THE AUSTRALIAN NATIONAL UNIVERSITY

Working Papers in Trade and Development

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Raghbendra Jha
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August 2008
Working Paper No. 2008/11

The Arndt-Corden Division of Economics
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Raghbendra Jha

And

Tu Dang

The Arndt-Corden Division of Economics
Research School of Pacific and Asian Studies
College of Asia and the Pacific
The Australian National University

Corresponding Address :
Raghbendra Jha
Australia South Asia Research Centre
The Arndt-Corden Division of Economics
Research School of Pacific & Asian Studies
College of Asia and the Pacific
The Australian National University
Email: R.Jha@anu.edu.au

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The Arndt-Corden Division of Economics,

RSPAS, College of Asia and the Pacific, ANU

Abstract

Economists have long recognized that a household's well-being depends not just on its average income or expenditure, but also on the risks it faces. Hence vulnerability is a more satisfactory measure of (inadequate) welfare than poverty. We measure vulnerability as expected poverty and establish the importance of its determinants, for Timor Leste′ based on the 2001 Living Standard Measurement Survey. The incidence of inadequate food consumption and vulnerability to food inadequacy are more severe than overall poverty and vulnerability to poverty. Poverty and vulnerability in Timor-Leste′ is largely a rural phenomenon. Policy options to reduce vulnerability are also discussed.

Keywords: Poverty, Vulnerability, Food security, Cross-section data

JEL codes: C21, C23, I32

All correspondence to:

Prof. Raghbendra Jha,
Australia South Asia Research Centre,
Division of Economics,
Australian National University,
Canberra, ACT 0200, Australia
Phone: + 61 2 6125 2683
Fax: + 61 2 6125 0443
Email: r.jha@anu.edu.au

[#] We are grateful to IFAD for financial support and to Raghav Gaiha and Katsushi Imai for comments. The usual disclaimer applies.

I. Introduction

In the extant literature either income or consumption expenditure per capita as measured over short periods of time (say a year) have been regarded as proxies for the material well-being of households. However, economists have long recognized that a household's sense of well-being depends not just on its average income or expenditure, but also on the risks it faces. Hence, vulnerability is a more satisfactory measure of (inadequate) welfare. The concept of vulnerability as used extends the notion of poverty to include idiosyncratic as well as aggregate risks. If the policy makers design poverty alleviation policies in the current year on the basis of a poverty threshold of income in the previous year, "the poor", who receive income support, may have already escaped from poverty and "the non- poor", who do not, may have slipped into poverty due to various unanticipated shocks (e.g. changes in relative crop prices or an illness incapacitating the main bread winner).

Chaudhuri (2003) lists four reasons why vulnerability is important:

(i) An atemporal or static approach to well-being, like poverty assessment, is of limited use in thinking about policy interventions to improve well-being that can only occur in the future.

(ii) Vulnerability assessment highlights the distinction between *ex ante* poverty prevention interventions and *ex post* poverty alleviation interventions.

(iii) Analysing vulnerability helps to investigate sources and forms of risks households face. This helps to design appropriate safety net programs to

reduce or mitigate risk, hence vulnerability.

(iv) Vulnerability is an intrinsic aspect of well-being when individuals are risk averse.

Nevertheless, Holzmann and Jørgensen (2001) argue that poverty and vulnerability are closely related concepts due to two established facts: (i) the poor are typically most exposed to diverse risks, and (ii) the poor have the fewest instruments to deal with these risks. Thus, Chaudhuri et al. (2002) state:

"Poverty and vulnerability (to poverty) are two sides of the same coin.... So if we are able to generate predicted probabilities of poverty for households with different sets of characteristics (which some but not all poverty assessments attempt), we will have, in effect, estimates of the vulnerability of these households." (p.3)

The purpose of this paper is to analyse poverty and vulnerability in Timor Leste′ and to discuss policy options for ameliorating these. The plan of the paper is as follows. Section II discusses the concept of social risk management and vulnerability. Section III lays out strategies of measuring vulnerability. Section IV briefly discusses the recent economic performance of Timor Leste′. Section V discusses empirical results on vulnerability. Section VI concludes the paper. To the best of our knowledge, this is the first analysis of vulnerability in Timor Leste′.

II. Social risk management and vulnerability

Social risk management (SRM), encompassing deprivation as well as risk thereof, is concerned with four main issues (Holzmann and Jørgensen, 1999).

Vulnerability: can be defined as the risk facing an individual or a household of falling below the poverty line or, for those already below the poverty line, to remain in or to fall further into poverty. Anti-vulnerability policies are designed to prevent this risk. Traditionally anti-poverty policy has been largely concerned with lifting the poor above the poverty line. Augmenting the static anti-poverty concept with the dynamic vulnerability concept through risk management measures should prove to be welfare enhancing.

Consumption smoothing: Households are presumed to prefer spreading their expected income over a long period (i.e., they are risk-averse). This requires appropriate risk management instruments, such as saving and dissaving possibilities, in order to smooth their consumption path.

