Timor-Leste
Poverty in a New Nation:
Analysis for Action

(In Two Volumes) Volume II: Technical Report

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UNMISET

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PREFACE

This report lays out the challenge of poverty reduction in Timor-Leste. It is based on the first nationally-representative household survey collected during August to December 2001. This work was conducted by the Poverty Assessment Project, a partnership between the Government of Timor-Leste (with the Ministry of Planning and Finance providing overall guidance), the World Bank, the Asian Development Bank (ADB), the Japanese International Cooperation Agency (JICA), the United Nations Development Program (UNDP), United Nations Children's Fund (UNICEF) and United Nations Mission of Support in East Timor (UNMISET). The Poverty Assessment Project was launched to provide up-to-date information on living conditions after the violence in 1999 as input into the National Development Plan. The Poverty Assessment Project comprised three data collection activities on different aspects of living standards, which taken together, provide a comprehensive picture of well-being in Timor-Leste on the eve of independence:

- *Suco Survey* – This is a census of all the 498 sucos in the country and provides an inventory of existing social and physical infrastructure, and of economic characteristics of each suco, in addition to aldeia level population figures. It was completed between February and April 2001, and the report, written by the ADB, was published in October 2001.
- *Participatory Potential Assessment*: This qualitative community survey assisted 48 aldeias to take stock of their assets, skills and strengths, identify the main challenges and priorities and formulate strategies for tackling these within their communities. The field work took place between November 2001 and January 2002. This activity was managed by UNDP and the report was finalized in May 2002.
- *Household Survey*: The Timor-Leste Living Standards Measurement Survey is a nationally representative survey of 1800 households from 100 sucos covering one percent of the population. This comprehensive survey was designed to diagnose the extent, nature and causes of poverty and analyze policy options for the country. Data collection was undertaken between end-August and November 2001.

This report, written in two volumes, was a collaborative effort of the members of the Poverty Assessment Project, with the World Bank taking the lead in the analysis. The objectives of this report are modest – to set a baseline for the new country on the extent, nature and dimensions of poverty; to assist the decision making of the newly elected government and its efforts in formulating, implementing and monitoring its Poverty Reduction Strategy. The objective was not to lay out the elements of the poverty strategy

but rather to present evidence on the basis of which the Timorese can define and refine their own poverty reduction strategy. We hope this is just the start of a series of analysis to consider the effects of government policies on different groups of people, especially the poor.

The preliminary analysis from the household survey was presented at a workshop in Dili in February 2002. The early results fed into the National Development Plan presented by the Government at independence. Sector analysis for health, education and agriculture were also presented at the workshop and in more detailed discussions with the relevant Ministries. The full report was discussed with the Government in January 2003. A series of seminars was organized by the Ministry of Planning and Finance during January 13-24, 2003. The dissemination took place before the Ministries embarked on the prioritizing and sequencing of the National Development Plan for the FY2004 budget. Seminars were held at the Council of Ministers and several Ministries (Education, Health, Agriculture, Labor and Solidarity and Finance and Planning). A large workshop in Dili and three regional workshops in Baucau, Ainaro and Maliana were organized for Government officials from the center and districts, civil society representatives, including the Church, women's, students and youth groups, NGOs, Chefe de Sucos, and development partners. The results from the UNICEF sponsored Multiple Indicators Survey (MICS) were also presented by their staff and consultants at these workshops, and at the Council of Ministers and the Ministry of Health seminars. The report was revised in light of the comments received and the health section was updated using the MICS results.

ACKNOWLEDGEMENTS

Timor-Leste Living Standards Survey Team Members

1	Akilis Moniz do Rosario	Supervisor
2	Antoninho dos Santos	Supervisor
3	Manuel da Silva	Supervisor
4	Antonio Soares	Supervisor
5	Felix Celestino da C. Silva	Supervisor
6	Batista Leos	Supervisor
7	De Francisco Barreto	Supervisor
8	Tornas Gusmao	Supervisor
9	Juliao da Cruz	Enumerator
10	Samuel Fatima	Enumerator
11	Armando Da Costa	Enumerator
12	Gertudes de Amaral	Enumerator
13	Henriqueta da Costa Braz	Enumerator
14	Armando Martins	Enumerator
15	Anibal Cardoso	Enumerator
16	Miguel Pereira	Enumerator
17	Manuel Ribeiro	Enumerator
18	Antonio C. Alves	Enumerator
19	Raul Pinto	Enumerator
20	Manuel Soares Pereira	Enumerator
21	Rodolfo Soares	Enumerator
22	Dilva do Rosario de F. da C.	Enumerator
23	Januario Ximenes	Enumerator
24	Amaro da C Tilman	Enumerator
25	Eva Femandes	Enumerator
26	Delia Nunes	Enumerator
27	Dominggos Moniz	Enumerator
28	Filomena M. Guterres	Enumerator
29	Julieta F. Silva	Enumerator
30	Jaimito do Rego	Enumerator
31	Gil Vicente Madeira	Enumerator
32	Rogerio Castro	Enumerator
33	Sebastiao Dias Saldanha	Enumerator
34	Saozina da Costa	Enumerator
35	Maria L. De Jesus	Enumerator

Timor-Leste Living Standards Survey Team Members (contd.)

36	Antonio B.S. Dasilva	Enumerator
37	Rogerio Babo	Data Entry
37	Inacia Vilena	Data Entry
38	Silvina Suares	Data Entry
39	Maria Odete	Data Entry
40	Suzana Leong da Costa	Data Entry
41	Eduardo Martinho Ximenes	Data Entry
42	Maria Odete Baros	Administration
43	Vicente Lean de Jesus	Field Administration
44	Saul do Carmo Ximcncs	Field Administration
45	Kintao de Deus	Field Administration
46	Tomas Pereirra	Field Administration
47	Rafael C. Lobato	Field Administration
48	Nicolau Pereira	Field Administration
49	Manuel da Costa Silva	Field Administration
50	Alvaro Maia	Field Administration

1. SURVEY DESIGN AND WELFARE MEASUREMENT

INTRODUCTION[1]

1.1   In developing countries, poverty is often seen as the defining characteristic of underdevelopment, and its elimination as the main purpose of economic development. Poverty measures are designed to count the poor and to diagnose the extent and distribution of poverty. The TLSS provides the information required to conduct such analysis. This chapter serves as a reference point for this poverty assessment. It introduces concepts and techniques that are widely used in other chapters. It is primarily written for technical experts in charge of data analysis as reference on the details of the analysis conducted to derive the summaries and messages contained in Volume I of this report. However, it is also addressed to decision makers who want to define the type of information they need for monitoring of poverty reduction and making appropriate policy decisions. The first sections of this chapter deal with the design and data of the TLSS. The later parts present the methodology of poverty, inequality, and welfare measurement.

SURVEY DESIGN[2]

1.2   A survey relies on identifying a subgroup of a population that is representative both for the underlying population and for specific analytical domains of interest. The main objective of the TLSS is to derive a poverty profile for the country and salient population groups. The fundamental analytic domains identified are the *Major Urban Centers* (Dili and Baucau), the *Other Urban Centers* and the *Rural Areas*. The survey represents certain important sub-divisions of the Rural Areas, namely two major agro-ecologic zones (*Lowlands* and *Highlands*) and three broad geographic regions (*West*, *Center* and *East*). In addition to these domains, we can separate landlocked sucos (Inland) from those with sea access (Coast), and generate categories merging rural and urban strata along the geographic, altitude, and sea access dimensions. However, the TLSS does not provide detailed indicators for narrow geographic areas, such as postos or even districts.[3] The survey has a sample size of 1,800 households, or about one percent of the total number of households in Timor-Leste. The experience of Living Standards Measurement Surveys in many countries – most of them substantially larger than Timor-Leste – has shown that samples of that size are sufficient for the requirements of a poverty assessment.

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[1] This chapter was written by Kaspar Richter.
[2] This section draws on Muñoz (2001).
[3] Timor-Leste is divided into 13 major units called districts. These are further subdivided into 67 *postos* (sub-districts), 498 *sucos* (villages) and 2,336 *aldeias* (sub-villages). The administrative structure is uniform throughout the country, including rural and urban areas.

1.3   The survey domains were defined as follows. The *Urban Area* is divided into the Major Urban Centers (the 31 sucos in Dili and the 6 sucos in Baucau) and the Other Urban Centers (the remaining 34 urban sucos outside Dili and Baucau). The rest of the country (427 sucos in total) comprises the *Rural Area*. The grouping of sucos into urban and rural areas is based on the Indonesian classification. In addition, we separated rural sucos both by agro-ecological zones and geographic areas. With the help of the Geographic Information System developed at the Department of Agriculture, sucos were subsequently qualified as belonging to the *Highlands* or the *Lowlands* depending on the share of their surface above and below the 500 m level curve.[4] The three westernmost districts (Oecussi, Bobonaro and Cova Lima) constitute the *Western Region,* the three easternmost districts (Baucau, Lautem and Viqueque) the *Eastern Region,* and the remaining seven districts (Aileu, Ainaro, Dili, Ermera, Liquica, Manufahi and Manatuto) belong to the *Central Region*.

Table 1.1: Number and percentage of households by analytical domain

	Agro-ecologic zone		Geographic region			Total
	Highlands	Lowlands	West	Center	East	
Urban	5,446	36,008	5,698	28,317	3,792	41,454
Major Urban Centers	2,236	21,945	-	20,530	3.651	24,181
Other Urban Centers	3,210	14,063	5,698	7,787	3,788	17,273
Rural	57,123	81,706	32,749	61,024	45,056	138,829
Total	62,569	117,714	38,447	89,341	52,495	180,283

	Altitude			Geographic region			Sea access		Total
	Lowlands	Midlands	Highlands	West	Center	East	Inland	Coast	
Urban	3	18	3	4	15	4	16	8	24
Major Urban Centers	2	10	1	0	11	2	7	6	13
Other Urban Centers	1	8	2	4	4	2	8	2	10
Rural	7	37	33	18	49	23	69	21	76
Total	9	55	36	22	54	25	77	23	100

Source: 2001 TLSS.

1.4   Our next step was to ensure that each analytical domain contained a sufficient number of households. Assuming a uniform sampling fraction of approximately 1/100, a non-stratified 1,800-household sample would contain around 240 Major Urban households and 170 Other Urban households –too few to sustain representative and significant analyses.[5] We therefore stratified the sample to separate the two urban areas from the rural areas (see Table 1.1). The rural strata were large enough so that its implicit stratification along agro-ecological and geographical dimensions was sufficient to ensure that these dimensions were represented proportionally to their share of the population. The final sample design by strata was as follows: 450 households in the Major Urban

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[4] Occasionally, we split Lowlands into Lowlands (of Flatlands), covering sucos below 100m of altitude, and Midlands, defined as sucos between 100m and 500m of altitude.
[5] The aldeia-level population numbers were collected by the Suco Survey.

Centers (378 in Dili and 72 in Baucau), 252 households in the Other Urban Centers and 1,098 households in the Rural Areas.

1.5   With the exception of Urban Dili, the sampling of households in each stratum followed a 3-stage procedure: In the first stage, a certain number of sucos were selected with *probability proportional to size* (PPS). In the second stage, 3 aldeias in each suco were selected, again with *probability proportional to size* (PPS). In the third stage, 6 households were selected in each aldeia with *equal probability* (EP). This implies that the sample is approximately *self-weighted* within the stratum: all households in the stratum had the same chance of being visited by the survey. A simpler and more efficient 2-stage process was used for Urban Dili. In the first stage, 63 aldeias were selected with PPS and in the second stage 6 households with equal probability in each aldeia (for a total sample of 378 households). This procedure reduces sampling errors since the sample will be spread more than with the standard 3-stage process, but it can only be applied to Urban Dili as only there it was possible to sort the selected aldeias into groups of 3 aldeias located in close proximity of each other.

1.6   The final sampling stage requires choosing a certain number of households at random with equal probability in each of the aldeias selected by the previous sampling stages. This requires establishing the complete inventory of all households in these aldeias – a field task known as the household listing operation. Two operational approaches were considered for the household listing. One is the classical door-to-door (DTD) method that is generally used in most countries for this kind of operations. The second approach – which is specific of Timor-Leste – depends on the lists of families that are kept by most suco and aldeia chiefs in their offices. The prior-list-dependent (PLD) method is much faster, since it can be completed by a single enumerator in each aldeia, working most of the time in the premises of the suco or aldeia chief; however, it can be prone to biases depending on the accuracy and timeliness of the family lists. After extensive empirical testing of the weaknesses and strengths of the two alternatives, we decided to use the DTD method in Dili and an improved version of the PLD method elsewhere. The improvements introduced to the PLD consisted in clarifying the concept of a household "currently living in the aldeia", both by intensive training and supervision of the enumerators and by making its meaning explicit in the forms wording (it means that the household members are regularly eating and sleeping in the aldeia at the time of the operation). In addition, the enumerators were asked to select a random sample of 10 households from the list, and visit them physically to verify their presence and ask them a few questions[6]. The listing operation was completed by a team of enumerators between May 21 and June 28, 2001.

1.7   The survey was fielded during end August to early December 2001. Eight field teams, each composed of three interviewers and one supervisor, conducted the household survey. Each interviewer was asked to interview 6 households per week, using a questionnaire that generally required visiting each household several times. Data entry

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[6] It is generally a good idea to undertake the listing operation as an independent operation. This reduces incentives on the part of enumerators to not list difficult areas, such as households living on the top of the mountain, to ensure that they are not selected in the enumeration.

took place in the field with the help of laptops. This not only reduced the time of data processing, but also allowed for immediate extensive checks on data quality built into the data entry program. Any inconsistency revealed at this stage was to be rectified by revisiting the households while still being in the village. In addition, we implemented a second round of standard checks on data quality in the project office in Dili upon retrieval of the data from the field teams. In general, with a few exceptions, the analysis has confirmed the high quality of the data entry and validation processes.

POVERTY DEFINITION

1.8   The measurement of poverty is a contentious science. The poverty literature typically introduces a poverty line, below which people are defined as poor, and above which they are not poor. The simplicity of a poverty line facilitates the focus on the poor, but it is a crude device. In particular, the discontinuity, with poverty on one side and lack of poverty on the other, is doubtful and typically not supported by evidence on empirical indicators, be they income, consumption, calories, or assets.

1.9   Poverty involves multiple dimensions of deprivation, including poor health, low human capital, and malnutrition. In principle, each of these deserves separate attention, as the correlations between these categories are far from perfect. Nevertheless, much of the progress in our understanding of poverty over the last decades was based on the investigation of poverty with single summary monetary measures of poverty. While such measures are clearly limited in scope, they capture a central component of any assessment of living standards. The basic choice is between an *income* and a *consumption* indicator of well-being. We follow common practice in most developing countries, and for much of the World Bank's analytical work, and adopt a consumption-based measure. Consumption is likely to be a more useful and accurate measure of living standards than income. This judgment already informed the TLSS questionnaire design. While the components of consumption are included comprehensively, the coverage of income categories is sketchier.

1.10   To clarify the interpretation of consumption as a welfare indicator, it is useful to review briefly the arguments for and against such a measure. Income, together with assets, measures the potential claims of a person or household, while consumption captures the level of living in terms of what living standard individuals actually acquire. From a theoretical point of view, both concepts can be defended as an approximation to utility. More relevant is the issue of the time period over which living standards are to be measured. The main reason for preferring consumption to income as an indicator of living standards is variability (Ravallion 1994). In a mostly agricultural economy people receive income only infrequently, and the amounts differ across seasons. Households often have consumption smoothing opportunities through savings and community-based risk sharing. This is confirmed by empirical evidence suggesting that households in low-income agricultural societies manage to smooth consumption in spite of highly volatile income receipts (Deaton 1997). Thus, current consumption is likely to be a better indicator of current well-being than current income; and current consumption may also be a better indicator of longer-term welfare, since it reveals information about incomes at other points in time.

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1.11   To the extent that we collected incomes (e.g. in the agriculture section), the survey design recognized the fact that certain incomes (such as agricultural income) are variable over time and adjusted the reference period accordingly. For example, agricultural data were asked over the past 12 months reflects incomes of agricultural households more accurately than a shorter period, say a month, even if interviewees recall only imperfectly extended periods. Similarly, consumption is measured using different recall periods reflecting the periodicity of purchases (e.g. a week for food; but longer periods such a month and a year for more infrequent purchases such as clothing, household supplies, etc).

POVERTY MEASUREMENT

1.12   The discussion so far suggests taking consumption as the welfare indicator. We still need to resolve how to convert this indicator into a measure about individual welfare. Following common practice, the TLSS collects expenditures on consumption items at the household rather than individual level. Most purchases occur for the household as a whole (e.g. food), and the bulk of food consumption takes place jointly during meals.

1.13   Households differ in size and composition. In particular, the needs of household members differ, especially between adults and children. One option that has been used is to try use a system of weights, whereby for example, children count as a fraction of an adult in terms of needs, and convert all households into the number of equivalent adults. But there also exist economies of scale in consumption. Some non-food items (for example, housing to an extent, durable goods) have public goods characters, as their usage by one member of the household does not reduce their value to other household members. Thus, because people can share goods and services without reducing their welfare, the cost of attaining a given level of welfare may be lower in larger households than in smaller households. Simply deflating household consumption by household size ignores these economies of scale in consumption. The number of equivalent adults can be adjusted for economies of scale to get the number of "effective" equivalent adults.

1.14   However, attempts to estimate the relative costs, or equivalent scales, faced by different types of families have failed to establish a generally accepted methodology (Deaton 1997 and Ravallion 1994). Therefore, we follow standard practice and use per capita total household expenditure as the basic welfare indicator, that is, we do not attempt to measure differences in consumption within households and assume families allocate resources equally among their members. For the purposes of constructing a poverty profile, it is important to conduct a sensitivity analysis to see to what extent the broad conclusions depend on assumptions regarding equivalent scales.

1.15   Constructing a consumption measure with the TLSS involves going through a series of steps, guided both by theoretical and practical considerations. Total household consumption is built up from several components. It includes all reported expenditures on goods and services, and then adds in a value for consumption that does not go through the market, like home produced consumption items or in-kind receipts from employers and donors. For perishable goods, it is mostly safe to assume that a household's consumption is closely tied to their purchases. However, for expensive durable goods, a correction has

to be made for the difference between consumption and expenditures. Finally, we need to convert all components into real terms using a price index that accounts for differences in regions and interview dates. The consumption aggregate is composed of four main types of goods and services: food items, non-food items, consumer durables, and housing. For any given household, the shares of these categories depend on a number of factors, including living standards, demographic composition, location, and tastes. The specific items included in each component, as well as the methodology used to ascribe a consumption value to each of these items, are outlined in the Appendix.

1.16   A poverty line determines the minimum level of standard of living before a person is no longer considered to be "poor". Setting poverty lines is often the hardest, and most controversial, step in constructing a poverty profile from household survey data. What method is chosen has implications for the incidence of poverty, and for policy making, such as in assessing whether growth is pro-poor, or in determining the allocation of public resources across regions. Following common practice in East Asia, we defined a poverty line that is both "absolute" and "objective". The Appendix provides a brief description of the procedure proposed to derive a poverty line for Timor- Leste.

1.17   Following most of the research on poverty measurement, we present three poverty statistics in the analysis. They all belong to the class of measures proposed by Foster, Greer, and Thorbecke (1984) and are characterized by the following equation:

$$P_\alpha = (1/n)\sum_{i=1}^{q}\left(\frac{z-y_i}{z}\right)^\alpha$$

where α is some non-negative parameter, z is the poverty line, y denotes expenditures, i indexes individuals, n equals the total number of individuals in the population, and q is the number of individuals with expenditures below the poverty line. All measures of this class are additive in the sense that aggregate poverty equals the population-weighted sum of the poverty levels in the subgroups of the population. We will use specific members of this family of poverty measures: P_1, the head-count index, P_2, the poverty gap, and P_3, the Foster-Greer-Thorbecke measure.

1.18   The head-count index gives the share of the poor in the total population, in other words, it measures share of population whose per capita consumption is below the poverty line. This indicator is by far the most commonly poverty measure. It is appealing because it is simple and easily interpreted. However, it does have limitations. The most important is that the head-count index does not take into account whether the poor have consumption levels just below or far below the poverty line. It is therefore indifferent to the distribution amongst the poor and insensitive to the degree of poverty. The poverty gap equals the average expenditure shortfall of the poor relative to the poverty line. It reflects the distance between the consumption levels of the poor and the poverty line; the greater the distance the higher will be the poverty gap. The Foster-Greer-Thorbecke measure is similar in construction to the poverty gap but differs in that it applies an

increasing weight to greater distances below the poverty line. This indicator is thus sensitive to the severity of poverty.

<div align="center">**SENSITIVITY ANALYSIS**</div>

1.19   Although the general procedures for calculating poverty measures are well defined in theory, we have to make compromises between imperfect alternatives in practice. Difficult choices are required in particular with regard to two issues: the level of the poverty line, and the comparisons across households of different size and composition. We ask how an analysis of poverty can explore the impact of the assumptions adopted on these two issues. A useful and visually appealing way to investigate both topics is to use "stochastic dominance" analysis, which relies on graphical tools to examine the sensitivity of poverty analysis. The motivation for such an approach is to let the facts speak for themselves as far as possible. Density and cumulative density functions provide a succinct and informative summary of the distributions of economic variables that are easily understood. These methods are also useful to indicate hypotheses to explore for explanation. We demonstrate this by comparing distributions for the population as a whole with the estimates for a range of relevant population subgroups.

Poverty Line

1.20   How does the poverty headcount index change as we vary the poverty line? The sensitivity of this measure to changes in the poverty line can be assessed by plotting the headcount as a function of the poverty line, that is, by drawing the cumulative density function of per capita consumption relative to the poverty line. Figure 1.1 shows this distribution. The curve indicates on the y-axis what percentage of the population has a per capita consumption level at or below the level represented on the x-axis. It has also an alternative interpretation. Suppose we increase on the horizontal axis the poverty line from zero to the maximum consumption per capita, and trace on the vertical axis the corresponding headcounts of poverty. The "poverty incidence curve" shows what incidence of poverty would be associated with a given poverty line on the x-axis (Ravallion 1994)[7].

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[7] Cumulative density functions are especially useful in order to compare the sensitivity to changes in the poverty line of poverty headcounts of two different distribution, based for example on alternative definitions of consumption. Similar calculations are possible for the poverty gap and the severity of poverty. For example, the sensitivity of the poverty gap measure to the poverty line can be examined by plotting the areas under the cumulative density functions, or the 'poverty deficit' curve.

Figure 1.1: Cumulative Distribution of Per Capita Consumption
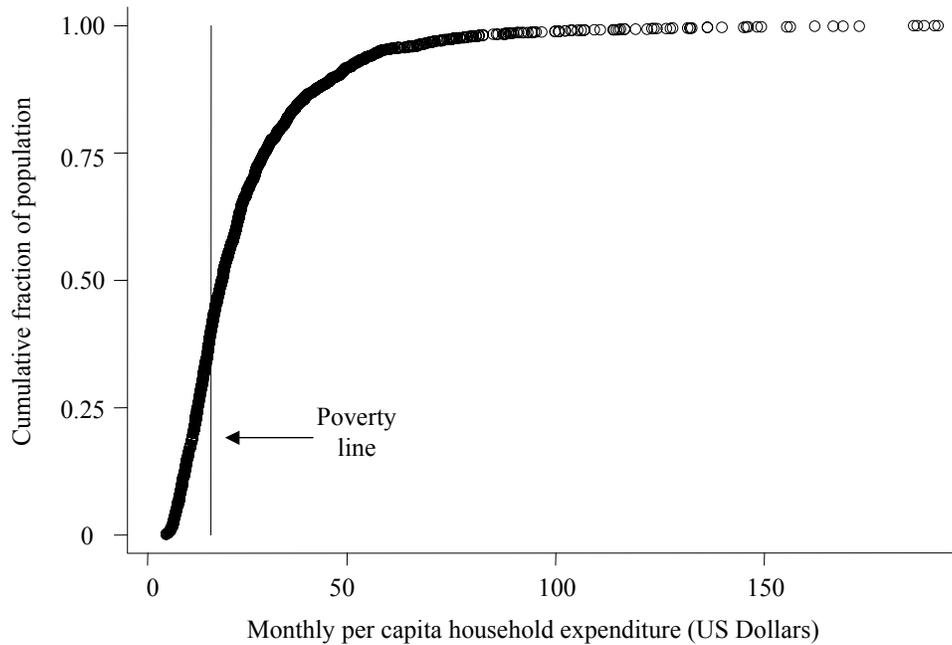
Source: 2001 TLSS.

1.21   In the analysis of social welfare, we ask to what extent we can say that one distribution of resources is better than another one.[8] Cumulative density functions play an important role in social welfare analysis, as it is directly linked to the notion of first-order stochastic dominance. A cumulative density function F_1 first-order stochastically dominates a cumulative density function F_2 whenever, for all levels of per capita consumption x,

$$F_2(x) \geq F_1(x)$$

This condition says that distribution 2 always has more individuals in the lower part of the distribution, associated with low levels of per capita consumption. It is naturally linked to the measurement of poverty with the headcount index, where we want to know whether poverty rankings depend on a specific level of the poverty line. If the above condition holds, then poverty of distribution 2 will always be at least as high as poverty of distribution 1, regardless of the choice of the poverty line. Figure 1.2 shows one example, comparing the urban and rural cumulative density functions of per capita expenditures.

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[8] More formally, the analysis of social welfare specifies a social welfare function which aggregates the individual welfare levels of the members of the population in accordance with certain general principles: social welfare does not decrease if the living standards of an individual rises (Pareto property); does depend on individual welfare levels and not on who has which welfare (anonymity property); and increases with an equalizing transfer from a rich to a poor individuals (transfer property).

Figure 1.2: Real Per Capita Household Consumption in Urban and Rural Areas
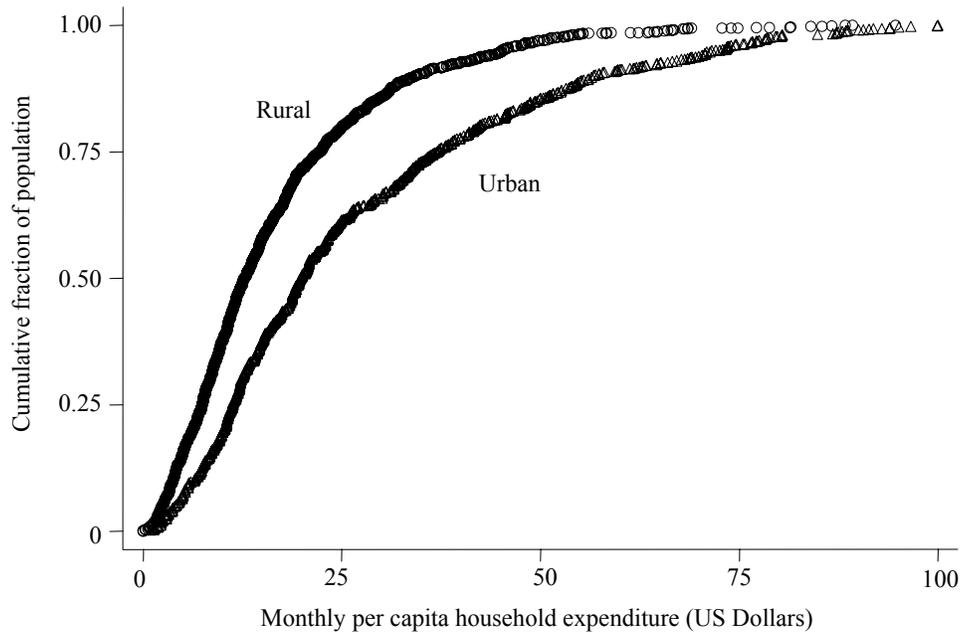
Source: 2001 TLSS.

1.22   We can illustrate the clustering of households around the poverty line with another connected concept, the density function. It characterizes the distribution by focusing on the concentration of the population at different points of the consumption scale. It therefore captures the essential characteristics of the distributional shape.[9] Distributional location and clumping can be easily examined using the density function by 'bumps' of consumption concentration at different points along the consumption scale. The density function of per capita expenditures is shown in Figure 1.3. The graph represents a kernel density estimate. Kernel density functions can be thought of as "smoothed" histograms. Histograms are constructed by dividing a range into a fixed number of intervals ('bins') of equal width, where vertical bars are drawn at each interval with heights proportional to the relative frequencies ('density') of observations within each bin. Kernel density function gets away from bins by estimating the density at every point rather than just for each interval. While in a finite sample there will only be a finite number of observations, these estimates use mass within an interval or band of 'nearby' points to estimate the density at each point. This technique overcomes the inherent 'lumpiness' at the edge of bins of histograms.

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[9] The area under the density function between two consumption levels is the proportion of the population with consumption within that range. The total area enclosed by the function equals 1 (100 percent of the population).

Figure 1.3: Density Function of Per Capita Consumption
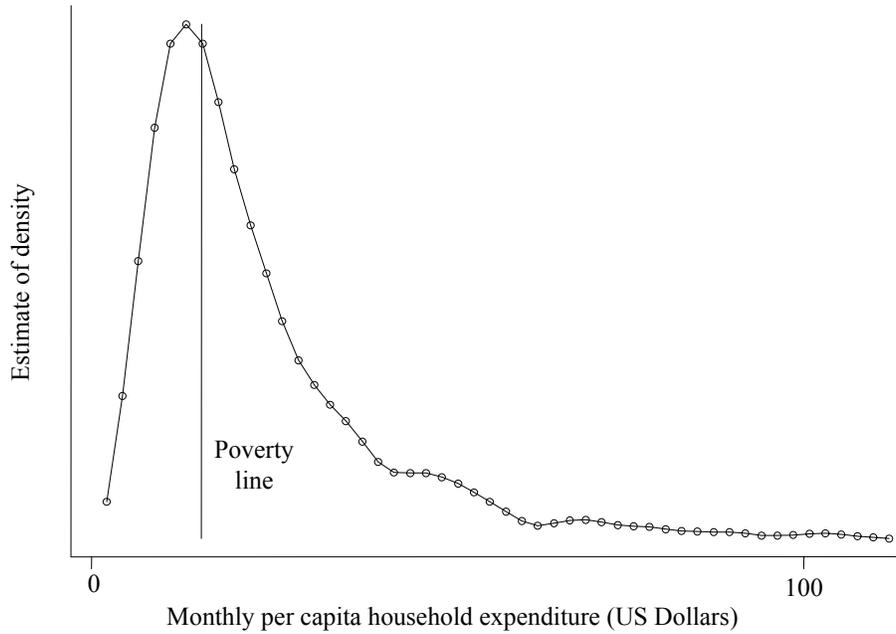
Source: 2001 TLSS.

Household Size and Composition

1.23   In most countries, an essential characteristic of the poor is their large family size. The more people depend on given household resources, the less there is available for each member.[10] Poverty comparisons along the dimension of household size are complicated by variations in household composition. For example, children will often require less than prime-aged adults to obtain the same level of living, while old people may need more of some things, like health services, but less or others, like work-related consumption. These compositional effects could be important enough that members of large families may be better off than members of smaller families with the same level of resources per capita.[11] Furthermore, apart from differences in needs, prime-aged adults have a larger earning power than either children or elderly. The inclusion of a prime-aged adult to a household may increase per capita consumption of all household members, while the addition of a child or elderly is likely to reduce it.

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[10] The link between household size and poverty at the micro level has a counterpart at the macro level: what is the effect of demographics on economic performance and poverty alleviation? While no dominant view has yet emerged on this issue, recent evidence shows that countries with higher rates of population growth have tended to experience less economic growth. In particular, changes in age structures resulting from declining fertility create an one-time 'demographic gift', where the working age population has to support few dependents. This factor may well have contributed to the Asian economic miracle. See Birdsall, Kelley, Sinding (2001).

[11] However, it is difficult to establish the correlation empirically, as long as we do not know enough on how household resources are allocated among its members, and therefore how many resources are needed to attain equal living standards for different types of household members.

1.24   Unfortunately, there are no generally accepted methods for calculating equivalence scales. Instead, the typically recommended method is to explore the sensitivity to a range of some reasonable, but essentially arbitrary, scales. The idea is to transform the number of persons in a household into the number of adult equivalents, allowing for relative cost differences and economies of scale. We adopt this approach and define the number of adult equivalents (AE) per household by the formula

$$AE = (A + \alpha K)^{\vartheta}$$

where A is the number of adults in the household, and K is the number of children. The parameter α is the cost of a child relative to that of an adult, and lies somewhere between 0 and 1. The other parameter, θ, also falls between 0 and 1, and controls the extent of the economies of scale.[12] The base case, used for most of the analysis in this report, is both α and θ equal to unity: child and adults are assumed to cost the same, and the resources needed to cover the expenses of households of different size vary simply in line with the number of members.

1.25   What are plausible values that α and θ could take? It is generally assumed that in developing countries children are relatively cheaper than adults, with costs as low as one third of an adult per child (Deaton and Muellbauer (1986) and Deaton (1997)). In our sensitivity analysis, we present results for α taking three values, namely 0.33, 0.66, and unity. With regard to economies of scale, it is often argued that their extend depends on the shared goods within the households, or the household public goods. For example, it all goods are private in consumption, costs should rise in proportion to the number of people in the household. On the other hand, if all goods are public, then costs are unaffected by the number of people in the household. In developing countries, the most important good in a household's consumption is food, which is a private good. The scope for economies of scale is therefore small, and θ is unlikely to be lower than 0.75. In Figure 1.4, we display the link between different definitions of household expenditures, based on six combination of α and θ, and the poverty headcount, relative to household size.

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[12] As the elasticity of adult equivalents with respect to 'effective' size (A+αK) is θ, the measure of economies of scale becomes (1-θ).

Figure 1.4: Poverty and Household Size: Equivalence Scales

Source: 2001 TLSS.
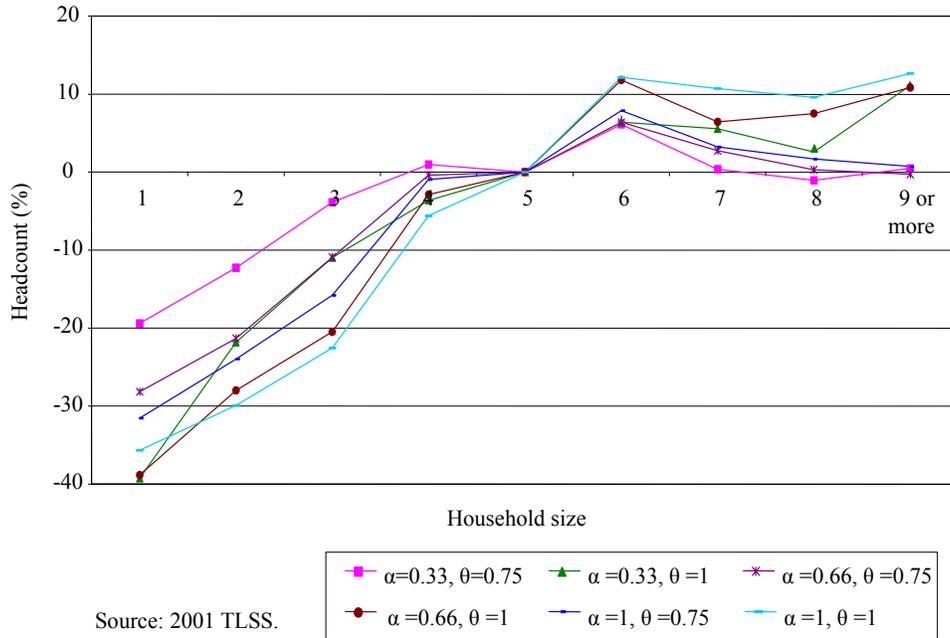
1.26   Household size is not a continuous variable, as by definition it takes only integer values. But how do we display the relationship, say, of the poverty headcount, to a continuous variable, like the age dependency ratio? Figure 1.5 plots the poverty headcount relative to the age dependency ratio, defined as the number of dependents (people younger than 15 and older than 64) to the working-age population (those of ages 15-64).   It is estimated using nonparametric regression analysis. The obvious way to calculate such a function would be to derive the average of all poverty headcounts corresponding to each dependency ratio. However, as we have a finite sample of households, yet the dependency ratio as a continuous variable (taking all values between 0 and its maximum of 3.5), we face the same problem as in the estimation of density functions: how to estimates the poverty rates at points where we have no observations? We adopt the same solution as with the kernel density estimates to average with a specific weighting scheme over the points 'near' to a given level of the dependency ratio (Deaton 1997).

Figure 1.5: Poverty and Household Composition
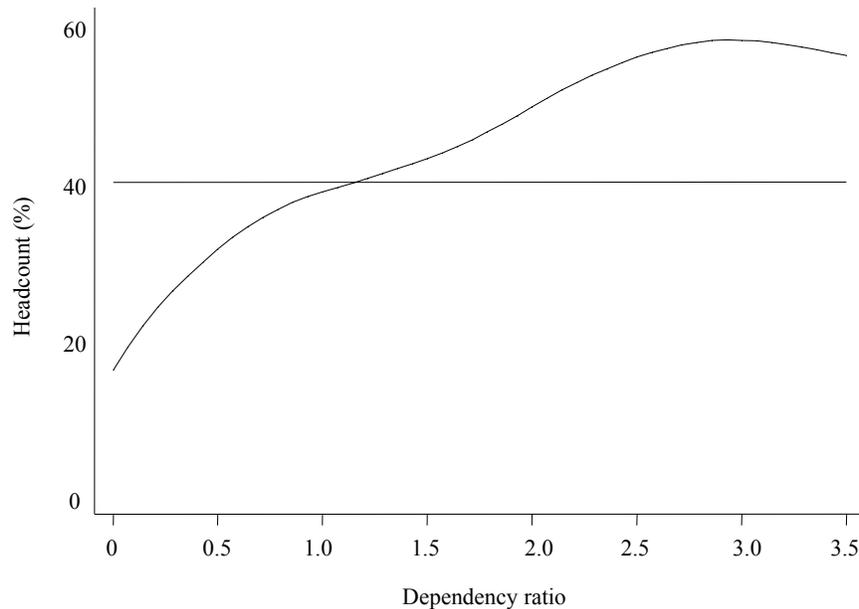
Source: 2001 TLSS.

INEQUALITY AND SOCIAL WELFARE

1.27   Inequality is part of the general analysis of welfare. It is concerned with the dispersion of the distribution of economic resources over the whole population, rather than only the individuals or households below a certain poverty line. The middle and top of the distribution can drive measures of inequality just as much as the bottom tail. In this sense, it is a broader concept than poverty. However, it also has a narrower focus than poverty, as it abstracts from the mean of the distribution and instead considers only the dispersion of the distribution. Poverty and inequality measurement are sometimes combined to capture social welfare, which depends on both the distribution and the means. The main difference between such an approach and poverty measurement is that in the first case, every individual is considered, even though more weight is assigned to the poor, while in the second case, the non-poor do not get any weight at all. In the following, we will present both summary measures and graphical tools to look at inequality in consumption in Timor-Leste.

Inequality

1.28   The perhaps simplest way to display inequality is to compare the resource shares of individuals at the bottom and top of the distribution. Just like for poverty measurement, researchers have developed a long array of summary measures to capture inequality. They include the Gini coefficient, which takes on values between 0 and 1 with zero indicating no inequality, and three members of the Generalized Entropy (*GE(α)*)

13

class of inequality measures, which range from 0 to ∞, with zero representing no inequality.[13]

1.29   How should we weigh people at different levels of per capita expenditures? And to what extend do rankings for specific inequality measures generalize to other inequality measures? The Lorenz curve is the standard graphical tool to address this issue. It captures all information about a distribution, with the exception of the average level. The Lorenz curve plots the cumulative fraction of population, starting from the poorest, on the x-axis against the cumulative fraction of resources on the y-axis. Complete equality is represented by the 45 degree line, with everyone receiving the same. Perfect inequality, implying the richest person having all the resources, generates a Lorenz curve running along the x-axis that jumps to the 45 degree line at the right-outmost point. The further away the Lorenz curve from the 45 degree line, the more inequality there is. The importance of the Lorenz curve for inequality analysis lies in this property: when two Lorenz curves do not cross, then the upper one represents an unambiguously more egalitarian distribution.[14] The Lorenz curves of per capita consumption for urban and rural areas are shown in Figure 1.6.