Improved equity: Lower inequality eases constraints in the ability of the poor to smooth their consumption, resulting in better risk management (Holzmann and Jørgensen, 2001)

Economic development: Undoubtedly, economic development is an important factor in reducing poverty.

Holzmann et al. (2003) argue that even among these issues vulnerability is the central concept in SRM. They advance *three* definitions of vulnerability:

i) Vulnerability is the risk that a household will, if currently non-poor, fall below the poverty line, or if currently poor, will remain in poverty or fall deeper into poverty. Thus, vulnerability is synonymous with a high probability of becoming poor or poorer in the future. This definition is referred as

outcome approach to vulnerability in Scaramozzino (2006).

ii) Vulnerability is the household's inability to smooth (insure) consumption when faced with income shocks while preserving a minimum level of assets. Thus, vulnerability is tantamount to consumption volatility. More precisely, household vulnerability is defined as the conditional covariance between changes in household consumption and changes in income, subject to an asset constraint.

iii) Vulnerability is the utility lost due to risks, as the difference between the expected household consumption and the certainty-equivalent consumption. This definition is referred as *utility-based approach* to vulnerability in Scaramozzino (2006). Specifically, the utility function can be decomposed into two distinct components measuring vulnerability: poverty and risk (aggregate and idiosyncratic risk) (Ligon and Schechter, 2004; 2003).

III. Empirical approach to measuring vulnerability

In this paper we work with the first definition of vulnerability. Because of data limitations we could not analyse household measures to protect consumption from related income shocks like consumption and income smoothing (see Christiaensen and Boisvert, 2002). The absence of panel data means that we are unable to model vulnerability as expected utility.

According to Holzmann et al. (2003), ideally, the empirical implementation of a vulnerability assessment requires panel data, and information on (i) the shocks that affect the households, and (ii) the household's ability to withstand those shocks. Such data are typically not available, especially in developing countries. In such cases

cross-sectional data have often been used to estimate vulnerability. This is referred to as *vulnerability as expected poverty* (VEP), and is a second-best solution (Chaudhuri, 2003; Chaudhuri et al., 2002). We now provide a brief overview of the methodology used in VEP estimation.

With the *outcome approach*, when household level data are available, the vulnerability level of household *i* at time *t* is defined by

$$VEP_t^i = \Pr(c_{t+1}^i \leq z)$$

where c_{t+1}^i is the per capita consumption (or income) of household *i* at time t+1 and *z* is the per capita expenditure requirement defined as the poverty line. If we can estimate the ex ante probability distribution f of the consumption *c*, the vulnerability of household *i* can be identified as

$$VEP_t^i = \int_0^z f(c_{t+1}^i) \mathrm{d}c_{t+1}^i$$

Here, we assume that the environment is stationary so that the probability of future consumption outcomes remain the same across time (Ligon and Schechter, 2004). The major challenge in measuring vulnerability is the estimation of the probability distribution f (Christiaensen and Boisvert, 2002). Given limited data for two years, we make the standard assumption that consumption is log-normally distributed as in Chaudhuri et al. (2002). Thus, vulnerability is estimated by

$$VEP_t^i = \Phi\left(\frac{\ln z - \ln c_{t+1}^i}{\sigma_i}\right)$$

where Φ is the cumulative log-normal distribution function.

Thus, to estimate a household's vulnerability we need to estimate its expected consumption and the variance of this consumption. To predict the consumption of household *i* at time *t+1* and the variance of consumption σ_i^2 we specify the following heteroscedasticity regressions:

$$\ln c^i = X_i\beta + \varepsilon_i \quad (1)$$

$$\sigma_{\varepsilon i}^2 = X_i\theta + e_i \quad (2)$$

where X_i represents a bundle of observed household characteristics, such as the number of household members or the proportion of children in the household.

According to Chaudhuri et al. (2002), there are two vulnerability thresholds. The first is the observed current poverty rate in the population. The second threshold is 0.5, indicating that a household whose vulnerability level exceeds 50 percent is more likely than not to end up being poor and can thus be considered to be vulnerable. In this paper, we chose the later threshold so household *i* would be included among the vulnerable if $VEP^i > 0.5$.

IV. Political and economic situation in Timor-Leste′

On October 19, 1999, Indonesia's parliament voted to confirm the results of the referendum in East Timor of August 30, 1999, which rejected autonomy under Indonesia and favoured independence. With about a million people, the country is one of the world's poorest nations. Life expectancy is about 60 years, the adult literacy

rate is only 50.1% (2004). Population growth recently has been a massive 5.4% per year. GDP per capita is under US$ 400 per annum (Table 1)

Table 1 here.

Poverty rate increased from 39.5% in 2001. The increase in poverty was due to the decline in growth rate of non-oil GDP. The non-oil GDP growth was driven by public expenditure. Table 2 shows that, following the 1999 referendum, public expenditure grew rapidly from 39% in 1999 to 57% of non-oil GDP in 2000 and remained high for the following years. Table 2 also notes that donor programs sponsored about 70% of total public expenditures. It turns out that the non-oil GDP growth was driven by donor programs. The cut in aid after 2002 was followed by a significant contraction. The increase in the rate of poverty between 2001 and 2004 was in turn a consequence of poor growth performance.

Table 2 here.

V. A profile of vulnerability in Timor-Leste′: Empirical findings

a. Data

The Timor-Leste′ Living Standard Measurement Survey (TLSS) was designed to diagnose the extent, nature and causes of poverty. It assembles information on household demographics, housing and assets, household expenditures and some components of income, agriculture, labour market data, basic health and education, subjective perceptions of poverty and social capital. The data were collected between end August and November 2001.

The TLSS has a sample size of 1,800 households, or about one percent of the total number of households in Timor-Leste′. It covers three areas: the Major Urban Centers (Dili and Baucau), the Other Urban Centers and the Rural Areas. Within rural areas it covers three sub-divisions of the Rural Areas: West, Center and East. To ensure that each analytical domain contained a sufficient number of households, the sample design by strata was as follows: 450 households in the Major Urban Centers (378 in Dili and 72 in Baucau), 252 households in the Other Urban Centers and 1,098 households in the Rural Areas.

The poverty line is provided by the survey which is the monthly real per capita of 154,374.1 rupiah.[1] The food share accounts for 70 percent of the poverty line. With this poverty line, we estimate that 34.7% of the population are poor and 38.6% of the population are undernourished. This signals the necessity to enhance the food security of people in Timor-Leste′ (Table 3).

[1] The poverty line consists of two elements, the food and the non-food components. The food component requires setting minimum food-energy requirement. The survey followed common practice in East Asia and used as basic nutritional requirement 2100 calories per person per day. The survey defined the food bundle that yields this level of nutrition by looking at the prevailing consumption patterns. Following standard convention, the survey excluded alcoholic drinks, tobacco and betel, and residual sub-categories "other". For a poverty line, the survey obtained a lower national monthly per capita poverty line of US$14.41 and a higher national poverty line of US$15.43. The food share accounts for 75 percent in the case of the lower poverty line and 70 percent in the case of the upper poverty line. In this paper we use the upper poverty line. Correspondently, the food poverty line is US$10.8 per month per person.

Table 3 here.

b. Determinants of vulnerability in Timor-Leste´

Based on the specification described in Section III, we estimated the coefficients on the different determinants of the *ex ante* mean and variance of future consumption as specified by (1) and (2). The estimated results indicate the relative importance of the different factors to vulnerability (Table 4). In general, the performance of the model is encouraging. The signs on the coefficients are plausible and consistent with other empirical studies, except that the availability of arable lands to a household reduces and the distance to the centre increases the household consumption.

Table 4 here.

Households in Dili/Baucau (capital) tend to have higher expectation and a larger variance of future consumption (per capita). However, these household tend to have lower expectation of food consumption in the future. This may be related to the fact that food is a necessity and people in the capital consume less than in rural areas.

Controlling for all other determinants, total and food consumption per capita fall with increases in household size, thereby increasing vulnerability. However, this negative effect weakens with household size because the coefficient on household size squared is positive and significant. At the same time, larger household size is associated with an increase in the variance of total consumption and a decrease in the variance of food consumption.

The size of expected future consumption declines with the age of the household head. After controlling for all other characteristics, male headed households are associated with higher mean consumption.

As expected, we find that the larger is the dependency ratio, defined as proportions of the household consisting of children under 16 and adults above 60, the larger the household's vulnerability. This is manifested as lower mean of future consumption for such households. The effects of both these categories are quite similar.

The education of household members does not have a clear mean enhancing effect on future total or food consumption. The proportion of members whose highest education attainment is kindergarten has a significant and positive effect on the mean of future consumption. However, the proportion of members whose highest educational attainment is higher than kindergarten has no significant effect on the mean of future household consumption. The proportion of members whose highest grade is senior secondary school lowers both total and food consumption, on average.

In general, households with a head who has a job or pension have a higher mean of future consumption than those with a head who has no job or pension. This positive effect is different among different kinds of occupation of household heads. Surprisingly, the effect of household head who is pensioner is largest. This may be indicative of the fact that, with high unemployment in Timor-Leste′, household heads are not major contributors to household income, at least through wage income.

Contrary to expectation, controlling arable lands has a significant and negative

effect on both total and food consumption regressions and hence increases household vulnerability. However, controlling arable land has a variance reduce effect. Thus, the effect of ownership of arable land on vulnerability is ambiguous.

Our results confirm that the distance to (aldeia) centrals reduces household vulnerability by increasing average consumption, with the effect being twice as large for food consumption compared to total consumption. This result differs from that by Christiaensen and Subbarao (2005) who argue that longer distances may result in income losses for farmers since they would face delays in delivering their goods to urban markets.

c. A vulnerability profile of Timor-Leste′

Based on these estimation results we conduct a vulnerability profile for Timor-Leste′. Using the assumption that consumption is lognormally distributed we can calculate the probability of each household's consumption falling below the poverty line in the future. A household is then considered vulnerable to poverty if this probability exceeds some threshold. Similarly, a household is considered vulnerable to food inadequacy if its future food consumption falls below the designated minimum food consumption with a probability greater than a give threshold.