Figure 1.6: Lorenz Curves for Urban and Rural Areas
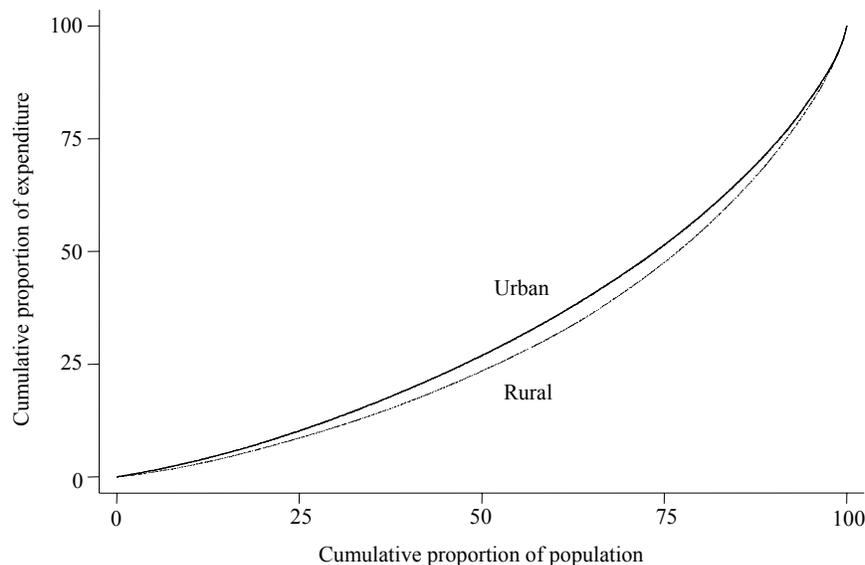
Source: 2001 TLSS.

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[13]Any inequality measure that satisfies a set of five desirable axioms (Transfer, Income Scale Independence, Population, Anonymity, Decomposability) is a member of the *GE* class. The parameter α in the *GE* class determines the weight given to distances of expenditures at the tails of the distribution. A value of 0 gives more weight to the lower tail, a value of 1 applies equal weights across the distribution, and a value of 2 gives more weight to gaps in the upper tail. *GE(0)* is identical to the mean log deviation, *GE(1)* to the Theil Index, and *GE(2)* to ½ the squared coefficient of variation.

[14] This holds for any inequality measure that satisfies the principle of transfer. Inequality decreases as a result of an equalizing transfer from a richer to a poorer individual. The Gini coefficient is related to the Lorenz curve. It equals the area between the Lorenz curve and the 45 degree line relative to the entire area under the 45 degree line.

Social Welfare

1.30   Lorenz curves display the degree of inequality, and are not affected by the mean of the distribution. This can be easily modified by multiplying the y-axis, the cumulative share of the per capita consumption, by the mean per capita consumption. The generalized Lorenz curve ranks distributions in terms of social welfare. If a generalized Lorenz curve *A* lies entirely above another generalized Lorenz curve *B*, then it implies that all lowest *p* percent of the population have more resources in total in distribution *A* than in distribution *B*. In other words, each lowest quintile of the distribution has more per capita consumption in *A* than in *B*, so that each social welfare function that gives more weight to poorer than richer people will rank *A* over *B*. Generalized Lorenz dominance is equivalent to second-order stochastic dominance. Since first-order stochastic dominance implies second-order stochastic dominance, a ranking of two distributions by cumulative density functions implies the same ranking by generalized Lorenz curves. These plots of per capita consumption for urban and rural areas are shown in Figure 1.7

Figure 1.7: Generalized Lorenz Curves for Urban and Rural Areas
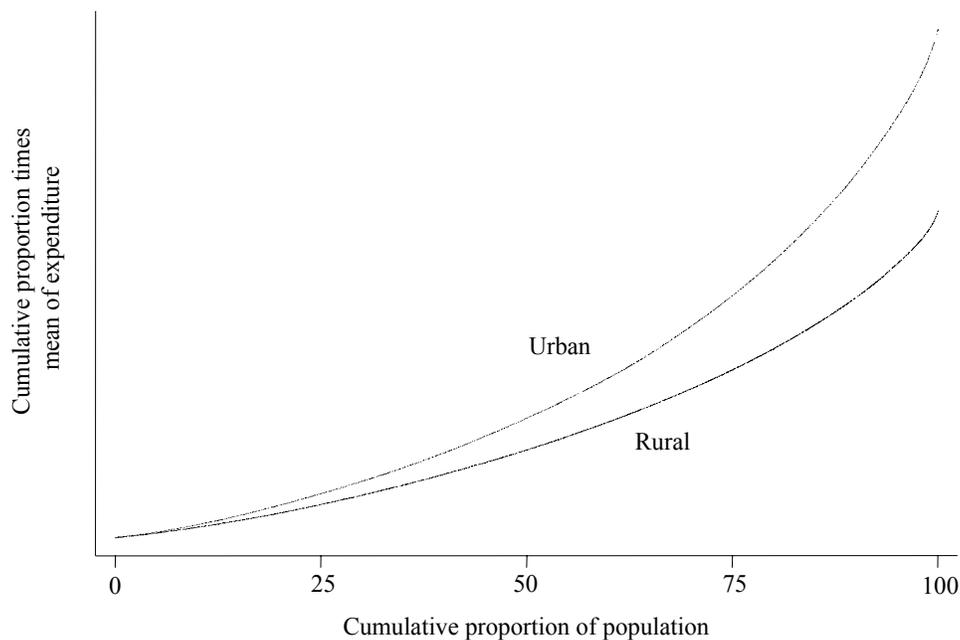
Source: 2001 TLSS.

MOBILITY

1.31   Another dimension of welfare concern changes over time. For example, in Chapter 4, we will analyze "ladder questions", where persons are asked to rank themselves with regard to economic and power status, both for now and before the violence. The scale ranges from 1 to 9, with 9 indicating "richest" or "most powerful", respectively. How does past status relate to current status? For example, those at the bottom of the economic or power scale today, were they also at the bottom in 1999? In

order to investigate this issue, we have to link information on the 1999 status with the current assessment. This can be most conveniently done with the help of transition matrices. They capture "intra-distributional" dynamics, and reveal differences in upward and downward mobility. More formally, let

$$P^E = [p_{ij}{}^E]$$

be a quadratic transition matrix of order 5 capturing the change in economic status. States are ranked from worst to best, and the top four steps are collapsed into one state, reducing the number of steps from nine to five. For example, element $p^E{}_{12}$ refers to the probability that an individual at the lowest step in 1999 progresses one step in 2001. Denote by F^E_{1999} and F^E_{2001} the 1999 and 2001 density functions of economic status, represented as column vectors with five elements. Then we can derive the transition matrix P^E such that $F'_{2001} = F'_{1999}P^E$ and each row adding up to unity ($P^E 1 = 1$). An example of such a matrix, for the change in power status between 1999 and 2001, is shown in Table 1.2

Table 1.2: Subjective Well Being: Matrix of Power Status

	2001				
	Lowest	2nd	3rd	4th	5th
1999					
Lowest	5	22	22	26	26
	(0.7)	(2.3)	(2.0)	(2.1)	(2.9)
2nd	6	19	21	26	27
	(1.6)	(3.0)	(2.5)	(3.2)	(4.0)
3rd	5	17	18	27	33
	(1.9)	(4.2)	(3.1)	(4.6)	(6.5)
4th	2	14	6	19	59
	(1.3)	(5.1)	(3.0)	(4.1)	(10.2)
5th	1	9	9	2	78
	(1.2)	(5.5)	(5.2)	(1.7)	(13.3)

Note: Standard errors in parentheses.
Source: 2001 TLSS.

1.32   How do we interpret these matrices of 25 transition probabilities? Similar to poverty and inequality measurement, various approaches have been developed to analysis the structure of mobility as captured by transition matrices (Bartholomew 1982). The simplest indicators are scalar summary measures of overall mobility, like the *im*mobility measure IM_k, which gives the share of individuals jumping less than k number of

steps,[15] or the jump measure J_s, which equals the absolute value of the average state in 1999 versus 2001, to be calculated for each state s and the transition matrix as a whole. Such measures treat upward and downward changes symmetrically, even though higher steps are preferred to lower steps. By contrast, the upward mobility measure U_S gives the value of the average step at 2001, again calculated for each row and the matrix as a whole.

1.33   A transition matrix is "monotone" (Conlisk 1990) if a higher step can be obtained from a lower step by moving probability mass to the right. In other words, it stochastically first-order dominates the distribution represented at a lower step. This property is important in the current context, where states are ranked from worst to best: a monotone matrix preserves the disadvantage of originating from a low state into the future. Finally, we can compare the two transition matrices in terms of their upward-mobility assuming that the mobility structure as characterized by the matrix is constant over time. By multiplying P with itself sufficiently often, we converge to a unique equilibrium probability vector π regardless of the initial distribution F_{1999}[16].

SUMMARY

1.34   This chapter offered a primer on the design and data of the TLSS, and basic concepts in poverty, inequality, social welfare, and mobility measurement. In the remainder of this volume, these definition and techniques will be applied to characterize living standards in Timor-Leste. The following chapters are intended to provide comprehensive information, presented mostly in tables rather than figures. Less technical summaries and main messages of the analysis in this volume are provided in Volume I.

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[15] k is no larger than the maximum number of states minus one. IM_1 is linked to the Shorrocks axiom for transition matrices (Shorrocks 1978): shifting probability mass from the diagonals to off-diagonals increases mobility.

[16] More technically, P be the time-invariant mapping of a first-order Markov chain, such that $F'_{t2} = F'_{t1}P^E$ with *t2>t1*. Under certain regularity conditions, there exists an unique "ergodic" equilibrium distribution π which is the unique solution to $\pi' = \pi'P$ (Quah 1993, Quah 1994, and Kremer, Onatski, and Stock 2001).

APPENDIX: CONSTRUCTING THE POVERTY MEASURE

Introduction[17]

1.   This appendix explains how we constructed the consumption measure. The first part lays out the treatment of the four main types of goods and services consumed (food, non-food, consumer durables, and housing). The next section presents the procedure for adjusting household consumption to cost of living differences across time and space. The third part explores the pattern of consumption, in terms of both regional variation and comparison to other countries. The final section elaborates the procedure to calculate the poverty line.

Consumption measure

Food items

2. Conceptually, constructing a food consumption aggregate is a straightforward exercise. We need to aggregate the total value of the food consumed during the recall period. Practical difficulties arise for three reasons. First, households receive food from different sources (purchases, home-production, gifts or remittances, in-kind payments), and all of them should be included to obtain an aggregate welfare measure, even though they may well be recorded with different recall periods. In the TLSS, households were asked to record the consumption of a list of 129 food items and beverages, composed of fourteen food categories/subgroups (cereals, tubers, fish, meat, eggs and milk products, vegetables, legumes/nuts, fruit, oil and fat, beverages/drinks, spices and honey, miscellaneous foods, alcoholic drinks, tobacco & betel). The common recall period of all items is *the last 7 days*. These items were deemed to be purchased relatively frequently so that this short recall period was adequate. The list[18] and recall period match those from the SUSENAS, the Indonesian household survey, in order to ensure comparability between the TLSS and the SUSENAS. For each item, households were asked separately about the consumption of *purchased*, *self-produced*, and *in-kind* items to ensure all sources are included. Second, the non-purchased items need to be valued in monetary terms to include them in the welfare measure. This involves typically identifying reference prices at which food quantities can be valued. The TLSS recorded both quantities and Rupiah values for each food item by source. It was therefore not necessary to refer to price information from other sections or alternative data sources to calculate food expenditures. Third, some less-perishable food items may be stored for a long time, so that food purchases may differ from food consumption. For most items in the TLSS food list, differences between purchases and consumption are likely to be unimportant. We also phrased the questions carefully to emphasize that only quantities and values of food actually consumed, rather than the total amount and value purchased, should be recorded.

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[17] This appendix was written by Benu Bidani, Martín Cumpa, and Kaspar Richter.
[18] The list of food items was reviewed to ensure that it reflected the Timor-Leste conditions. A few changes to the list were made to include items that were eaten more commonly in Timor-Leste. Food names were also provided in Tetun on the questionnaire.

Non-food items

3. The TLSS collected information on consumption of over 50 non-food categories, belonging to six subgroups (goods and services, including health and education expenditures; clothing, footwear and headgear; durable goods; taxes and insurance; festivities and ceremonies; and other expenses). In line with other household surveys (both the Indonesian SUSENAS and the Living Standards Measurement Surveys), the TLSS asked for information on expenditures only, as most non-food items are too heterogeneous to permit the collection of information on quantities consumed. It recorded expenditures during the past 30 days and during the past 12 months, whether purchased or received in-kind as aid or as payment for work. The computation of the non-food aggregate involves a simple aggregation over the relevant items. The main difficulties related to which items to include, and which recall period to choose. The items in the non-food list also very closely follow the Indonesian SUSENAS non-food module.

4. Concerning the first issue, the basic principle is that only those non-food items should be included into the consumption aggregate, which can be considered to add to the consumption of the household. For example, expenditures on taxes and levies or interest on loans are deductions from income, and therefore not included. In any case, such expenditures are very small and infrequent. Only 14 households in the data report paying taxes. The average monthly per capita expenditure is only US$0.0079, which represents only 0.03 percent of total monthly per capita expenditure. Less than 4 percent of households pay interest on loans.

5. More complicated is the issue of lumpy or infrequent expenditures, such as marriages, dowries, births and deaths. Ideally, we would want to smooth these expenditures linked to rare events over several years but lack the information to do so. Including them would risk to potentially overestimating substantially the longer-term average of consumption of those households that happened to incur in such expenditures during the survey period. We therefore followed common practice and excluded such items.

6. By contrast, in line with most poverty assessments, we included expenditure on education and health, even though such items can be viewed as, in the case of health, as "regrettable necessities", and, in the case of education, as investments, and therefore not directly add to consumption. Yet, excluding them would imply that we make no distinction between two households, both of whom are sick (or have children in school age), but only one pays for treatment (or sends their children to school). Furthermore, most poverty analysis includes these expenditures. Education and health expenses were recorded not just in the consumption section but also in the education and health sections. Unsurprisingly, the latter sources result in higher numbers due to more detailed questions. In education, expenditures are asked for each child. However, education and health amount on average to no more than 2 percent of total expenditures even with the higher numbers. In order to have consistent recall periods, to ensure comparability with the SUSENAS, and to avoid double counting of related expenditures like transport, we opted

to include the expenditure figures from the consumption section.[19] This also ensures that we can construct in future rounds of the survey a consistent consumption measure, even if we do not include separate health and education modules.

7.   Another issue for non-food expenditures relates to the choice of recall period. Non-food expenditures, including health and education, were recorded for both the last 30 days and the last year. We found that nominal per capita consumption expenses for non-food items for the shorter recall period were on average 40 percent higher than for the longer recall period. This evidence is in line with macroeconomic data, which shows that the economy improved substantially during the course of the year preceding the survey. As we are interested in capturing as well as possible the longer-term well-being of households at the time of the survey, we decided to stick with the shorter recall period. This brings the recall period for non-food expenditures also in line with the other components of consumption, food and rent, which are measured (as discussed below for rent) with recall periods of the last 7 days and the last 30 days.

Consumer Durables

8.   Finally, durable goods require special treatment as they last typically for several years, so that lumpy and infrequent expenditures on durable goods are not a good indicator of the utility derived from these goods during the reference period. Instead of including purchases of durable goods, the standard procedure is to estimate the flow of services accruing to the household from the total stock of durable goods it owns. However, since we only have information on the estimate for the current value of a durable good, we would need to adopt more or less arbitrary assumptions on the rates of depreciation and inflation of a durable good to derive this value. This would add a noisy, and controversial, component to the measure of longer-term well-being. Furthermore, only very few households report the ownership of durable goods (see Table A.1.1). Overall, we decided to exclude durable goods from our measure of consumption in view of their rare occurrence and measurement difficulties.

Housing

9.   Housing is often the most problematic area to include especially when rental markets are thin, as is the case in many developing countries. The underlying principle for housing is the same as for other consumer durables. We would like to include in the consumption aggregate a measure of the flow of services received by the household from occupying its dwelling. If all households rented their dwelling, and rental markets were well functioning, we could use the value of rent paid. However, outside Dili, the incidence of rent payments is very sparse, and even within Dili, only a fraction of households report rent payments. Many households own the dwelling in which they reside, and others do not pay rent as such. Dili/Baucau the primary urban center reports the highest percentage of renters (26%). Only 7 percent rent houses in other urban areas,

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[19] We also calculated the consumption and poverty measures using the expenditures from the health and education modules. Total nominal per capita consumption is 1% higher compared to the corresponding measure with health and education from the consumption module.

3% in the rural highlands, and 6% in the rural lowlands. Nationally, only 8% of households rent their houses.

10. While rent payments are reported only for some households, the questionnaire also asked households for estimates of how much their dwelling could be rented out for. This implicit rental value can in principle be used in the consumption aggregate whenever actual rents are not reported. Implicit rents are a hypothetical concept, and the estimates may not always be credible or usable. We inspected the numbers carefully and identified only a few outliers. In addition, we did a simple cross-check on the validity of the imputed rent estimates. For those households reporting actual rent payments, we run a typical hedonic housing regression which includes the rental value for households as the dependent variable and characteristics of the house (such as the construction material of the house, number of rooms etc), and used this model to predict rent payments for the other households that did not report rent. We found that predicted rent payments and imputed rent estimates matched each other fairly closely nationally, though there are some differences by different regions. Predicted rents in Dili are significantly lower than those reported by households, but imputed values in the rural lowlands and other urban centers are close. For the consumption aggregate, we therefore used actual rents if available, and otherwise imputed rents as estimates for the flow of services from housing. We plan to do some sensitivity analysis of our results to different choices related to the housing variable.

Table A.1.1: Ownership of Consumer Durables (% population)

	% owning
Stoves	7.9
Refrigerators	2.9
Washing machines	0.3
Sewing/knitting machines	2.9
Clothes cupboard	32.5
Buffet	16.5
Fans	4.1
Televisions	6.9
Video players	2.9
Tape/CD players	6.8
Cameras, video cameras	1.0
PCs	0.1
Radios	32.4
Bicycles	5.2
Motorcycles/scooters	3.0
Cars/trucks	1.8
Motor boat	0.0
Boat without motor	0.5
Generators	0.5
Water dispenser	0.4
Electric rice cookers	2.2
Mosquito nets	45.0

Source: 2001 TLSS.

Cost of Living Differences

11. The discussion in the previous section concentrated on the construction of a consumption aggregate. Before this measure could be used to compare standards of living of individuals residing in different parts of the country, we have to adjust for differences in cost of living. In particular, prices of goods and services vary considerably across different regions and this spatial variation in prices should be taken into account when comparing welfare levels across different parts of the country. In Timor Leste transportation is difficult and expensive, and local markets are not well connected, giving rise to possibly large variations in the cost of living. In this section we explain how we adjust for differences in the cost of living due to either temporal or spatial price differences.

12. Adjusting for temporal price differences is in principle straightforward. The survey was implemented over a period of three and a half months, and we have to account for the changes in the price level over this time span. Households interviewed at the beginning of the survey period faced a different price vector than households at the end

of the period. This adjustment is especially important in situations of high inflations or deflations. We only have information on monthly changes in the Consumer Price Index (CPI) for Dili, not for the country as a whole, for which the CPI is released only quarterly. The price changes were relatively minor: the CPI increased by about 0.5 percent between the beginning of September to the end of November. Assuming the time trend in the Dili CPI was representative for other regions of the country, we deflated consumption to prices as of the beginning of September 2001.

13. In a cross-sectional survey, most price variation is due to spatial differences. Before we turn to the calculation of the spatial price index, we should clarify our data source for regional price information. The TLSS collected price information in the consumption section and in a separate suco-level price survey. We decided to construct the price index using the implicit price information from the consumption section, obtained by dividing expenditures by quantities. This has a number of advantages over price information from local markets. First, it is likely to reflect more accurately the prices faced by households. Local consumers may pay different prices than survey enumerators – for example through haggling or because of their long-term relationship with the vendor. Second, prices quoted at the local market within a suco may not be the relevant ones for a household located in this suco, as the household may be closer located to a different market that lies outside its suco. The disadvantage of using the price information from the consumption section is that dividing values by quantities gives unit values rather than prices. Better-off households typically purchase higher quality even of relatively homogenous goods like rice, so that the higher price they face is at least partially a reflection of the better quality. We followed the recommended method to deal with this unit value problem by replacing household specific prices with the median of the unit price within each region (Deaton and Zaidi, 1998).

14. The literature proposes two main competing methods to calculate price indexes to deflate nominal consumption. They differ in the choice of weights. Spatial price indexes compare price vectors at different locations by means of a set of quantities or weights. The Paasche Index uses for each household a different set of weights, namely the purchases of the household, while the Laspeyres Index uses a fixed set of reference weights for all households. In principle, the Paasche and Laspeyres indexes give different results in the presence of either variations in regional price differences or differing expenditure patterns of households. Nevertheless, in view of other conceptual and practical problems in the poverty analysis, like accounting for housing in the consumption aggregate or allowing for differences in household composition, the choice of the deflation techniques is unlikely to be of paramount importance. We follow standard practice adopted in poverty analysis in several countries in the East Asia region and use a Laspeyres Index that uses a fixed consumption bundle. We do however test the sensitivity of our poverty estimates to the choice of this index and find that the results are remarkably robust.[20]

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[20] Dividing nominal consumption by a Paasche Index leads to "money metric utilities", and by a Laspeyres Index gives rise to "welfare ratios". Both concepts have theoretical flaws. Money metric utility violates the transfer principle: an equalizing transfer from a rich to a poor household may widen their gap in money metric utilities, as money metric utility is in general not a concave function of expenditures. The welfare

15. As explained, the Laspeyres Index involves comparing the prices a household living in a particular region faces with a set of reference prices, using a fixed consumption bundle. In terms of picking regions, we pick regions where prices are relatively homogeneous and people face reflect similar cost-of-living indices; and regions that are disaggregated enough to capture price variations across the country. While a very disaggregated grouping is desirable, the geographic regions have to be large enough to allow us to get reasonable estimates of prices. Based on these considerations, we pick five regions: Dili/Baucau, other urban areas, and rural areas divided into three groups: the rural central, the rural east and the rural west regions. For the fixed consumption bundle, we pick the reference basket of those at the lower end of the consumption distribution – to capture the tastes of the poor, not the well-off. Based on these considerations, we pick the group in the 2nd to 5th decile based on nominal consumption for Timor Leste as a whole as the reference group. We take the expenditure pattern of this group and take the average quantities consumed by this group as the fixed consumption bundle. The Laspeyres price index for each region is computed by comparing the cost of buying the reference bundle in that region compared to a reference region. The choice of the reference price vector is a matter of convenience. We followed common practice and chose the national median of the prices observed. The use of medians rather than means limits the sensitivity to outliers. Basing the reference price vector on a national price vector brings our consumption measure closely in line with national income accounting practice, and eliminates results that depend on specific relative price patterns that occur only in some areas. The Laspeyres price index, therefore compares prices in the five regions as discussed above, to the national average.

16. Constructing Laspeyres food price indexes is readily done, as in principle we have price information on each food item for each region. Apart from food, the other major item in the consumption basket is housing. Since rents, or imputed rents, are highly location specific, it is important to account for differences in the cost of living deriving from housing. In particular, the same apartment or house is likely to be more expensive in Dili than in a remote rural area. Ignoring such differences would risk overestimating the living standards in urban relative to rural areas. Deriving price indexes is more involved for housing than for food. In principle, we need to identify a reference "housing bundle", and then determine the average price of this reference bundle for each region (Lanjouw et. al 1996). However, in practice, defining a reference bundle for housing is more difficult than in the case of food. In contrast to food items, housing is a heterogeneous bundle of goods and services comprising different attributes (number and size of rooms, quality of construction material, accessibility of services, location, etc.). In order to derive a price index for housing using the same methodology as for food, we would need to identify housing units across in each that were exactly alike in terms of all conceivable attributes, and then compare average rental values across regions to derive the housing price index. This would clearly be impossible to implement in practice. Instead, we estimated a hedonic housing regression model using actual rental values for those households in the sample that reported rents and the rents imputed by households that lived in owner-occupied or free housing as the dependent variable. The set of

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ratio violates the Pareto principle: it is possible for a policy to make a household better off yet its welfare ratio to decline (Blackorby and Donaldson 1987, Deaton and Zaidi 1998).

explanatory variables included a wide range of housing characteristics, measures of quality of housing, regional dummy variables and other factors that helped determine the rental value of dwellings. We then used the parameter estimates of this model to get a measure of the "price" of housing in each region. The model was used to estimate the cost of renting a typical house, based mostly on mode housing characteristics for the reference group, setting all variables other than the regional dummies to zero.[21] The housing price index was then derived by taking the ratio of the rents in each region to the national mean.

17. The Laspeyres price indexes for food and housing constructed from the TLSS data are presented in Table A.1.2. The TLSS did not collect price data for non-food items, so we could not use the data to construct price indices. As food and housing for the reference group (2nd to 5th decile of national consumption expenditure) account on average for about 87 percent of total consumption, we simply ignored the price differences arising from spending on non-food items. To compute the aggregate index, we used fixed weights of housing and food for the reference group. The fixed weights are 89.8 percent for food and 10.2 for housing. This is like assuming that this expenditure-weighted average of the Laspeyres food and housing indexes reflects adequately the cost differences for non-food items.

18. Table A.1.2 shows the price indices by region (Dili/Baucau, other urban areas, rural east, rural central and rural west.). The food price index shows significant price differences in Dili/Baucau relative to the rest of the country. Dili/Baucau face prices that are fourteen percent higher than the national average, and the prices other urban areas, the rural east and the rural central regions are slightly lower than the national average, while prices in the rural west are about 4 percent lower than the national average.

19. Including housing prices alters the picture significantly. The Dili/Baucau housing price index is 70 percent higher than the national average. Prices in the rural west are 27 percent higher than the national average, while prices in other urban areas are at the national average. The rural east has the lowest housing price index, 40 percent below the national average.

20. Combining both the food and the housing price indices shows that the cost-of-living in Dili/Baucau are 20 percent higher than the national average, while prices in the rest of the country are between 1-5 percent lower than the national average.

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[21] The "reference" house has three rooms, is 36 square meters large, was built in 1997, has bamboo walls, metal sheets/zinc roof, earth/clay floor, no toilet, uses a spring as the main source for bathing and washing, and has a lamp as the main source of light.

Table A.1.2: Regional Laspeyres Price Indices

	Index			Real per capita expenditure 1/ (US Dollars per month)
	Food	Housing	Overall	
Urban	1.071	1.371	1.102	33.78
Dili/Baucau	1.141	1.672	1.196	40.15
Other urban	0.984	0.994	0.985	25.87
Rural	0.978	0.886	0.969	21.22
Rural highland	0.980	0.896	0.972	20.75
Rural lowland	0.976	0.877	0.966	21.58
Rural center	0.988	0.845	0.974	20.54
Rural east	0.980	0.629	0.944	24.57
Rural west	0.954	1.266	0.986	18.86
Total	1.000	1.000	1.000	24.17

1/ Based on a last month recall period.
Note: All Rupiah values from the survey were converted to US Dollars using an exchange rate of 10,000 Rupiah/US Dollar.
Source: 2001 TLSS.

Pattern of Consumption Expenditure

21. The next two tables display per capita expenditures. Table A.1.3 shows the expenditures deflated by the food price index only and Table A.1.4 shows the expenditures deflated by the food and housing price indices. The results in each table are presented using the past 30 days expenditure to calculate non-food expenditures. Expenditure calculated based on the past 12 months is about 4 percent lower than the expenditure based on the last month.

Table A.1.3: Monthly Per Capita Expenditures deflated only by a food price index
(US Dollars)

| | Total | | Urban | Rural | Dili/ | Other | Rural | | | Rural | |
	Nominal	Real			Baucau	Urban	Highland	Lowland	Center	East	West
Rent	5.71	5.46	12.37	3.34	17.46	6.04	2.87	3.71	3.02	3.40	3.98
Utilities	1.31	1.28	1.97	1.06	2.67	1.10	1.03	1.09	0.90	1.50	0.92
Food	15.16	15.10	16.06	14.81	17.21	14.64	15.19	14.52	15.10	15.42	13.50
Purchases	8.51	8.36	12.25	7.17	15.24	8.53	7.46	6.94	7.06	7.36	7.18
Home production	5.72	5.80	3.19	6.61	1.44	5.35	6.69	6.54	6.83	7.03	5.63
In-kind	0.94	0.94	0.63	1.04	0.53	0.75	1.04	1.03	1.21	1.03	0.69
Non-food	2.06	2.02	3.94	1.43	4.00	3.86	1.20	1.60	0.92	2.87	0.86
Clothing	0.94	0.93	1.18	0.85	1.50	0.80	0.70	0.96	0.44	1.97	0.44
Others 1/	0.92	0.89	2.22	0.48	2.08	2.40	0.40	0.54	0.46	0.64	0.35
Minor durable goods	0.20	0.20	0.53	0.10	0.42	0.67	0.10	0.10	0.02	0.26	0.07
Education	0.18	0.17	0.30	0.13	0.45	0.11	0.10	0.16	0.10	0.20	0.14
Health	0.21	0.20	0.22	0.20	0.27	0.15	0.14	0.25	0.21	0.28	0.09
Total	24.63	24.23	34.85	20.98	42.06	25.90	20.53	21.32	20.24	23.67	19.49
Shares (%)											
Rent	23	23	35	16	42	23	14	17	15	14	20
Utilities	5	5	6	5	6	4	5	5	4	6	5
Food	62	62	46	71	41	57	74	68	75	65	69
Purchases	35	34	35	34	36	33	36	33	35	31	37
Home production	23	24	9	31	3	21	33	31	34	30	29
In-kind	4	4	2	5	1	3	5	5	6	4	4
Non-food	8	8	11	7	10	15	6	8	5	12	4
Clothing	4	4	3	4	4	3	3	5	2	8	2
Others 1/	4	4	6	2	5	9	2	3	2	3	2
Minor durable goods	1	1	2	0	1	3	0	0	0	1	0
Education	1	1	1	1	1	0	0	1	0	1	1
Health	1	1	1	1	1	1	1	1	1	1	0
Total	100	100	100	100	100	100	100	100	100	100	100

1/ Considers personal care items and services, house cleaning supplies, entertainment, transportation and others.
Note: Consumption was deflated over time and also spatially using a Laspeyres price index including only food components.
All Rupiah values from the survey were converted to US Dollars using an exchange rate of 10,000 Rupiah/US Dollar.
Source: 2001 TLSS.

Table A.1.4: Monthly Per Capita Expenditures deflated by a food and housing price index (US Dollars)

| | Total | | Urban | Rural | Dili/ | Other | Rural | | | Rural | |
	Nominal	Real			Baucau	Urban	Highland	Lowland	Center	East	West
Rent	5.71	5.38	11.93	3.37	16.67	6.03	2.89	3.74	3.06	3.53	3.85
Utilities	1.31	1.27	1.90	1.08	2.55	1.10	1.05	1.10	0.91	1.56	0.89
Food	15.16	15.13	15.62	14.98	16.43	14.62	15.35	14.70	15.32	16.01	13.06
Purchases	8.51	8.32	11.86	7.24	14.54	8.52	7.53	7.02	7.16	7.64	6.94
Home production	5.72	5.86	3.15	6.69	1.38	5.35	6.76	6.63	6.94	7.30	5.45
In-kind	0.94	0.95	0.61	1.05	0.50	0.75	1.05	1.05	1.22	1.07	0.67
Non-food	2.06	2.01	3.84	1.46	3.82	3.86	1.22	1.63	0.94	2.98	0.84
Clothing	0.94	0.93	1.15	0.87	1.43	0.80	0.71	0.99	0.44	2.04	0.43
Others 1/	0.92	0.88	2.17	0.49	1.99	2.39	0.41	0.55	0.47	0.67	0.34
Minor durable goods	0.20	0.20	0.52	0.10	0.40	0.67	0.10	0.10	0.02	0.27	0.07
Education	0.18	0.17	0.29	0.14	0.43	0.11	0.10	0.16	0.10	0.21	0.14
Health	0.21	0.21	0.21	0.20	0.26	0.15	0.14	0.25	0.21	0.29	0.09
Total	24.63	24.17	33.78	21.22	40.15	25.87	20.75	21.58	20.54	24.57	18.86
Shares (%)											
Rent	23	22	35	16	42	23	14	17	15	14	20
Utilities	5	5	6	5	6	4	5	5	4	6	5
Food	62	63	46	71	41	57	74	68	75	65	69
Purchases	35	34	35	34	36	33	36	33	35	31	37
Home production	23	24	9	32	3	21	33	31	34	30	29
In-kind	4	4	2	5	1	3	5	5	6	4	4
Non-food	8	8	11	7	10	15	6	8	5	12	4
Clothing	4	4	3	4	4	3	3	5	2	8	2
Others 1/	4	4	6	2	5	9	2	3	2	3	2
Minor durable goods	1	1	2	0	1	3	0	0	0	1	0
Education	1	1	1	1	1	0	0	1	0	1	1
Health	1	1	1	1	1	1	1	1	1	1	0
Total	100	100	100	100	100	100	100	100	100	100	100

1/ Considers personal care items and services, house cleaning supplies, entertainment, transportation and others.
Note: Consumption was deflated over time and also spatially using a Laspeyres price index including both food and housing components.
All Rupiah values from the survey were converted to US Dollars using an exchange rate of 10,000 Rupiah/US Dollar.
Source: 2001 TLSS.

22. Real expenditures are highest in Dili/Baucau, followed by other urban areas, the rural east, the rural central and finally the rural west. This pattern is stable regardless of the price index used. However the urban-rural differences are higher if we deflate only by the food price index. Figure 1 shows the real per capita monthly expenditures by different geographic domains. The largest difference between the two deflators is in Dili/Baucau, with real expenditures being significantly higher when only deflating by the food price index.

23. The expenditure pattern, in terms of the shares of expenditure spent on different categories, is also shown in these tables. The results are broadly consistent across the price indices. So for our discussion, we focus on the results using the 30 day expenditure that are deflated by the food and housing index (Table A.1.4, bottom panel). On average, the share of food in total expenditure in Timor Leste is 63 percent, of which 34 percent is from purchases, 24 percent from home-production and 4 percent from gifts/aid or payment in kind. Food shares are highest in the rural center (75 percent) and lowest in Dili/Baucau at 41 percent. In contrast to the rest of the country, in Dili/Baucau most of the food consumption comes from purchases. On average 22 percent of all expenditures go towards housing rent, whereas another 5 percent is spent on fuel and other housing utilities. Housing expenditures vary significantly: in Dili/Baucau, rents account for almost half of all expenditures, whereas in the rural east they represent only 14 percent.

Education and health account for less than 2 percent of total expenditures. Other non-food goods total the other 8 percent.

24. Table A.1.5 compares the expenditure pattern of Timor Leste to a sample of other developing countries (taken from Deaton and Zaidi 1998). While the aggregates are not necessarily comparable due to differences in survey design, it gives an indication of the relative importance of the components. Timor Leste stands out with a high food share, in line with Engel's law, predicting a negative correlation of food shares and the level of income in the country. Non-food spending share is the lowest in all countries and spending on consumer durables was not included in the aggregate – a practice also not adopted in South Africa and Brazil. Perhaps surprisingly, the housing share is relatively high. This could be one example of the transitional rise in the relative price of non-tradable to tradable goods and services as a consequence of the influx of some 15,000 expatriates.

Table A.1.5: Main components of the aggregate consumption

	Timor Leste 2001	Vietnam 1992-93	Nepal 1996	Ghana 1988-89	Kyrgyz 1996	Ecuador 1994-95	South Africa 1993	Panama 1997	Brazil 1996-97
Food	63	51	64	65	45	50	30	46	28
Purchases a/	34	34	29	44	33	44	28	40	21
Home production b/	28	17	35	21	11	5	2	6	7
Non-food items:	10	29	19	28	23	29	45	46	32
Education	1	3	3	n.a.	2	8	3	8	6
Health	1	6	3	n.a.	1	.	2	1	5
Other non-foods	8	21	13	n.a.	19	21	40	37	21
Consumer durables	-	13	1	2	4	5	-	5	-
Housing	27	8	15	3	30	16	25	3	40
Rent	22	6	13	2	18	12	16	2	31
Utilities	5	2	3	1	12	4	9	1	9
Overall	100	100	100	100	100	100	100	100	100
GNP per capita ($) c/	470	170	210	390	550	1,280	2,980	3,080	4,400

a/ Includes meals taken away from the home.
b/ Includes also food received from other household members, friends, and in the form of in-kind payments.
c/ GNP per capita is taken from international statistics for the same year of the survey, except for Panama where the latest available estimate is
for 1996. The figure for Timor-Leste refers to the predicted GDP per capita taken from the World Bank Country Economic Memorandum.

Poverty line

25. Following common practice in East Asia, we defined a poverty line that is both "absolute" and "objective". A poverty line is *absolute* if it fixes a given standard of living over time and space, or, in the terminology of economists, a given level of utility. Such a poverty line guarantees that two individuals with the same standard of living are always

treated in the same way.[22] Furthermore, a poverty line is *objective* if the standard of living is anchored in the attainment of certain basic capabilities, rather than in individual perceptions of welfare, as in subjective methods. In particular, we correlate directly the standard of living with the capability to meet the nutritional requirement for maintaining a certain activity level. The poverty line is then set so as to meet the cost of these requirements.

26. The leading method to implement nutrition-based poverty lines is the Cost-of-Basic-Needs (CBN) approach. It sets a consumption bundle deemed to be adequate for basic consumption needs, and then estimates the costs to obtain such bundle for the relevant population subgroups. A person is considered to be poor if it cannot meet the cost of the consumption bundle. Two points are important to bear in mind. First, a person's poverty status is linked not to whether the actual consumption meets the stipulated needs, but rather to whether the person would have the means to do so. In other words, while nutritional requirements are used to set the reference standard of living, nutritional status is not itself the welfare indicator. Second, there are many ways to determine the consumption bundle that provides for the basic needs. Current practice favors to set this bundle with reference to actual consumer behavior. The poverty line is composed of two elements, the food- and the non-food components.

Food component

27. First, we need to set the stipulated food-energy requirement. We followed common practice in East Asia and used as basic nutritional requirement 2100 calories per person per day. We defined the food bundle that yields this level of nutrition by looking at the prevailing consumption patterns. There are a number of ways to calculate such a bundle. In particular, we took the average food bundle consumed by the lowest second to fifth decile of the population as ranked in terms of real consumption per capita. This reference group is our first guess for the poverty head-count. Then we used caloric conversion on factors to convert the food bundle into total calories. We identified the caloric content of the over 100 food items represented in the food basket of the reference group, drawing on two sources. Whenever possible, we took caloric conversion factors from Pradhan et al (2000), used for the poverty line calculations with Indonesian Susenas data. In case a closely matching food item was missing in Pradhan et al (2000), we referred to the detailed nutritional database from the US Ministry of Agriculture, which is posted on the web.[23] Following standard convention, we excluded alcoholic drinks, tobacco and betel, and residual sub-categories "other". We were left with 102 out of 129 food items, from which we identified the caloric nutrients of 93 items. Overall, this covered 99.9 percent of the food expenditure basket of our reference group, as shown in Table A.1.6. This table also provides the budget shares of the main food items and the caloric conversion factors. Finally, we calculate the nutritional content of the food basket and scaled it proportionately to ensure it provides the required 2100 calories per person.

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[22] More formally, it guarantees that a Pareto improvement in terms of welfare, whereby at least one person is better off, and no one else is worse off, cannot increase measured poverty (Ravallion 1998).
[23] The website for the nutrient database of the US Department of Agriculture is located at http://www.nal.usda.gov/fnic/cgi-bin/nut_search.pl.

Table A.1.6: Food bundle

Code	Item	US dollars per capita per month	%
1000	Cereals	2.97	29.6
1010	Tubers	0.98	9.8
1020	Fish	0.23	2.3
1030	Meat	0.61	6.1
1040	Eggs and milk product	0.20	1.9
1050	Vegetables	1.51	15.1
1080	Legumes/nuts	0.33	3.3
1090	Fruit	0.42	4.2
1110	Oil and fat	0.36	3.6
1120	Beverages/drinks	0.79	7.9
1130	Ingredients	0.19	1.9
1140	Miscellaneous food	0.38	3.8
1150	Alcoholic drinks	0.27	2.7
1160	Tobacco and betel	0.78	7.8
Total		10.03	100.0

Note: All Rupiah values from the survey were converted to US Dollars using an exchange rate of 10,000 Rupiah/US Dollar.
Source: 2001 TLSS.