Figure 1 depicts the estimated incidence of vulnerability to poverty and food requirement for vulnerability thresholds ranging from 0 to 1, measured along the horizontal axis. It is evident that for a wide range of thresholds of less than 0.6, the incidence of vulnerability to food requirement is higher than for vulnerability to poverty.

Figure 1 here.

Figure 2 depicts the estimated incidence of vulnerability to poverty for the population, the poor and the non-poor for given threshold. The horizontal line indicates the (observed) poverty rate of the population. This figure shows that for any threshold less than 0.45 the vulnerability rate of the population is higher than the poverty rate.

Figure 2 also suggests that for almost any threshold, the incidences of vulnerability to poverty of the population, the poor and the non-poor are significantly different and that there is a given fraction of the non-poor are vulnerable to poverty. As expected, the incidence of vulnerability of the poor is much higher than that of the non-poor. However, the sensitivity to choosing the threshold of the incidence of vulnerability of the non-poor is much higher than that of the non-poor, as manifested by the slope of the vulnerability fraction curves.

Figure 2 here.

To investigate the distribution of the vulnerability through segments of the population we chose a threshold of 0.5. In doing so we follow Chaudhuri (2003, 2002) who suggests that a household whose vulnerability level exceeds 0.5 is more likely than not to end up poor.

Table 5 describes the distribution of vulnerability at the aggregate level. While 34.7% of the population is observed to be poor, we estimate that only 28.3% and 31.5% of the population are vulnerable to poverty and food inadequacy, respectively. In this case, the observed incidence of poverty overestimates the

incidence of vulnerability. However, of the 65.3% of the population observed to be non-poor, 16.4% and 21.5% are estimated to be vulnerable to poverty and food inadequacy, respectively. Furthermore, among the poor, only one half is estimated to be vulnerable to poverty and food requirement.

Table 5 here.

Table 6 describes the cross-distribution between vulnerability to poverty and vulnerability to food inadequacy. The table suggests that 10% of the population estimated not to be vulnerable to poverty are vulnerable to food inadequacy.

Table 6 here.

Table 7 decomposes the population into groups into those who are vulnerable to poverty, vulnerable to food inadequacy or are poor. The table suggest that 15% of the population need special assistances. These are people who are not only poor but also vulnerable to both poverty and food inadequacy. This group is resident mainly in rural areas (46.4% in Rural center, 25.3% in Rural west, and 12.7% in Rural east).

Table 7 shows that there is a fraction of the population which is not poor and not vulnerable to poverty but is vulnerable to food inadequacy. These households represent 4.6% of the population and are easy to exclude from poverty alleviation programs. This group is resident mostly in urban areas with 70.6% in Dili/Baucau and 10.9% in Other Urban.

Table 7 here.

d. Distribution of vulnerability in Timor-Leste´

Table 8 presents poverty and vulnerability by regions and selected household characteristics.

Table 8 here.

In rural areas, the estimated incidence of vulnerability is approximately the same as the observed incidence of poverty. However, in urban areas, the vulnerability rate is much lower than the poverty rate. Indeed, about 22% of the urban population is poor but only 9% of the population in urban areas is vulnerable to poverty.

Relative to their share in the population, rural households are over-represented among the poor and the vulnerable. While 61% of the population is rural, 73.7% of the poor live in rural areas as do 87.4% of those we estimate to be vulnerable. Thus, vulnerability and poverty rates are much higher in rural areas. About 44% of the rural population are poor, whereas the poverty rate for urban areas is only 22%. Even worse, we estimate about 43% of rural population is vulnerable but only 9% of urban population are considered as being vulnerable to poverty.

There are two principal factors explaining why the poverty and vulnerability are more severe in rural areas. First, as suggested by Figure 3, inequality is higher in rural than in urban areas. Second, as can be seen in Table 8 as much as 82% of the poor and 95% of the vulnerable are members of households headed by farmers whereas only 77 % of the population lives in rural areas. In other words, the poverty and vulnerability in urban areas is associated with the high weight of agriculture,

which is considered to have low and uncertain value added.

Figure 3 here.

The disproportionate contribution of the rural population to overall poverty and vulnerability is reflected at the regional level as well. It turns out that Dili/Baucau is the only urban area which is under-represented among both the poor and the vulnerable, relative to their shares in the population. In particular, the capital contributes only 0.3% to overall vulnerability. Except the Rural East, rural areas tend to be over-represented among the poor and the vulnerable. The Rural Center contributes more than one half of the vulnerable, although this region accounts for only 20.8% of the population.