Non-food component

28. The most controversial part of setting a poverty line concerns the non-food component. The rationale for allowing a non-food component is closely tied to the normative judgment involved in choosing the food component. Setting the food-energy needs requires determining an activity level. Yet, maintaining a certain activity level involves participating in society, and therefore, according to prevalent social norms, a minimum level of spending on clothing, shelter and health care. In order to allow for basic-needs non-food expenditures, common practice is to divide the food component of the poverty line by some estimate of the budget share devoted to food. How do we fix the food share? Standard practice looks at the share of non-food expenditures of a person, whose total expenditure is just enough to reach the food poverty line. This can be interpreted as the minimum necessary allowance for non-food spending, since the person has substituted this spending for basic food needs.[24] This estimate is referred to as the

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[24] Under certain assumptions, this method identifies the lower bound of the poverty line. The corresponding upper bound is defined by the food share of households whose actual food spending equals the food poverty line. Once "survival" food needs are satisfied, basic non-food needs will have to be satisfied before basic food needs as total expenditure rises. And food and non-food are "normal" goods, so that their demand increases with total expenditures. They ensure that a person whose food expenditures match the food poverty line has already covered at least the basic non-food needs.

"lower poverty line". A higher allowance for non-food expenditures looks at those households in which individual food expenditures actually equal the food poverty line. The non-food spending of these households is added as the allowance for non-foods. The more generous allowance for non-food expenditures gives us the "higher poverty line".

29. We calculated the non-food shares for both the lower and higher poverty lines with a simple non-parametric technique (triangular kernel density estimation), as suggested in Ravallion (1998)[25]. First, we considered those households whose overall consumption lie within plus and minus one percent around the food poverty line, and derived their mean non-food expenditure. We then repeated this calculation another nine times, each time increasing the interval on each side by one percent of the food poverty line. Finally, we took the average of all the mean non-food share of expenditures[26], which provided us with our estimate for the non-food components of the poverty line. Using the food and housing index to get real expenditures, the calculations give us a lower national monthly per capita poverty line of US$14.45, with a food component of 75 percent (US$10.89) and a higher national poverty line of US$15.85. The poverty lines are shown in Table A.1.7.

Table A.1.7: Poverty Lines (US Dollars per capita per month)

| | Price index derived from: | |
	Food and housing	Food
Upper poverty line		
Food	10.81	10.73
Non-food	4.63	4.36
Total	15.44	15.10
Lower poverty line		
Food	10.81	10.73
Non-food	3.60	3.42
Total	14.41	14.15

Source: 2001 TLSS.

Poverty Estimates

30. We have finally all components together to calculate the poverty estimates. Tables A.1.8 and A.1.9 present the poverty rates for Timor Leste based on the poverty line developed in the preceding sections. The poverty measures are presented at the lower and upper poverty lines, using both the food price deflator and the food and housing index

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[25] Alternatively, the food share can be estimated parametrically with an Engel curve. The non-parametric approach is both simpler and requires no assumptions on the functional form of the Engel curve.
[26] This method gives highest weight on the households within the narrowest interval, and lowest weight to households within the widest interval. The weights are declining linearly around the food poverty line.

deflator. The rankings of the regions are robust to the choice of the deflator, though the urban-rural differentials in the poverty rates are narrower when we use the food and housing price deflator, which allows for the higher housing prices in urban areas. For the discussion that follows, we only discuss the results using the food and housing price deflator.

Table A.1.8: Poverty rates by region, deflated only by a food price index

	Headcount		Poverty Gap		Severity	
	%	S.E.	%	S.E.	%	S.E.
Upper poverty line						
Urban	21.7	2.9	5.9	1.1	2.3	0.5
Dili/Baucau	9.8	2.4	3.2	0.9	1.3	0.4
Other urban	36.7	5.9	9.3	2.1	3.4	1.0
Rural	42.6	3.7	13.0	1.7	5.4	0.9
Highland	43.8	6.2	14.4	3.0	6.3	1.6
Lowland	41.7	4.5	12.0	1.8	4.8	0.9
Center	48.3	5.9	15.6	2.8	6.8	1.5
East	32.5	4.3	9.7	1.7	3.9	0.8
West	42.0	7.5	11.4	3.0	4.4	1.4
Total	37.7	2.9	11.4	1.3	4.7	0.7
Lower poverty line						
Urban	19.1	2.9	4.9	1.0	1.8	0.4
Dili/Baucau	9.5	2.4	2.8	0.9	1.1	0.4
Other urban	31.2	5.8	7.7	1.9	2.7	0.8
Rural	38.0	3.7	11.2	1.5	4.5	0.8
Highland	40.2	6.4	12.5	2.8	5.3	1.4
Lowland	36.3	4.2	10.2	1.7	3.9	0.7
Center	43.4	5.9	13.5	2.6	5.7	1.3
East	28.6	4.4	8.3	1.6	3.2	0.7
West	37.2	6.8	9.5	2.7	3.5	1.2
Total	33.6	2.9	9.7	1.2	3.9	0.6

Note: Consumption was deflated over time and also spatially using a Laspeyres price index including only food components. The standard errors take into account survey design effects.
Source: 2001 TLSS.

Table A.1.9: Poverty rates by region, deflated by a food and housing price index

	Headcount		Poverty Gap		Severity	
	%	S.E.	%	S.E.	%	S.E.
Upper poverty line						
Urban	24.8	3.1	6.5	1.1	2.6	0.5
Dili/Baucau	13.9	2.8	3.8	1.0	1.6	0.5
Other urban	38.4	6.1	10.0	2.2	3.7	1.0
Rural	44.3	3.6	13.5	1.7	5.7	0.9
Highland	45.4	6.2	14.9	3.0	6.5	1.6
Lowland	43.4	4.2	12.4	1.8	5.0	0.9
Center	49.3	5.7	15.8	2.8	6.9	1.5
East	32.0	4.3	9.4	1.7	3.8	0.8
West	47.5	7.1	13.2	3.2	5.2	1.6
Total	39.7	2.9	11.9	1.3	4.9	0.7
Lower poverty line						
Urban	19.9	2.9	5.4	1.0	2.1	0.5
Dili/Baucau	9.8	2.4	3.2	0.9	1.3	0.4
Other urban	32.7	5.7	8.1	2.0	2.9	0.9
Rural	38.7	3.7	11.5	1.6	4.7	0.8
Highland	40.8	6.4	12.8	2.8	5.4	1.4
Lowland	37.1	4.4	10.5	1.7	4.1	0.8
Center	43.6	6.0	13.6	2.6	5.7	1.3
East	27.4	4.3	7.9	1.5	3.0	0.7
West	41.1	7.3	11.0	2.9	4.2	1.4
Total	34.3	2.9	10.1	1.2	4.0	0.6

Note: Consumption was deflated over time and also spatially using a Laspeyres price index including food and housing components. The standard errors take into account survey design effects.
Source: 2001 TLSS.

31. The incidence of poverty in the country as a whole is 40 percent at the higher poverty line when using expenditures deflated by the housing and food index, amounting to 340,000 individuals. Poverty in urban areas is lower (26 percent) than in rural areas (46 percent). It is lowest in Dili/Baucau (14.4 percent), and highest in rural center and the rural west (51 percent). Since over three quarters of the population (76.5 percent) resides in rural areas, it is clear that poverty is overwhelmingly a rural phenomenon: 85 percent of the poor live in rural areas. This conclusion is not overturned when one turns to the other two poverty measures: rural poverty is both deeper and more severe than urban poverty.

32. Since the poverty rates are based on sampled data, it is important to take into account the standard errors of the estimates. In calculating the standard errors we took into account the sampling structure of the TLSS survey. As this survey involved both stratification as well as clustering these two features of the survey were incorporated into the standard error formulae (Howes and Lanjouw 1995). The standard errors indicate that the poverty rankings between urban and rural areas can be inferred with great confidence, and that Dili/Baucau is the richest region. The geographical rankings between the other urban areas, rural highland and the rural lowlands cannot be inferred with great confidence.

33. At the lower poverty line, the poverty rate for Timor Leste as a whole is 34 percent of the population or around 280,000 people. Poverty in urban areas is 20 percent and it is 38.5 percent in rural areas. The rankings of the different regions remain broadly unchanged at the lower poverty line.

Table A.1.10: Food bundle

Code	Item	Unit	Calories per unit	Per capita expenditure US Dollars per month	%
	TOTAL FOOD EXPENDITURE			**10.03**	**100.00**
1000	**Cereals**			**2.97**	**29.59**
1001	Local rice	kg	3,614	0.72	7.13
1002	Unhusked rice	kg	3,614	0.04	0.41
1003	Imported rice	kg	3,614	1.18	11.71
1004	Corn	kg	3,200	1.03	10.25
1005	Wheat flour	kg	3,330	0.00	0.03
1006	Corn flour	kg	3,200	0.01	0.06
1007	Other cereals	kg			0.00
1010	**Tubers**			**0.98**	**9.80**
1011	Cassava	kg	1,309	0.41	4.11
1012	Sweet potatoes	kg	1,252	0.27	2.71
1013	Sago (ambon sago)	kg	n.a.	0.02	0.20
1014	Taro	kg	1,120	0.23	2.25
1015	Potatoes	kg	270	0.03	0.33
1016	Other tubers	kg		0.02	0.20
1020	**Fish**			**0.23**	**2.28**
1021	Tuna	kg	904	0.02	0.15
1022	V. small sea fish (sardines, teri, etc)	kg	824	0.07	0.72
1023	Other fresih fish	kg	824	0.07	0.74
1024	Salted fish	kg	824	0.01	0.15
1025	Canned fish	100 gms	82	0.02	0.18
1026	Squid	kg	920	0.01	0.11
1027	Fresh shrimp	kg	1,060	0.02	0.22
1028	Dried shrimp	100 gms	106		0.00
1029	Other seafood	kg		0.00	0.01
1030	**Meat**			**0.61**	**6.11**
1031	Beef	kg	2,070	0.25	2.52
1032	Buffalo meat	kg	990	0.04	0.42
1033	Goat	kg	1,090	0.02	0.16
1034	Pork	kg	4,165	0.13	1.32
1035	Chicken	kg	3,020	0.11	1.14
1036	Canned meat	kg	2,070		0.00
1037	Meat scraps and bones	kg	n.a.	0.00	0.03
1038	Other meat	kg		0.05	0.53
1040	**Eggs and milk product**			**0.20**	**1.94**
1041	Chicken eggs	each	66	0.09	0.91
1042	Other eggs	each	66	0.00	0.01
1043	Fresh milk	litre	630	0.01	0.12
1044	Canned sweet milk	390 gms	1,334	0.05	0.50
1045	Powdered milk	kg	5,090	0.00	0.00
1046	Baby milk	400 gms	1,984	0.04	0.39
1047	Other eggs/milk and dairy	100 gms			0.00

Table A.1.10: Food bundle

Code	Item	Unit	Calories per unit	Per capita expenditure US Dollars per month	%
1050	**Vegetables**			**1.51**	**15.06**
1051	Spinach	kg	114	0.02	0.24
1052	Kangkung	kg	220	0.08	0.76
1053	Cabbage	kg	250	0.05	0.49
1054	Light mustard green	kg	260	0.14	1.43
1055	Dark mustard green	kg	260	0.08	0.82
1056	String bean	kg	276	0.01	0.09
1057	Tomato	kg	671	0.01	0.15
1058	Carrot	kg	430	0.00	0.03
1059	Cucumber	kg	125	0.00	0.00
1061	Cassava leaves	kg	635	0.25	2.50
1062	Eggplant	kg	260	0.01	0.10
1063	Squash	kg	285	0.03	0.31
1064	Papaya, young	kg	345	0.17	1.66
1065	Papaya flowers	kg	345	0.18	1.78
1066	Lettuce	kg	130	0.01	0.06
1067	Pumpkin	kg	260	0.02	0.21
1068	Pumpkin leaves	kg	190	0.02	0.20
1069	Kabura	kg	n.a.	0.02	0.17
1071	A Timor veg	kg	635	0.05	0.51
1072	Tips of banana plants	kg	644	0.05	0.47
1073	Green bitter melon	kg	320	0.00	0.04
1074	Onion (big)	kg	1,236	0.17	1.66
1075	Garlic	kg	1,490	0.10	0.99
1076	Red pepper/chili	kg	659	0.00	0.04
1077	Sukun	kg	n.a.	0.02	0.16
1078	Other vegetables	kg		0.02	0.16
1080	**Legumes/nuts**			**0.33**	**3.31**
1081	Soya bean	kg	4,160	0.03	0.26
1082	Mung bean	kg	300	0.06	0.64
1083	Cashews	100 gms	587	0.00	0.01
1084	Peanuts	kg	5,670	0.04	0.42
1085	Kidney bean	kg	3,330	0.16	1.58
1086	Tofu & tempe	kg	1,350	0.00	0.00
1087	Other legumes/nuts	kg		0.04	0.40

Table A.1.10: Food bundle

Code	Item	Unit	Calories per unit	US Dollars per month	%
1090	**Fruit**			**0.42**	**4.23**
1091	Orange/tangerines	kg	455	0.00	0.02
1092	Mango	kg	365	0.07	0.67
1093	Apples	kg	590		0.00
1094	Avocado	kg	1,610	0.02	0.17
1095	Pineapple	kg	490	0.01	0.14
1096	Banana	kg	920	0.17	1.74
1097	Papaya	kg	345	0.08	0.76
1098	Jambu air	kg	n.a.	0.00	0.02
1099	Goiabas	kg	n.a.	0.00	0.02
1101	Watermelon	kg	320	0.01	0.06
1102	Soursop	kg	660		0.00
1103	Jackfruit	kg	940	0.01	0.13
1104	Markisa	kg	n.a.	0.00	0.04
1105	Canned fruit	kg	n.a.	0.00	0.01
1106	Coconuts	kg	3,363	0.05	0.47
1107	Other fruit	kg			0.00
1110	**Oil and fat**			**0.36**	**3.62**
1111	Coconut oil	litre	6,960	0.08	0.80
1112	Pork oil	litre	6,960	0.01	0.07
1113	Other cooking oil	litre	6,960	0.27	2.70
1114	Dry coconut	kg	6,960	0.00	0.05
1115	Butter and margarine	100 gms	717		0.00
1116	Other oil and fat	litre		0.00	0.01
1120	**Beverages/drinks**			**0.79**	**7.89**
1121	Sugar	100 gms	375	0.34	3.37
1122	Palm sugar	100 gms	375	0.00	0.01
1123	Tea	100 gms	466	0.02	0.21
1124	Coffee	100 gms	1,243	0.43	4.27
1125	Cocoa/chocolate powder	100 gms	288	0.00	0.01
1126	Soda drinks (Sprite, Coke)	litre	403	0.00	0.03
1127	Other beverages	litre			0.00
1130	**Ingredients**			**0.19**	**1.88**
1131	Salt	100 gms	0	0.08	0.84
1132	Honey	kg	3,040	0.00	0.01
1133	Candle nut	100 gms	2,245	0.00	0.01
1134	Paprika	100 gms	289	0.04	0.35
1135	Soy sauce sweet/sour	140 ml	77	0.00	0.01
1136	MSG	gram	0	0.07	0.66
1137	Other ingredients/spices	kg		0.00	0.00

Table A.1.10: Food bundle

Code	Item	Unit	Calories per unit	Per capita expenditure US Dollars per month	%
1140	**Miscellaneous food**			**0.38**	**3.82**
1141	Instant noodles	80 gms	356	0.26	2.57
1142	Macronie	100 gms	360	0.01	0.11
1143	White bread	small piece	53	0.01	0.14
1144	Sweet bread	each	162	0.05	0.53
1145	Biscuits	100 gms	325	0.01	0.14
1146	Sweets/cakes	each	37	0.03	0.33
1147	Snacks	portion	n.a.	0.00	0.00
1148	Other food				0.00
1149	Prepared food and drink			0.00	0.00
1150	**Alcoholic drinks**			**0.27**	**2.65**
1151	Beer	620 ml		0.00	0.02
1152	Wine	620 ml		0.00	0.02
1153	Tua mutin	litre		0.10	1.04
1154	Tua sabu	litre		0.16	1.55
1155	Other alcoholic beverages	litre		0.00	0.02
1160	**Tobacco and betel**			**0.78**	**7.80**
1161	Clove cigarette, filter	each	0	0.16	1.60
1162	Clove cigarette, non filter	each	0	0.01	0.08
1163	Tobacco cigarette, filter	each	0	0.00	0.02
1164	Tobacco cigarette, non filter	each	0	0.01	0.11
1165	Tobacco	100 gms		0.19	1.89
1166	Betel fruit	stick		0.03	0.29
1167	Betel nuts	100 gms		0.07	0.65
1168	Betel leaves	grams		0.14	1.36
1169	Areca nut	stick		0.18	1.79

Note: All Rupiah values from the survey were converted to US Dollars using an exchange rate of 10,000 Rupiah/US Dollar.
Source: 2001 TLSS.

2. THE PEOPLE'S PERSPECTIVE

INTRODUCTION[27]

2.1   Happiness, satisfaction, and well-being with life are broad notions that go beyond purely material endowments. Welfare indicators like income, or expenditure, fail to capture this multi-dimensionality of happiness. Furthermore, we cannot make interpersonal comparisons of welfare by looking solely at the "revealed" preferences of people as evident from their demand behavior. This has severe consequences: as is well know from Arrow's Impossibility Theorem (1950), it is impossible to construct a social welfare function in the absence of interpersonal comparisons of individual welfare.

2.2   The shortfalls of standard welfare measures are well recognized, but the conventional methods have remained popular, as it proved difficult to propose convincing measurable concepts that comprise the wider concepts of happiness. However, over the last three decades or so, a substantive volume of research has emerged that uses people's own assessments to get at notions of individual happiness and satisfaction. The underlying idea is to rely on individuals and households themselves to define their level of well-being. Even though precise definitions of these concepts still remain elusive, psychologists and economist have used self-assessments as proxy measures of welfare and well-being. The approach has become so successful that subjective questions are now routinely included in household surveys, along with objective measures. TLSS followed this praxis and collected subjective information on life satisfaction both in general and with respect to various domains of life, such as jobs, food security, health, education, and empowerment.

2.3   The distinguishing feature of subjective measures is that they are based on a person's self-assessment. This raises the question whether they are consistent, and change systematically with objective measures. For example, a person's self-assessed economic situation may stay unchanged even though her consumption increases, either because her expectations have increased, or because her position relative to her reference group has remained the same. To avoid such pitfalls in the assessment of well-being across a group of individuals on the basis of subjective indicators, we need to assume that individuals:

- are able to understand and answer consistently questions about own situation, and

- provide responses that are comparable.

2.4   While some evidence suggests that these conditions typically hold within a common cultural context, it is generally difficult to verify these assumptions. Therefore,

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[27] This chapter was written by Kaspar Richter.

an analysis of subjective measures is best conducted jointly with an investigation of objective indicators. In this chapter, we have drawn on subjective measures to cross-check evidence from objective indicators. We investigate four specific areas:

- Subjective well-being post-violence;

- Change in subjective well-being since the violence;

- Characteristics of "winners" and "losers"; and

- Personal and national priorities.

SUBJECTIVE WELL-BEING

2.5 Happiness is much more than income alone. Participatory poverty assessments in Timor-Leste and around the world have shown that the good life or well-being is multidimensional with both material and psychological dimensions.[28] Well-being is peace of mind; it is good health; it is belonging to a community; it is safety; it is freedom of choice and action; it is a dependable livelihood and a steady source of income; and it is food. Absence of poverty is the capability to cover one's essential needs. To be poor "…is to be hungry, to lack shelter and clothing, to be sick and not cared for, to be illiterate and not schooled" (World Development Report 2000-2001). Ill-being is not just lack of material things – of food, but also work, money, shelter and clothing. It is also living and working in often unhealthy, polluted and risky environments, and with bad experiences and bad feelings about the self.

2.6 A standard tool to assess subjective well-being are "adequacy" questions covering the different categories of family needs. In Table 2.1, we display the answers of heads of households to questions regarding their family requirements. It shows the percentage shares of each of the three (less than adequate; just adequate; and more than adequate) possible answers along the dimensions of food, shelter, clothing, health care, education, and income.

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[28] One example is the World Bank's participatory research initiative, Voices of the Poor, which collected the voices of more than 60,000 poor women and men from 60 countries (World Bank 2000).

Table 2.1: Subjective Well-being: Adequacy

	Food (%)	Housing (%)	Clothing (%)	Health care (%)	Education (%)	Income (%)
Less than adequate	59.2	48.9	64.0	35.9	55.9	75.4
	(2.3)	(2.6)	(2.1)	(2.9)	(2.4)	(1.8)
Just adequate	40.5	50.8	35.9	62.8	43.4	24.3
	(2.3)	(2.6)	(2.1)	(2.9)	(2.3)	(1.8)
More than adequate	0.3	0.3	0.1	1.3	0.7	0.3
	(0.1)	(0.1)	(0.1)	(0.4)	(0.3)	(0.1)

Note: Standard errors in parentheses.
Source: 2001 TLSS.

2.7   The striking feature is one of widespread *in*adequacy and severe hardship of everyday life. Whatever specific aspect of living standards we consider, 99 in 100 people in Timor-Leste feel at best just adequately endowed, and between over one third to three quarters believe to be less than adequately covered. The concern is largest for clothing, followed by food, children's education, and housing, and least for the provision of health care. In addition, more than three in four persons live in households where total income is deemed inadequate.[29]

Table 2.2: Subjective Well-being: Happiness

Very satisfied	2.6
	(0.4)
Rather satisfied	32.7
	(2.1)
Neither/Nor	44.3
	(2.0)
Somewhat unsatisfied	18.6
	(2.0)
Very unsatisfied	1.7
	(0.4)

Note: Standard errors in parentheses.
Source: 2001 TLSS.

2.8   The household head was the respondent to these adequacy questions, assessing the economic situation of the entire family. Yet, perceptions of happiness are personal, vary from one household member to the next, and go beyond just purely economic

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[29] It is not clear whether respondents viewed total income as a summary measure capturing other dimensions, or a separate dimension of living standards itself.

notions of well-being. In Table 2.2, we show the assessment of all individuals aged 15 years or older in terms of happiness. In spite of widespread deprivation, the population displays a surprisingly degree of satisfaction with life in general. More than one third of the individuals are very or rather satisfied, compared to just over one fifth who are somewhat or very unsatisfied.

CHANGE IN SUBJECTIVE WELL-BEING SINCE THE VIOLENCE

2.9   How has life changed since 1999 in the people's own assessment? In the survey, the people of Timor-Leste were asked to assess the changes since before the violence in 1999 along different dimensions: living standards, corruption, economic status, and power status. This section looks at the evidence from these questions. Our focus is on exploring what could account for the high degree of general satisfaction with life in the face of economic hardship. We will show that part of the explanation lies with the improvement in non-economic dimensions of life that have improved substantially over the last two years.

2.10   Living standards are closely linked to economic conditions, and they have remained difficult since the violence. In Table 2.3, we show the responses of all individuals aged 15 years or older when asked about the change in living standards. About three in ten persons believe living standards have deteriorated, compared to only one in ten persons saying they have improved. This underlines the message of the adequacy questions, pointing to substantial material hardship.

Table 2.3: Change in Living Standards Since the Violence in 1999

Improvement	10.5
	(1.0)
Same	60.4
	(2.4)
Deterioration	29.1
	(2.4)

Note: Standard errors in parentheses.
Source: 2001 TLSS.

2.11   Corruption is a core poverty issue. For example, the World Bank's Voices of the Poor recorded reports by poor people of hundreds of incidents of corruption as they attempt to seek health care, educate their children, claim social assistance, get paid, attempt to access justice or police protection, and seek to enter the marketplace. In their dealings with officials, poor men and women are subject to insults, rudeness, harassment, and sometimes assault by officials. Harassment of vendors in urban areas is widespread. Politicians, state officials, and public servants are rarely viewed as effective, trustworthy, or participatory. Corruption also matters for the broader performance of a country. It is an

obstacle to economic and social development. It distorts the rule of law and weakens the institutional foundation on which economic growth depends. These harmful effects are especially severe on the poor, who suffer most from economic decline, are most reliant on the provision of public services, and are least capable of paying the extra costs associated with bribery, fraud, and the misappropriation of economic privileges.

Table 2.4: Change in Corruption Since the Violence in 1999

					Geography									Total		15 - 24		25 - 49		50 plus	
	National	R	U	MUC	OUC	RW	RC	RE	RL	RM	RH	RI	RS	F	M	F	M	F	M	F	M
More	18	17	23	30	14	18	18	14	8	17	19	17	16	16	20	18	21	18	22	11	15
	(1.4)	(1.8)	(1.8)	(2.4)	(2.6)	(4.5)	(2.6)	(2.4)	(4.7)	(3.0)	(2.1)	(1.9)	(4.8)	(1.4)	(1.6)	(2.1)	(2.3)	(1.5)	(1.8)	(1.7)	(2.3)
Same	42	44	36	39	33	42	47	41	40	40	49	45	38	43	41	39	43	43	39	49	43
	(1.9)	(2.4)	(3.0)	(2.6)	(6.0)	(5.2)	(3.7)	(3.3)	(3.5)	(3.3)	(3.8)	(2.7)	(3.9)	(2.1)	(1.9)	(2.7)	(2.4)	(2.2)	(2.2)	(3.5)	(2.9)
Less	40	39	40	31	53	40	35	45	51	43	32	38	46	40	39	42	36	40	39	40	42
	(2.5)	(3.1)	(3.5)	(2.8)	(7.1)	(6.5)	(4.5)	(5.2)	(7.7)	(4.5)	(4.3)	(3.5)	(5.7)	(2.7)	(2.4)	(3.3)	(2.9)	(2.7)	(2.6)	(3.5)	(3.3)

Note: R stands for Rural, U for Urban, MUC for Major Urban Centers, OUC for Other Urban Centers, RW for Rural West, RC for Rural Center, RE for Rural East,
RL for Rural Lowland, RM for Rural Midland, RH for Rural Highland, RI for Rural Inland, RS for Rural Sealand, F for Female and M for Male.
Standard errors in parentheses.
Source: 2001 TLSS.

2.12   People's perception on the change in corruption since 1999 are shown in Table 2.4. Overall, people feel corruption is less of an issue now than in 1999. Only one fifth of the population aged 15 years or older believes corruption has worsened since violence, compared two fifth who feel corruption has declined. Across the board of geographic and age-gender categories, more people believe corruption is less prevalent now. However, there are important differences. Most strikingly, in major urban centers, three in ten people feel corruption has become worse. In rural areas, the issue appears to be larger in rural west and center than in rural east, and in rural mid- and highlands than in rural lowlands. With regard to gender, men are more pessimistic than women about the progress made in corruption prevention, as are persons younger than 50 years of age compared to those older than 50 years of age. One possible explanation of this pattern could be involvement in commercial and administrative tasks. Inhabitants of Dili and Baucau, and prime-age men are likely to be more exposed to such activities. Interestingly, the more optimistic view on change in corruption in the rural east and rural lowland coincides with lower poverty than in the other rural domains.

2.13   Living standards and corruption are important for both economic status and empowerment. Table 2.5 displays the responses to "ladder questions", where persons are asked to rank themselves with regard to economic and power status, both for now and before the violence. Let us consider the economic dimension first. Looking back to before the violence in 1999, the vast majority view themselves as poor: one third of the respondents believe they were on the lowest step, another third on the second lowest step, and another 30 percent between the third to fifth lowest steps. Less than two percent ranked themselves on the top four steps. By comparison, today's situation has improved, especially for the lowest third. The share at the lowest step has significantly decreased, boosting the shares of the second and third lowest steps, with the rest remaining unchanged. Overall, the economic situation of the lowest two thirds has improved or

remained unchanged, while the one for the highest third has remained unchanged.[30] This more detailed assessment of the changes of the economic status leads to a more positive evaluation of the alteration since the violence than the single question about changes in living standards discussed in the previous paragraph.

Table 2.5: Subjective Well-being: Economic and Power Status

	Economic		Power	
	2001	1999	2001	1999
Lowest	22	32	5	62
	(1.7)	(1.9)	(0.7)	(2.3)
2nd	38	34	20	22
	(1.8)	(1.5)	(1.8)	(1.5)
3rd	25	19	21	9
	(1.6)	(1.2)	(1.3)	(0.9)
4th	11	9	25	4
	(1.1)	(1.0)	(1.7)	(0.6)
5th	3	4	15	2
	(0.5)	(0.5)	(1.0)	(0.5)
6th	1	1	8	1
	(0.2)	(0.3)	(0.9)	(0.4)
7th	0	1	3	0
	(0.0)	(0.2)	(0.7)	(0.1)
8th	0	0	1	0
	(0.0)	(0.1)	(0.3)	(0.0)
Highest	0	0	1	0
	(0.0)	(0.0)	(0.3)	(0.1)

Note: Standard errors in parentheses.
Source: 2001 TLSS.

2.14   The questions regarding power status reveal a clear picture. In 1999, today's population viewed themselves as powerless, with six in ten placing themselves on the lowest step, and another two in ten on the second lowest step. Essentially nobody ranked herself on the top four steps. The situation in 2001 is substantially different. Only one in twenty people believe they are completely powerless, and close to three in ten believe they rank on the top five steps.[31] These numbers suggest that, while the economic situation has improved primarily at the bottom tail, the advances in power status have affected almost the entire population. The transition matrices for economic and power status are shown in Table 2.6 and Table 2.7. For example, p_{12}^{E} equals 39 percent,

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[30] Assuming that the means of the two distributions are unchanged, we can apply the concept of first-order stochastic dominance. The 2001 cumulative density function is not higher than the one for 1999 up to the 95 percentile, and therefore first-order dominates the 1999 distribution up to this percentile.

[31] The 2001 cumulative density function is not higher than the 1999 cumulative density function over the entire range, and therefore first-order dominates the 1999 distribution over the entire range.

indicating that about 4 in ten person who belonged to the lowest step in 1999 moved to the second lowest step in 2001. The corresponding number for power status is 22 percent.

Table 2.6: Matrix Economic Status

	2001				
	Lowest	2nd	3rd	4th	5th
1999					
Lowest	43	39	14	3	1
	(3.5)	(3.0)	(1.8)	(1.1)	(0.5)
2nd	16	50	26	7	1
	(2.0)	(3.1)	(2.8)	(1.1)	(0.6)
3rd	8	30	40	19	2
	(1.9)	(3.4)	(3.7)	(2.9)	(0.8)
4th	7	23	29	31	9
	(2.6)	(4.1)	(4.5)	(5.6)	(4.2)
5th	3	14	20	17	45
	(2.4)	(4.6)	(5.4)	(4.5)	(6.0)

Note: Standard errors in parentheses.
Source: 2001 TLSS.

Table 2.7: Matrix Power Status

	2001				
	Lowest	2nd	3rd	4th	5th
1999					
Lowest	5	22	22	26	26
	(0.7)	(2.3)	(2.0)	(2.1)	(2.9)
2nd	6	19	21	26	27
	(1.6)	(3.0)	(2.5)	(3.2)	(4.0)
3rd	5	17	18	27	33
	(1.9)	(4.2)	(3.1)	(4.6)	(6.5)
4th	2	14	6	19	59
	(1.3)	(5.1)	(3.0)	(4.1)	(10.2)
5th	1	9	9	2	78
	(1.2)	(5.5)	(5.2)	(1.7)	(13.3)

Note: Standard errors in parentheses.
Source: 2001 TLSS.

2.15   The values for mobility measures are shown in Table 2.8. Summing over the entries on the main diagonal, we find substantial mobility. Only four in ten persons

remain on the step for economic status, and only less than three in ten for power status. The other immobility indicators also suggest lower mobility with regard to economic status than power status. The same holds overall for the jump measures, even though those for the top highest steps are lower for power status than for economic status. For the entire matrix, economic status changes on average by half a step, compared to 0.7 steps for power status.

Table 2.8: Mobility Measures

	I	J	U	e
Economic status				
1	42.0	0.8	1.8	16.5
2	79.2	0.3	2.3	37.5
3	94.0	0.2	2.8	28.2
4	99.1	0.9	3.1	13.4
5		1.1	3.9	4.5
Total		0.5	2.8	2.5
Power status				
1	27.9	2.5	3.5	2.4
2	60.1	1.5	3.5	12.3
3	81.7	0.7	3.7	11.3
4	94.5	0.2	4.2	10.2
5		0.5	4.5	63.8
Total		0.7	3.9	4.2

Note: The mobility measures are defined in the mobility section in Chapter 1 of this volume.
Source: 2001 TLSS.

2.16   From the perspective of social welfare, more important than overall mobility is upward mobility. For economic status, the average state rank in 2001 is 2.8, compared to the average state rank of 3, suggesting an overall downward movement. However, in contrast to the top three states, the two lowest states show upward mobility.[32] By contrast, for power the average state rank in 2001 is 3.9, implying upward mobility. In particular, the improvement in the lowest rank is dramatic, with an average step rank of 3.5. We also find that both transition matrices are "monotone" (Conlisk 1990) so that the disadvantage of originating from a low state is preserved into the future.

2.17   The equilibrium vectors, deriving from a first-order Markov chain, are shown in Table 2.8. The distribution on economic status shows the bulk of the population on the second and third step, and no more than 5 percent on the top step. By contrast, close to two thirds of the population end up on the top ladder for power status. Furthermore, the

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[32] Note that by construction of a transition matrix, the lowest state cannot display downward mobility, while the highest state cannot display upward mobility.

power status equilibrium distribution first-order dominates the one for economic status. This confirms the previous conclusions: on the one hand, the economic situation has improved primarily for the poorest families, while little amelioration is evident for other households; on the other hand, the population feels broadly empowered as a result of the changes since 1999.

WINNERS AND LOSERS

2.18   Timor-Leste has made significant strides since the violence surrounding the referendum of September 1999. This transformation has changed the direction of life courses for literally every citizen, and affected their material and emotional well-being, including own perceptions of self-worth. However, as the previous section suggests, not everybody has benefited in the same way, and some even feel to have lost out. Although the fundamental achievement of gaining independence is overwhelmingly positive, the vast structural changes were accompanied by conflict, destruction, and migration with negative impacts on parts of the population.

2.19   In particular, as the experience in the former Soviet Union has demonstrated, the economic transformation can trigger conflict through creating 'winners' and 'losers', challenging traditional values or authority structures, or raising the stakes of economic competition. A full appreciating of the scale of these changes would require a thorough investigation of political and economic transformation, social reconstruction and empowerment, and the institutional capacity to manage or resolve violent conflict and to promote tolerance, and build peace and human security.

Table 2.9: Winners and Losers: Characteristics

	Economic Status		Power Status	
	Upward	Downward	Upward	Downward
Poverty headcount (%)	0.319	0.276	0.341	0.279
	(0.033)	(0.031)	(0.027)	(0.055)
Poverty gap (%)	0.086	0.070	0.100	0.080
	(0.013)	(0.010)	(0.012)	(0.020)
Poverty severity (%)	0.034	0.025	0.041	0.031
	(0.006)	(0.004)	(0.006)	(0.009)
Age (years)	34.5	35.7	35.6	34.8
	(0.458)	(0.470)	(0.282)	(0.965)
Male (%)	0.507	0.494	0.502	0.507
	(0.008)	(0.012)	(0.006)	(0.021)
Attended school (%)	0.504	0.503	0.480	0.439
	(0.024)	(0.025)	(0.016)	(0.045)
Average grade if schooling (1 - 22)	9.05	8.84	8.70	8.93
	(0.246)	(0.234)	(0.151)	(0.509)
Farmer	0.378	0.408	0.399	0.510
	(0.016)	(0.019)	(0.011)	(0.038)
Labor force	0.553	0.576	0.549	0.610
	(0.014)	(0.022)	(0.012)	(0.031)
Household size	5.9	5.7	5.7	5.0
	(0.157)	(0.183)	(0.112)	(0.269)
Dependency ratio	0.952	0.934	0.940	0.814
	(0.039)	(0.038)	(0.027)	(0.086)
Urban	0.284	0.258	0.256	0.176
	(0.026)	(0.026)	(0.009)	(0.036)
Major urban centers	0.180	0.138	0.145	0.087
	(0.021)	(0.016)	(0.007)	(0.026)
Other urban centers	0.103	0.120	0.111	0.089
	(0.014)	(0.019)	(0.006)	(0.024)
Rural west	0.206	0.268	0.166	0.305
	(0.056)	(0.066)	(0.042)	(0.087)
Rural center	0.330	0.359	0.348	0.393
	(0.055)	(0.061)	(0.050)	(0.084)
Rural east	0.180	0.116	0.230	0.126
	(0.049)	(0.034)	(0.046)	(0.051)
Rural lowland	0.330	0.472	0.428	0.581
	(0.054)	(0.062)	(0.049)	(0.079)
Rural midland	0.295	0.380	0.356	0.508
	(0.053)	(0.064)	(0.049)	(0.084)
Rural highland	0.386	0.270	0.317	0.243
	(0.060)	(0.057)	(0.050)	(0.073)
Rural seaside	0.099	0.154	0.147	0.222
	(0.033)	(0.048)	(0.039)	(0.077)
Population (%)	35	23	84	6

Note: Standard errors in parentheses.
Source: 2001 TLSS.

2.20   While such an agenda goes beyond the scope of this analysis, we can shed some light on this issue with regard to self-perceived changes in economic and power status as captured by the ladder questions. What distinguishes the winners from the losers of this two-year transition? In Table 2.9, we classify individuals according to whether they have climbed, or dropped back, on the ladders of economic status and power status, and display summary statistics of basic personal, household, and geographical characteristics.

2.21   Let us consider economic position first. Over one third of the citizens aged 15 or older believe their situation has improved, compared to just below one quarter who experienced downward mobility. In terms of mean group characteristics, the two groups are comparable in terms of age, gender, and household composition. Furthermore, the differences in terms of education and labor force are too small to be significant. By contrast, the geographical incidence shows important variations. The upwardly mobile are more urban, and correspondingly less likely to be farmers than the downwardly mobile. Furthermore, in urban areas, the winners are concentrated in the major urban centers, and in rural areas in the east, the highland, and inland. In other words, the winners come from parts of the country with low poverty (Dili/Baucau and rural east) and high poverty (rural highland and rural inland). However, the poverty statistics reveal that the upwardly mobile are overall poorer than the downwardly mobile. This suggests that the economic winners of the transition come over-proportionately from the poorer segment of the population in 1999. Their gains may have narrowed the material gap to the rest of the population, but not eliminated it.

2.22   How does this picture differ for power status? Again, we find little evidence for differences in terms of age and gender, but other features are important. Overall, the urban-rural gap is substantially larger than for economic status. Correlated with this division, those feeling more empowered a more likely to have attended school, less likely to be farmers, and have larger household size.[33] In terms of geographical breakdown in urban and rural areas, the pattern is in line with the picture on economic status, with winners originating from major urban centers, rural highland and rural inland. Equally, we find that the poor were especially empowered, again indicating that the least advantaged in 1999 feel included in the gains in power status.

PERSONAL AND NATIONAL PRIORITIES

2.23   Changes in self-perceived economic and power status can be triggered by various factors. Economic well-being is tied to issues like employment, housing, and business climate, while empowerment relates to aspects like participation in the community and absence of fear of violence. Exploring these factors allows us to gain a deeper understanding on the perceived successes and failures of the transformation since the referendum of 1999. Contrasting the evaluation of the past performance with the personal and national priorities looking forward gives us an indication about to what extend the agenda of the past should be modified for the future.

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[33] Note that in Timor-Leste, in contrast to most developing countries, households have more members in urban than in rural areas.

2.24   This section draws on rankings of individuals aged 15 years or older of ten categories with regards to changes in the past, and personal and national priorities for the future. In four questions, interviewees were asked to give the two main areas of improvement and deterioration over the last two years, and of individuals and national priorities for improvement of living standards as of today. In Table 2.10, we display the backward-looking results. We summarize the responses by calculating the difference in the percentage rates of improvement and deterioration for each sector, nationwide and separated by salient geographic and age-gender groupings. A positive number suggests more feel the specific area has improved than deteriorated, while a negative number indicates that those perceiving a worsening outnumber those seeing an improvement.