We now turn to the other determinants of poverty and vulnerability. We start with household size. Clearly, poverty and vulnerability increase with household size. In particular, of the 39.3% of the population that lives in households with more than 5 members, who comprise 56.3% of the poor and 93.4% of the vulnerable, 41.4% are poor and 46.1% are vulnerable to poverty. However, household size is not a reason for the imbalance between the contributions of rural and urban areas to overall poverty and vulnerability because rural areas contribute only about one half of households with more than 5 members. The difference in the vulnerability rate between households with 5 members or less and that of households with more than 5 members is striking: increasing from 6.9% to 46.1%.

Another important determinant of poverty and vulnerability is the gender of the household head. Of the 15.2% of the rural population which lives in households

with female heads 28.7 are poor and 13.3% are vulnerable to poverty. Female headed households comprise 11% of the poor and 5.5% of the vulnerable. Surprisingly, the vulnerability rate among households headed by women, at 13.3%, is significantly lower than that of households headed by men, at 30%. The reason for this is the relation between gender of household head and rural area. About 60% of households headed by men live in rural areas where the main economic activity is agriculture which not only requires male labour force but also has low and uncertain value added. Consequently, households with male heads are poorer and more vulnerable.

We also divide the sample according to the occupation of the household head and discover that people who live in households headed by individuals working in agriculture and fishing sectors are poorer and more vulnerable to poverty. The

group with the highest rates of poverty and vulnerability is that which lives in households headed by farm labourers. Strikingly, all of them are poor and vulnerable. Of the 67% of the population who live in households headed by farmers, and who comprise 82% of the poor and 94.8 % of the vulnerable, 44% are poor and nearly 42 % are vulnerable to poverty. With these same rates of poverty and vulnerability the people who live in household headed by fishermen are only 0.6% of the total population. Thus, we can say that poverty and vulnerability in Timor-Leste′ is largely an agricultural and, hence, rural phenomena.

VI. Conclusions

In this paper, we measured the extent of vulnerability and poverty in Timor

Leste′, a country that has recently become independent. This is particularly significant since relatively little is known about economic conditions of the population. We also modelled the determinants of poverty and vulnerability. Our analysis was based on the 2001 Timor-Leste′ Living Standard Measurement Survey.

According to Chaudhuri (2003), a household's vulnerability to poverty depends on depends on its future income prospects, the degree of its income volatility due to aggregate shocks and/or idiosyncratic shocks. The paper found that, in Timor-Leste′, the incidence of not having enough food and vulnerability to food inadequacy is more severe than overall poverty and vulnerability to poverty. For almost any given threshold, the incidence of vulnerability to food inadequacy is higher than vulnerability to poverty. Strikingly, there is a fraction of the population who are not poor and not vulnerable to poverty but vulnerable to food inadequacy. These households represent 4.6% of the population and live mostly in urban areas. This raises a serious issue of food security and indicates that government and foreign aid agencies should support Timor-Leste′s agricultural programs and enhance open trading system, especially agricultural trade liberalisation.

We also concluded that poverty and vulnerability in Timor-Leste′ is an agricultural phenomena. Indeed, 15% of population, who are not only poor but also vulnerable to both poverty and undernourished, live mainly in rural areas. Our analysis also suggests that poverty and vulnerability in rural areas are associated with higher inequality than in urban areas.

This constitutes a list of factors that any anti-poverty and anti-vulnerability policy should target in Timor Leste′. A successful policy to reduce poverty

and vulnerability in Timor Leste′ would have the following components. First, a strong effort needs to be made to reduce hunger. Second, inequality needs to be lowered, particularly in rural areas. Third, given widespread differences in the incidences of poverty and vulnerability across regions efforts should be made to reduce regional disparity. Fourth, agricultural productivity and output need to be enhanced. However, and fifth, given the high association of agriculture with poverty and vulnerability economic activity in the country should be diversified. Sixth, a policy of population country through family planning would yield rich dividends in lowering poverty and vulnerability in Timor Leste′.

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Figure 1. Estimated incidence of vulnerability to poverty and food requirement