Table 2.10: Change in Living Standards Since the Violence in 1999 by Sector

| | | | | Geography | | | | | | | Age-gender groups | | | | |
| | | | | | | | | | | 15 - 24 | | 25 - 49 | | 50 plus | |
	National	MUC	OUC	RW	RC	RE	RL	RM	RH	F	M	F	M	F	M
Safety	39	45	31	67	23	40	46	39	37	33	41	39	36	43	44
	(4.7)	(5.1)	(14.5)	(7.4)	(9.5)	(7.1)	(11.8)	(7.5)	(10.3)	(5.4)	(5.5)	(5.0)	(5.1)	(5.2)	(6.0)
Political participation	26	32	15	23	30	26	39	26	25	28	26	25	26	28	30
	(3.0)	(4.2)	(8.6)	(7.1)	(6.6)	(4.4)	(5.9)	(4.9)	(6.7)	(2.9)	(4.2)	(3.2)	(3.9)	(3.2)	(3.6)
Education	19	19	29	27	19	8	6	16	22	20	18	20	19	16	19
	(2.3)	(3.0)	(7.4)	(5.4)	(4.5)	(4.3)	(5.4)	(4.3)	(4.3)	(3.8)	(3.5)	(2.6)	(2.7)	(3.4)	(4.0)
Status in community	9	6	7	16	8	9	6	8	14	7	9	10	10	9	8
	(1.5)	(1.8)	(2.8)	(3.8)	(2.5)	(4.1)	(7.4)	(2.6)	(2.8)	(2.1)	(2.0)	(1.6)	(1.6)	(2.4)	(2.0)
Health care	2	8	7	-3	5	-7	-11	2	0	4	-1	2	3	-1	1
	(2.7)	(2.3)	(8.1)	(5.0)	(5.6)	(5.6)	(5.6)	(5.3)	(5.1)	(3.0)	(3.4)	(3.3)	(2.8)	(4.5)	(3.5)
Access to land	-5	1	-4	-11	-3	-5	-5	-7	-5	-4	-4	-5	-4	-5	-5
	(1.2)	(1.2)	(3.4)	(3.4)	(1.7)	(2.9)	(3.7)	(2.3)	(2.1)	(1.5)	(1.6)	(1.5)	(1.3)	(2.7)	(2.4)
Infrastructure	-12	-2	-12	-15	-12	-16	-9	-14	-14	-13	-11	-13	-10	-12	-14
	(1.6)	(2.1)	(4.4)	(4.4)	(2.8)	(3.5)	(7.3)	(2.4)	(3.4)	(2.2)	(2.4)	(1.7)	(2.0)	(2.5)	(3.1)
Employment	-19	-40	-15	-29	-11	-11	-17	-16	-15	-20	-18	-19	-21	-17	-17
	(2.0)	(3.9)	(6.1)	(4.2)	(3.4)	(3.7)	(4.5)	(3.3)	(4.3)	(3.3)	(3.3)	(2.5)	(2.7)	(3.3)	(3.1)
Demand for products	-26	-17	-19	-28	-30	-24	-17	-27	-32	-22	-28	-26	-24	-30	-26
	(2.4)	(2.7)	(5.1)	(6.3)	(4.2)	(5.9)	(7.9)	(4.7)	(4.4)	(3.4)	(3.3)	(3.0)	(2.8)	(3.2)	(3.2)
Housing	-34	-48	-38	-45	-29	-22	-39	-28	-33	-33	-32	-33	-35	-33	-40
	(2.1)	(3.0)	(6.1)	(5.2)	(3.7)	(3.7)	(10.2)	(3.7)	(3.7)	(3.2)	(2.6)	(2.6)	(2.5)	(3.6)	(3.2)

Note: MUC stands for Major Urban Centers, OUC for Other Urban Centers, RW for Rural West, RC for Rural Center, RE for Rural East,
RL for Rural Lowland, RM for Rural Midland, RH for Rural Highland, F for Female and M for Male. Standard errors in parentheses.
Source: 2001 TLSS.

2.25   According to this ranking, safety comes out on top, while housing ranks bottom. In particular, three fifths believe that safety has improved since the violence, compared to one fifth who feel safety has deteriorated. Therefore, the excess of those feeling an improvement relative to those perceiving a deterioration is two fifths, the highest share across all categories. Other areas, where more interviewees saw an improvement rather than a deterioration, are, ranked in order of importance, political participation, education, status in community, and health care. For the remaining five areas, more people experienced a deterioration than an improvement: access to land, infrastructure, employment, demand for products, and housing, which ranked bottom scoring –34.

2.26   This pattern highlights both the achievements, and disappointments, during the transformation since 1999. On the one hand, the areas of improvement like safety, political participation, and status in community are directly associated with overcoming a

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history of violence and suppression, and the move towards an independent and democratic Timor-Leste. Furthermore, the positive scores for education and health also reflect the appreciation of the population for the substantial social investments made during the last years. This emphasis is likely to have contributed to the overall positive assessment of the transitional period by the population.[34]

2.27   On the other hand, the negative scores for housing and infrastructure reflect the destruction occurring in the immediate aftermath of the 1999 referendum. It confirms that in view of the large-scale devastation the considerable reconstruction efforts have not yet been able to fully repair the damage. Finally, the low ranking of land access, employment, and demand for products point to the disruptive impact of the transition period on economic activities.

2.28   Table 2.10 also shows a breakdown of the ranking by geographic and age-gender groups. Overall, the differences between regions, and especially age-gender groups, are relatively minor, with a number of noteworthy exceptions. Due to its proximity to Indonesia, the rural west was especially affected by violence and destruction in 1999. This shows up with high scores on safety, status in community, and education, and low scores on access to land, infrastructure, employment, and housing. A similar pattern is discernible for Dili and Baucau, which, as major urban agglomerations, were also focal points of disruption and conflict.

2.29   We now turn to the priorities of the population looking forward. The results are shown in the Table 2.11 and Table 2.12, displaying the main personal concerns and concerns for Timor-Leste, respectively. The numbers state the percentage of individuals aged 15 or older indicating an area as first or second priority. Top of the list of personal concerns are economic and social factors. Number one is employment, quoted by three fifths of the interviewees. This is followed by improvements in social services (education, health care, and housing), and demand for products. In contrast, the main achievements of the past years (safety, political participation, and status in community) rank lowest in terms of importance for individual living standards for the future. Separating regions, employment matters substantially more for the rural west and rural highland compared to rural east and rural lowland, while the order of priority is reverse for demand for products. In terms of age-gender groupings, employment is more important for men than women, the young are concerned particularly about education, while the old worry more about health care and housing. Perhaps surprisingly, demand for products turns out to be more a concern for women than men.

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[34] A specific emphasis on social policies, relative to sectoral and macroeconomic policies, is recommended as policy priority for post-conflict countries, based on a series of empirical research conducted by the Conflict Prevention and Reconstruction Unit in the World Bank.

Table 2.11: Personal Priorities for Living Standards

| | National | Geography | | | | | | | | Age-gender groups | | | | | |
| | | MUC | OUC | RW | RC | RE | RL | RM | RH | 15 - 24 | | 25 - 49 | | 50 plus | |
										F	M	F	M	F	M
Employment	62	63	65	73	67	43	49	57	69	59	63	61	72	47	59
	(1.8)	(2.8)	(4.2)	(5.0)	(2.0)	(3.0)	(6.8)	(3.1)	(3.2)	(2.8)	(2.8)	(2.1)	(2.0)	(3.0)	(2.7)
Health care	36	25	40	28	40	40	33	38	38	32	33	39	33	43	38
	(1.6)	(2.1)	(5.1)	(5.4)	(2.5)	(2.7)	(6.3)	(2.5)	(3.5)	(2.2)	(2.5)	(2.0)	(1.8)	(2.7)	(2.8)
Education	30	32	31	37	24	33	27	31	29	40	44	26	27	22	25
	(1.5)	(2.6)	(3.4)	(4.5)	(2.7)	(2.9)	(6.1)	(2.7)	(3.1)	(2.2)	(2.5)	(1.9)	(1.8)	(2.3)	(2.4)
Housing	23	29	23	29	17	24	31	23	18	23	19	22	22	29	27
	(1.5)	(2.4)	(4.8)	(4.8)	(2.0)	(2.9)	(4.6)	(2.9)	(2.5)	(2.3)	(2.0)	(1.7)	(1.5)	(3.1)	(2.8)
Demand for products	21	21	17	15	20	30	32	23	19	20	16	25	16	31	24
	(1.3)	(2.1)	(2.9)	(3.9)	(1.9)	(1.8)	(5.0)	(2.5)	(1.7)	(2.1)	(1.9)	(1.6)	(1.4)	(2.5)	(2.5)
Safety	10	8	12	3	16	5	2	9	12	9	8	10	10	10	9
	(1.3)	(1.3)	(3.4)	(1.2)	(2.6)	(1.4)	(0.9)	(2.0)	(2.9)	(1.8)	(1.6)	(1.4)	(1.4)	(2.2)	(2.0)
Infrastructure	9	8	8	10	9	12	11	10	9	6	7	8	11	10	12
	(0.8)	(1.4)	(1.9)	(2.2)	(1.3)	(2.0)	(2.1)	(1.3)	(1.8)	(1.2)	(1.3)	(1.0)	(1.2)	(1.8)	(1.9)
Access to land	3	2	3	5	2	6	8	4	2	4	2	4	3	4	3
	(0.5)	(0.7)	(1.2)	(1.6)	(0.6)	(1.3)	(2.1)	(1.0)	(0.7)	(0.8)	(0.6)	(0.7)	(0.6)	(1.2)	(0.8)
Political participation	1	3	0	0	1	2	1	1	0	2	2	1	1	1	1
	(0.3)	(0.8)	(0.3)	(0.1)	(0.3)	(0.9)	(0.7)	(0.6)	(0.1)	(0.5)	(0.7)	(0.3)	(0.2)	(0.4)	(0.6)
Status in community	1	4	0	1	1	1	0	1	1	2	2	1	1	1	0
	(0.3)	(0.9)	(0.2)	(0.5)	(0.6)	(0.4)	(0.0)	(0.4)	(0.6)	(0.7)	(0.5)	(0.3)	(0.4)	(0.7)	(0.3)

Note: MUC stands for Major Urban Centers, OUC for Other Urban Centers, RW for Rural West, RC for Rural Center, RE for Rural East,
RL for Rural Lowland, RM for Rural Midland, RH for Rural Highland, F for Female and M for Male. Standard errors in parentheses.
Source: 2001 TLSS.

2.30   The priorities for Timor-Leste's living standards are broadly in line with individual preferences. The bottom three categories are exactly the same, and the same three categories appear in the top three, even if their internal ranking is reversed. The most striking difference is the emphasis on education as key to national prosperity, listed by seven in ten individuals, compared to only three in ten for personal preferences. Employment, housing, and demand for products are listed by fewer people as national priorities than individual priorities. Overall, this suggests that the immediate individual economic concerns are viewed as less important for the national agenda. In both personal and national rankings, economic and social concerns dominate aspects linked to empowerment, perhaps a reflection of the achievement in this area over the past few years.

Table 2.12: National Priorities for Living Standards

				Geography							Age-gender groups					
										15 - 24		25 - 49		50 plus		
	National	MUC	OUC	RW	RC	RE	RL	RM	RH	F	M	F	M	F	M
Education	70	66	72	75	70	70	75	67	74	71	70	70	73	63	71
	(1.5)	(2.4)	(3.1)	(4.7)	(2.7)	(2.8)	(3.1)	(2.7)	(3.0)	(3.0)	(2.4)	(1.8)	(1.7)	(2.6)	(2.4)
Employment	46	49	47	53	48	36	36	42	51	47	45	45	48	46	44
	(1.9)	(2.9)	(6.0)	(5.2)	(3.0)	(3.4)	(6.4)	(2.6)	(4.0)	(2.8)	(2.9)	(2.2)	(2.3)	(2.9)	(3.2)
Health care	39	23	38	42	42	45	39	44	42	41	39	44	33	43	37
	(1.6)	(3.1)	(2.7)	(5.4)	(2.4)	(3.4)	(6.1)	(2.4)	(3.5)	(2.4)	(2.7)	(2.1)	(2.0)	(2.9)	(2.7)
Safety	20	15	22	13	23	22	20	24	16	16	20	17	21	20	26
	(1.5)	(1.5)	(4.7)	(3.7)	(2.9)	(2.9)	(5.8)	(2.6)	(2.9)	(2.1)	(1.9)	(1.4)	(2.1)	(2.6)	(2.8)
Housing	7	11	6	5	6	8	3	6	7	8	8	7	7	6	5
	(0.6)	(1.2)	(1.0)	(1.8)	(0.9)	(1.4)	(1.7)	(1.1)	(1.1)	(1.3)	(1.2)	(0.9)	(0.9)	(1.3)	(1.0)
Infrastructure	5	10	6	3	4	7	11	5	3	6	6	4	5	7	6
	(0.7)	(1.8)	(2.0)	(1.7)	(0.9)	(1.6)	(3.3)	(1.1)	(0.8)	(1.1)	(1.2)	(0.7)	(0.8)	(1.4)	(1.2)
Demand for products	5	14	4	2	4	4	6	3	3	6	7	5	4	7	4
	(0.6)	(2.1)	(1.3)	(1.3)	(0.9)	(0.7)	(1.8)	(0.8)	(0.9)	(1.0)	(1.4)	(0.7)	(0.7)	(1.3)	(0.8)
Access to land	2	3	2	2	1	6	7	3	1	1	2	3	3	4	3
	(0.4)	(0.7)	(1.3)	(0.9)	(0.3)	(1.3)	(1.9)	(0.9)	(0.2)	(0.5)	(0.5)	(0.6)	(0.6)	(1.1)	(0.8)
Political participation	2	4	2	4	2	1	2	3	1	3	2	2	3	2	2
	(0.5)	(0.7)	(1.2)	(2.6)	(0.5)	(0.5)	(1.4)	(1.3)	(0.4)	(0.6)	(0.6)	(0.5)	(0.6)	(0.7)	(1.3)
Status in community	0	2	1	0	0	0	1	0	0	1	1	0	1	0	0
	(0.1)	(0.6)	(0.4)	(0.1)	(0.1)	(0.1)	(0.5)	(0.1)	(0.1)	(0.3)	(0.4)	(0.1)	(0.2)	(0.1)	(0.2)

Note: MUC stands for Major Urban Centers, OUC for Other Urban Centers, RW for Rural West, RC for Rural Center, RE for Rural East,
  RL for Rural Lowland, RM for Rural Midland, RH for Rural Highland, F for Female and M for Male. Standard errors in parentheses.
Source: 2001 TLSS.

POLICY AND RESEARCH ISSUES

2.31   At the time of Timor Leste's independence, the population feels more empowered compared to Indonesian times, but less secure about its economic well-being. When asked about their economic situation in end 2001 compared to before the violence in 1999, slightly more people believe their economic situation has improved than deteriorated, but the bulk feels little has changed. Remarkably, the poorest families believe their economic well-being has improved. By contrast, seven in eight persons feel they have more power now than before the violence in 1999. Today's entire population says it was empowered as a result of the changes since 1999. The people's assessments confirm that progress has been achieved in safety, political participation, education and status in community, whereas economic factors like housing, demand for products, employment and infrastructure have worsened and remain priorities for the future.

2.32   Two immediate research issues follow from this analysis. First, this chapter focused on subjective indicators. It will be important to assess how this assessment compares to the changes in objective indicators. Second, as Timor-Leste implements post-independence policies, a monitoring of people's perception of policy priorities can provide useful information on the progress in meeting the development challenge.

3. WELFARE PROFILE

INTRODUCTION[35]

3.1   In this chapter, we explain how the poor differ from the non-poor. This information allows us to get a better understanding of who the poor are, and what features separate them from the non-poor. The poverty profile includes information on where the poor live, what they do, how they earn a living, and what their living standards are in terms of health, education and housing. This analysis is important for two reasons. It provides insights on the characteristics of the poor for the design of poverty-reduction programs, and highlights the link of poverty to other dimensions of well-being.

POVERTY MEASURES

3.2   What is the incidence, depth, and severity of poverty in Timor-Leste? Table 3.1 presents standard poverty indicators. Since the poverty rates are based on sampled data, it is important to take into account the standard errors of the estimates.

Table 3.1: National Poverty Rates

Headcount	Poverty Gap	Severity
39.7	11.9	4.9
(2.9)	(1.3)	(0.7)

Note: Standard errors in parentheses.
Source: 2001 TLSS.

3.3   The incidence of poverty in the country as a whole is 39.7 percent, amounting to 329,000 individuals. In other words, two in five individuals in Timor-Leste are not able to cover the food and non-food consumption requirements. This poverty count is a useful statistic, as it is easily understood and focuses the discussion on poverty. However, care has to be taken to take this measure as the exclusive objective of policy. This indicator ignores the distribution among the poor. Policies that reduce the headcount to the detriment on the very poor are unlikely to be desirable. Furthermore, some policies may be welfare improving even though they fail to reduce the poverty headcount. Such policies should clearly be considered, especially as they may improve the lot of those

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[35] This chapter was written by Kaspar Richter.

who are poor by many definitions, but whose consumption places them just above some arbitrary poverty line.

3.4   The poverty gap does not just count the poor, but measures their average consumption shortfall relative to the poverty line. It equals to 11.9 percent. This indicator has a straightforward interpretation. The sum of all poverty gaps across all individuals is the minimum income transfer needed to bring all of the poor just up to the poverty line assuming that the transfer is both perfectly targeted and fully consumed.[36] A poverty gap of 11.9 percent suggests that, under these assumptions, an income transfer of US$1.84 (= 0.119 x national poverty line of US$15.44) per person per month would be required to eliminate poverty. The total annual volume of income transfers necessary to bring all of the poor to an income level just at the poverty line would then be US$18.28 millions (= US$1.84 x 12 months x 825,000 persons)[37]. This is equivalent to around 30% of total spending in the 2001 CFET budget, or close to 5% of GDP.

3.5   The poverty gap is not sensitive to the distribution of consumption among the poor. For example, an income transfer from a very poor to a poor person can leave the poverty gap unaffected. The severity measure of poverty takes such changes into account. It weights the shortfall between an individual's consumption and the poverty line more heavily the further below the poverty line that individual's consumption falls. The drawback of this measure is however that it does not lend itself to an easy interpretation. It is nevertheless useful in comparing the severity of poverty across different subgroups of the population. The severity measure of poverty equals 4.9 percent. Due to its sensitivity to the distribution among the poor, the severity measure reveals differences across population groups that are veiled by the other two poverty measures.

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[36] Perfect targeting implies that each individual below the poverty line would receive a transfer equal to the shortfall of consumption below the poverty line. Assuming that all this income transfer is consumed, all previously poor individuals would then have a consumption level just equal to the poverty line. No individual above the poverty line would receive any transfer.

[37] These are hypothetical numbers, and few developing countries would choose to continue making income transfers to the poor in perpetuity. Perfect targeting impossible in practice, and not all income is consumed. Most importantly, transfers based on the shortfall of consumption (or income) to the poverty line to the poor have significant disincentive effects.

3.6   What is the sensitivity of poverty to shifts in the poverty line? In Figure 3.1 we depict the cumulative distribution function for Timor-Leste for the entire range of monthly per capita consumption levels. It shows that at the poverty line of US$15.44 about 40 percent of the population are poor. It also tells us how poverty would change if another poverty line were selected. We can see that the cumulative distribution function around our poverty line is fairly steep. This implies that even small shifts up or down of the poverty line result in a sizable change in the incidence of poverty.

Figure 3.1: Cumulative distribution of per capita consumption
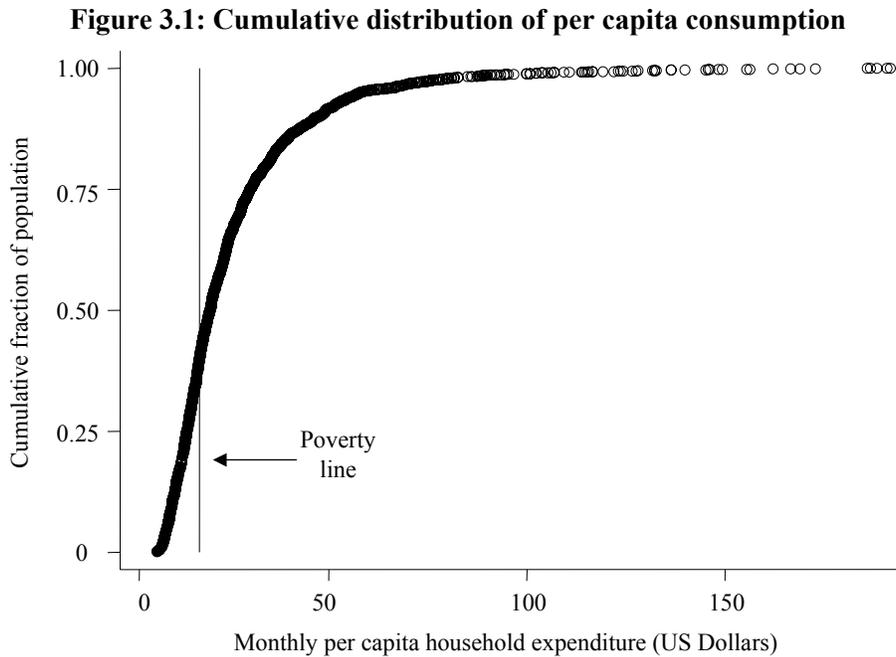
Source: 2001 TLSS.

3.7   The kernel density estimate of per capita expenditure is shown in Figure 3.2. About one seventh of all individuals lie within plus or minus 10 percent of the poverty line, and more than one fifth within plus or minus 25 percent of the poverty. The picture reveals another feature. The mode of this distribution is just below the poverty line,[38] and more probability mass is just below the poverty line than just above it. This implies that poverty rates are more sensitive to a scaling down of the poverty line than to a scaling up. As shown in Table 3.2, while a doubling of the poverty line leads to a doubling in the headcount (from 40 percent to 78 percent), a halving of the poverty line reduces poverty by five sixth (from 40 percent to 7 percent).

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[38] The mode of the density distribution is the point of the highest concentration of the population.

Figure 3.2: Density function of per capita consumption

Poverty
line

0   100

Monthly per capita household expenditure (US Dollars)
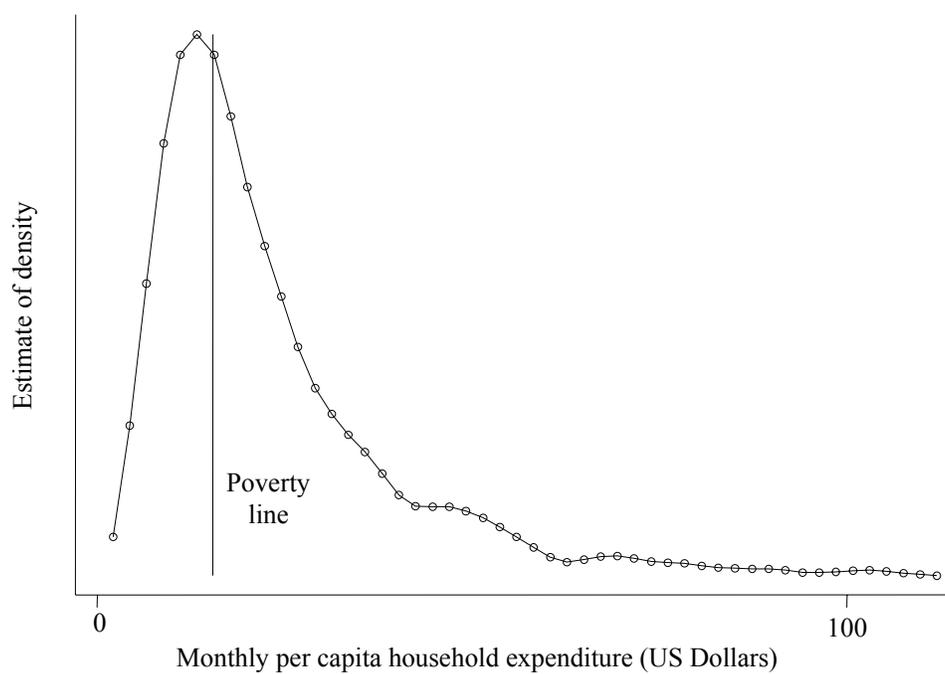
Source: 2001 TLSS.

Table 3.2: Poverty rates at different poverty lines

Scaling of Poverty Line	Headcount (%)
200	77.7
150	64.8
125	53.9
110	46.0
100	39.7
90	32.5
75	21.6
50	7.3

Source: 2001 TLSS.

3.8 What is the sensitivity of poverty to assumptions regarding equivalence scales? Using the per capita measure, poverty increases with household size (see Table 3.3). While fewer than one in ten individuals reside in households with one or two members are poor, this ratio rises to one in two in households with more than five members. The difference can be fairly stark even for small increases in household size. For example, the typical household in Timor-Leste has five to six members. This group represents overall one third of the population, which in turn is divided equally between households with five and households with six members. Yet, poverty in five-member households affects less than two in five persons, while about every other individual in six-member households is poor.

Table 3.3: Poverty and Household Size

	Household size									
	1	2	3	4	5	6	7	8	9	10 plus
Headcount	2.4	8.2	15.5	32.5	38.1	50.2	48.8	47.7	56.5	46.7
	(1.7)	(2.8)	(3.2)	(4.7)	(4.2)	(4.7)	(5.0)	(5.9)	(6.4)	(7.0)
Memorandum items:										
Share in total poor	0.1	1.0	3.9	10.2	16.0	20.6	15.8	13.1	8.8	10.6
Population share	1.1	4.7	9.9	12.5	16.6	16.3	12.8	10.9	6.2	9.0

Note: Standard errors in parentheses.
Source: 2001 TLSS.

3.9 The standard indicator to capture household composition is the age dependency ratio. It is defined as the number of dependents (people younger than 15 and older than 64) to the working-age population (those of ages 15-64), and measures how many dependents there are for each person in the productive age group.[39] For example, the average dependency ratio in Timor-Leste is 1.2. This means that there are 1.2 dependents for every working-age person. As a first cut, Figure 3.3 plots the poverty headcount relative to the age dependency ratio. The figure clearly shows that poverty rises with the dependency ratio.

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[39] Obviously, not every person below 15 and over 65 is a dependent and not every person between ages 15 and 65 is productive, but despite the crudeness of this indicator it is widely used in demographic and poverty studies.

Figure 3.3: Poverty and Household Composition
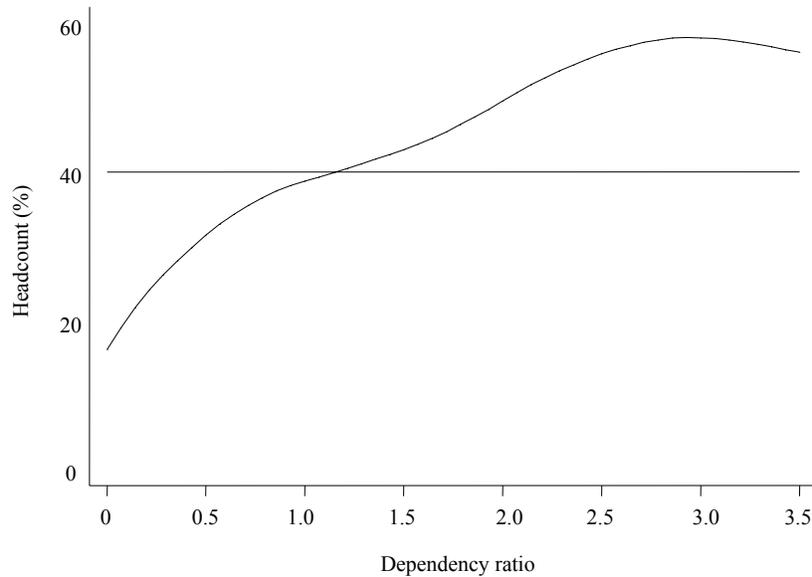
Source: 2001 TLSS.

3.10 The positive correlation between poverty and both household size and dependency ratio is not very surprising. In most cases, an increase in household size implies more children. Thus, larger households are also the ones with higher dependency ratios. As the number of dependents increases relative to earners, there is less income (and consumption) available to each household member and thus more poverty.

3.11 These comparisons are based on per capita consumption as the welfare measure. We converted from a household to an individual basis by dividing total household expenditure by the number of people in the household, and then used total household expenditure per capita as the measure of welfare for each member of the household. However, this in itself is problematic. Various members of a household have differing needs based on their age, sex, and other demographic characteristics, which should be taken into account when comparing their living standards. In particular, children require less of most things, including food, than adults. Furthermore, two persons can live more cheaply together than two can live separately. Calculating 'equivalence scales' becomes an issue of identifying the costs of children relative to adults and the extent of the economies of scale.[40]

3.12 For example, households with no more than five members have per capita expenditures 40 percent higher than households with at least six members, but their total expenditures are 35 percent below those of large households. Without knowing the economies of scale, it is impossible to know which group is poorer. Furthermore, children tend to live in larger households than the prime-aged and the elderly (6.5 members versus

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[40] A third issue concerns the allocation of resources within the household. For lack of better knowledge, our principal assumption is that everyone in the household receives an equal allocation.

5.9 members and 4.7 members, respectively), and in households with a higher fraction of children (57 percent versus 43 percent and 32 percent, respectively),[41] so welfare comparisons depend on the assumptions not just on the economies of scale but also on the relative costs between children and adults.

3.13   To test the impact of equivalence scales on poverty, we derive six consumption measures, corresponding to three values for α and two values for θ in the formula introduced in Chapter 1, Volume II. Figure 3.4 shows for each household size the differences in the poverty headcount relative to a household with five members. While the degree of the sensibility of poverty to household size varies, we find consistently that the headcount increases from one to six household members, and remains fairly stable for households with more than six members. This analysis confirms that, for households with up to six members, larger households tend to be poorer than smaller households, regardless of the precise values for child costs and economies of scale. In this chapter, we routinely conduct this sensitivity analysis, and point out whenever poverty rankings depend on the choice of the equivalence scales.

Figure 3.4: Poverty and Household Size: Equivalence Scales

Source: 2001 TLSS.

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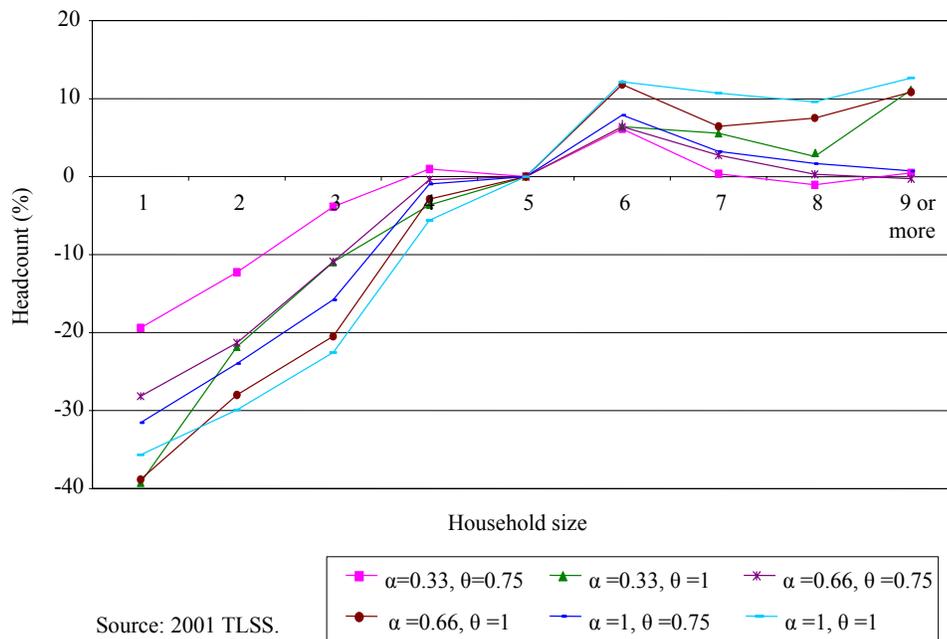
[41] Prime-aged refers here to 15 to 49 years, and elderly to 50 years and older.

3.14   As is well known, geography matters for poverty. Nations in tropical climate and in desert zones generally face higher rates of infectious diseases and lower agricultural productivity than countries in temperate zones. The very poorest nations in the world are burdened by distance from sea trade and a tropical or desert ecology. Geographical differences are also important for living standards across regions within a country. Fertility and slope of the soil, access to coastal regions, and the climate vary from the East to the West, and between lowland and highland, or the seaside and landlocked districts, and these differences affect the economic development of regions.

3.15   There is considerable variation in poverty across geographic characteristics. Table 3.4 shows poverty in relation to the east-west dimension, altitude level, and sea access. Poverty is lowest in the East. For example, the three westernmost districts, Oecussi, Bobonaro, and Cova Lima, are home to one fifth of the population and one quarter of the poor. By contrast, Baucau, Lautem and Viqueque, the three eastern districts, account for one quarter of the population but for less than one fifth of the poor. The ranking is unaffected by allowing for economies of size and differential adult-child needs, even though this reduces the poverty gap between Center, with the highest average household size and children share, and East.

Table 3.4: Poverty and Geography

	National	West	Center	East	Flatland	Midland	Highland	Inland	Seaside
Headcount	39.7	46.4	41.3	30.3	36.0	37.1	44.4	39.7	39.8
	(2.9)	(5.9)	(4.3)	(3.8)	(7.0)	(3.5)	(5.8)	(3.4)	(5.8)
Poverty Gap	11.9	12.7	12.9	8.9	7.7	10.8	14.5	12.0	11.5
	(1.3)	(2.6)	(2.1)	(1.5)	(1.8)	(1.5)	(2.8)	(1.6)	(2.1)
Severity	4.9	4.9	5.5	3.6	2.6	4.4	6.3	5.1	4.5
	(0.7)	(1.3)	(1.1)	(0.7)	(0.7)	(0.7)	(1.5)	(0.8)	(1.0)
Memorandum items:									
Share below PL (%)	100	25	56	19	8	51	41	77	23
Number below PL ('000)	329	82	184	62	26	168	135	254	75
Household size	6.0	5.5	6.4	5.7	6.1	6.0	6.1	6.0	6.1
Dependency ratio (%)	125	120	129	121	111	121	133	126	119
Children (% household size)	45	44	47	43	40	45	48	46	44
Age of household head	44	44	43	45	44	43	44	44	42
Male household head (%)	90	88	91	89	90	90	90	90	90
Urbanization (%)	24	18	29	18	28	33	9	20	35

Note: Standard errors in parentheses.
Source: 2001 TLSS.

3.16   Poverty also varies by level of altitude above sea level. The poverty incidence in highlands, above 500 meters of altitude, is about 5 percent higher than the national average, whereas in Flatland, up to 100 meters of altitude, poverty is almost 4 percent below the national poverty headcount. Assuming a need discount for children relative to adults, the poverty differential between Highland and the other the lower altitude levels would rise. Finally, Coast and Inland have similar poverty rates, regardless of the choice of equivalence scales.

3.17   These geographical patterns are partly, but not entirely, a reflection of the degree of urbanization (see Table 3.5). In line with experience in other developing countries, poverty in rural areas is higher than in urban areas, irrespective of the choice of equivalence scales. Rural dwellers experience almost 20 percent additional poverty than urban citizens. Since three quarters of the population reside in rural areas, poverty is overwhelmingly a rural phenomenon: six in seven of the poor live in rural areas, amounting to 280,000 persons.

3.18   In view of this evidence, we should expect more rural geographic areas to have higher poverty than more urban areas. This link is borne out when with regard to the altitude dimension. Highland is poorer and more rural than the rest of the country. More than nine in ten people in Highland live in rural areas, compared to only about seven in ten people in Flat- and Midland. However, urbanization does not account well for the geographical groupings. East is more rural than Center (82 percent versus 71 percent) but still is less poor. Similarly, landlocked sucos are more rural than coastal sucos (80 percent versus 65 percent) yet poverty is similar.

Table 3.5: Poverty by Analytical Domains

	National	Urban	Rural	Urban		Rural			Rural			Rural	
				Major	Other	West	Center	East	Flat	Mid	High	Inland	Seaside
Headcount	39.7	24.8	44.3	13.9	38.4	47.5	49.3	32.0	46.5	42.8	45.4	43.0	49.8
	(2.9)	(3.1)	(3.6)	(2.8)	(6.1)	(7.1)	(5.7)	(4.3)	(7.9)	(4.8)	(6.2)	(4.1)	(7.6)
Poverty Gap	11.9	6.5	13.5	3.8	10.0	13.2	15.8	9.4	10.4	12.8	14.9	13.3	14.2
	(1.3)	(1.1)	(1.7)	(1.0)	(2.2)	(3.2)	(2.8)	(1.7)	(2.2)	(2.1)	(3.0)	(2.0)	(2.9)
Severity	4.9	2.6	5.7	1.6	3.7	5.2	6.9	3.8	3.6	5.3	6.5	5.7	5.6
	(0.7)	(0.5)	(0.9)	(0.5)	(1.0)	(1.6)	(1.5)	(0.8)	(0.9)	(1.0)	(1.6)	(1.0)	(1.4)
Memorandum items:													
Share below PL (%)	100	85.3	14.7	4.6	10.1	21.4	47.5	16.4	9.2	46.4	44.4	78.3	21.7
Household size	6.0	6.6	5.9	7.3	5.8	5.5	6.2	5.5	5.7	5.7	6.0	5.9	5.8
Dependency ratio (%)	125	109	130	102	117	123	139	117	123	139	117	130	128
Children (% household size)	45	42	46	41	43	45	49	43	45	49	43	47	45
Age of household head	44	43	44	42	44	44	43	45	44	43	45	44	43
Male household head (%)	90	91	90	91	90	88	91	89	88	91	89	90	89

Note: Standard errors in parentheses.
Source: 2001 TLSS.

3.19   How does the regional breakdown change when we separate out rural from urban areas? Within urban sucos, poverty is higher in urban conglomerations than in the two largest cities. In Dili and Baucau, poverty affects only one in seven people, compared to almost four in ten people in other urban centers. The larger household size in urban areas suggests that the differences would be even starker if we assumed economies of size. In rural areas, just as for the whole country, Center and West are poorer than East. Rural Center is the most populous and home to almost half of the poor in the country, but its ranking relative to Rural West depends on the choice of equivalence scales. Turning to the altitude dimension, there are little differences between Flat-, Mid- and Highland, with either Flat- or Highland coming out as the poorest domain depending on the choice of equivalence scales. Due to its high population density, Rural Midland accounts for close to one in two poor persons. Finally, poverty differences between Rural Coast and Rural Inland are insignificant.

Figure 3.5: First Order Dominance Results
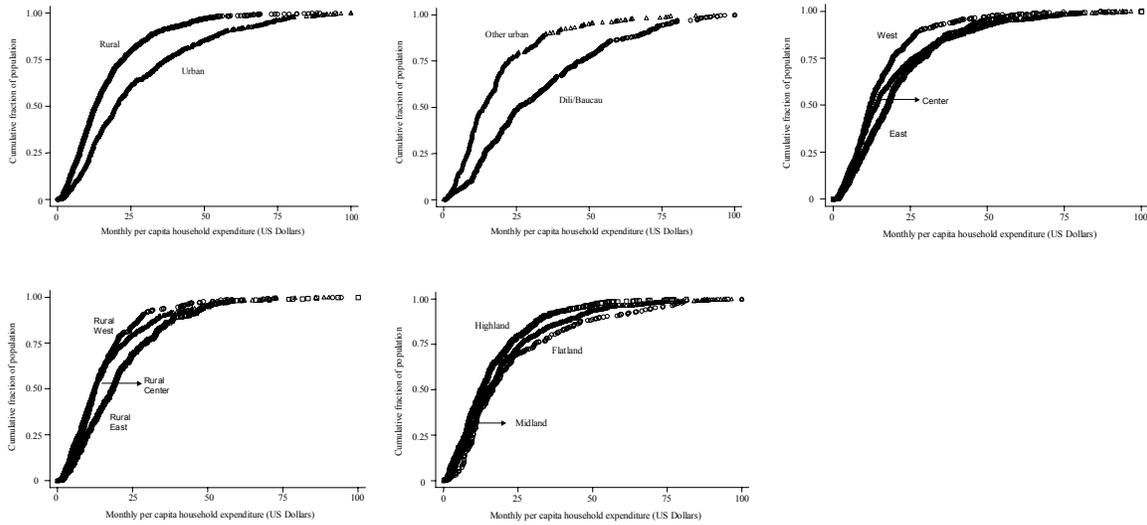
Source: 2001 TLSS.

3.20   Before we turn to the other poverty measures, we can use this concept of first-order stochastic dominance (see 1.22) to firm up these findings. In Figure 3.5, we display the five sets of cumulative density functions. They show that these rankings generalize over the range of poverty lines up to US$100, the 99th percentile of the per capita expenditure distribution:

- Rural areas are poorer than urban areas;

- Other Urban Centers are poorer than Major Urban Centers;

- East and Rural East are the least poor; and

- Highland, but not Rural Highland, is the least poor.

3.21   These patterns are broadly confirmed when we turn to other poverty measures that capture the shortfall and distribution of consumption among the poor. While the gap between the two main cities and other urban center shrinks, the geographical poverty profile is sharper along most dimensions. Overall, the sensitivity analysis with regard to equivalence scales results in these regularities:

- Rural areas are substantially poorer than urban areas;

- Other Urban Centers are substantially poorer than Dili and Baucau, the two major urban cities;

- East is the least poor, while the ranking between Center and West is ambiguous; the same applies for the corresponding rural areas;

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- Nationwide, Highland is the poorest region, while the ranking between Midland and Flatland is ambiguous; in rural areas, Highland is poorest, and Flatland the least poor using the poverty gap and severity measures, while the ranking is ambiguous for the headcount index;

- Coast and Inland, cannot be ranked unambiguously, either in the country as a whole or in rural areas only; using severity of poverty, Inland is unambiguously poorer than Coast nationwide, but not in rural areas only.

LIFE CYCLE

3.22   How does poverty vary for different age groups? For example, is the fraction of children in poverty higher than that of the elderly? This assessment has obvious implications for the policy agenda and the design of welfare programs, trading off support for elderly with assistance to families with children.

Table 3.6: Poverty and Demographic Groups

	Children	Prime-Aged	Elderly
Headcount	45.4	35.6	32.2
	(3.2)	(2.7)	(3.3)
Poverty Gap	13.9	10.5	9.0
	(1.6)	(1.2)	(1.3)
Severity	5.8	4.3	3.6
	(0.8)	(0.6)	(0.6)
Memorandum items:			
Population share	45	43	11

Note: Standard errors in parentheses.
Source: 2001 TLSS.

3.23   To provide empirical evidence on this issue, we classify the population into three groups: children, aged from zero to less than 15; prime-aged adults, aged from 15 to 49; and the elderly, aged 50 and older.[42] Children and prime-age adults account both for over 4 in 10 individuals, while the elderly represent just over 1 in 10 individuals. The statistics are derived on an individual basis whereby the welfare measure that is calculated for a household gets assigned to each individual in that household. Table 3.6 shows the various poverty measures for the basic welfare measure. We find consistently that children are poorest, while the elderly are least poor. Prime-age individuals rank in-between these two groups.

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[42] Note that for the group of the elderly we have chosen a lower age limit than for the calculation of the dependency ratio (50 years rather than 65 years).

Figure 3.6: Poverty and Demographic Groups: Equivalence Scales
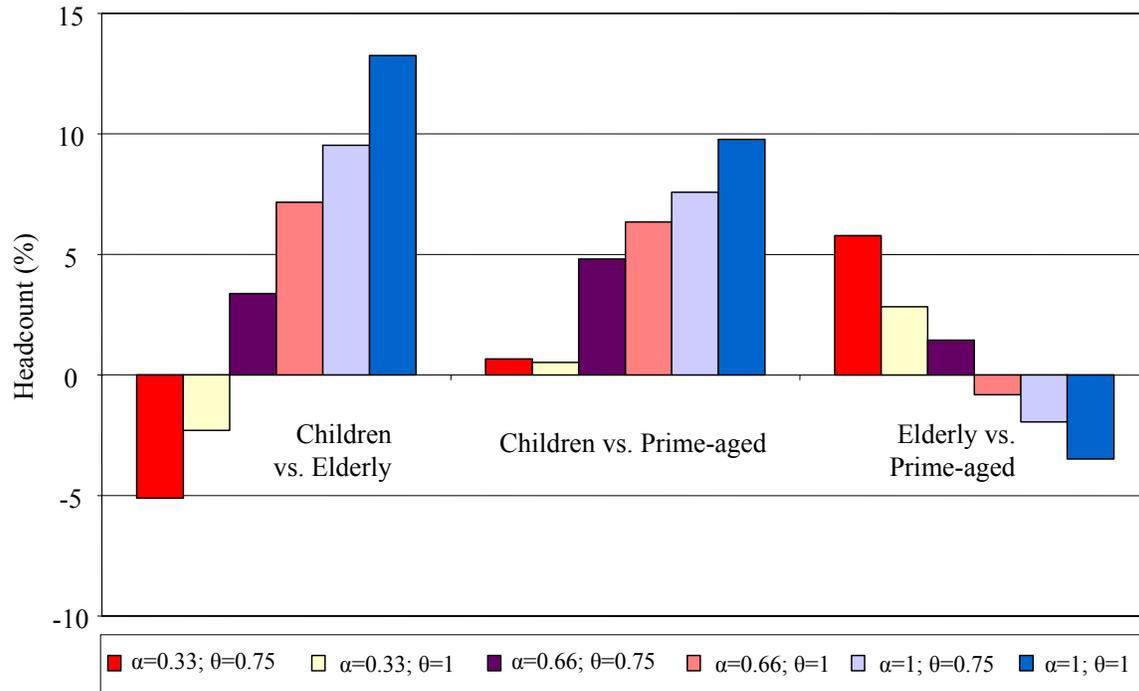
Source: 2001 TLSS.

3.24   We now use the graphical tools introduced in previous sections and examine the sensitivity of welfare comparisons to assumptions about needs.[43] In Figure 3.6, we show what happens to the differences in poverty headcount rates for these three demographic groups under the different assumptions regarding child costs and economies of scales. Starting with the comparison of children versus elderly, we see that the poverty ranking depends on the choice of the parameters. Our basic welfare measure, which assumes children are equally costly than adults and economies of scales are absent, shows the highest difference. By reducing the costs of children (lowering α) and/or introducing economies of scale (lowering θ), the gap in the poverty headcount dwindles, and becomes negative once α is as low as 0.33. Children live in larger households than elderly. As a result, the measured welfare of children is increased by allowing either for the lower cost of children or for economies of scale, or both. Since elderly live with fewer children and in smaller households, they benefit less from such adjustments. In consequence, the position of the elderly relative to children worsens the lower are the costs of children and the higher are the economies of scale.

3.25   Turning to the gap in poverty headcounts between children and prime-aged adults, we find that children are consistently poorer for all six parameters. However, the gap reduces from close to 10 percent to as little as 0.5 percent, once we allow for economies

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[43] Our approach can be thought of as a parametric alternative to the methodology developed by Atkinson and Bourguignon (1987). Their stochastic dominance approach is however unsuited to making comparisons between families with different compositions in a single distribution.

of scale and reduced child costs. Finally, the elderly are poorer than the prime-aged only as long as both child costs are high enough and economies of scales low enough.

3.26   Prime-aged adults are less poor than children for all the equivalence scales under consideration. Nevertheless, the quantitative difference in poverty varies depending on the parameter values, and becomes smaller as we allow for lower child costs and higher economies of scale. Again, this result derives from the fact that prime-aged adults live in smaller households than children. Finally, as prime-aged adults live in larger families than elderly, the ranking of elderly relative to prime-aged adults depends again on the assumptions for equivalence scales: prime-aged adults are worse off than elderly unless we assume sufficiently low child cost and high economies of scales.

CHARACTERISTICS OF THE HOUSEHOLD HEAD

3.27   As highlighted in the previous section, households differ widely in terms of size and composition. In order to compare poverty across households, we have to find a simple way of classifying households. A standard approach is to categorize households by the characteristics of the household head.[44] The head is in most cases the main provider, and his or her characteristics are of special importance to the well-being of the entire household. The head's features are also indicative of characteristics of the household in general, including size and composition. For example, a prime-age male household head is likely to be married and to live with children. In this section, we study the link of age, education, and employment of the household head with poverty.

Age

3.28   Poverty is linked to the age of the household head. In Table 3.7, we separate households into three groups depending on the age of the household head, using 30 years and 50 years as cutoffs. We focus on male-headed households, which cover nine in ten of persons. The bulk of the individuals lives in households headed by a prime-age adult, and almost two in three individuals live in families whose household head is between 30 to 50 years old. Poverty first increases as we move from young prime-age adults to old prime-age adults, and then drops off at old age, but stays above the level at young prime-age. The pattern is consistent across all three measures, and the differences are significant for the severity of poverty. Two issues remain. As to be expected, household demographics vary strongly across these groups. Households grow in size and dependency ratio as the household head ages, before they again shrink once children set up their own families. In addition, the averaging within age groups may cover up important differences within categories.

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[44] The identity of the household head was established by household members at the beginning of the TLSS interviews.

Table 3.7: Age of Household Head and Poverty

	15 - 29	30 - 49	50 plus
Headcount	29.2	43.2	40.9
	(4.1)	(3.5)	(3.9)
Poverty Gap	7.9	13.8	11.1
	(1.6)	(1.7)	(1.4)
Severity	3.1	5.9	4.3
	(0.8)	(0.9)	(0.7)
Memorandum items:			
Household size	4.6	6.7	6.1
Dependency ratio (%)	95	147	92
Children (% household size)	41	53	34
Age of household head	26	39	59
Population share	29	59	13

Note: Standard errors in parentheses.
Source: 2001 TLSS.

3.29   Figure 3.7 plots the poverty headcount relative to the age of the household head for the six combinations of equivalence scales. A number of findings stand out. First, regardless of the equivalence scale, poverty first drops at young age, then rises until between 45 to 55, and then drops off, before it rises again at old age. The grouping displayed in Table 3.7 therefore failed to capture the drop at young age and rise at old age. Second, poverty is lowest across all measures at some point between 18 to 28, and, on average, lowest at young prime-age. Third, the ranking between old prime-age and old age depends on the choice of the equivalence scales. Fourth, poverty is highest at young, middle- and old age, and there is no clear ranking across these three age brackets.

Figure 3.7: Poverty and Age of Household Head: Equivalence Scales

Source: 2001 TLSS.

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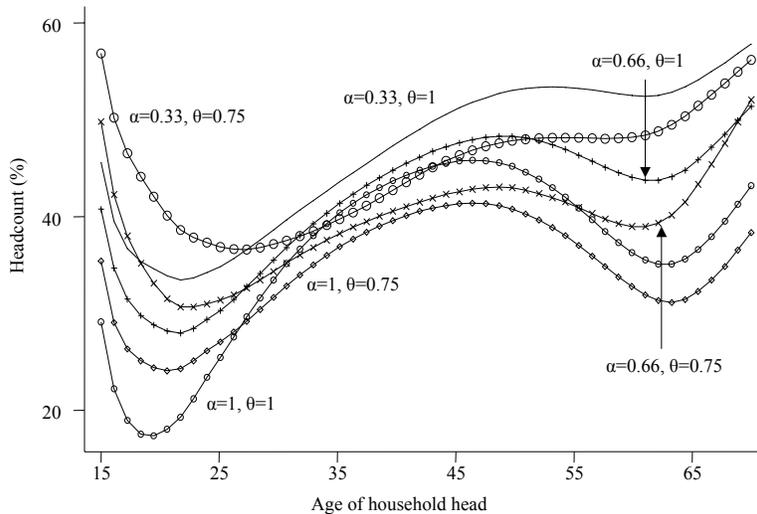
3.30   How does this picture differ for female headed households? Figure 3.8 shows that the broad age pattern observed for male headship caries over to female headship. Poverty is lowest at young prime-age, and it is not possible to rank old prime-age and old age. However, there is no evidence for a poverty hike at young age.

Figure 3.8: Poverty, Age and Gender of Household Head
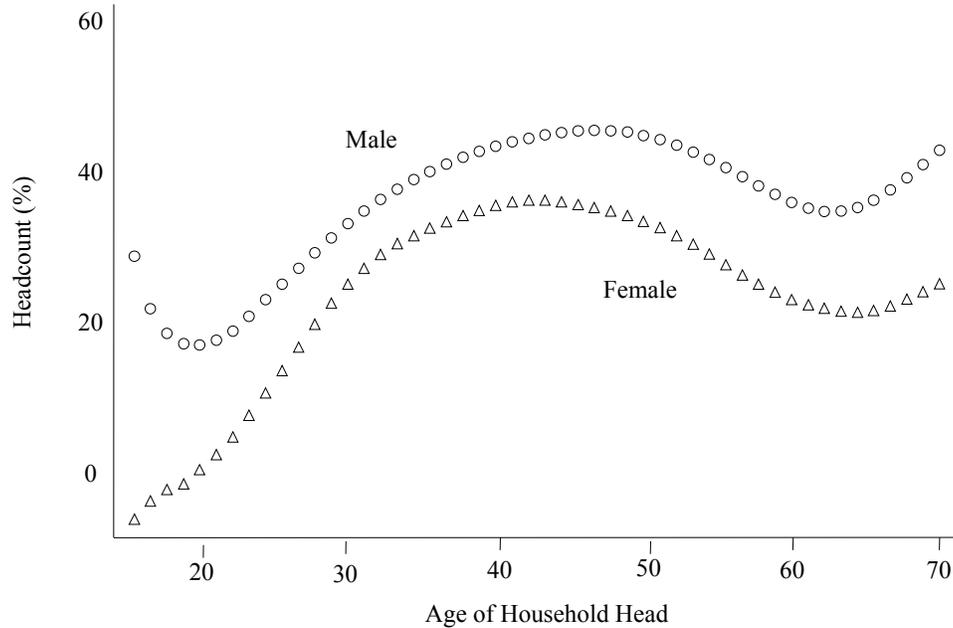
Source: 2001 TLSS.

Education

3.31   All over the world, education is an important predictor of poverty. The household survey collected information on school attendance, grade level completed, and the ability to read and write. School attendance is highly correlated with literacy, making a separate analysis of these variables redundant.[45] In the following, we will focus on grade level completed as education indicator, subsuming those never attending school under the lowest grade category.

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[45] About 97 percent of those who did not attend school say they are illiterate, while 98 percent of those attending school claim to be literate. Ability to read and write relies on self-reporting of the individuals, rather than testing. This may explain the high correlation between literacy and attendance.

Table 3.8: School Grade Completed of Household Head and Poverty (%)

	None or Pre-school	Primary	Junior Secondary	Senior Secondary	Tertiary
Headcount	47.4	36.5	31.6	13.8	5.6
	(3.4)	(4.0)	(5.4)	(2.7)	(4.0)
Poverty Gap	14.4	11.1	8.4	3.2	0.4
	(1.6)	(1.7)	(1.8)	(1.0)	(0.3)
Severity	6.09	4.52	3.26	1.17	0.04
	(0.9)	(0.8)	(0.8)	(0.5)	(0.0)
Memorandum items:					
Household size	5.8	6.8	6.0	5.9	5.9
Dependency ratio (%)	118	142	128	121	93
Children (% household size)	42	51	48	47	39
Age of household head	48	40	34	35	35
Male household head (%)	85	97	97	97	97
Population share	57	23	8	10	1

Note: Standard errors in parentheses.
Source: 2001 TLSS.

3.32   In Table 3.8, we show the standard poverty statistics by grade completed, in addition to information on household demographics and characteristics of the household head. A number of features stand out. First, education levels of household heads are low. Close to three in five individuals live in households where the household head has not completed primary education. No more than one in five have a household head who has finished at least junior secondary education. Second, as expected, poverty is declining with the education level of the household head. For example, close to one in two persons are poor in families where the head has not completed primary education. This compares to less than one in seven where the head has at least senior secondary education. Third, the monotonic decrease in poverty headcounts by grade completed does not depend on the choice of equivalence scales over the plausible range of values.[46]

3.33   Finally, the average age of the household head drops as we move from none or pre-school to secondary or tertiary education. This reflects the general increase in school enrollment and attainment over the last decades. The average grade level completed of household heads is highest for the 20 to 30 year olds, and declines quickly for older household heads.

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[46] Allowing for economies of size of 25 percent keeps the ranking unaffected, but the gap in poverty rates between primary and junior secondary levels is no longer statistically significant.

Employment

3.34   Jobs and income generation are at the core of the livelihood of families around the world. High output growth rates, together with large labor absorption rates and successive improvements in skills have been associated with rapid poverty reduction, as exemplified by many East Asian countries, including China, South Korea, Singapore, Taiwan, and Thailand.

3.35   In Timor-Leste, the challenge of sustainable employment creation is especially urgent in view of the recent legacy. Many workers had formal employment in the bloated Indonesian public sector before 1999. The vast majority of these jobs disappeared with the move towards independence. Today, un- and underemployment, resulting from a loss of formal employment, is a concern for many people in Timor-Leste. Instead, most families depend fully on farming (cultivation, animal husbandry, forestry, and aquaculture), and only few can supplement this income with receipts from household businesses.

3.36   What is the link between poverty and employment status of the household head? Table 3.9 shows the usual poverty statistics and information on selected household demographics. We limit our attention to heads in the age bracket from 15 to 64, typically considered as the economically active phase in life. The first two columns group households depending on whether the head participates in the labor force.[47] About nine in ten persons live with heads that are active in the labor force. Unsurprisingly, they experience lower poverty than those with head's who are not active. The differences are large enough to be statistically significant and robust to changes in the equivalence scale.

3.37   Economic activity can be of different types. In the next four columns, we distinguish four broad categories: self-employment in agriculture (household farm); self-employment in non-agriculture, like food stall or tailor shop (household business); remunerated work as an employee for somebody else; and the residual category. Almost seven in ten individuals live with heads that, over the course of the last 12 months, have only worked on their farm. Almost half of them are poor. For one in ten individuals, household resources were at least partly gained from a household business (but not from remunerated employment), and for one in seven from wage employment. These two groups experiences substantially less poverty, with less than two in ten falling below the poverty line. Finally, the last group contains heads that are not pursuing any of these three activities, living off accumulated wealth. They are worse off than those engaged in remunerated employment or household businesses, but still far better off than heads who dependent entirely on farming. While there are some demographic differences across these four groupings, the ranking is robust to changes in equivalence scales.

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[47] According to the definition of the International Labor Organization, a person participates in the labor force if, during the last seven days preceding the survey, she worked for at least one hour, did not worked but had a permanent job, or did not work but was looking for a job.

Table 3.9: Employment of Household Head and Poverty (%)

	Labor Force Participation		Type of employment				Main occupation					
	No	Yes	Household farm	Wage employment	Household business	Other	Farmer	Non-farm worker	Trader	Civil servant, teacher	Housewife	Other
Headcount	47.3	38.6	48.2	18.7	17.0	27.2	44.9	26.0	12.0	13.6	39.4	22.9
	(5.8)	(2.9)	(3.4)	(3.5)	(3.8)	(5.7)	(3.3)	(7.4)	(6.8)	(4.5)	(10.4)	(4.0)
Poverty Gap	14.6	11.6	15.0	4.6	3.7	6.9	13.8	4.3	1.9	3.6	11.8	6.6
	(2.5)	(1.3)	(1.7)	(1.1)	(1.0)	(1.7)	(1.6)	(1.7)	(1.2)	(1.4)	(4.3)	(1.4)
Severity	6.06	4.84	6.36	1.80	1.19	2.7	5.83	1.41	0.49	1.23	4.8	2.66
	(1.2)	(0.7)	(0.9)	(0.5)	(0.4)	(0.8)	(0.8)	(0.8)	(0.3)	(0.6)	(2.1)	(0.6)
Memorandum items:												
Household size	6.0	6.1	5.9	7.0	6.4	6.0	6.0	7.6	6.2	6.5	4.8	6.8
Dependency ratio (%)	100	126	128	132	114	66	127	131	102	135	110	90
Children (% household size)	38	48	48	49	46	29	48	51	42	50	38	37
Age of household head	47	41	42	38	40	50	42	38	40	38	48	43
Male household head (%)	72	93	92	97	90	67	93	100	83	97	17	83
Urban (%)	29	23	13	52	39	51	13	55	71	51	34	68
Population share	11	89	70	15	10	6	78	4	3	5	2	9

Note: Standard errors in parentheses.

Source: 2001 TLSS.

3.38   Finally, as a third cut at the link between poverty and head's employment, we categorize households according to the heads' occupation. It confirms the picture obtained so far. First, most people in Timor-Leste depend foremost on agriculture. Over three quarters live with heads whose main occupation is farming. While there is likely to be substantial variation in this group's living standards, these households are on average poorer than any of the other categories. The only exception is the small group of those just pursuing work at home, who, depending on the choice of equivalence scale, experience similar levels of poverty. Second, poverty is lowest for civil servants, teachers, and traders. Non-farm workers rank in-between, although allowing for economies of size would all but wipe out the poverty gap to civil servants and teachers.

ASSETS

3.39   While farming income and job earnings move families toward self-sufficiency, opening the door to acquiring assets is the key to their achieving economic security. Assets are an insurance against economic uncertainty and a way of preparing for future expenses. In Timor-Leste, the most important material assets are land and livestock.

Land

3.40   Land is the most important factor of production in agriculture, the primary source of income for three quarters of population. It is also essential for accessing credit markets, in accumulating wealth and transferring it from one generation to the next. Land access is determined by a traditional system of land tenure, with modern notions of ownership rights emerging only slowly. Households claim to own about 95 percent of the land under their control. Four fifths of this land was inherited, and two thirds are held on the basis of customary right. In spite of the legacy of frequent legal regime shift during the second half of the twentieth century, only 4 percent of the land plots are disputed according to the land cultivators.

Table 3.10: Land characteristics among Land Holders

	Urban		Rural		
	Major	Other	West	Center	East
Land size:					
Number of plots (#)	0.06	0.27	0.27	0.34	0.32
	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)
Average plot size	2.45	1.10	1.13	1.05	1.02
	(0.09)	(0.12)	(0.05)	(0.09)	(0.06)
Land holding	0.06	0.26	0.29	0.32	0.27
	(0.01)	(0.04)	(0.03)	(0.04)	(0.02)
Operated	0.06	0.23	0.26	0.30	0.26
	(0.01)	(0.03)	(0.02)	(0.03)	(0.02)
Land tenure:					
Owned	0.06	0.25	0.27	0.30	0.25
	(0.01)	(0.04)	(0.02)	(0.03)	(0.02)
Inherited	0.04	0.21	0.23	0.25	0.21
	(0.01)	(0.03)	(0.02)	(0.03)	(0.02)
Customary right	0.05	0.22	0.23	0.26	0.23
	(0.01)	(0.03)	(0.02)	(0.03)	(0.02)
Ownership disputed	0.00	0.01	0.01	0.01	0.01
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Land quality:					
Irrigated	0.01	0.04	0.04	0.06	0.05
	(0.00)	(0.01)	(0.01)	(0.01)	(0.01)
Flat slope	0.02	0.12	0.14	0.12	0.11
	(0.01)	(0.02)	(0.02)	(0.02)	(0.01)
Slight slope	0.02	0.09	0.10	0.12	0.10
	(0.01)	(0.01)	(0.02)	(0.02)	(0.01)
Moderate slope	0.01	0.03	0.03	0.05	0.04
	(0.00)	(0.01)	(0.00)	(0.01)	(0.01)
Steep slope	0.01	0.02	0.03	0.03	0.02
	(0.00)	(0.00)	(0.01)	(0.01)	(0.00)

Note: Standard errors in parentheses. Three observations with per capita land holdings exceeding 100 ha were excluded.
Source: 2001 TLSS.

3.41   Land holdings are widespread: six in seven persons live in a household with access to land (see Table 3.10). Among those with land access, land holdings are typically limited to one or two plots. Only one in ten persons live in households with more than two land plots. Furthermore, the size of land holdings is very small: the median area per person is only 0.22 hectares, and fewer than one in twenty persons with land access hold more than one hectare. Families make full use of their land holdings:

almost 95 percent of the land was cultivated over the last year. The quality of the land varies widely. About one fifth is irrigated in any form, and less than two fifths are flat.

3.42   As expected, there is a wide urban-rural gap. While only one in twenty rural dwellers have no land access, almost half of the urban population does not cultivate any land. Overall, more than six in seven persons holding land live in rural areas. Among households holding land, rural dwellers have twice as many land plots per capita than urban dwellers. This is only partly offset through smaller plot sizes, so that on average rural dwellers have access to 70 percent more land than urban citizens. Furthermore, land cultivated by rural dweller is of higher quality: it is more likely to be irrigated (over one fifth compared to less than one seventh) and of flat slope (two fifth compared to less than one third).

Table 3.11: Land access and Poverty

	Rural		Urban	
	No	Yes	No	Yes
Headcount	21.1	45.4	8.7	37.8
	(7.6)	(3.7)	(1.9)	(4.8)
Poverty Gap	6.1	13.8	1.3	10.8
	(2.4)	(1.8)	(0.3)	(1.8)
Severity	2.13	5.83	0.37	4.33
	(0.9)	(0.9)	(0.1)	(0.9)
Memorandum items:				
Household size	4.6	5.9	7.2	6.2
Dependency ratio (%)	122	130	97	118
Children (% household size)	39	47	40	44
Age of household head	44	44	41	45
Male household head (%)	66	91	91	91
Population share	4	73	11	13

Note: Standard errors in parentheses.
Source: 2001 TLSS.

3.43   How does land access correlated with poverty? Table 3.11 gives the standard poverty statistics and some household characteristics, broken down by rural and urban areas, and by land access. Two salient points stand out. First, both in rural and urban areas, those without land access are less poor than those with land access. This pattern holds up for different assumptions on equivalence scales, even though the gap in poverty rates is somewhat reduced in rural areas once we allow for economies of size. This confirms an earlier finding that the capability to rely on non-farm sources of income is in general associated with low poverty. Second, rural areas are poorer than urban areas, both for those with and without land access. This is surprising considering that rural farmers have more land and land of higher quality than urban farmers. It suggests that urban

farmers either find ways to boost agricultural yields or that the poverty differential is due to non-agricultural earning opportunities in the urban sector that also benefit the farming households.

3.44   In order to investigate the relationship between poverty and land size among the land holders, we turn to Figure 3.9. It depicts the link between the poverty headcount and per capita land size up to one hectare, which covers 95 percent of the land holding population. For per capita land size of less than 0.4 ha, poverty is higher in rural than in urban areas, while the ranking reverses for larger land holdings. More importantly, poverty decreases with larger land size, both in urban and rural areas: as expected, more land is linked to lower poverty.

Figure 3.9: Poverty and Land Size: Rural versus Urban
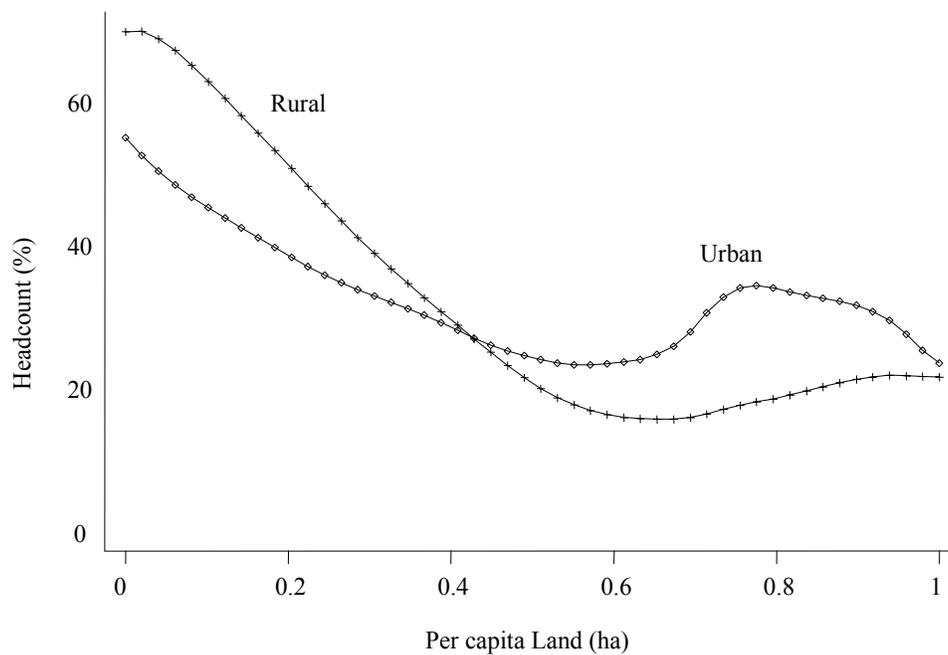
Source: 2001 TLSS.

3.45   An alternative measure of land holding is the farmer's estimated sales value. Among the land holders, the median per capita value is US$360, more than twice their median per capita expenditure, and one in ten land holders estimate this value to be in excess of US$1,700. Rural land holdings are about one quarter more valuable than urban land holdings, reflecting both larger land plots and higher quality.[48] The relationship between land value per capita and poverty among land holders is shown in Figure 3.10. The pattern confirms the previous findings. Poverty declines in both urban and rural areas, and rural poverty is lower than urban poverty at very high level of land assets.

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[48] The median evaluation of land per hectare is about US$1,640 in rural areas, compared to US$1,450 in urban areas.

Figure 3.10: Poverty and Land Value: Rural versus Urban
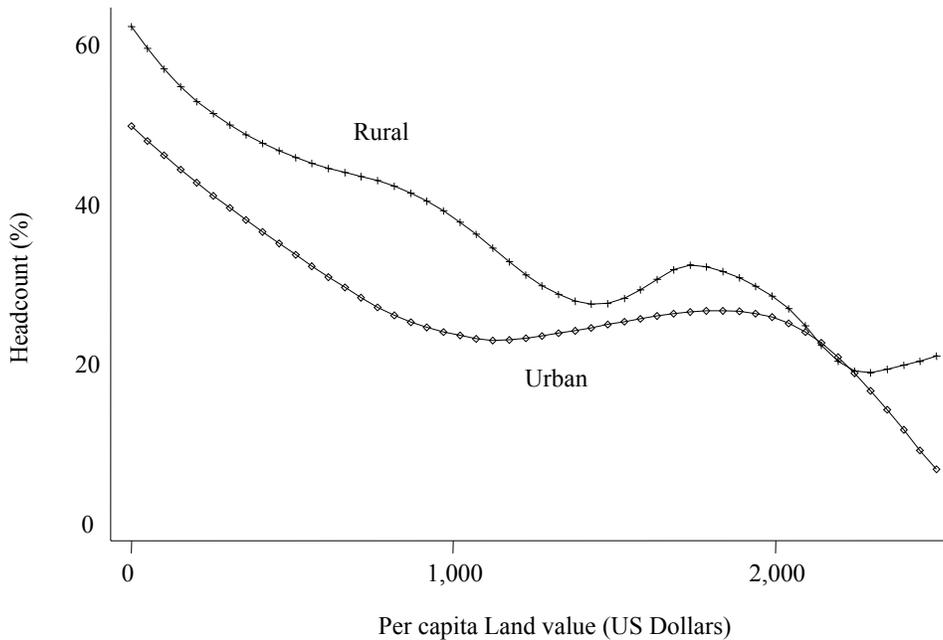
Source: 2001 TLSS.

Livestock

3.46   Apart from land and housing, the most important asset of households in Timor-Leste is livestock. Cattle, pigs, chicken, and other animals are life-enhancing and life-supporting, feeding both people and soils. For many, livestock is one of the few means of asset creation and escaping poverty. They reproduce themselves under even the harshest conditions, growing not only on rangelands but also on and near croplands. They convert organic materials indigestible by people into human food of the highest quality. They provide nutrient (manure production) and financial (dairy income) resources, acting as catalysts that bolster the viability and health of smallholder farming systems as a whole.

3.47   Most households in Timor-Leste hold animals. Chicken, pigs, and goats are widespread, but even horses, cows, and buffalos can be found in large parts of the country. According to farmers' estimation,[49] grown-up animals are between two to four time more valuable than young animals, and cattle is more pricey than small animals. Buffalos, bali cows, and cows fetch prices in excess of US$200, while chicken and ducks cost no more than US$5.

3.48   In rural areas, animals are a common feature of household farms. Nine in ten rural dwellers live in households with animals. Their numbers is almost twice the size of the rural population, suggesting that animals play an important role in sustaining rural

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[49] The questionnaire asked farmers to estimate the sales price of the animals, separating young and old animals. To clean these valuations from farmer-specific variations, we based the assessment of livestock holding on the median price estimate of the entire livestock holding population.

livelihood. Livestock is worth about US$100 per capita, or about four times the per capita expenditures. However, this figure hides substantial variations. One in ten rural dwellers live in households whose per capita livestock holdings exceed US$200 and for one in hundred have more than US$1,000. Livestock is not just widespread in rural areas. In cities, seven in ten persons live with animals, and the total number of animals exceeds those of the urban population by 30 percent. However, the value of livestock is only about half of the number in rural areas.

Table 3.12: Livestock Holdings

	Rural				Urban			
	All		Livestock holders		All		Livestock holders	
	%	US Dollars	#	US Dollars	%	US Dollars	#	US Dollars
Buffalo	11	37.1	1.33	329.4	8	22.6	1.32	298.4
Bali cow	1	3.6	0.98	289.4	0	0.0	0	0.0
Cow	13	36.6	0.97	290.8	5	11.4	0.55	210.1
Horse	22	37.3	0.37	170.2	7	10.3	0.38	143.9
Pig	72	75.6	0.54	104.7	57	52.1	0.54	91.5
Goat	11	7.2	0.92	65.3	11	8.7	0.85	79.7
Sheep	2	1.3	2.16	78.0	1	0.5	2.03	65.0
Chicken	80	5.9	1.29	7.4	54	4.2	1.20	7.8
Duck	1	0.1	0.47	7.1	2	0.1	0.55	6.0
Other	6	0.8	0.51	13.2	5	0.9	0.38	17.9
All animals	90	205.4	2.2	228.8	71	110.9	1.8	155.4

Note: All Rupiah values from the survey were converted to US Dollars using an exchange rate of 10,000 Rupiah/US Dollar.
Source: 2001 TLSS.

3.49   Is the livelihood of farmers and their dependents linked to animal assets? Table 3.13 contrasts poverty statistics for both rural and urban areas depending on whether households keep livestock. We find evidence of a divide between rural and urban environments, and the results are unaffected by changes in equivalence scales. In cities, livestock holding is associated with substantially higher poverty, while in rural areas it is linked to somewhat lower poverty. Furthermore, urban living standards are higher than rural: urban dwellers with livestock are less poor than rural dwellers. Both the intra-urban and the urban-rural poverty gap suggest that activities outside agriculture and livestock production are the key driver to reduce poverty. In contrast, the inverse rural pattern indicates that in an environment, where a dependency on farming activities is essentially inevitable, the holding of livestock is a sign of prosperity.

Table 3.13: Livestock Holdings and Poverty

	Urban		Rural	
	No	Yes	No	Yes
Headcount	12.2	29.8	52.6	43.3
	(3.2)	(3.9)	(8.6)	(3.6)
Poverty Gap	2.7	8.0	18.7	12.9
	(0.8)	(1.4)	(3.6)	(1.7)
Severity	1.00	3.18	8.43	5.34
	(0.4)	(0.7)	(1.7)	(0.9)
Memorandum items:				
Household size	6.6	6.6	5.3	5.9
Dependency ratio (%)	99	113	117	131
Children (% household size)	40	43	43	47
Age of household head	40	44	41	44
Male household head (%)	91	91	79	91
Population share	7	17	8	69

Note: Standard errors in parentheses.
Source: 2001 TLSS.

Figure 3.11: Poverty and Livestock

Source: 2001 TLSS.

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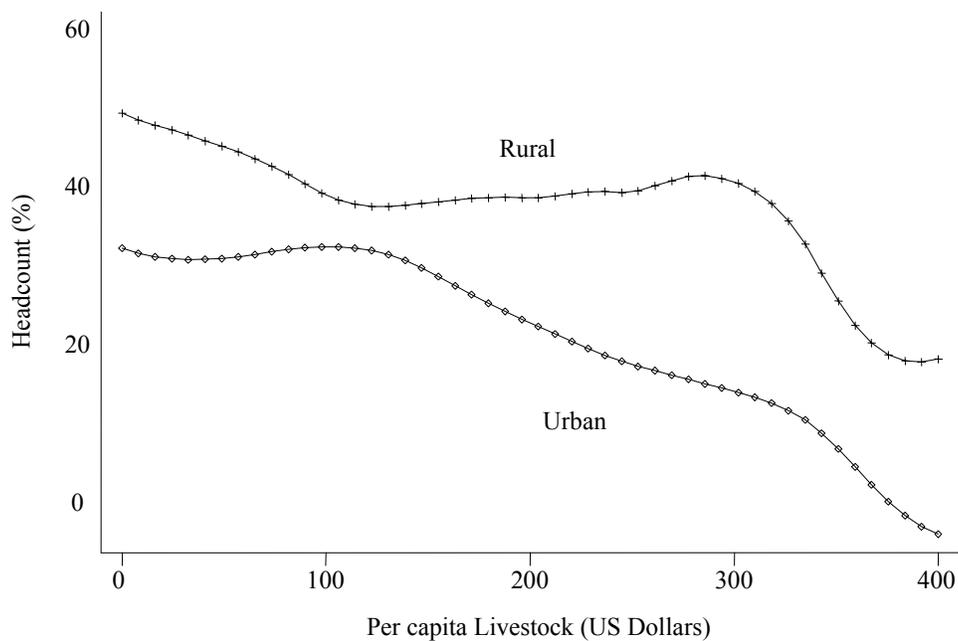
3.50   The large variation in livestock holdings suggests that poverty declines with the value of animal assets. In Figure 3.11, we display the poverty headcount relative to livestock holding per capita, separating rural from urban areas. We find that for families in both villages and cities, more livestock is associated with less poverty. However, the relationship is not strictly monotone. For example, for animal assets between US$100 to US$300, poverty appears broadly unchanged in rural areas, even though it is declining in urban areas. This reminds us that, while livestock is a key factor in the livelihood of families and communities, it is only one of many determinants.

Savings

3.51   In developed countries, the most important for of wealth, next to housing, are financial assets. In subsistence economies, savings in the form of cash or bank deposits are unlikely to play a major role. In Timor-Leste, a modest degree of financial mediation was reached during Indonesian times.[50] With the 1999 crisis, the financial system came to a complete halt, and the de-facto prohibition to access Indonesian deposits.[51] As a result, in today's economy, most families get by without reliance on financial assets.

Table 3.14: Households Savings by Type

	Total	Cash Rupiah	Cash foreign	Indonesian deposits	Other deposits	Gold, silver, etc	Jewelry	Other
% with savings	46	36	13	4	0.4	5	16	0.1
	(4)	(3)	(3)	(1)	(0)	(1)	(3)	(0)
Among households with savings								
As % of total expenditure	136	45	86	139	149	196	78	336
	(11)	(4)	(14)	(20)	(75)	(29)	(6)	(191)
As % of total savings	100	25	22	14	2	18	19	2
		(2)	(4)	(3)	(1)	(3)	(3)	(1)

Note: Standard errors in parentheses.
Source: 2001 TLSS.

3.52   The vast majority of the population has no or little holdings of financial assets (see Table 3.14). About one in two persons live in households without any financial wealth. For savers, these assets amount on average to 140 percent of their monthly expenditures, but the median is only as high as a third of that. Overall, slightly more than three fifth of the financial assets is held in broad money (cash or deposits). The most widespread form of savings comes in Rupiah cash holdings, followed by jewelry and foreign cash holdings (mostly US Dollars).[52] About one quarter of total savings is held in

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[50] There were seven commercial banks, one development bank, a branch office of the Central Bank, six insurance companies and one exchange bureau. In September 1999, broad money was 28 percent of GDP, amounting to about US$100 million.

[51] By the end of 2001, two foreign banks and several currency exchange bureaus were operating. Broad money amounted to about US$30 million.

[52] The US Dollar became the official currency in January 2000, but the Rupiah was still the dominant currency especially in rural areas at the time of the survey.

Rupiah cash, another quarter in foreign currency, another fifth in precious metals, like gold and silver, and another fifth in jewelry. Only one in 25 persons live in households with deposits at Indonesian institutions, which represent one seventh of total savings.

Table 3.15: Household Savings in Urban and Rural Areas

	Urban		Rural			Rural	
	Major	Other	West	Center	East	Lowland	Highland
% with savings	20	52	70	60	15	41	62
	(3)	(11)	(9)	(7)	(3)	(7)	(7)
Among households with savings							
As % of total expenditure	157	150	157	119	121	144	116
	(19)	(24)	(26)	(17)	(24)	(21)	(16)
As % of total savings	14	15	24	41	7	38	34
	(3)	(4)	(7)	(7)	(3)	(7)	(7)
Poverty Headcount							
No savings	15	43	50	63	32.1	48	47
	(3)	(9)	(12)	(8)	(4)	(5)	(10)
With savings	8	34	46	40	31.5	37	45
	(4)	(6)	(8)	(6)	(8)	(5)	(7)

Note: Standard errors in parentheses.
Source: 2001 TLSS.

3.53   Table 3.15u (see Table 3.15). Its share in total savings is about the same as it population share. Furthermore, financial assets holdings are more concentrated than in the rest of the country. Only one in five households in Dili/Baucau have financial savings, compared to up to six to seven in ten persons in the Rural Center, Rural Highlands, and Rural West. Furthermore, relative to per capita consumption, average asset holdings are about the same at between 120 to 160 percent across all domains. However, with per capita expenditure in Dili/Baucau being substantially higher, this still implies that among savers, absolute wealth levels in Major Urban Centers are about twice as high than in the rest of the country.

3.54   Households accumulate savings when income exceeds consumption. Poor families are less likely to go through periods of excess inflow, and therefore fail to build up financial, or other, assets. The last four rows in Table 3.15 separate households depending on whether they hold savings. As expected, poverty of the non-savers is systematically higher than of the savers, even though the differences are not always significant. The gap in poverty rates is highest in Major Urban Centers and Rural Center, areas in which markets (service sector in Dili/Baucau; coffee production in Rural Center) play a great role for economic activities.

3.55   The link between savings and poverty is actually stronger than suggested in this comparison of savers and non-savers. In Figure 3.12, we plot the poverty headcount relative to the amount of the stock of per capita savings. Poverty declines monotonically with higher financial assets, dropping close to zero for per capita savings in excess of US$150.