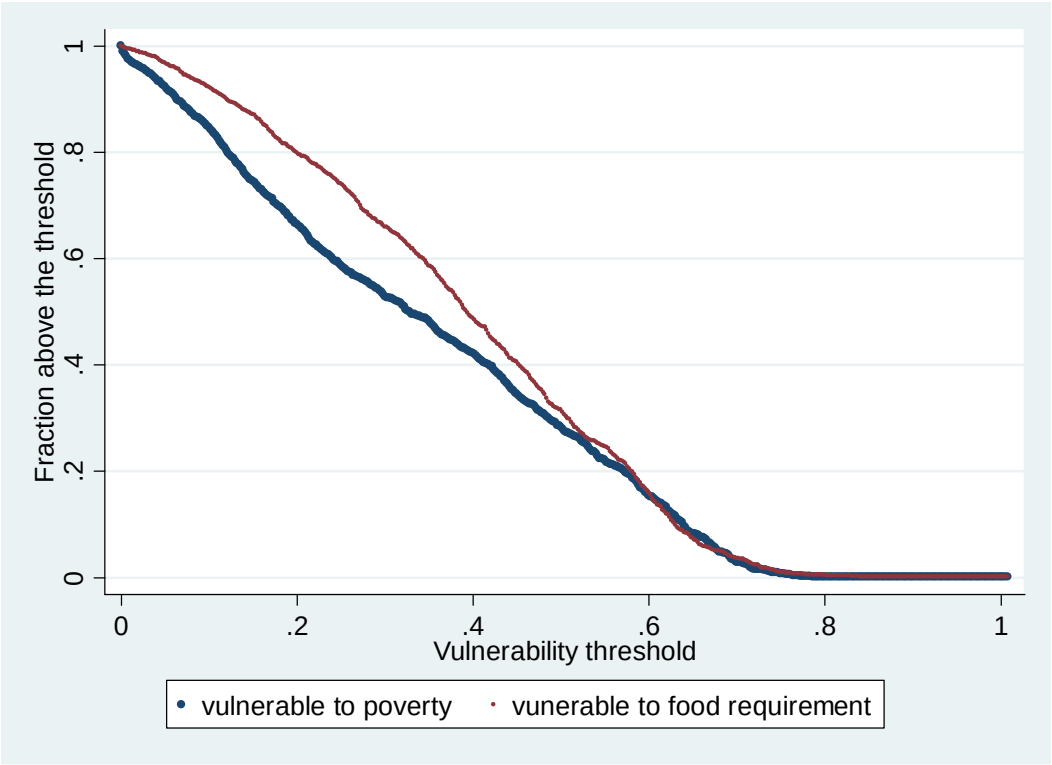

Figure 2. Estimated incidences of vulnerability to poverty for poor and non-poor

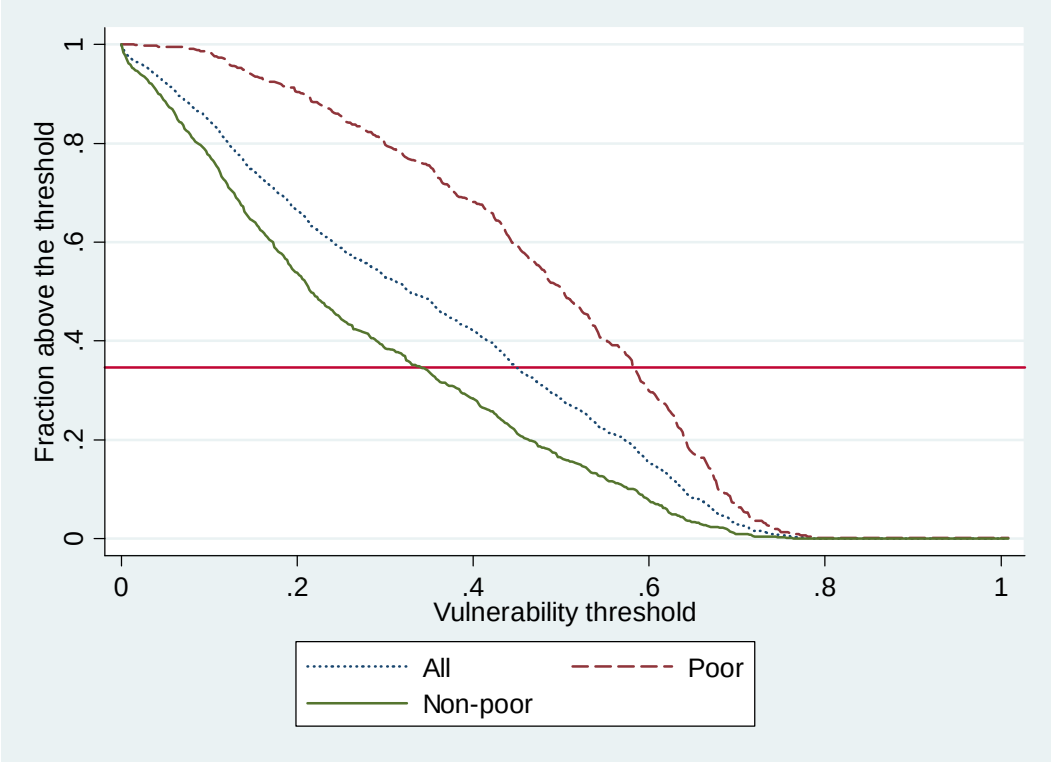

Figure 3: Lorenz consumption curves for rural and urban areas

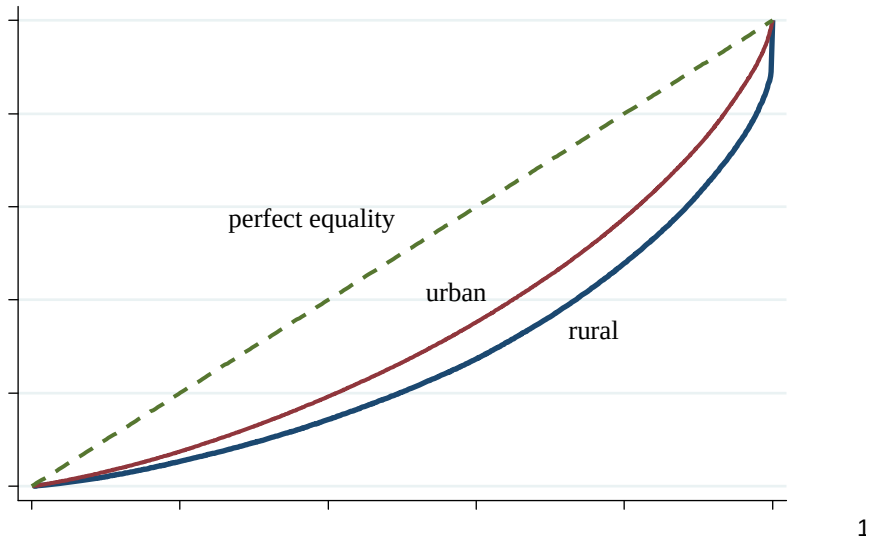

Table 1. Key development and economic indicators in Timor-Leste′, 1999-2006

	1999	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	*2006*
Population growth (annual %) [a]	0.47	0.47	0.47	5.36	5.36	5.36	5.36	5.35
Birth rate, crude (per 1,000 people) [a]	…	40.9	…	47.4	52.1	…	50.7	50.7
Life expectancy at birth (years) [a]	…	54.1	…	55.2	…	…	56.7	57.2
Poverty rate (% below poverty line) [b]	…	…	39.5*	…	…	41.5	…	…
GINI coefficient [d]	…	…	0.44	38*	…	…	…	…
Literacy rate [b]	…	…	…	…	…	50.1	…	…
Human development index [b]	…	…	…	…	…	0.426	…	…
Non-oil real GDP (% change) [a]	…	13.7	16.5	-6.7	-6.2	0.3	2.3	-1.6
GDP per capita (constant 2000 US$) [a]	356.7	403.5	468.0	413.9	368.1	350.1	339.4	316.6
Agriculture, value added (% of GDP) [a]	43.2	25.8	24.1	27.3	29.0	30.6	31.8	32.2
Consumer price inflation (annual %) [c]	…	…	…	…	7.0	3.2	1.8	4.1

Source: [a] World Development Indicators (The World Bank). [b] IMF Country Report No. 07/86.

[c] The EIU Country Report 2008. [d] Our estimation.

Note: * In this paper we estimate the poverty rate in 2001 is 34.7%.

Table 2: Public expenditure in non-oil GDP in Timor-Leste′, 2000-2005

	2000	**2001**	**2002**	**2003**	**2004**	*2005*
Capital (% of non-oil GDP)	9	16	22	18	15	15
Public expenditures (% of non-oil GDP)	39	57	65	71	70	68
Donor programs:						
• millions of US$	79	148	181	170	165	154
• % of public expenditures	68.1	75.9	78.4	70.5	69.6	66.4
• % change		87.3	22.3	-6.1	-2.9	-6.7

Source: IMF Country Report No. 07/86.

Table 3: Basic statistics Timor-Leste′ household data for 2001

Variable	Mean	Std. Dev.	Min	Max
Hh per capita monthly food cons. (1000 rupiahs)	178	133.7	25	1,921
Hh per capita monthly total cons. (1000 rupiah)	326	736.9	45	29,200
Household size	5	2.5	1	19
Age of household head	44	13.9	16	99
Number of children	2	1.9	0	10
Number of old	0.1	0.39	0	2
Number of employees	4	2	1	10
Land area household controls* (hectares)	2.4	27.41	0	1,000
Number of households surveyed 1800				

Source: Timor-Leste′ Living Standard Measurement Survey

Note: *including area not belong to the household

Table 4: Determinants of vulnerability in Timor-Leste′

	log total consumption per capita		log food consumption per capita	
	expectation	variance	expectation	variance
Location				
Dili/Baucau	0.275***	0.095	-0.041	0.111**
Rural center	-0.096**	-0.003	0.024	0.118***
Rural east	-0.008	0	0.002	0.079**
Rural west	-0.149***	-0.111**	-0.097**	-0.001
Demographic factors				
Household size	-0.265***	0.034	-0.271***	-0.008
Household size squared	0.013***	-0.002	0.014***	0.001
Age of household head	-0.003**	0	-0.002	-0.001
Whether hh head is male	0.083*	0.007	0.108***	0.052*
Prop. of children (<16)	-0.343***	-0.087	-0.277***	-0.094*
Proportion of old (>60)	-0.204**	0.001	-0.146*	0.042
Education [#]				
Prop. of members with TK	0.322***	-0.133	0.429***	-0.08
Prop. of members with SD	-0.014	0.018	-0.038*	-0.004
Prop. of members with SMP	0.001	-0.031	0.018	-0.046
Prop. of members with SMA	-0.112***	0.028	-0.095***	0.036
Occupation of household head				
Farmer	0.367	-0.012	0.506**	0.116
Share cropper	0.677*	0.25	0.925**	0.626**
Farmer labourer	-0.284	-0.289	0.082	-0.096
Non-farm labourer	0.449	-0.145	0.507**	0.032
Fisherman	0.283	-0.057	0.636**	0.062
Trader	0.570**	-0.021	0.702***	0.046
Skilled worker	0.545*	-0.153	0.611***	0.007
Civil servant	0.683**	0.032	0.740***	0.152
Teacher	0.685**	-0.018	0.680***	0.098
Pensioner	1.122***	-0.239	1.076***	-0.005
Housewife	0.356	0.068	0.375*	0.126
School student	0.669**	-0.209	0.427	-0.016
University student	0.527*	0.124	0.572***	0.142
Assets				
Whether controls arable land	-0.280***	-0.029	-0.196***	-0.033
Community characteristic				
Kms to the aldeia centre	0.005**	-0.004	0.009***	-0.002
Constant	13.264***	0.256	12.547***	0.132
Number of obs	1798	1800	1799	1800
R-squared	0.3979	0.02781	0.3238	0.03577
F-value	40.3	1.75	29.21	2.26