Figure 3.12: Poverty and Household Savings
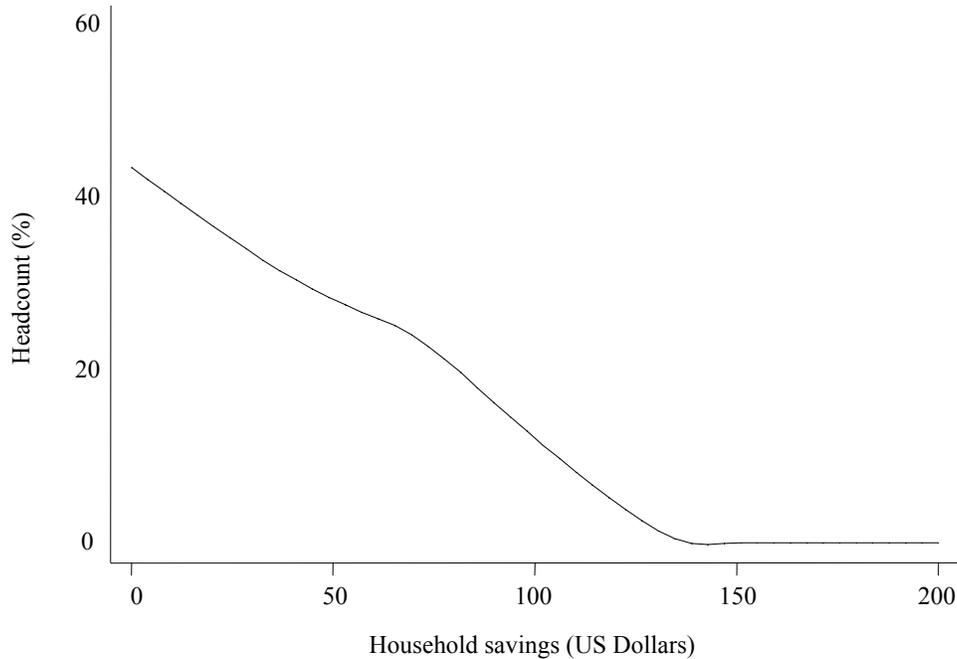
Source: 2001 TLSS.

INFRASTRUCTURE

3.56   The importance of infrastructure for development can hardly be overstated. Indeed, traditional thinking on development had at its core the view that investment in infrastructure alone can facilitate the key development push. Adequate infrastructure raises productivity and lowers production costs, and is vital to accommodate economic growth. The experience of many low-income countries shows that households' living standards improve dramatically as access to services such as safe water, sanitation, electric power, and transport expand. However, it has also demonstrated that quantity is no substitute for quality. Low operating efficiency, inadequate maintenance, and lack of attention to the needs of users can result in gains made from initial infrastructure investments evaporating quickly.

3.57   Timor-Leste received a significant boost in infrastructure during Indonesian times. Yet, inadequate institutional incentives together with the destruction accompanying the violence took a dramatic toll on the households' access to these services. The considerable effort during the transitional period could only begin to redress this situation. The evidence from the household survey demonstrates that for vast sections of the population even basic provision with infrastructure remains elusive, especially in the rural areas. Yet, the growth of farm productivity and non-farm rural employment is linked closely to infrastructure provision. Inadequate infrastructure becomes an essential constraint for farmers and their dependents to escape poverty.

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Table 3.16: Access to Infrastructure and Poverty

	Drinking Water				Sanitation				Electrification				All three			
	Urban		Rural		Urban		Rural		Urban		Rural		Urban		Rural	
	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Headcount	39.2	18.4	44.3	44.2	37.5	19.4	42.1	48.6	49.7	15.3	46.1	29.5	37.8	10.4	44.8	31.7
	(6.6)	(2.6)	(4.2)	(4.5)	(5.7)	(3.3)	(3.6)	(5.8)	(5.9)	(2.7)	(3.7)	(7.6)	(4.8)	(2.7)	(3.7)	(10.0)
Poverty Gap	9.5	5.2	14.3	12.5	10.2	5.0	12.8	14.8	14.5	3.5	14.4	6.6	10.6	2.0	13.7	7.7
	(2.3)	(0.9)	(2.0)	(2.0)	(1.9)	(1.2)	(1.6)	(2.9)	(2.4)	(0.8)	(1.8)	(1.9)	(1.9)	(0.5)	(1.7)	(2.6)
Severity	3.56	2.11	6.16	5.02	4.04	1.93	5.31	6.36	5.85	1.30	6.11	2.06	4.25	0.69	5.79	2.27
	(1.2)	(0.4)	(1.1)	(1.0)	(0.9)	(0.6)	(0.8)	(1.6)	(1.3)	(0.4)	(1.0)	(0.7)	(0.9)	(0.2)	(0.9)	(0.8)
Memorandum items:																
Household size	6.2	6.8	5.7	6.1	5.9	6.9	5.8	6.1	5.9	6.9	5.9	5.9	6.2	7.1	5.9	5.8
Dependency ratio (%)	112	108	129	131	117	106	127	135	124	103	131	122	114	104	130	130
Children (% household size)	43	42	46	46	43	41	46	48	45	41	47	44	43	41	46	49
Age of household head	45	42	44	44	44	42	44	43	44	43	44	44	44	42	44	42
Male household head (%)	91	90	91	88	88	92	89	91	91	91	90	87	90	92	90	94
Population share	31	69	56	44	30	70	67	33	28	72	89	11	52	48	96	4

Note: Standard errors in parentheses.
Source: 2001 TLSS.

3.58   Lack of access to infrastructure services, from safe water, safe sanitation, to electricity, is clearly in itself an important dimension of poverty. The numbers tell a stark picture (see Table 3.16). Nationwide, three in four people live without electricity, three in five without safe sanitation, and every other without safe drinking water.[53] Furthermore, there is a vast divide between rural and urban areas. In urban areas, seven in ten persons have access to each of these services. The shortfall to this share in rural areas is 25 percent for drinking water, 37 percent for sanitation, and 61 percent for electrification. Overall, while about every other person in urban areas has access to safe drinking water, safe sanitation, and electricity, fewer than one in twenty persons in rural areas receive these basic services.

3.59   The table also provides standard poverty statistics in relation to access to infrastructure, separating rural from urban areas. The following findings are worth emphasizing. First, persons lacking access to infrastructure are in general also poorer than those with access to infrastructure. This holds for both rural and urban areas. The one exception is sanitation in rural areas, but the differences in poverty rates are not significant, and allowing for economies of size would reverse the ranking. Second, the poverty gaps between those with and without access to infrastructure widens as we move to distribution-sensitive poverty measures. Third, the differences in poverty rates with regard to access to infrastructure are larger in urban areas than in rural areas. For example, only about one in seven urban dwellers with electricity are poor, compared to every other urban citizen without electricity. The corresponding gap for rural areas is only half as large (17 percent compared to 34 percent).

3.60   These statistics emphasize the need to tackle the lack of infrastructure access as a key constraint of the poor. However, coping with infrastructure's challenges involves much more than a simple numbers game of drawing up inventories of infrastructure stocks and plotting needed investment on the basis of past patterns. It involves tackling inefficiency and waste and responding more effectively to user demand.

INEQUALITY AND SOCIAL WELFARE

3.61   So far, our attention had been primarily on the lower half of the distribution. Now we ask how the rich far relative to the poor. Table 3.17 shows summary inequality measures, namely the cutoffs, averages and shares of per capita expenditures by deciles. For example, the bottom two fifth of the population have an expenditure share of no more than 18 percent, and have monthly per capita expenditures below US$15.49, which is just above the poverty line of US$15.44. By contrast, the top two fifth of the population have an expenditure share of about two thirds, and have monthly per capita expenditures of no less than US$18.22.

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[53] Safe drinking water refers to bottled water, tap water, pump, protected well or spring. Safe sanitation refers to access to disposable facilities that can effectively prevent human, animal, and insect access with excreta.

Table 3.17: Distribution of Monthly Per Capita Expenditure

Decile	Cut-off (US Dollars)	Mean (US Dollars)	Share (%)
Bottom	8.39	6.97	2.90
2nd	11.16	9.77	4.04
3rd	13.36	12.26	5.05
4th	15.49	14.47	6.04
5th	18.22	16.76	6.90
6th	21.58	19.79	8.16
7th	25.99	23.44	9.70
8th	32.80	28.90	11.99
9th	46.19	38.34	15.84
Top		71.11	29.38

*Note: All Rupiah values from the survey were converted to US Dollars using
an exchange rate of 10,000 Rupiah/US Dollar.*
Source: 2001 TLSS.

3.62   Some of the most popular of these indicators are displayed in Table 3.18. The different measures are in broad agreement. Comparing inequality by the different geographical categories, there a significant differences along the East-West dimension, and smaller variations for the other groupings. As expected, inequality is higher in urban than in rural areas. Furthermore, it is highest in Center, Flatland, and Seaside, and lowest in West, Highland, and Inland.

Table 3.18: Inequality and Geography

	National	Rural	Urban	West	Center	East	Flatland	Midland	Highland	Inland	Seaside
GE(0)	22.3	19.0	25.0	15.2	25.2	20.0	23.3	22.4	20.6	21.6	24.4
GE(1)	24.0	20.3	25.5	16.7	26.7	21.3	24.8	24.0	22.2	23.2	25.9
GE(2)	32.6	26.9	32.2	22.2	35.8	28.8	32.5	32.3	30.6	31.8	34.2
Gini	37.0	34.2	38.9	30.6	39.3	34.6	37.9	37.1	35.5	36.3	38.8

Source: 2001 TLSS.

3.63   Turning to the analytical domains, we find little differences between Major Urban Centers and Other Urban Centers for bottom and middle tail sensitive measures, but higher inequality in Other Urban Centers for *GE(2)*, the top tail sensitive measure (Table 3.19). Furthermore, in rural areas, along the East-West Dimension, and coastal and landlocked sucos, the inequality ranking is the same as for the nation as a whole. In contrast, the ranking by altitude is reverse, being highest in Highland and lowest in Flatland but the differences overall are modest.

Table 3.19: Inequality and Analytical Domains

	National	Rural	Urban	Urban		Rural			Rural			Rural	
				Major	Other	West	Center	East	Flatland	Midland	Highland	Inland	Seaside
GE(0)	22.3	19.0	25.0	22.7	21.1	14.5	20.8	17.7	16.1	19.0	19.6	18.8	19.9
GE(1)	24.0	20.3	25.5	21.6	24.4	16.0	22.5	18.1	17.2	20.2	21.0	19.8	22.1
GE(2)	32.6	26.9	32.2	25.1	37.0	21.8	30.6	22.4	21.2	26.2	28.8	26.1	30.1
Gini	37.0	34.2	38.9	36.4	36.0	29.7	35.8	32.6	31.6	34.2	34.5	33.9	35.3

Source: 2001 TLSS.

3.64   Do these rankings generalize to Lorenz dominance? As shown in Figure 3.13, urban areas are unambiguously more unequal than rural areas, as is Center relative to East and West, and East relative to West. By contrast, the ranking along altitude levels, and by sea access depends on the choice of the inequality measure. Among urban areas, there is no unambiguous ranking between Dili and Baucau and Other Urban Centers (Figure 3.14). In rural areas, the Center-East-West inequality still holds, and Flatland has less inequality than either Midland or Highland. Any other rankings are ambiguous.

Figure 3.13: Lorenz Curves and Geography
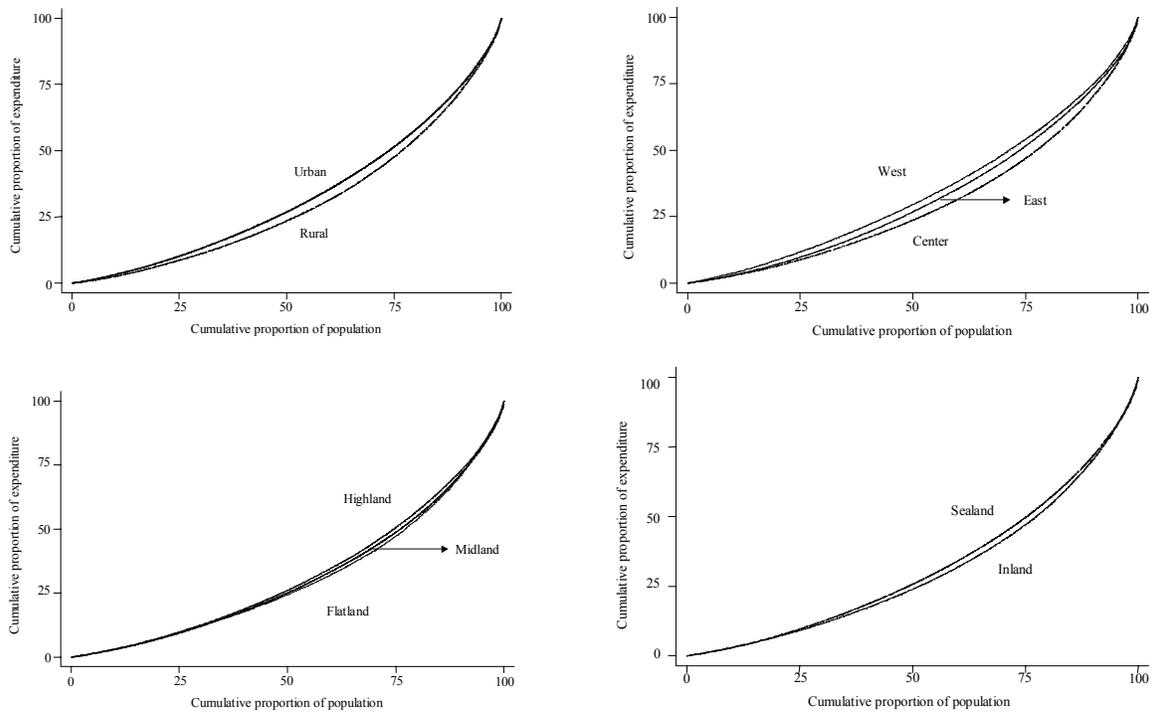
Source: 2001 TLSS.

Figure 3.14: Lorenz Curves and Analytical Domains
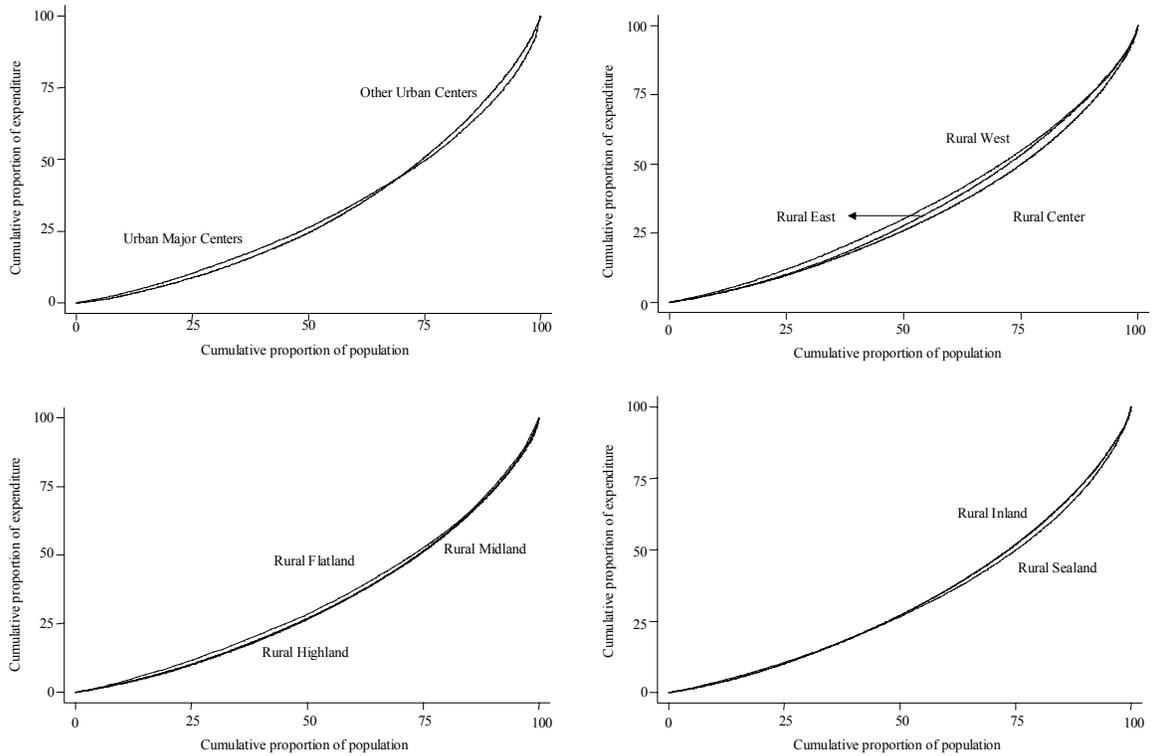
Source: 2001 TLSS.

3.65   Generalized Lorenz curves for Timor-Leste are shown in Figure 3.15. They are consistent, as they have to, the first-stochastic dominance results, in that urban areas dominate rural areas; Dili and Baucau dominate Other Urban Centers; East and Rural East dominate Center and East and Rural Center and Rural East, respectively; and Lowland and Midland dominate Highland. In addition, they demonstrate second-order stochastic dominance for Lowland relative to Midland; Rural Lowland relative to Rural Midland, and Seaside relative to Inland. Even with generalized Lorenz curves, Center and East cannot be ranked, neither Center and West, nor Rural Seaside and Rural Inland.

Figure 3.15: Generalized Lorenz Curves for Timor-Leste
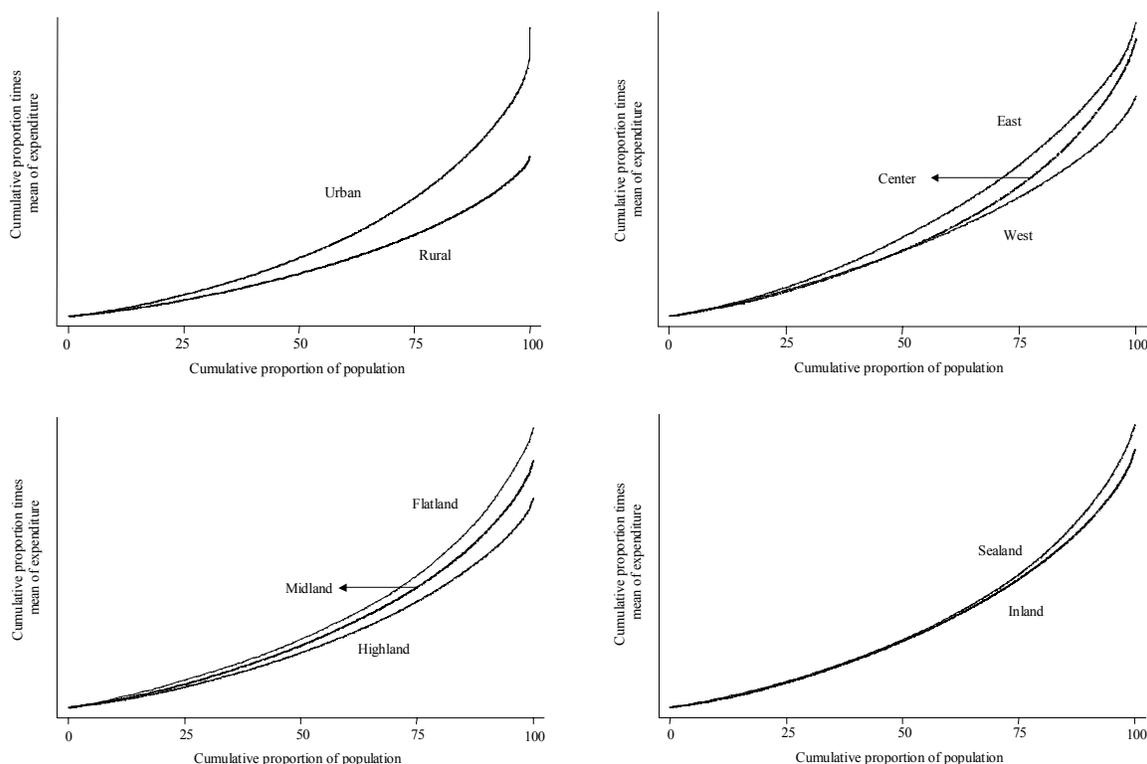
Source: 2001 TLSS.

Table 3.20: Decomposition of Inequality

	# groups	GE(0)	GE(1)	GE(2)
Urban-rural	2	13	9	2
GEO: MUC-OUC-RW-RC-RE	5	18	14	3
GEO and gender	10	19	15	3
GEO, gender, and age	50	23	19	4
GEO, gender, age, and education	152	35	31	8

Source: 2001 TLSS.

3.66   The results of the inequality decomposition analysis are shown in Table 3.20. We isolate five principal characteristics of the household to may be seen as potential explanations of the structure of inequality. The first two are geographical features, namely urbanization; and, within urban areas, Major Urban Cities versus Other Urban Centers, and within rural areas, West, Center, and East. The last three dimensions are linked to the household head: gender, age (five groups: under 25, 25-34, 35-44, 45-54, 55 plus), and education (five groups: no primary, primary, junior secondary, senior

secondary, and tertiary). As can be seen, the largest contributions come from urbanization and education. However, even when we control along these five categories, we explain at most one third of the observed inequality. The implication is that the real story of inequality is to be found within geographic, gender, age, and education groups.

POLICY AND RESEARCH ISSUES

3.67   Poverty is widespread in Timor Leste with two fifths of the population unable to cover basic food and non-food needs. Living standards vary across the country. Urban areas, especially the two major cities Dili and Baucau, are better off than rural areas. While only three quarters of the population live in rural areas, six in seven poor reside there. Poverty also increases from East to Center and West, and, but less distinctly, from Lowland to Highland. There is no evidence for lower poverty along the shore than in the inland. More human capital through better education leads to lower poverty. Demographic characteristics matter too – larger households and families with a higher share of children and elderly are poorer. In rural areas, valuable land and livestock holdings imply low poverty. Secure access to infrastructure services, ranging from safe water and sanitation, to electricity, is essential for escaping poverty. Inequality is considerable and mostly within-group. Accounting for geography, gender, age, and education of the household head explains at most one third of overall inequality.

3.68   Timor Leste's poor share a number of characteristics, including rural residence, low education and farming, which are in line with features of the poor in most developing countries. Country-specific are the findings on the geographical distribution of poverty, and more research is needed to better understand the differences between East and West, and Low- and Highland. Furthermore, since the fielding of TLSS in late 2001, Timor Leste has undergone important changes, including the reduction in international presence and the reflux of emigrants. It will be important to assess the repercussions of these economic and social changes on poverty, including the urban-rural divide. Finally, in view of the importance of rural livelihood for poverty, future work should establish a more detailed poverty profile of farming communities and explore the importance and origin of intra-regional differences in living standards. This analysis would shed light on the possible role of village-level targeting in poverty reduction strategies.

4. LABOR MARKETS, EMPLOYMENT AND POVERTY

4.1   This section reviews the employment and labor market conditions in Timor Leste following the referendum in 1999 and subsequent dramatic political and economic changes. It draws mainly on the Living Standards Survey conducted in the fall of 2001. In sum, the labor market is dominated by self-employed farmers with significantly lower labor force participation among women. Poor workers are less likely to be engaged in wage employment than their non-poor counterparts. Self-employed workers in the agriculture sector report lower earnings than the self-employed other sectors. Furthermore, while wage employment is a smaller share of employment in 2001 than in previous years, wages are considerably higher than levels in neighboring Indonesia.

LABOR FORCE PARTICIPATION AND EMPLOYMENT RATES

4.2   The International Labor Organization (ILO) defines the standard approach to measure labor force participation for the economically active population. The labor force includes all people who are considered employed and unemployed i.e. those having worked in the last week, having not worked in the last week but having a permanent job, or having not worked in the last week but having looked for work in the last week. Tables 1-3 describe the characteristics of the labor force for the economically active population (15-64 years) by poverty group, gender and other co-variates[54]. The overall labor force participation rate in Timor Leste is 60 percent (Table 4.1). This is broadly consistent with the most recent rounds of the Indonesian National Labor Force Survey (*Sakernas)* conducted in Timor Leste prior to the 1999 referendum: 62.5 (1995), 61.5 (1996), 61.1 (1997) and 71.9 (1998). Participation rates are significantly higher rates for men (81 percent) than women (40 percent).

4.3   By poverty group, rates are comparable across quintiles for the poorest 80 percent of the population. However, we observe slightly lower labor force participation among men and higher labor force participation among women in the wealthiest 20% of the population compared to their poorer counterparts. By geographic area, participation rates for men and women are lowest in Dili/Baucau and highest in rural areas, 48 and 62 percent overall respectively. However, within rural areas there is considerable variation in labor force participation across the center, east and west areas. Labor force participation among the population in the rural east is lower (55 percent) than rural center (68 percent) and rural west (61 percent).

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[54] Quintile is defined on the basis of the population-weighted distribution of per capita expenditure. The category "poor" encompasses individuals whose per capita expenditure is below the poverty line by which approximately 40% of the population of Timor Leste were designated as poor.

4.4   By age groups, labor force participation rates are lowest among the youngest (ages 15-24), about 50 percent for men and 33 percent for women (Table 4.2). For men, rates are above 90 percent in the prime ages of 25-54, with slight decline after 54 years. For women, rates are at their highest among those 45-54 years, after peak child-bearing years. By education, labor force participation rates are highest among those with no schooling among women, about 45 percent (Table 4.3). Among men, this is the case only for men under 35, where a significant portion may in fact still be in school. For men 35-64, labor force participation rates are slightly higher among those with some schooling.

4.5   Regression analyses for the determinants of labor force participation using probit models are presented in Table 4.4. Regressions are estimated for the pooled sample and then separately for men and women, which allows the pattern of the determinants of participation to differ across men and women. There are three specifications for all regressions. The first includes as explanatory variables most personal characteristics of the individual, household composition variables and area dummies. The second contains some housing characteristics and assets ownership variables. Finally, we take into account the languages spoken by the individual.

4.6   Overall, the socio-demographic variables in these regressions are significantly associated with labor force participation, although in some case differently for men and women. Education is negatively associated with labor force participation for both men and women. Those with no schooling are most likely to be in the labor force, probably because they can least afford to not be working (or looking for work) compared to those with more education. Women who speak Portuguese are more likely to be in the labor force than women who do not; for men, language is not associated with labor force participation. Men who are not currently married are less likely to be in the labor force, whereas the case is the opposite for women. Women in households with small children (6 and under) are less likely to be in the labor force, but the presence of young children is not associated with participation of men.

4.7   Turning from labor force participation to employment, Tables 5-7 present statistics on employment rates. These statistics are based on the sample of people who are in the labor force.   The converse of employment, unemployment, as defined by international definitions, is low (5 percent) with little difference by poverty group (Table 4.5). Women have slightly higher unemployment rates than men (5 percent compared to 7 percent). By geographical area, employment rates are lowest in Dili/Baucau for men and women. Finally, regarding age and education, younger people and the better educated are the ones having higher unemployment rates (Table 4.6 and Table 4.7). However, the conventional definition of unemployment, people who did not work in the last 7 days but were looking for work as a fraction of the labor force, may lead to urban bias in that it is likely to be most relevant in areas with more wage/salary employment. Moreover, even in urban areas with more active formal labor markets, the international definition does not capture the discouraged worker effect, i.e. those without a job do want to work but have ceased to look actively. In rural areas, where the vast majority of employment is among self-employed farmers, unemployment (or underemployment) is a much more elusive concept and probably not being appropriately captured by the international definition

(See Section III for a more detailed analysis of unemployment with a focus on major urban areas).

4.8   Regression analyses for the determinants of being employed, conditional on being on the labor force, are presented in Table 4.8. Probit regressions are estimated for the pooled sample and then separately for men and women. As with labor force participation, overall, the socio-demographic variables are significantly associated with labor force participation, although in some case differently for men and women. Education is negatively associated with employment rates regardless of gender, although it appears to be more robust only for women. Controlling for age, languages spoken and location, education is not associated with being employed for men. Men who speak Indonesian are more likely to be unemployed that those who do not. Men who are not currently married have significantly lower employment rates. Presence of children in the household (under 7 or 7-14) is not associated with employment rates for women.

CHARACTERISTICS OF EMPLOYMENT

4.9   Table 4.9 examines employment status by quintile across 6 categories: self-employed, unpaid family worker, employee (wage/salary worker) and not working (including those with a job but temporarily not working and those who are actively looking). Wealthier men (those in the top 20% of the distribution) are more likely to be wage employed than self-employed and slightly likely to be actively looking for work than other men. For women, wage employment is highest among those in the highest quintile as is unpaid family work.

4.10   Table 4.10 presents the distribution of workers by three broad categories of sector of employment: agriculture, industry and services; Table 4.11 presents a more detailed breakdown of the sectoral profile. The vast majority of all workers are employed in agriculture (over 80 percent) and the fewest share of workers are employed in industry (about 4 percent). By comparison, in the 1998 Sakernas, 70 percent of all workers were employed in agriculture and industry accounted for 10 percent of workers. This is consistent with a reduction in formal sector job opportunities since 1999 and a shift of employment back to self-employment in agriculture.

4.11   The sectoral profile of employment for men and women are largely similar. For both groups, the share of workers in non-agriculture sectors (industry or services) increases with wealth especially at the top of the income distribution. That is, the poor are more likely to work in agriculture than the non-poor. The richest 20 percent are significantly more likely to be employed in the service sector than their poorer counterparts. By geographic area, few workers in rural areas are employed in industry or services, while few in Dili/Baucau are in the agriculture sector[55].

4.12   Table 4.12 presents additional characteristics of employment among workers. Only one in ten workers is an employee (receiving wages or salary). Male workers are only slightly more likely to be wage employees than female workers (13 percent and 9

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[55] See Tables 1-6 in Appendix for the distribution of workers by sector of employment and occupation in Dili/Baucau.

percent respectively). There has been a considerably decline in the share of wage employment among male workers compared to 1998 Sakernas statistics. In 1998, 21 percent of workers were employees (8 percent of female workers). This is consistent with the shift in sector of employment noted above since 1998.

4.13   While few workers are employed for wages, nonetheless, we still see a strong correlation between wage employment and poverty for both men and women. Poor workers are more likely to be self-employed (or unpaid family workers) than non-poor workers.

4.14   Among the employed, men report working just over 40 hours in the last 7 days (for all jobs); employed women are working slightly fewer hours (36). Weekly hours among poorer workers are smaller than wealthier workers, but the difference is not large (less than 4 hours difference between workers in the lowest and highest quintiles of the expenditure distribution). Male workers are more likely to have a second job (10 percent) than female workers (4 percent).

4.15   Regression analyses for the determinants of being wage employed for those in the labor force are presented in Table 4.13. Probit regressions are estimated for the pooled sample and then separately for men and women. Generally, education is positively associated with having a wage job. People who speak Portuguese are more likely to be wage employed; ability to speak Indonesian is associated with wage employment for women only. Residing in Dili/Baucau is associated with more wage employment for men and somewhat for women (but the marginal effect is small). Men who are currently married are more likely to be employed for wages. Women in households with small children (6 and under) are less likely to have a wage job.

4.16   Turning to wages, the large influx of international agencies, NGOs and other foreign employers has presumably inflated wages in Timor Leste with important implied effects on private sector employment opportunities[56]. This would be consistent with the decline in wage employment as a share of employment from 1998 to 2001 (as noted above). In Table 4.14 we examine hourly wages computed from employee earnings (and the reported hours worked for these earnings) in the TLSS to look for further evidence of inflated wages. Note that wage employment broken down by employer type leads to small samples for each employer type and the wage statistics in that table are *not* weighted.

4.17   Median wages are lowest for workers employed by private companies (5,625 Rp/hour) and highest for workers employed by the government, public sector or army (8,959 Rp/hour). In monthly terms, wages are over 1,000,000 Rp/month. By comparison,

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[56] See references to this situation described as "the artificial nature of current urban conditions" in World Bank (2002). Also, AusAID report on employment patterns (AudAID, 2001). Civil servant wages are estimated to be about three times the average in Indonesia. This may have led to significant demonstration effects for the private sector. For example, unskilled farm labor wages in the coffee industry are estimated to be three times higher now compared to rates in Indonesia. The concern is that these inflated wages have led private employers to export jobs and shift towards labor-reducing technologies, consequently reducing employment opportunities and impeding the growth of private enterprise. It raises serious concerns regarding job security for workers in the urban areas whose wages and employment are potentially very vulnerable to the change in the employment environment after Independence in 2002.

in the survey of sucos conducted in February-April 2001 in all sucos in Timor Leste, the mean daily wage for *unskilled* labor in Timor Leste was lower than any of these categories: 25,490 (about 3,300 Rp/hour)[57]. World Bank (2002) reports that local hotels/lodges pay about $120 per month for literate staff (with limited secondary education), approximately 7,500 Rupiah/hour, also in the range of rates in Table 4.14.

4.18   To put these wages in context, data on wages is available from the Indonesian Central Bureau of Statistics for a variety of sectors and regions close to Timor Leste. Rural wages in the province of West Nusa Tenggara for September 2001 averaged about 450,000 Rp/month (about 3000 Rp/hour *if* employed full-time). Production manufacturing workers for Indonesia overall were paid on the order of 100,000 Rp/week (about 3000 Rp/hour for fulltime employment) in the fall of 2001 with even lower wages observed in Bali and other eastern provinces. Monthly minimum wages for construction, trade, transportation and services sectors (the dominant sectors of wage employment in the TLSS) ranged from 400,500 Rp/month (services) to 634,000 Rp/month (transportation). By comparison, the wages for workers in the TLSS are on the order of 2 to 3 times higher than the rates reported in these other sources.

4.19   Again, these results are consistent with the suggestion that wages in Timor Leste are inflated compared to expectations. In addition, the hourly wages computed from earnings in Table 4.14 are broadly consistent with the posted wage rates for the civil service (see Table 4.15).

4.20   Since a large share of workers is self-employed, wages give information on only a select group of workers. However, earnings from self-employment are more difficult to measure for several reasons. First, many self-employed persons are not going to keep official records to compute net profits. Second, we expect that hours will be measured will considerable noise. And, of course, self-employment earnings are likely to be more seasonal that wage-employment earnings[58]. Nevertheless, the TLSS did collect earnings from self-employment for the previous 30 days and for the previous 12 months. If the respondent was unable to report net profit, then gross profit is reported. These statistics are presented in Table 4.16 by sector and by region.

4.21   The main thrust of Table 4.16 is that non-agricultural self-employment earnings are always higher than earnings in the agricultural sector, typically 2 or 3 times higher. By area, Dili/Baucau earnings are much higher than other areas; moreover, the self-employed in other urban areas do not have much higher earnings than the self-employed in rural areas.

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[57] See ETTA et al (2001).

[58] It is for these reasons that consumption/expenditure is used as a measure of welfare rather than income in such settings.

4.22   The standard approach to measuring unemployment is to apply the definition of the International Labor Organization. According to international standards, the unemployed are persons that are part of the labor force and, in the last 7 days, did not work but were looking for work. As mention in the first section, this definition may not adequately capture those without work who want to be working. To address the robustness of the international definition to alternative measures of unemployment, we present two alternative definitions. In addition to using the international methodology, we draw on information about the self-reported main occupation of every working-age individual. The unemployed are identified as those responding "jobless", and the out of the labor force as those reporting "pensioner", "housewife" and "student".

4.23   As shown in Table 4.17, there is a considerable but imperfect overlap between international and self-reported categories[59]. Overall, about four in five working-age people are grouped identically as working, being unemployed, or being out of the labor force. However, only about one third of those classified as unemployed according to the international definition are labeled as jobless in the self-reported grouping. Furthermore, while there is little evidence for higher poverty of unemployed compared to employed in the international concept, those reporting to be without a job are clearly poorer than those reporting being employed in Dili/Baucau (see Table 4.18). For example, among the 15 to 34 years old, poverty is 2.9 percentage points higher among the unemployed compared to the employed according to the international definition, but poverty is 7.4 percent higher for the jobless according to self-reported occupation.

4.24   What are the unemployment rates according to these two concepts (see Table 4.19)? Unemployment is largely an urban phenomenon as noted in Table 4.5. According to the international definition, workers in Dili/Baucau face the highest unemployment rates, with one fifth of the workforce being unemployed. One in four women are unemployed, compared to one in seven for men. Unemployment rates decline sharply with age: the unemployment rate among the youth (15-24) is a staggering 43 percent, it declines to 17 percent for the 25-34 years olds, and nine percent of the over 35 years old. Surprisingly, unemployment is higher among the educated than the non-educated. Turning to the self-reported occupation, we find similar unemployment rates by location, gender, age, and education. In particular, we confirm that women, the young, and the educated have higher unemployment rates than men, the old, and the uneducated.

4.25   In the previous paragraph, we looked at specific groups and established their unemployment rates. Table 4.20 characterizes the population of unemployed people. As before, we find that the bulk of the unemployed are young and educated. For example, according to the international definition, half the unemployed in Dili/Baucau are young (15-24 years) and another third are between 25 and 34 years, and half of the unemployed have higher secondary education or more. However, while women have higher unemployment rates than men, most members of the labor force are male, and as a result

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[59] It is interesting to note that some people who self-classify themselves as not working, did engage in some income-earning activity in the last 7 days according to the employment module.

close to two thirds of the unemployed are male. Again, this picture is similar when we use the self-reported occupation to define unemployment.

4.26   Finally, we take a more in depth look at unemployment in Dili/Baucau by conducting a multivariate analysis. We estimated a probit model where the dependant variable takes the value of unity if the person is unemployed or zero if she is working (see Table 4.21)[60]. The model included as explanatory variables personal characteristics of the individual (gender, age cohort, highest level of education attained and marital status), and household composition variables (household size and number of members in certain age groups (0 to 6, 7 to 14, 65 and more))[61]. Regressions were run for all 15-64 and 15-34 years old in Dili using both classifications. As before, we find that the results are similar for both concepts of unemployment. In the following, we will briefly highlight the main findings for the international concept. Women are more likely to be unemployed than men. Holding age and education features constant, a woman is on average 6 percent more likely to be out of a job than a man. Unemployment declines with age. Those above the age of 24 are about 13 to 16 percent less likely to be unemployed than the 15-24 years old. Controlling for other influences, education does not affect unemployment. However, the coefficients are positive and in some cases near significant, suggesting that in Timor-Leste unemployment is also a problem of the educated. Being not currently married is a strong predictor of unemployment, it raises the probability of unemployment by 9 percent. Finally, household and dwelling variables do not appear to be significant. When we rerun the regressions among the group of the 15 to 34 years old only, the results are broadly confirmed for both unemployment classifications. Overall, the findings confirm three earlier results. First, unemployment is concentrated among the young. Second, more education is not associated with less joblessness. Third, women are more likely to be unemployed than men.

HOUSEHOLD LABOR INCOME SOURCES

4.27   Understanding household income sources is one key to devising a poverty alleviation strategy for households, especially in agricultural settings. Table 4.22 shows the distribution of households across categories for labor income sources. In rural areas, a larger share of household's sole source of labor income is in farming than among urban households (78 percent overall for rural households compared to 17 percent among households in Dili/Baucau and 71 percent for households in other urban areas). While the primary economic activity in rural areas may be agriculture, it is not the only activity. Figure 4.1 shows the patterns of labor income diversification for urban and rural households by poverty status. Although there is not a great deal of diversification, nonetheless, it appears that non-poor households are more likely to have non-farm income sources than their poor counterparts. Also, urban households have more diversification and there is variation among rural areas themselves. Figure 4.2 shows the pattern of income sources among rural households by region and poverty status. In every rural region, non-poor households were less likely to rely only on farming for household

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[60] This is the inverse of the regressions in Table 8, except restricted on the population in Dili/Baucau where unemployment is most prevalent.

[61] Including variables for housing characteristics, asset ownership, and suco dummies does not affect the results.

income. It should be noted that almost none of the wage earners reported working in an agricultural sector (farming, livestock, forestry, fishing or hunting). That is, these wage earners are not hired farm labor.

4.28   Focusing on average incomes across sources in rural areas, non-farm income sources yield higher earnings in a comparison of earnings among rural workers associated with the three labor income sources: wage employment, farm self-employment, and non-farm self-employment. The mean monthly earnings for rural wage employees was over 1,000,000 Rupiah. While farmers reported net earnings of about 130,000 Rupiah in the last 30 days, non-farm self-employed workers had net earnings of 360,000 Rupiah. Similarly, earnings from wages are 8 times higher than net farm earnings and 3 times higher than net non-farm self-employment. However, it is obvious that earnings from farming may be much more seasonal than other labor income sources. This can be seen in Table 4.16, which also includes the earnings reported for the last 12 months. Of course, given the significant changes in the economy, we might not expect the previous 12 months (fall 2000-fall 2001) to be reflective of annual earnings in the next few years. In any case, the 12-month earnings suggest average monthly earnings below those reported for the previous month. Moreover, if wage earnings are even moderately stable over the year, at least on a 12-month basis, wage earnings are much higher than farm or other self-employment earnings.