Note: * indicates the coef. is sign. at 10%, ** at 5%, *** at 1% level

[#] the highest grade completed, TK = Kindergarten, SD = Primary School (grades 1-6),
SMP = Junior Secondary School (grades 7-9), SMA = Senior Secondary School (grades 10-12)

Table 5: Cross-distribution between poverty and vulnerability

	Non-vulnerable to poverty	Vulnerable to poverty	Non-vulnerable to food requirement	Vulnerable to food requirement	
Non-poor	83.6	16.4	78.5	21.5	**65.3**
Poor	49.2	50.8	49.6	50.4	**34.7**
Total	**71.7**	**28.3**	**68.5**	**31.5**	**100**

Table 6: Cross distribution between vulnerability to poverty and food requirement

	Non-vulnerable to food requirement	Vulnerable to food requirement	
Non-vulnerable to poverty	90.0	10.0	**71.7**
Vulnerable to poverty	14.2	85.8	**28.3**
Total	**68.5**	**31.5**	**100.0**

Table 7: Decomposing distribution between vulnerability and poverty

Non-vulnerable to poverty	Non-vulnerable to food requirement	Non-poor	***49.7***
Non-vulnerable to poverty	Non-vulnerable to food requirement	Poor	14.7
Non-vulnerable to poverty	Vulnerable to food requirement	Non-poor	4.6
Non-vulnerable to poverty	Vulnerable to food requirement	Poor	2.3
Vulnerable to poverty	Non-vulnerable to food requirement	Non-poor	1.5
Vulnerable to poverty	Non-vulnerable to food requirement	Poor	2.5
Vulnerable to poverty	Vulnerable to food requirement	Non-poor	9.2
Vulnerable to poverty	Vulnerable to food requirement	Poor	15.1
Total			**100**

Table 8: Distributions of poverty and vulnerability over selected segments

	Population share	**Share of poor**	**Share of vulnerable**	**Poverty rate (%)**	*Vulnerability rate (%)*
Total	**100**	**100**	**100**	**34.7**	**28.3**
Areas					
Urban	39.0	26.3	12.6	22.4	8.9
Rural	61.0	73.7	87.4	44.3	43.3
Regions					
Dili/Baucau	25.0	10.8	0.3	14.5	0.2
Other Urban	14.0	15.5	12.4	39.5	27.8
Rural Center	28.0	39.1	50.9	49.3	51.8
Rural East	19.0	16.4	13.5	32.5	25.7
Rural West	14.0	18.1	23.0	48.2	47.3
Household size					
1	4.7	0.4	0.3	2.4	1.2
2	10.7	2.8	0.0	7.8	0.0
3	14.7	7.2	0.0	14.3	0.0
4	14.5	15.1	0.6	30.7	0.8
5	16.1	18.1	5.7	33.2	6.9
6 or more	39.3	56.3	93.4	41.4	46.1
Gender of hh head					
Female	15.2	11.0	5.5	28.7	13.3
Male	84.8	89.0	94.5	35.4	30.0
Occupation of hh head					
Farmer	66.9	82.0	94.8	44.3	41.7
Share cropper	0.3	0.4	0.0	60.0	0.0
Farmer labourer	0.1	0.4	0.6	100.0	100.0
Non-farm labourer	1.6	0.8	0.6	19.0	5.7
Fisherman	0.6	0.8	1.1	45.1	42.3
Trader	4.4	1.1	0.0	9.4	0.0
Skilled worker	2.9	1.9	0.6	20.3	5.8
Civil servant	2.2	0.8	0.0	9.2	0.0
Teacher	3.4	1.3	0.0	16.3	0.0
Pensioner	0.9	0.0	0.0	0.0	0.0
Housewife	2.8	2.1	0.6	29.1	8.5
School student	0.2	0.2	0.3	35.7	35.7
University student	0.4	0.0	0.0	0.0	0.0
Other	13.2	8.3	1.4	17.6	3.1

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