LABOR POLICIES AND THE POOR[62]

4.29   While a flexible labor market may encourage competitiveness and job creation, labor regulations are an important means to protect workers rights. Draft legislation defining administrative and adjudicative structures, as well as some quantitative provisions, was prepared in July 2001. Minimum wages are to be established by subsequent regulations. Given that the majority of workers are employed in self-employment (or are unpaid family labor), legislation related to minimum wages or unemployment benefits is unlikely to affect most workers in Timor Leste. Moreover, the majority of those who may be affected are in the highest income quintile (see Table 4.9, for example). Thus, at this time, given the undeveloped labor market in Timor Leste, it is unlikely that such labor policies are relevant issues for poverty alleviation in Timor Leste. On the other hand, policies that promote wage employment or off-farm self-employment are likely to be associated with greater earnings and poverty reduction.

CHILD LABOR IN TIMOR LESTE

4.30   Child labor is generally of particular concern in developing countries where it is considered a consequence of persistent poverty. Applying the same definition of labor force participation to children 10-14 years, results are presented in Table 4.23 and Table 4.24. Child labor does not appear to be widespread in Timor Leste (consistent with results for neighboring Indonesia also).[63] The overall labor force participation rate was almost 10

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[62] Background on labor laws is taken from World Bank (2002).

[63] Among the concerns about child labor is that it reduces the educational attainment of children. However, among 13-15 year olds, only a small portion of children who have never attended report the reason as demand for work at home or on the family farm.

percent with no differences by gender. All child labor is concentrated in self-employment or working as unpaid family labor. Children did not report working for wages or salary.

4.31   Poor children are not disproportionately in the labor force.[64] In fact, non-poor children have slightly higher rates of labor force participation than their poor counterparts. As in the case for adults in rural areas, child labor force participation is highest in rural west and center areas. Average hours worked (among working children) was about 20 hours in the last week. Girls in poor households had the highest average hours (25) than boys (about 20) or girls in non-poor households (22 hours).

4.32   Regression analyses for labor force participation of children are presented in Table 4.25. The relationship between the covariates and working is largely the same for boys and girls. Controlling for other covariates, children in households with no schooled adults are more likely to be in the labor force. Children in households where the highest education among adults exceeds junior secondary are least likely to be in the labor force. Area of residence is not associated with child labor. Girls in households with small children (under 6) are less likely to be working, perhaps because small children have child care demands that may fall to girls. The association between poverty and child labor is unclear, consistent with results in Table 4.23. This may be identifying failures in the rural labor markets. This would be the case if farmers rely on their children as farm laborers, in spite of wealth, due to a poorly functioning labor market.

TIME USE

4.33   In addition to collecting information regarding hours in employment activities, the TLSS also collected information about time-use in four additional activities: fetching water, fetching firewood, housework, and child care. Table 4.26 summarizes these statistics for three age groups by gender and poverty status. Girls spent slightly more time doing housework in the last 7 days than boys. This difference expands with women spending more hours in these activities than girls but no increase among men relative to boys. Likewise, girls and women spend more time in child care activities. By poverty status, it does not appear that the poor spend more time these activities than the non-poor.

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[64] While this is contrary to popular notions about child labor being perpetuating by poverty, it is consistent with other empirical studies. In their review of several studies of child labor, Canagarajah and Nielsen (1999) do not find clear evidence that poverty is associated with higher incidence of child labor. Bhalotra and Heady (2001) demonstrate findings from Ghana and Pakistan in which the children of land-rich households are *more* likely to work (and less likely to be in school) than their counterparts in land-poor households. This is a finding they label a "wealth paradox" since it challenges the notion that child labor is observed more often among children in poor households. Their explanation for this paradoxical result is the combination of labor market failures and ill-functioning land markets. The other possibility is that working children contribute to family income, thus leading to a positive correlation between income and child labor.

Table 4.1: Labor Force Participation Rates by Gender, Poverty and Region

	Total	Men	Women
National	60.0	80.8	39.6
Quintile			
Poorest Q1	58.1	80.8	37.6
Q2	58.9	81.2	35.6
Q3	60.1	81.7	39.3
Q4	60.9	83.3	39.2
Richest Q5	61.4	77.8	44.6
Poverty			
Non-poor	60.9	80.7	41.4
Poor	58.4	81.1	36.4
Area			
Dili/Baucau	48.2	65.4	29.3
Other urban	59.3	77.3	41.2
Rural	62.4	84.6	41.2
Highlands	63.6	84.8	42.5
Lowlands	61.6	84.4	40.3
Center	68.0	86.3	49.6
East	54.5	81.4	29.9
West	60.6	84.5	38.4

Note: Labor force participation is defined by standard ILO convention for the economically active population aged 15-64. Both employed and unemployed are considered in the labor force i.e. those having worked in the last week, having not worked in the last week but having a permanent job, or having not worked in the last week but having looked for work in the last week. Source:2001 TLSS.

Table 4.2: Labor Force Participation Rates by Gender, Poverty and Age

	Men		Women	
	Non-Poor	Poor	Non-Poor	Poor
15-24	51.9	50.9	33.1	34.5
25-34	93.5	92.8	38.3	26.7
35-44	94.7	96.7	49.1	42.3
45-54	94.1	94.6	54.7	49.9
55-64	84.5	84.7	39.0	37.3

Source:2001 TLSS.

Table 4.3: Labor Force Participation Rates by Gender, Age and Education

	Men		Women	
	15-34	35-64	15-34	35-64
No school	91.0	91.6	43.7	47.7
Some primary	65.1	96.3	27.3	43.2
Completed primary	67.8	95.6	33.9	36.1
Some/completed junior secondary	62.9	96.7	24.3	40.7
More than junior secondary	66.8	92.5	28.6	60.7

Source:2001 TLSS.

Table 4.4: Probit Regressions of Labor Force Participation, Adults 15-64 years

	All			Men			Women		
Female	-0.454	-0.454	-0.446						
	(29.16)	(29.10)	(28.28)						
Age groups									
15-24 (omitted category)									
25-34	0.254	0.255	0.252	0.177	0.178	0.178	0.141	0.140	0.136
	(11.53)	(11.58)	(11.41)	(10.30)	(10.40)	(10.35)	(4.45)	(4.43)	(4.28)
35-44	0.303	0.305	0.295	0.142	0.141	0.139	0.219	0.220	0.204
	(12.23)	(12.29)	(11.34)	(6.07)	(6.12)	(5.78)	(5.92)	(5.88)	(5.28)
45-54	0.267	0.270	0.263	0.078	0.079	0.078	0.174	0.174	0.160
	(9.90)	(10.00)	(9.16)	(2.69)	(2.77)	(2.59)	(4.39)	(4.36)	(3.81)
55-64	0.132	0.136	0.133	-0.055	-0.058	-0.057	-0.001	0.001	-0.005
	(4.07)	(4.17)	(3.85)	(1.50)	(1.56)	(1.44)	(0.03)	(0.01)	(0.11)
Education									
None (omitted category)									
Primary	-0.086	-0.080	-0.121	-0.123	-0.116	-0.127	-0.097	-0.096	-0.116
	(3.80)	(3.52)	(4.84)	(4.86)	(4.60)	(4.58)	(3.30)	(3.20)	(3.67)
Junior high	-0.141	-0.130	-0.174	-0.175	-0.160	-0.173	-0.140	-0.138	-0.160
	(5.06)	(4.59)	(5.70)	(5.24)	(4.78)	(4.79)	(4.05)	(3.91)	(4.31)
Senior high or more	-0.098	-0.081	-0.130	-0.177	-0.154	-0.168	-0.054	-0.051	-0.082
	(3.78)	(2.97)	(4.40)	(5.96)	(5.05)	(5.02)	(1.60)	(1.44)	(2.15)
Not currently married	0.006	0.006	0.014	-0.244	-0.243	-0.241	0.200	0.198	0.202
	(0.31)	(0.30)	(0.71)	(9.85)	(9.82)	(9.69)	(8.07)	(7.96)	(8.08)
Household composition									
Household size (#)	-0.014	-0.014	-0.015	-0.012	-0.012	-0.012	-0.009	-0.008	-0.009
	(2.95)	(2.87)	(3.07)	(2.76)	(2.82)	(2.86)	(1.43)	(1.33)	(1.50)
# 0-6	-0.016	-0.017	-0.016	0.005	0.005	0.005	-0.044	-0.044	-0.043
	(1.88)	(1.94)	(1.87)	(0.61)	(0.56)	(0.60)	(3.88)	(3.89)	(3.75)
# 7-14	-0.002	-0.002	-0.003	-0.004	-0.004	-0.004	0.005	0.005	0.004
	(0.19)	(0.21)	(0.30)	(0.51)	(0.50)	(0.50)	(0.41)	(0.42)	(0.37)
# 65 and more	-0.004	-0.003	-0.002	-0.048	-0.050	-0.050	0.065	0.067	0.067
	(0.18)	(0.13)	(0.10)	(2.21)	(2.30)	(2.29)	(2.08)	(2.14)	(2.16)
Area									
Rural lowland (omitted category)									
Dili/Baucau	-0.094	-0.051	-0.059	-0.079	-0.035	-0.035	-0.065	-0.048	-0.055
	(4.29)	(1.78)	(2.04)	(3.51)	(1.24)	(1.25)	(2.26)	(1.26)	(1.43)
Other urban	-0.018	0.003	0.003	-0.033	-0.013	-0.012	0.021	0.032	0.032
	(0.71)	(0.12)	(0.12)	(1.25)	(0.46)	(0.44)	(0.65)	(0.92)	(0.91)
Rural highland	0.008	0.006	0.003	-0.004	-0.004	-0.004	0.025	0.025	0.020
	(0.37)	(0.29)	(0.13)	(0.18)	(0.17)	(0.18)	(0.91)	(0.88)	(0.70)
Infrastructure									
Safe drinking water?		0.012	0.011		0.008	0.008		0.015	0.013
		(0.71)	(0.65)		(0.43)	(0.44)		(0.66)	(0.59)
Electricity?		-0.045	-0.056		-0.041	-0.044		-0.018	-0.027
		(1.85)	(2.30)		(1.74)	(1.83)		(0.58)	(0.84)
Sanitation?		-0.024	-0.026		-0.003	-0.004		-0.028	-0.029
		(1.30)	(1.40)		(0.19)	(0.22)		(1.19)	(1.22)
Assets									
Livestock (per capita value, Rp)		0.000	0.000		0.000	0.000		0.000	0.000
		(0.32)	(0.35)		(1.22)	(1.21)		(0.01)	(0.02)
Rent (per capita, Rp)		0.000	0.000		0.000	0.000		0.000	0.000
		(0.59)	(0.82)		(1.33)	(1.36)		(0.47)	(0.23)
Languages spoken									
Tetun			0.029			0.005			0.024
			(0.98)			(0.13)			(0.71)
Indonesian			0.045			0.013			0.014
			(1.91)			(0.53)			(0.47)
Portuguese			0.104			0.016			0.121
			(3.86)			(0.66)			(2.86)
Sample	4832	4832	4832	2416	2416	2416	2416	2416	2416

Note: Absolute value of z-statistics in parentheses. See Table 7 in Appendix for means.
Source: 2001 TLSS.

Table 4.5: Employment Rates by Gender, Poverty and Region

	Total	Men	Women
National	94.7	95.4	93.2
Quintile			
Poorest Q1	94.6	96.4	91.2
Q2	97.5	98.2	95.8
Q3	94.6	95.6	92.5
Q4	95.9	96.3	95.1
Richest Q5	91.7	91.6	91.8
Poverty			
Non-poor	93.9	94.4	93.0
Poor	96.1	97.3	93.5
Area			
Dili/Baucau	80.3	82.4	75.0
Other urban	95.6	97.8	91.6
Rural	96.7	97.2	95.7
Highlands	97.3	97.9	96.1
Lowlands	96.2	96.6	95.4
Center	96.3	96.5	95.8
East	97.3	98.0	95.6
West	96.9	97.6	95.4

Note: Employment includes those who worked in the last week or did not
work but have a permanent job, among people in the labor force.
Source:2001 TLSS.

Table 4.6: Employment Rates by Gender, Poverty and Age

	Men		Women	
	Non-Poor	Poor	Non-Poor	Poor
15-24	85.6	89.7	82.8	80.3
25-34	93.6	97.4	94.4	99
35-44	98.1	100	95.9	94.3
45-54	98.7	99.7	98.4	100
55-64	98.5	100	96	100

Source:2001 TLSS.

Table 4.7: Employment Rates by Gender, Age and Education

	Men		Women	
	15-34	35-64	15-34	35-64
No school	96.8	95.7	99.3	98.3
Some primary	92.6	88.1	99.2	91.7
Completed primary	91.2	81.4	99.0	91.3
Some/completed junior secondary	92.8	86.4	95.9	82.6
More than junior secondary	85.0	76.7	96.5	78.2

Source:2001 TLSS.

Table 4.8: Probit Regressions of Employment, Adults 15-64 years

	All			Men			Women		
Female	-0.025	-0.022	-0.023						
	(3.15)	(2.96)	(3.36)						
Age groups									
15-24 (omitted category)									
25-34	0.036	0.035	0.030	0.019	0.018	0.016	0.064	0.061	0.075
	(4.70)	(4.79)	(4.72)	(2.16)	(2.16)	(2.30)	(4.45)	(4.54)	(4.40)
35-44	0.040	0.040	0.034	0.031	0.031	0.027	0.050	0.050	0.058
	(4.50)	(4.68)	(4.30)	(2.91)	(2.99)	(2.98)	(3.03)	(3.26)	(2.86)
45-54	0.046	0.046	0.038	0.030	0.029	0.024	0.070	0.070	0.081
	(4.77)	(4.89)	(4.23)	(2.52)	(2.50)	(2.31)	(3.71)	(3.86)	(3.37)
55-64	0.038	0.038	0.029	0.024	0.022	0.013	0.054	0.052	0.061
	(3.37)	(3.44)	(2.62)	(1.74)	(1.63)	(0.91)	(2.45)	(2.62)	(2.24)
Education									
None (omitted category)									
Primary	-0.032	-0.025	-0.008	-0.013	-0.008	0.003	-0.084	-0.066	-0.058
	(2.80)	(2.23)	(0.91)	(1.11)	(0.74)	(0.32)	(3.11)	(2.62)	(1.95)
Junior high	-0.045	-0.032	-0.012	-0.028	-0.020	-0.005	-0.065	-0.042	-0.026
	(2.96)	(2.28)	(1.04)	(1.83)	(1.36)	(0.48)	(2.08)	(1.49)	(0.81)
Senior high or more	-0.051	-0.031	-0.012	-0.029	-0.016	-0.001	-0.098	-0.059	-0.047
	(3.99)	(2.58)	(1.15)	(2.24)	(1.26)	(0.15)	(3.39)	(2.21)	(1.50)
Not currently married	-0.032	-0.031	-0.030	-0.054	-0.053	-0.050	-0.004	-0.004	-0.007
	(3.34)	(3.31)	(3.57)	(4.30)	(4.32)	(4.48)	(0.25)	(0.24)	(0.35)
Household composition									
Household size (#)	0.000	-0.001	0.000	0.002	0.002	0.002	-0.003	-0.003	-0.004
	(0.13)	(0.29)	(0.11)	(0.82)	(0.87)	(1.10)	(0.78)	(1.02)	(1.04)
# 0-6	0.005	0.004	0.003	0.002	0.001	0.001	0.006	0.007	0.008
	(1.26)	(1.15)	(1.14)	(0.40)	(0.22)	(0.15)	(0.89)	(0.98)	(0.99)
# 7-14	0.002	0.001	0.001	-0.001	-0.001	-0.001	0.003	0.002	0.004
	(0.42)	(0.31)	(0.35)	(0.15)	(0.27)	(0.33)	(0.34)	(0.30)	(0.41)
# 65 and more	0.007	0.006	0.005	0.012	0.010	0.007	-0.004	-0.005	-0.006
	(0.66)	(0.54)	(0.50)	(0.92)	(0.76)	(0.64)	(0.21)	(0.26)	(0.26)
Area									
Rural lowland (omitted category)									
Dili/Baucau	-0.106	-0.059	-0.051	-0.096	-0.054	-0.049	-0.110	-0.051	-0.052
	(7.94)	(4.03)	(3.92)	(6.60)	(3.44)	(3.49)	(4.07)	(1.74)	(1.54)
Other urban	0.002	0.009	0.008	0.014	0.019	0.016	-0.021	-0.010	-0.009
	(0.16)	(0.78)	(0.77)	(1.03)	(1.54)	(1.55)	(0.82)	(0.39)	(0.29)
Rural highland	0.010	0.010	0.010	0.011	0.012	0.009	0.011	0.010	0.020
	(0.90)	(0.95)	(1.08)	(0.92)	(1.00)	(0.91)	(0.52)	(0.50)	(0.79)
Infrastructure									
Safe drinking water?		-0.011	-0.010		-0.009	-0.007		-0.016	-0.020
		(1.45)	(1.40)		(1.12)	(1.02)		(1.05)	(1.03)
Electricity?		-0.015	-0.010		-0.015	-0.011		-0.020	-0.017
		(1.41)	(1.03)		(1.33)	(1.11)		(0.91)	(0.64)
Sanitation?		-0.013	-0.009		-0.012	-0.009		-0.013	-0.011
		(1.64)	(1.30)		(1.41)	(1.19)		(0.84)	(0.57)
Assets									
Livestock (per capita value, Rp)		0.000	0.000		0.000	0.000		0.000	0.000
		(0.68)	(0.64)		(0.51)	(0.52)		(0.71)	(0.67)
Rent (per capita, Rp)		0.000	0.000		0.000	0.000		0.000	0.000
		(1.65)	(1.41)		(1.01)	(0.73)		(1.27)	(1.18)
Languages spoken									
Tetun			-0.030			-0.012			
			(1.76)			(0.58)			
Indonesian			-0.028			-0.028			-0.027
			(2.95)			(2.78)			(1.11)
Portuguese			-0.006			-0.008			-0.004
			(0.68)			(0.91)			(0.15)
Sample	2780	2780	2780	1867	1867	1867	913	913	793

Note: Absolute value of z-statistics in parentheses. See Table 7 in Appendix for means.
Source: 2001 TLSS.

Table 4.9: Employment Status by Quintile and Gender

	Q1 Poorest	Q2	Q3	Q4	Q5 Richest	All
Men 15-64						
Self-employed	64.8	54.4	50.1	57.1	41.3	52.6
Unpaid family worker	10.7	20.8	22.2	15.6	9.9	15.6
Employee	2.7	5.7	7.2	9.4	21.2	10.1
Did not work	16.9	17.1	16.7	14.6	20.9	17.4
Did not work but has permanent job	2.6	1.3	0.6	0.5	0.9	1.1
Did not work and looked for work in last week	2.3	0.7	3.2	2.9	5.8	3.2
Women 15-64						
Self-employed	22.7	17.7	19.1	20.4	21.8	20.4
Unpaid family worker	6.5	13.5	15.9	17.4	11.2	13.0
Employee	1.2	2.4	1.7	3.2	6.0	3.1
Did not work	60.7	61.8	59.3	56.3	56.6	58.5
Did not work but has permanent job	6.7	3.1	1.1	0.9	1.7	2.6
Did not work and looked for work in last week	2.3	1.5	3.0	2.0	3.7	2.6

Source:2001 TLSS.

Table 4.10: Employment by Gender, Sector, Poverty and Region

	Men			Women		
	Agriculture	Industry	Services	Agriculture	Industry	Services
National	82.3	4.3	13.4	80.8	3.2	16.0
Quintile						
Poorest Q1	95.7	1.2	3.2	85.9	4.4	9.7
Q2	88.9	4.3	6.9	86.0	3.8	10.3
Q3	86.6	3.2	10.2	83.2	3.4	13.4
Q4	85.7	4.0	10.3	85.2	2.1	12.8
Richest Q5	60.2	7.9	32.0	68.5	2.9	28.6
Poverty						
Non-poor	76.9	5.1	18.0	78.3	2.7	18.9
Poor	92.2	2.9	5.0	86.3	4.2	9.6
Area						
Dili/Baucau	23.3	13.7	63.1	17.9	2.8	79.4
Other urban	84.5	3.0	12.5	78.4	4.5	17.2
Rural	90.0	3.2	6.8	87.4	3.1	9.5
Highlands	90.3	3.8	5.9	90.9	1.6	7.5
Lowlands	89.8	2.8	7.5	84.7	4.2	11.1
Center	89.8	3.0	7.1	87.5	3.7	8.9
East	90.4	3.4	6.2	89.5	1.1	9.4
West	89.9	3.4	6.7	85.4	3.4	11.2

Note: Employment sector refers to the sector of employment for the person's main job in the last 3 months. Agriculture includes agriculture, livestock, forestry, fishing, and hunting. Industry includes mining and quarrying, manufacturing or processing, electricity, gas, water, and construction. Services include wholesale trade, retail restaurants and hotels, transport, storage, communications, financing, insurance, real estate, business services, public administration, military, health services, education services, and other community, social and personal service activities.
Source:2001 TLSS.

Table 4.11: Distribution of Workers by Quintile, Gender and Sector

	Q1 Poorest	Q2	Q3	Q4	Q5 Richest	All
Employed men 15-64						
Agriculture, livestock	93.6	88.3	85.1	85.0	59.1	81.2
Forestry	0.0	0.0	0.0	0.1	0.0	0.0
Fishing	2.0	0.0	1.3	0.5	0.5	0.8
Hunting	0.0	0.6	0.2	0.1	0.6	0.3
Mining and Quarrying	0.0	0.0	1.0	0.2	0.1	0.3
Manufacturing or processing industry	0.0	1.9	0.4	1.0	2.6	1.3
Electricity, gas, water	0.4	0.0	0.2	0.2	0.6	0.3
Construction	0.7	2.3	1.7	2.7	4.6	2.5
Wholesale trade, retail restaurants and hotels	0.3	2.6	2.6	2.2	7.5	3.2
Transportation, storage and communications	0.7	0.5	1.1	0.8	6.6	2.1
Finance, insurance, real estate and business services	0.0	0.1	0.1	0.1	1.0	0.3
Public Administration/Military	0.0	0.1	1.0	1.6	2.3	1.1
Health	0.0	0.0	0.2	0.2	1.4	0.4
Education	0.3	0.9	1.8	2.5	5.1	2.3
Other community, social and personal services activities	1.1	0.8	2.1	1.9	5.4	2.4
Other	0.8	1.9	1.1	1.1	2.6	1.6
Employed women 15-64						
Agriculture, livestock	85.9	84.4	80.6	85.1	68.1	79.9
Forestry	0.0	0.0	0.0	0.0	0.0	0.0
Fishing	0.0	0.6	1.6	0.0	0.4	0.5
Hunting	0.0	1.0	1.0	0.2	0.0	0.4
Mining and Quarrying	0.0	0.0	0.9	0.0	0.0	0.2
Manufacturing or processing industry	4.0	3.8	1.7	2.1	2.9	2.8
Electricity, gas, water	0.0	0.0	0.8	0.0	0.0	0.2
Construction	0.5	0.0	0.0	0.0	0.0	0.1
Wholesale trade, retail restaurants and hotels	6.3	6.4	8.7	4.9	15.4	8.8
Transportation, storage and communications	0.0	0.0	0.0	1.1	0.2	0.3
Finance, insurance, real estate and business services	0.0	1.0	0.0	0.2	0.5	0.3
Public Administration/Military	0.0	0.5	0.8	0.3	1.7	0.8
Health	0.0	0.0	0.7	0.1	1.1	0.4
Education	0.9	0.0	0.8	3.2	4.5	2.2
Other community, social and personal services activities	0.0	2.0	2.1	2.0	3.4	2.1
Other	2.5	0.4	0.4	0.9	1.9	1.2

Source:2001 TLSS.

Table 4.12: Employment Characteristics by Gender and Poverty, Adults 15-64 years

	Wage/Salary employee (%)			Hours all jobs last week			Second job in the last 3 months (%)		
	Total	Men	Women	Total	Men	Women	Total	Men	Women
National	11.4	12.9	8.9	39.9	41.8	35.7	8.2	10.0	4.4
Quintile									
Poorest Q1	3.6	3.4	4.0	38.1	40.0	33.3	6.0	6.3	5.2
Q2	7.1	7.1	7.0	39.1	41.2	33.3	8.6	8.2	9.5
Q3	7.6	9.1	4.5	40.0	42.4	34.9	9.0	12.2	2.3
Q4	10.2	11.5	7.7	39.7	41.6	35.4	8.4	11.8	1.8
Richest Q5	24.6	29.3	15.5	41.8	43.3	38.9	8.9	10.4	4.5
Poverty									
Non-poor	14.6	17.0	9.6	40.5	42.5	36.6	8.5	11.3	2.9
Poor	5.5	5.4	5.6	38.6	40.6	33.3	7.5	7.5	7.6

Source:2001 TLSS.

Table 4.13: Probit Regressions of Wage Employment, Adults 15-64 years

	All			Men			Women		
Female	-0.035	-0.038	-0.030						
	(2.68)	(2.96)	(2.47)						
Age groups									
15-24 (omitted category)									
25-34	0.056	0.050	0.044	0.024	0.022	0.021	0.112	0.089	0.079
	(2.88)	(2.65)	(2.51)	(0.94)	(0.89)	(0.78)	(3.61)	(3.27)	(3.24)
35-44	0.074	0.067	0.035	0.047	0.043	0.010	0.101	0.086	0.068
	(3.07)	(2.88)	(1.65)	(1.46)	(1.38)	(0.32)	(2.83)	(2.72)	(2.31)
45-54	0.032	0.026	-0.004	-0.005	-0.012	-0.048	0.074	0.064	0.050
	(1.18)	(0.99)	(0.18)	(0.14)	(0.34)	(1.34)	(1.84)	(1.78)	(1.42)
55-64	0.005	0.004	-0.013	-0.044	-0.041	-0.069	0.084	0.068	0.069
	(0.13)	(0.13)	(0.44)	(1.01)	(0.96)	(1.54)	(1.45)	(1.34)	(1.37)
Education									
None (omitted category)									
Primary	0.106	0.088	0.038	0.124	0.102	0.058	0.060	0.046	0.006
	(5.21)	(4.47)	(2.07)	(4.68)	(3.94)	(2.01)	(1.91)	(1.64)	(0.26)
Junior high	0.156	0.126	0.064	0.182	0.152	0.099	0.109	0.078	0.022
	(5.61)	(4.75)	(2.69)	(4.97)	(4.28)	(2.67)	(2.63)	(2.16)	(0.79)
Senior high or more	0.321	0.277	0.185	0.324	0.278	0.208	0.345	0.287	0.175
	(12.46)	(10.69)	(7.47)	(9.84)	(8.36)	(5.78)	(7.96)	(6.91)	(4.86)
Not currently married	-0.015	-0.013	-0.006	-0.039	-0.038	-0.029	0.012	0.010	0.011
	(0.93)	(0.87)	(0.42)	(1.73)	(1.69)	(1.19)	(0.67)	(0.63)	(0.78)
Household composition									
Household size (#)	0.008	0.006	0.005	0.011	0.008	0.008	0.006	0.005	0.004
	(2.49)	(1.87)	(1.71)	(2.31)	(1.69)	(1.46)	(1.56)	(1.37)	(1.30)
# 0-6	-0.011	-0.010	-0.009	-0.010	-0.009	-0.008	-0.017	-0.015	-0.013
	(1.77)	(1.66)	(1.56)	(1.18)	(1.06)	(0.88)	(2.04)	(2.05)	(2.03)
# 7-14	-0.001	0.000	-0.001	-0.005	-0.004	-0.005	0.002	0.002	0.000
	(0.14)	(0.00)	(0.20)	(0.52)	(0.40)	(0.49)	(0.21)	(0.29)	(0.07)
# 65 and more	0.012	0.020	0.019	0.002	0.017	0.017	0.011	0.012	0.010
	(0.61)	(1.04)	(1.05)	(0.07)	(0.57)	(0.54)	(0.51)	(0.66)	(0.58)
Area									
Rural lowland (omitted category)									
Dili/Baucau	0.222	0.125	0.107	0.270	0.167	0.162	0.113	0.042	0.031
	(10.98)	(5.37)	(4.87)	(10.21)	(5.37)	(4.93)	(4.02)	(1.42)	(1.16)
Other urban	0.024	-0.014	-0.015	0.048	-0.002	-0.004	-0.008	-0.022	-0.023
	(1.10)	(0.69)	(0.82)	(1.63)	(0.07)	(0.14)	(0.31)	(0.95)	(1.14)
Rural highland	-0.014	-0.010	-0.017	-0.011	-0.006	-0.019	-0.015	-0.014	-0.017
	(0.73)	(0.55)	(1.01)	(0.43)	(0.21)	(0.68)	(0.62)	(0.67)	(0.87)
Infrastructure									
Safe drinking water?		0.004	0.001		-0.001	-0.003		0.010	0.005
		(0.33)	(0.10)		(0.03)	(0.15)		(0.60)	(0.36)
Electricity?		0.094	0.080		0.123	0.125		0.034	0.017
		(5.13)	(4.65)		(5.04)	(4.75)		(1.41)	(0.79)
Sanitation?		0.003	0.001		0.003	-0.001		0.006	0.005
		(0.23)	(0.05)		(0.18)	(0.03)		(0.33)	(0.31)
Assets									
Livestock (per capita value, Rp)		0.000	0.000		0.000	0.000		0.000	0.000
		(2.56)	(2.66)		(1.89)	(1.98)		(1.67)	(1.76)
Rent (per capita, Rp)		0.000	0.000		0.000	0.000		0.000	0.000
		(1.38)	(1.69)		(1.69)	(1.89)		(0.12)	(0.19)
Languages spoken									
Tetun			0.078						0.033
			(2.18)						(1.19)
Indonesian			0.020			0.009			0.037
			(1.13)			(0.33)			(1.76)
Portuguese			0.094			0.122			0.062
			(5.32)			(4.70)			(2.48)
Sample	2780	2780	2780	1867	1867	1752	913	913	913

Note: Absolute value of z-statistics in parentheses. See Table 7 in Appendix for means.
Source: 2001 TLSS.

Table 4.14: Hourly Wages among Employees by Employer Type (US Dollars)

	Mean	Median	N
Private company	0.74 (0.61)	0.56	127
Rural works	1.05 (0.83)	0.85	47
Government/Public/Army	1.20 (0.90)	0.90	140
State-owned business	1.02 (0.62)	0.82	38
Private individual	0.90 (0.83)	0.61	54
Family member	0.75 (0.60)	0.65	28

Note: Original Rupiah values have not been adjusted for spatial or temporal price variations. An exchange rate of 10,000 Rp/US$ was used to convert Rupiah values into US Dollars. Un-weighted means and medians. Standard deviations in parentheses. Source:2001 TLSS.

Table 4.15: Monthly Wages for Civil Service by Level (US Dollars)

	ETTA	UNTAET	NGO Agreement	NGO Actual
Level 1	85 (0.52)	111-134 (0.67)	77-88 (0.47)	69-94 (0.48)
Level 2	100 (0.61)	144-174 (0.87)	88-110 (0.53)	86-152 (0.52)
Level 3	123 (0.75)	191-231 (1.16)	-	125-240 (0.76)
Level 4	155 (0.94)	253-335 (1.53)	121-198 (0.73)	120-263 (0.73)
Level 5	201 (1.22)	335-445 (2.03)	176-242 (1.07)	172-285 (1.04)
Level 6	266 (1.61)	445-538 (2.70)	176-242 (1.07)	286-550 (1.73)
Level 7	361 (2.19)	589-713 (3.57)	-	-

Note: Figures in parentheses are an approximate hourly rate corresponding to 165 hours of work per month (computed at the midpoint where there are ranges). An exchange rate of 10,000 Rp/US$ was used to convert Rupiah values into US Dollars.
Source: World Bank (2002) Table 9.2.

Table 4.16: Earnings in Self-employment by Sector and Urban/Rural (US Dollars)

	Last 30 days		Last 12 months	
	Net Profit	Gross Profit	Net Profit	Gross Profit
National	21	43	155	279
	(10)	(20)	(80)	(120)
	[580]	[434]	[807]	[571]
Agriculture sector	15	32	121	173
	(9)	(165)	(67)	(100)
	[458]	[345]	[689]	[478]
Non-agriculture sector	45	86	352	823
	(30)	(60)	(200)	(480)
	[122]	[89]	[118]	[93]
Dili/Baucau	45	75	330	658
	(30)	(50)	(180)	(300)
	[102]	[100]	[104]	[113]
Agriculture sector	31	42	196	157
	(20)	(32)	(100)	(75)
	[41]	[38]	[47]	[47]
Non-agriculture sector	54	95	441	1016
	(40)	(60)	(240)	(795)
	[61]	[62]	[57]	[66]
Other Urban	17	33	138	238
	(8)	(15)	(60)	(120)
	[114]	[81]	[143]	[98]
Agriculture sector	15	31	123	214
	(7)	(15)	(60)	(113)
	[99]	[70]	[127]	[88]
Non-agriculture sector	36	46	264	450
	(30)	(50)	(195)	(350)
	[15]	[11]	[16]	[10]
Rural	16	34	127	171
	(10)	(18)	(70)	(100)
	[364]	[253]	[560]	[360]
Agriculture sector	13	30	114	165
	(8)	(16)	(65)	(96)
	[318]	[237]	[515]	[343]
Non-agriculture sector	36	82	270	293
	(20)	(50)	(150)	(200)
	[46]	[16]	[45]	[17]

Note: Original Rupiah values have not been adjusted for spatial or temporal price variations. An exchange rate of 10,000 Rp/US$ was used to convertRupiah values into US Dollars. Statistics are un-weighted means, medians in parentheses, and samples size in brackets. Sample of workers 15-64.
Source: 2001 TLSS.

Table 4.17: Comparison of Unemployment Definitions

| | International classification | | | |
	Working	Unemployed	Out of LF	Total
National				
Self-reported activity				
Working	47	1	4	52
Jobless	0	1	2	3
Out of LF	10	1	34	45
Total	57	3	40	100
Dili/Baucau				
Self-reported activity				
Working	34	1	2	38
Jobless	0	3	6	10
Out of LF	5	5	43	52
Total	39	10	52	100

Source: 2001 TLSS.

Table 4.18: Poverty Rates by Labor Status

| | Dili/Baucau | |
	15-64	15-34
International classification		
Working	13.8	9.6
Agriculture	30.0	25.7
Non-agriculture	10.1	6.8
Unemployed	11.5	12.7
Out of LF	12.0	11.5
Self-reported activity		
Working	13.0	9.7
Agriculture	30.5	26.4
Non-agriculture	9.1	5.7
Jobless	14.8	17.1
Out of LF	12.0	10.6
Total	12.6	11.1

Source: 2001 TLSS.

Table 4.19: Unemployment Rates

	International classification		Self-reported activity	
	Dili/Baucau	National	Dili/Baucau	National
Total	19.7	5.3	21.1	6.2
Gender				
Men	17.6	4.6	17.9	3.7
Women	25.0	6.8	30.0	13.2
Age groups				
15/24	43.0	14.9	45.5	14.2
25/34	16.5	5.0	18.5	5.6
35/44	10.8	2.3	10.1	1.8
45/54	8.3	1.0	9.8	3.2
55/64	5.6	1.6	13.3	6.7
Education				
No school	11.0	2.0	16.3	4.0
Primary	17.2	6.6	17.5	7.3
Junior high school	27.1	8.4	29.6	7.9
Senior high school or more	23.7	14.9	23.5	11.7

Source: 2001 TLSS.

Table 4.20: Characteristics of the Unemployed

	Unemployed under:			
	International classification		Self-reported activity	
	Dili/Baucau	National	Dili/Baucau	National
Gender				
Men	63	57	62	45
Women	37	43	38	55
Age groups				
15/24	50	56	47	45
25/34	31	27	33	28
35/44	13	10	11	6
45/54	5	3	6	9
55/64	1	3	3	12
Education				
No school	12	20	18	35
Primary	20	27	21	27
Junior high school	17	15	17	11
Senior high school or more	50	38	44	27
Total	100	100	100	100

Source: 2001 TLSS.

Table 4.21: Probit Regressions of Unemployment in Dili/Baucau

	All				15/34			
Female	0.058	0.061	0.063	0.061	0.097	0.163	0.161	0.093
	(1.82)	(1.89)	(1.96)	(1.90)	(2.06)	(2.71)	(2.68)	(1.97)
Age groups								
15-24 (omitted category)								
25-34	-0.134	-0.124	-0.126	-0.136	-0.154	-0.158	-0.161	-0.157
	(3.79)	(3.63)	(3.77)	(3.91)	(3.12)	(2.72)	(2.73)	(3.14)
35-44	-0.134	-0.119	-0.124	-0.138				
	(3.17)	(2.97)	(3.03)	(3.22)				
45-54	-0.147	-0.122	-0.128	-0.148				
	(3.17)	(2.69)	(2.80)	(3.10)				
55-64	-0.155	-0.123	-0.122	-0.150				
	(2.72)	(2.07)	(2.00)	(2.50)				
Education								
None (omitted category)								
Primary	0.041	0.040	0.007	-0.005	0.086	0.140	0.131	0.075
	(0.85)	(0.83)	(0.14)	(0.11)	(1.08)	(1.35)	(1.27)	(0.94)
Junior high	0.069	0.072	0.033	0.017	0.034	0.072	0.063	0.020
	(1.25)	(1.22)	(0.58)	(0.31)	(0.42)	(0.67)	(0.59)	(0.24)
Senior high or more	0.059	0.009	-0.030	0.001	0.041	0.007	-0.004	0.020
	(1.40)	(0.20)	(0.65)	(0.01)	(0.63)	(0.08)	(0.04)	(0.29)
Not currently married	0.094	0.107	0.121	0.108	0.179	0.248	0.253	0.182
	(2.43)	(2.77)	(3.09)	(2.76)	(3.35)	(3.89)	(3.95)	(3.41)
Household composition								
Household size (#)	-0.002	-0.005	-0.006	-0.003	-0.005	-0.001	-0.001	-0.006
	(0.35)	(0.73)	(0.87)	(0.48)	(0.56)	(0.08)	(0.12)	(0.59)
# 0-6	-0.006	0.011	0.011	-0.006	-0.003	0.034	0.033	-0.004
	(0.45)	(0.74)	(0.74)	(0.41)	(0.16)	(1.21)	(1.18)	(0.18)
# 7-14	-0.016	-0.011	-0.010	-0.015	-0.015	-0.038	-0.037	-0.015
	(0.99)	(0.66)	(0.62)	(0.97)	(0.62)	(1.19)	(1.15)	(0.60)
# 65 and more	-0.012	0.021	0.024	-0.003	-0.019	0.040	0.046	-0.009
	(0.27)	(0.47)	(0.53)	(0.08)	(0.31)	(0.53)	(0.61)	(0.14)
Infrastructure								
Safe drinking water?		0.028	0.026			0.044	0.039	
		(0.68)	(0.64)			(0.60)	(0.52)	
Electricity?		-0.093	-0.109			-0.195	-0.220	
		(1.17)	(1.34)			(1.23)	(1.36)	
Sanitation?		-0.071	-0.069			-0.063	-0.063	
		(1.45)	(1.41)			(0.70)	(0.69)	
Assets								
Livestock (per capita value, Rp)		0.000	0.000			0.000	0.000	
		(1.12)	(1.06)			(1.10)	(1.11)	
Rent (per capita, Rp)		0.000	0.000			0.000	0.000	
		(0.42)	(0.21)			(0.05)	(0.02)	
Area 1/								
Suco dummies		…..	…..			…..	…..	
Suco dummies		…..	…..			…..	…..	
Languages spoken 2/								
Indonesian			0.090	0.113			0.096	0.098
			(1.92)	(2.50)			(0.97)	(1.26)
Portuguese			0.043	0.043			-0.009	-0.003
			(1.18)	(1.16)			(0.13)	(0.06)
Sample 3/	749	722	722	749	443	387	387	443

Note: Absolute value of z-statistics in parentheses. See Table 8 in Appendix for means.
1/ The sample contains 25 sucos in Dili and Baucau, so coefficients and t-stats are not shown because of brevity considerations.
2/ Tetun was excluded because almost all the sample speaks that language (only four individuals did not speak it).
3/ The sample changes when including suco dummies because in three sucos the dependant variable is constant, and hence the observations are dropped.
Source: 2001 TLSS.

Figure 4.1: Household Sources of Income
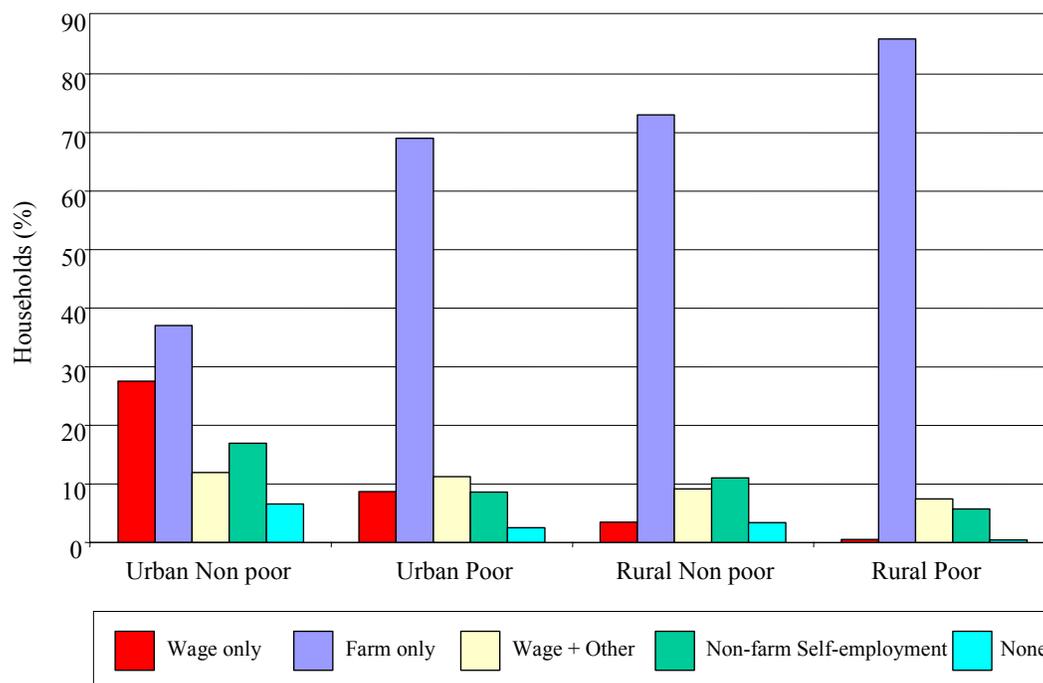
Source: 2001 TLSS.

Figure 4.2: Household Sources of Income in Rural Areas

Source: 2001 TLSS.

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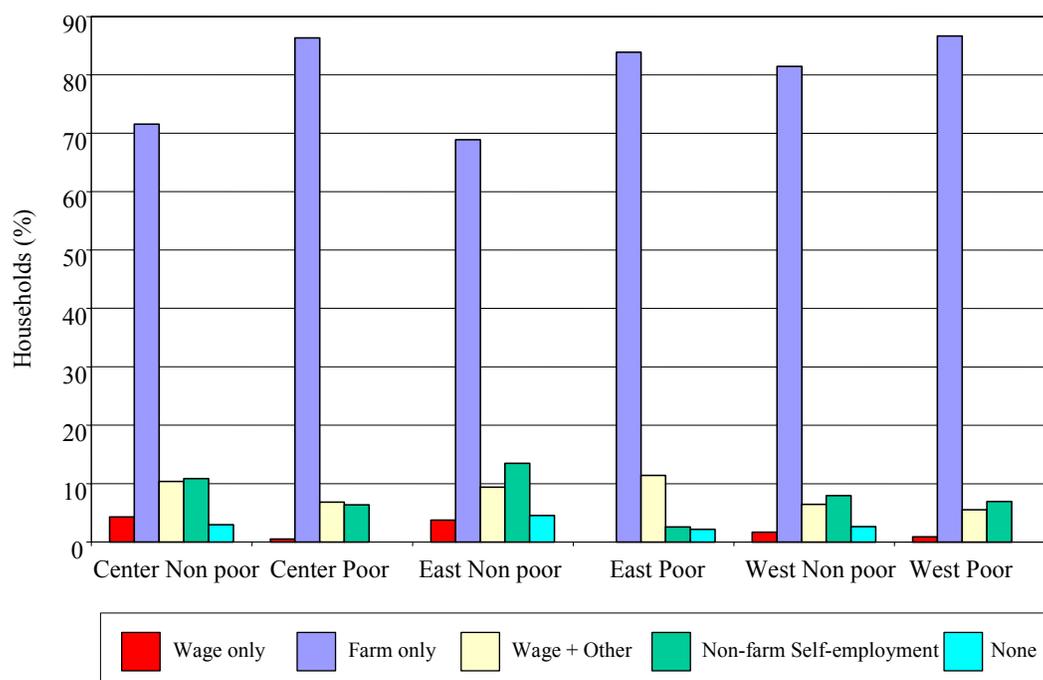
Table 4.22: Household Sources of Labor Income

	Wage only	Farm only	Wage and Other	Non-farm Self-employment	None
National	6.8	70.5	9.2	10.4	3.1
Quintile					
Poorest Q1	1.1	84.9	6.7	6.5	0.8
Q2	2.2	81.7	8.9	6.6	0.7
Q3	5.2	72.7	9.1	12.0	1.0
Q4	5.6	74.9	8.0	9.5	1.9
Richest Q5	15.6	49.0	12.0	14.9	8.5
Poverty					
Non-poor	9.4	64.2	9.8	12.5	4.2
Poor	1.7	83.5	8.0	6.1	0.7
Area					
Dili/Baucau	40.5	17.2	13.9	19.3	9.2
Other urban	6.0	71.4	9.6	10.9	2.1
Rural	2.4	77.6	8.5	9.1	2.4
Highlands	1.4	83.8	7.5	6.3	1.0
Lowlands	3.1	73.2	9.2	11.2	3.3
Center	2.7	77.6	8.9	9.0	1.7
East	2.8	72.7	9.9	10.7	4.0
West	1.4	83.4	6.1	7.5	1.6

Note: Statistics at the household level.
Source:2001 TLSS.

Table 4.23: Labor Force Participation Rates by Gender, Poverty and Region, Children 10-14 years

	Total	Boys	Girls
National	9.6	9.1	10.0
Quintile			
Poorest Q1	6.6	6.8	6.2
Q2	9.1	7.9	10.1
Q3	10.9	11.3	10.5
Q4	14.4	14.0	14.9
Richest Q5	6.5	4.6	8.9
Poverty			
Non-poor	11.1	10.6	11.7
Poor	7.9	7.4	8.4
Area			
Dili/Baucau	6.0	5.9	6.1
Other urban	6.3	7.3	5.4
Rural	10.6	9.9	11.3
Highlands	9.7	8.8	10.6
Lowlands	11.2	10.7	11.8
Center	11.5	9.1	14.1
East	4.2	3.0	5.8
West	15.5	21.1	10.6

Note: Those who are considered in the labor force include employed and unemployed people. Labor force participation is defined as those having worked in the last week, having not worked in the last week but having a permanent job, or having not worked in the last week but having looked for work in the last week. Source:2001 TLSS.

Table 4.24: Hours worked last week by Gender and Poverty, Children 10-14 years

	Total	Boys	Girls
Non-poor	21.9	21.9	22.0
Poor	22.0	18.7	25.3

Source:2001 TLSS.

Table 4.25: Probit Regressions of Child Labor (ages 10-14)

	All		Boys		Girls	
Female	0.006	0.008				
	(0.38)	(0.50)				
Highest level of education in household						
None (omitted category)						
Primary	-0.097	-0.090	-0.100	-0.082	-0.103	-0.102
	(2.74)	(2.60)	(2.26)	(2.04)	(1.81)	(1.79)
Junior high	-0.082	-0.079	-0.065	-0.052	-0.103	-0.104
	(2.91)	(2.82)	(1.71)	(1.48)	(2.55)	(2.56)
Senior high or more	-0.102	-0.096	-0.078	-0.054	-0.138	-0.141
	(3.23)	(2.94)	(1.87)	(1.30)	(2.91)	(2.91)
Child of household head?	0.040	0.041	0.051	0.048	0.019	0.017
	(1.65)	(1.76)	(1.59)	(1.67)	(0.52)	(0.49)
Household composition						
Household size (#)	-0.007	-0.008	-0.008	-0.009	-0.004	-0.004
	(1.52)	(1.69)	(1.35)	(1.55)	(0.55)	(0.62)
# 0-5	-0.018	-0.018	-0.012	-0.012	-0.026	-0.025
	(1.84)	(1.86)	(0.90)	(0.99)	(1.86)	(1.82)
Any other children 6-14 in hh?	0.014	0.010	0.025	0.021	-0.009	-0.011
	(0.65)	(0.44)	(0.88)	(0.80)	(0.26)	(0.32)
Anyone wage employed in hh?	0.028	0.028	-0.003	-0.008	0.060	0.061
	(1.02)	(1.04)	(0.08)	(0.25)	(1.46)	(1.47)
Area						
Dili/Baucau	-0.017	-0.021	-0.025	-0.017	0.004	-0.007
	(0.69)	(0.72)	(0.80)	(0.48)	(0.10)	(0.16)
Other urban	-0.023	-0.028	-0.013	-0.014	-0.026	-0.034
	(0.95)	(1.18)	(0.40)	(0.45)	(0.74)	(0.93)
Rural highland	-0.001	-0.003	-0.005	-0.007	0.002	0.002
	(0.07)	(0.15)	(0.20)	(0.27)	(0.06)	(0.06)
Infrastructure						
Safe drinking water?		-0.012		-0.016		-0.015
		(0.70)		(0.71)		(0.60)
Electricity?		0.022		0.025		0.023
		(0.87)		(0.81)		(0.57)
Sanitation?		0.014		0.008		0.022
		(0.80)		(0.36)		(0.83)
Assets						
Livestock (per capita value, Rp)		0.000		0.000		0.000
		(0.94)		(1.51)		(0.19)
Rent (per capita, Rp)		0.000		0.000		0.000
		(1.54)		(1.92)		(0.49)
Sample	1092	1092	576	576	516	516

Note: Absolute value of z-statistics in parentheses. See Table 9 in Appendix for means.
Source: 2001 TLSS.

Table 4.26: Time Use last Week by Age, Gender and Poverty

	10-14		15-34		35-64	
	Male	Female	Male	Female	Male	Female
Fetching water						
Non-poor	3.2	3.2	3.1	4.2	2.4	4.0
Poor	2.7	2.9	3.0	3.3	1.6	2.7
Fetching wood						
Non-poor	2.6	2.9	3.0	2.6	3.0	2.7
Poor	2.2	2.2	3.3	2.3	2.6	1.6
Housework a/						
Non-poor	3.3	6.4	3.7	10.9	2.4	10.7
Poor	2.3	4.2	2.1	7.7	0.9	7.2
Child care						
Non-poor	1.5	3.2	2.0	12.7	2.1	7.8
Poor	1.3	2.2	2.1	11.5	2.3	8.5

a/ Includes cooking, cleaning, washing and home maintenance.
Source:2001 TLSS.

Table 1: Workers by Gender and Sector, Dili/Baucau

	Men	Women	Total
Agriculture, livestock	19.2	14.1	17.9
Forestry	0.1	0.0	0.1
Fishing	1.2	0.0	0.9
Hunting	2.0	1.0	1.7
Mining and quarrying	0.2	0.0	0.2
Manufacture or processing industry	1.4	2.0	1.6
Electricity, gas, water	1.6	0.0	1.2
Construction	10.7	0.9	8.1
Wholesale trade, retail, restaurants and hotels	18.5	31.4	21.9
Transportation, storage and communications	11.7	4.0	9.7
Finance, insurance, real state and business	2.5	1.1	2.1
Public administration, military	5.0	2.3	4.3
Health	1.6	3.7	2.2
Education	4.6	10.1	6.0
Other community, social and personal services	13.6	20.7	15.4
Other	6.4	8.7	7.0
Total	100.0	100.0	100.0

Source: 2001 TLSS.

Table 2: Workers by Gender and Occupation, Dili/Baucau

	Men	Women	Total
Employer	4.8	2.5	4.2
Self-employed	17.6	26.1	19.8
Self-employed assisted by unpaid family	19.0	17.9	18.7
Unpaid family worker in family business	1.0	2.7	1.5
Paid family worker in family business	2.8	1.1	2.4
Employee/paid worker by private company	18.0	17.1	17.7
Employee/paid worker by rural works	8.8	3.9	7.5
Employee/paid worker by goverment/public/army	14.4	18.0	15.3
Employee/paid worker by state-owned company	5.9	3.9	5.4
Employee/paid worker by private individual	7.8	6.9	7.6
Total	100.0	100.0	100.0

Source: 2001 TLSS.

Table 3: Workers by Age and Sector, Dili/Baucau

	Age groups				
	15/24	25/34	35/44	45/64	Total
Agriculture, livestock	22.4	11.0	16.5	29.3	17.9
Forestry	0.0	0.0	0.3	0.0	0.1
Fishing	0.0	0.6	0.8	2.2	0.9
Hunting	0.8	3.2	1.2	0.4	1.7
Mining and quarrying	0.0	0.0	0.6	0.0	0.2
Manufacture or processing industry	0.8	1.6	1.7	1.8	1.6
Electricity, gas, water	2.7	0.7	1.7	0.0	1.2
Construction	5.8	7.1	8.7	11.2	8.1
Wholesale trade, retail, restaurants and hotels	18.5	24.8	19.3	22.4	21.9
Transportation, storage and communications	10.9	12.5	6.5	7.5	9.7
Finance, insurance, real state and business	0.9	2.1	3.8	0.8	2.1
Public administration, military	3.8	6.4	2.1	3.3	4.3
Health	3.8	2.1	1.5	1.8	2.2
Education	1.0	4.9	10.8	5.8	6.0
Other community, social and personal services	20.8	14.8	17.5	9.6	15.4
Other	7.7	8.3	7.1	3.8	7.0
Total	100.0	100.0	100.0	100.0	100.0

Source: 2001 TLSS.

Table 4: Workers by Age and Occupation, Dili/Baucau

	Age groups				
	15/24	25/34	35/44	45/64	Total
Employer	5.6	2.5	4.4	6.0	4.2
Self-employed	15.8	17.2	19.2	28.7	19.8
Self-employed assisted by unpaid family	17.9	15.1	20.0	24.5	18.7
Unpaid family worker in family business	3.7	0.8	0.7	2.0	1.5
Paid family worker in family business	3.8	2.9	2.1	0.4	2.4
Employee/paid worker by private company	23.2	20.7	15.5	10.5	17.7
Employee/paid worker by rural works	9.6	8.6	7.1	4.5	7.5
Employee/paid worker by goverment/public/army	8.3	20.0	16.0	10.9	15.3
Employee/paid worker by state-owned company	5.3	3.6	8.0	5.4	5.4
Employee/paid worker by private individual	6.7	8.6	7.1	7.1	7.6
Total	100.0	100.0	100.0	100.0	100.0

Source: 2001 TLSS.

Table 5: Workers by Education and Sector, Dili/Baucau

	None	Some/ completed primary	Some/ completed junior secondary	More than junior secondary	Total
Agriculture, livestock	37.6	21.4	17.3	3.4	17.9
Forestry	0.0	0.0	0.0	0.2	0.1
Fishing	0.0	2.6	0.0	0.5	0.9
Hunting	0.5	2.5	1.2	2.1	1.7
Mining and quarrying	0.0	0.6	0.0	0.0	0.2
Manufacture or processing industry	0.0	3.1	0.6	1.8	1.6
Electricity, gas, water	0.0	0.9	0.0	2.3	1.2
Construction	8.1	14.3	9.7	3.9	8.1
Wholesale trade, retail, restaurants and hotels	32.1	20.3	27.9	14.6	21.9
Transportation, storage and communications	4.4	11.8	11.3	11.2	9.7
Finance, insurance, real state and business	0.6	2.0	0.0	3.7	2.1
Public administration, military	0.3	1.4	1.2	9.4	4.3
Health	0.0	0.7	0.0	5.1	2.2
Education	0.0	0.0	0.0	15.2	6.0
Other community, social and personal services	10.5	12.0	24.8	18.0	15.4
Other	5.8	6.3	6.2	8.4	7.0
Total	100.0	100.0	100.0	100.0	100.0

Source: 2001 TLSS.

Table 6: Workers by Education and Occupation, Dili/Baucau

	None	Some/ completed primary	Some/ completed junior secondary	More than junior secondary	Total
Employer	2.4	5.1	9.8	3.1	4.2
Self-employed	44.5	20.4	9.7	6.6	19.8
Self-employed assisted by unpaid family	27.7	24.0	23.5	8.4	18.7
Unpaid family worker in family business	3.1	0.8	4.3	0.0	1.5
Paid family worker in family business	0.8	3.4	5.9	1.7	2.4
Employee/paid worker by private company	9.4	18.4	24.1	20.7	17.7
Employee/paid worker by rural works	0.7	5.0	2.2	15.0	7.5
Employee/paid worker by goverment/public/army	0.7	7.2	8.0	31.7	15.3
Employee/paid worker by state-owned company	2.6	5.0	2.7	8.1	5.4
Employee/paid worker by private individual	8.1	10.7	10.1	4.7	7.6
Total	100.0	100.0	100.0	100.0	100.0

Source: 2001 TLSS.

Table 7: Summary Statistics for Regressions in Tables 4, 8 and 13

Variable		All		Men		Women	
		LFP and wage employment	Employed	LFP and wage employment	Employed	LFP and wage employment	Employed
Labor force participation		0.575	0.921	0.773	0.931	0.378	0.901
Female		0.500	0.328				1.000
Age groups							
25-34		0.284	0.307	0.279	0.330	0.289	0.261
35-44		0.195	0.237	0.193	0.238	0.196	0.235
45-54		0.135	0.164	0.130	0.156	0.139	0.181
55-64		0.079	0.086	0.086	0.091	0.072	0.077
Highest level of education in household							
Primary		0.221	0.221	0.261	0.258	0.182	0.143
Junior high		0.131	0.103	0.135	0.112	0.128	0.083
Senior high or more		0.207	0.187	0.247	0.209	0.167	0.142
Not currently married		0.428	0.373	0.440	0.314	0.415	0.494
Household composition							
Household size (#)	*	6.015	5.677	6.019	5.740	6.010	5.550
# 0-6	*	1.206	1.151	1.183	1.246	1.230	0.958
# 7-14	*	1.202	1.149	1.179	1.135	1.226	1.177
# 65 and more	*	0.098	0.092	0.089	0.074	0.106	0.130
Area							
Dili/Baucau		0.320	0.269	0.333	0.283	0.308	0.241
Other urban		0.138	0.143	0.139	0.139	0.138	0.152
Rural highland		0.228	0.252	0.227	0.250	0.230	0.256
Infrastructure							
Safe drinking water?		0.579	0.557	0.584	0.558	0.575	0.556
Electricity?		0.428	0.377	0.441	0.387	0.414	0.356
Sanitation?		0.523	0.487	0.535	0.502	0.512	0.456
Assets							
Livestock (per capita value, Rp)	*	835	901	808	856	861	992
Rent (per capita, Rp)	*	85,474	78,792	88,755	79,502	82,193	77,340
Languages spoken							
Tetun		0.914	0.915	0.945	0.938	0.883	0.869
Indonesian		0.661	0.642	0.746	0.712	0.576	0.498
Portuguese		0.124	0.150	0.170	0.182	0.079	0.085
Sample		4,832	2,780	2,416	1,867	2,416	913

*Note: All dummy variables except when followed by *.*
Source: 2001 TLSS.

Table 8: Summary Statistics for Regressions in Table 21

Variable		All	15/34
Unemployed		0.196	0.262
Female		0.294	0.302
Age groups			
25-34		0.364	0.616
35-44		0.239	0.000
45-54		0.127	0.000
55-64		0.043	0.000
Highest level of education in household			
Primary		0.235	0.192
Junior high		0.127	0.147
Senior high or more		0.409	0.530
Not currently married		0.382	0.546
Household composition			
Household size (#)	*	6.870	6.865
# 0-6	*	1.307	1.323
# 7-14	*	1.262	0.984
# 65 and more	*	0.089	0.097
Infrastructure			
Safe drinking water?		0.816	0.828
Electricity?		0.888	0.901
Sanitation?		0.845	0.862
Assets			
Livestock (per capita value, Rp)	*	304	231
Rent (per capita, Rp)	*	179,665	191,347
Languages spoken			
Tetun		0.995	0.998
Indonesian		0.860	0.928
Portuguese		0.308	0.176
Sample		749	443

*Note: All dummy variables except when followed by *.*
Source: 2001 TLSS.

Table 9: Summary Statistics for Regressions in Table 25

Variable		All	Boys	Girls
Labor force participation		0.085	0.083	0.087
Female		0.473		
Highest level of education in household				
Primary		0.484	0.486	0.483
Junior high		0.210	0.201	0.219
Senior high or more		0.275	0.273	0.277
Child of household head?		0.874	0.872	0.876
Household composition				
Household size (#)	*	7.157	7.142	7.172
# 0-5	*	1.097	1.095	1.099
Any other children 6-14 in hh?		0.832	0.832	0.831
Anyone wage employed in hh?		0.227	0.222	0.233
Area				
Dili/Baucau		0.289	0.299	0.279
Other urban		0.138	0.127	0.151
Rural highland		0.246	0.236	0.258
Infrastructure				
Safe drinking water?		0.575	0.575	0.576
Electricity?		0.395	0.403	0.386
Sanitation?		0.527	0.524	0.531
Assets				
Livestock (per capita value, Rp)	*	711	757	660
Rent (per capita, Rp)	*	63,028	60,099	66,298
Sample		1,092	576	516

*Note: All dummy variables except when followed by *.*
Source: 2001 TLSS.

5. EDUCATION AND POVERTY

THE PRE-EXISTING CONDITIONS[65]

5.1   Before 1999, education was underdeveloped in Timor-Leste. Primary education attainment of youths who grew up under Indonesian administration was below the Indonesian national average: in Timor-Leste, only about 80 percent of the 16-to-18 age cohort had completed three years of education, compared with Indonesia's nearly 100 percent, and the decline after Grade 3 was much steeper than Indonesia's. The enrollment gaps between the rich and the poor, the urban and rural areas, and males and females were large in absolute terms and in comparison with Indonesia. Illiteracy rates were high among the adult population that was born in Timor-Leste. Administrative, managerial, technical and professional positions were largely filled by people from other parts of Indonesia. This was one of the sources of tension between the people of Timor-Leste and Indonesians.

5.2   After the vast majority of the people of Timor-Leste voted for independence in a referendum in August 1999, pro-Indonesian militia caused enormous destruction in the country. They burned down about 95 percent of the schools. Meanwhile, about 20 percent of primary school teachers and 80 percent of secondary school teachers, who originally come from other parts of Indonesia, left the country. Also departed were many other migrants who had higher levels of education and skills. Timor-Leste Transitional Administration (ETTA) began rebuilding the nation with the assistance of the United Nations, multilateral and bilateral agencies. This chapter describes the accomplishments of the Transitional Government in rebuilding the education sector, assesses the issues in education as they relate to poverty, and evaluates policy options for the new government.

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[65] This chapter was written by Kin Bing Wu.

Figure 5.1: Illiteracy Rates in Timor-Leste by Place of Birth, 1990
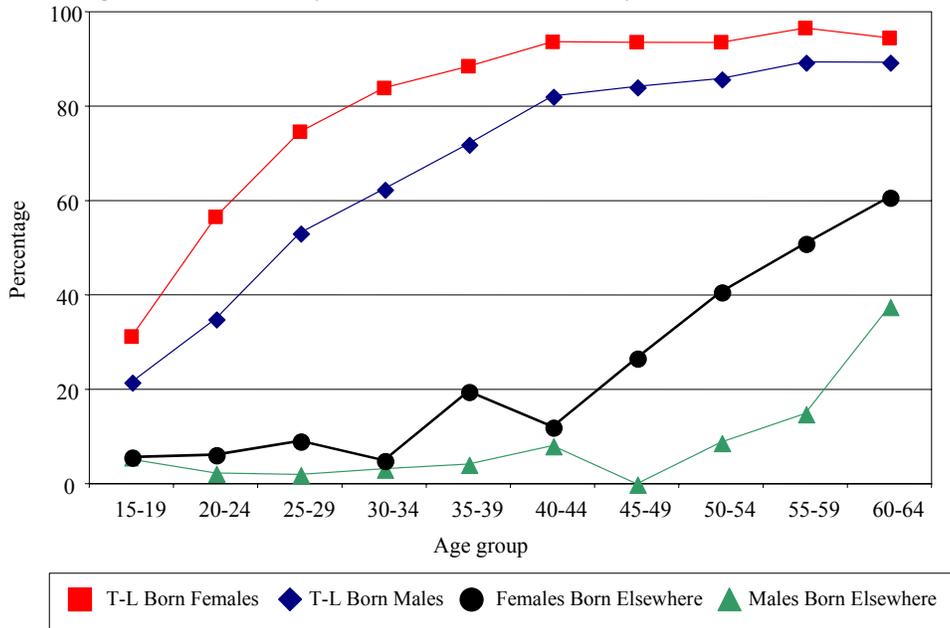
Source: 1990 Indonesian Population Census on Timor-Leste.

ACCOMPLISHMENTS UNDER THE TRANSITIONAL ADMINISTRATION

Enrollments

5.3   Within about 18 months after the destruction, the school system, by and large, was rebuilt. By early 2001, about 86 percent of classrooms were rehabilitated and useable (Table 5.1).   922 schools were in operation, of which 82 percent offered primary education, 11 percent junior secondary education, 3 percent, senior secondary education and the rest other types of education. The total enrollment was 237,551, of which 48 percent are girls.   Teachers have been recruited at an average ratio of 1 teacher to 52 students.   Twenty eight percent of them are females.

5.4   The most phenomenal accomplishment was the massive increase in enrollment by the poor, girls and rural children under ETTA, resulting in narrowing the gaps in school participation rates between the richest and the poorest quintile, boys and girls, and urban and rural areas. These results are displayed in Figure 5.2 - Figure 5.6 and Table 5.2 and Table 5.3. The largest increase in enrollment between 1998/99 and 2001/02 was among children between the ages of 5 and 15 [66].

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[66] The participation rates in 1998 were based on reporting of the population remained in Timor-Leste during the time of the TLSS, 2001. This remaining population excluded those migrants from other parts of Indonesia who left after 1999 and those refugees who still have not returned to Timor-Leste. In other words, the participation rates in 1998 reported in the TLHS 2001 are not the same rates as those reported in Susenas 1999 because the latter included the Indonesians and those who later became refugees.

5.5   Many children between 5 and 14 years of age in 1998/99 who missed schooling then, enrolled in later years. The shaded cells in Table 5.4 show that a progressively larger number of children entered schools even as they get older. In fact, enrollment in primary education rose from about 167,000 in 1998/99 to about 183,000 in 2001.

5.6   The trend was reversed for adolescents at age 14 in 1998 because they were getting too old to enter the primary grades to make up for the missed schooling. A lower percentage of that cohort remained in school in 2001 than those in 1998. Enrollment in junior secondary education slightly declined from 32,000 to 26,000 over the same period.

Table 5.1: Characteristics of Schools in Timor-Leste, 2001

Total number of schools	922
State operated	717
Church operated	173
Private operated	26
Others	6
Number of classrooms	
Before the violence in 1999	5,162
Useable as of early 2001	4,449
Share of school operating (%)	
One shift	71
Two or more shift	29
Share of schools (%)	
Primary	82
Junior Secondary	11
Senior Secondary	3
Others	4
Number of teachers	5,789
Female	1,633
Male	4,156
Number of students in early 2001	237,551
Girls	114,627 (48%)
Boys	122,924 (52%)
Average student-to-teacher ratio	52
State schools	56
Church schools	40
Private	41
Others	46

Source: School Mapping 2001.

Figure 5.2: School Participation by Age, 1998 and 2001

2001/02

1998/99

Percentage

Age
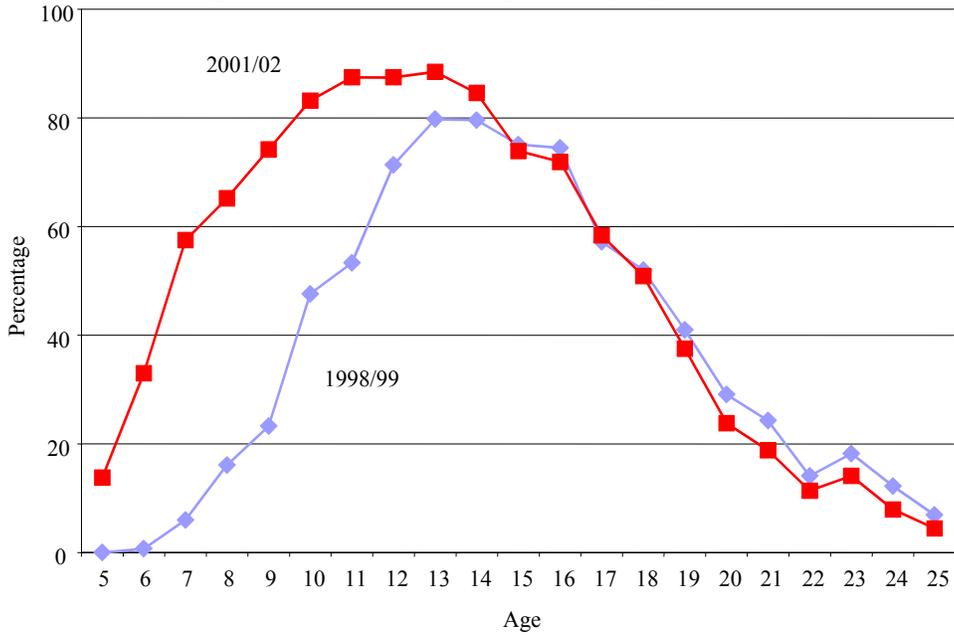
Source: 2001 TLSS.

Figure 5.3: School Participation by Age, 1999

Percentage

Age

● Male Poorest   ■ Male Richest   ▲ Female Poorest   ◆ Female Richest

Source: 2001 TLSS.

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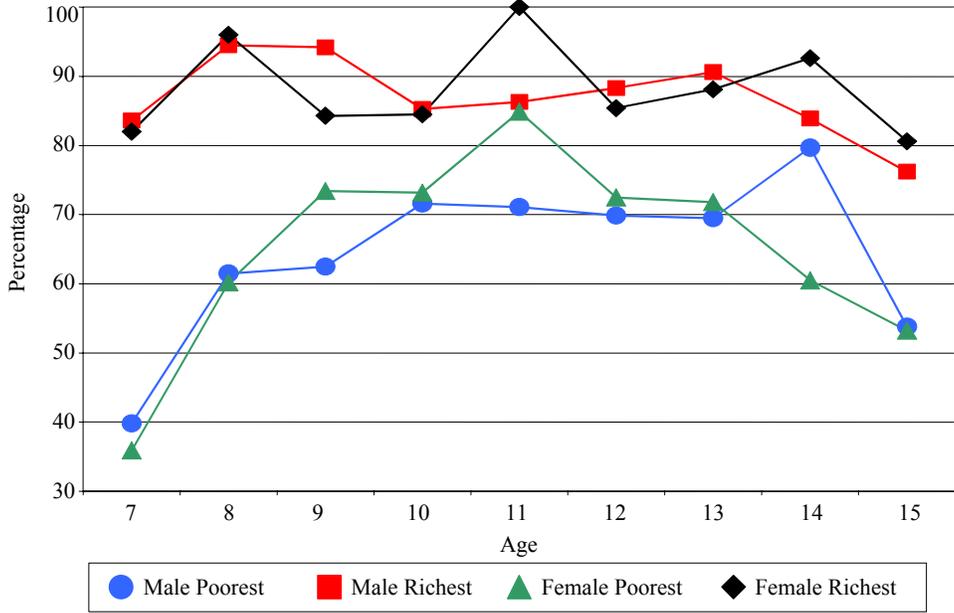
Figure 5.4: School Participation by Age, 2001
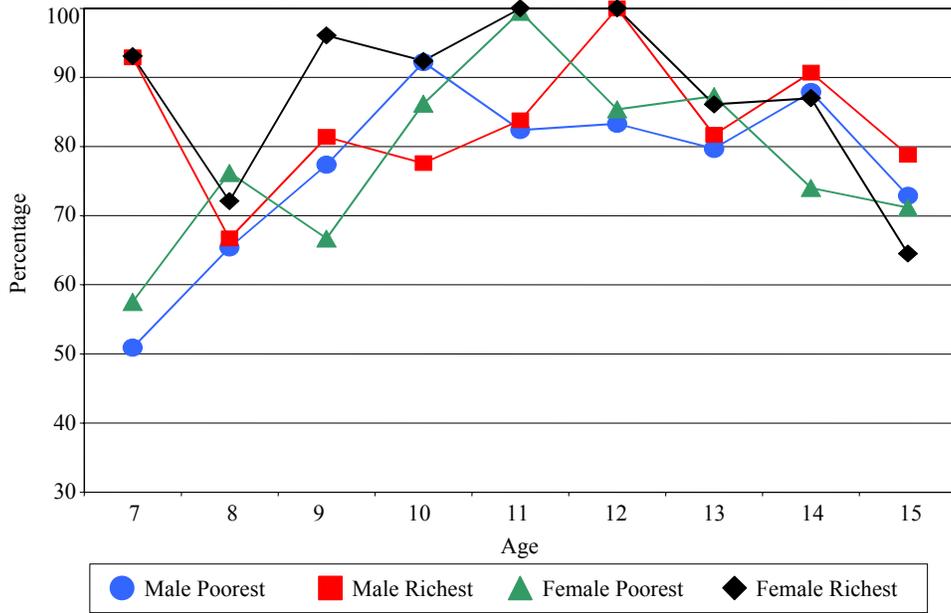
Source: 2001 TLSS.

Figure 5.5: School Participation of Poorest and Richest Urban Quintiles, 2001

Source: 2001 TLSS.

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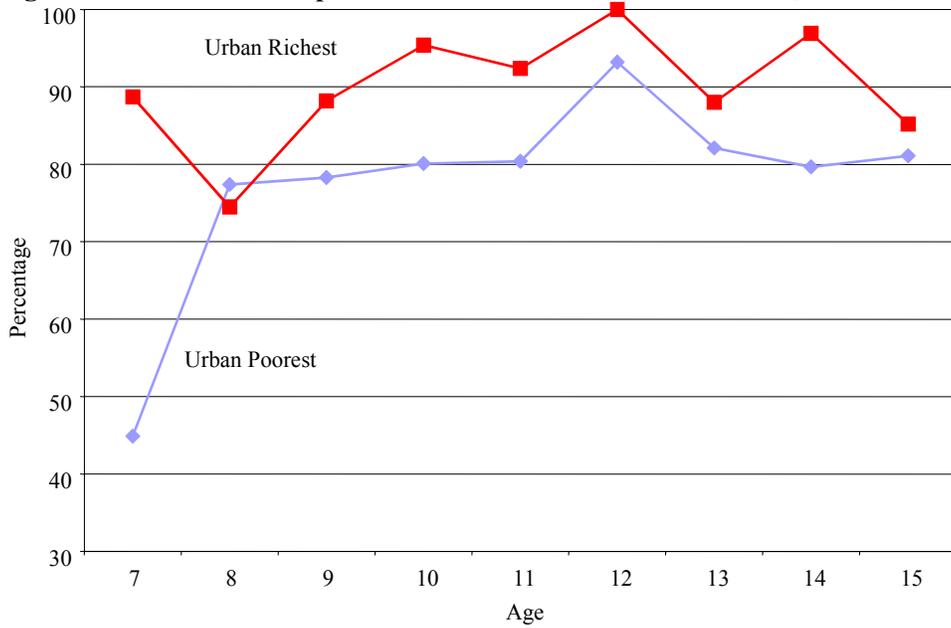
Figure 5.6: School Participation of Poorest and Richest Rural Quintiles, 2001
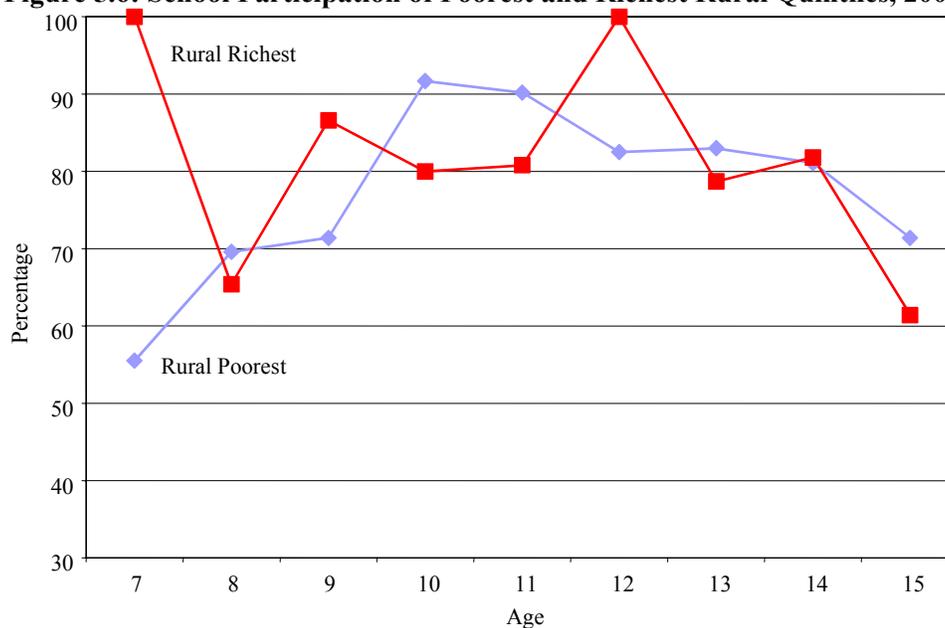
Source: 2001 TLSS.

Table 5.2: Enrollment by Single Age of the Population that remains in Timor-Leste, 1998 to 2001 (%)

	1998/99	1999/00	2000/01	2001/02
5	0.0	1.5	7.4	13.8
6	0.7	4.6	18.8	33.0
7	6.0	14.6	43.8	57.5
8	16.1	25.9	57.3	65.2
9	23.3	35.0	69.8	74.2
10	47.6	57.6	77.3	83.2
11	53.3	62.7	86.6	87.5
12	71.4	68.3	86.7	87.5
13	79.8	71.7	88.8	88.5
14	79.6	64.7	84.3	84.6
15	75.1	67.1	73.7	73.9
16	74.5	68.6	74.2	71.9
17	57.2	55.7	57.2	58.4
18	52.0	44.4	50.4	50.9
19	41.0	35.1	38.0	37.5
20	29.1	23.1	24.6	23.8
21	24.3	21.0	18.5	18.8
22	14.1	8.7	9.5	11.4
23	18.2	13.9	15.7	14.1
24	12.2	6.9	8.1	7.9
25	6.9	5.1	4.4	4.4
26	2.2	2.2	1.3	1.0
27	2.0	1.3	1.3	2.0
28	1.9	0.7	1.4	1.4

Source: 2001 TLSS.

Table 5.3: Enrollment by Age Group of the Population that remains in Timor-Leste, 1998 to 2001 (%)

	1998/99	1999/00	2000/01	2001/02
3-5	0.0	1.5	7.4	13.8
6-11	21.7	30.4	55.7	64.2
12-14	76.8	68.3	86.6	86.9
15-16	74.8	67.8	73.9	73.0
17-18	54.5	49.6	53.6	54.4
19-29	15.2	12.0	12.5	12.5

Source: 2001 TLSS.

Table 5.4: Example of Children who are now enrolled

	1998/99	1999/00	2000/01	2001/02
5	0.000	0.015	0.074	0.138
6	0.007	0.046	0.188	0.330
7	0.060	0.146	0.438	0.575
8	0.161	0.259	0.573	0.652
9	0.233	0.350	0.698	0.742
10	0.476	0.576	0.773	0.832
11	0.533	0.627	0.866	0.875
12	0.714	0.683	0.867	0.875
13	0.798	0.717	0.888	0.885
14	0.796	0.647	0.843	0.846
15	0.751	0.671	0.737	0.739
16	0.745	0.686	0.742	0.719
17	0.572	0.557	0.572	0.584
18	0.520	0.444	0.504	0.509
19	0.410	0.351	0.380	0.375
20	0.291	0.231	0.246	0.238
21	0.243	0.210	0.185	0.188
22	0.141	0.087	0.095	0.114
23	0.182	0.139	0.157	0.141
24	0.122	0.069	0.081	0.079
25	0.069	0.051	0.044	0.044
26	0.022	0.022	0.013	0.010
27	0.020	0.013	0.013	0.020
28	0.019	0.007	0.014	0.014

Note: Children aged 6 in 1998/99 were aged 9 in 2001/02 (in yellow).
Children aged 14 in 1998/99 were aged 17 in 2001/02 (in magenta).
Source: 2001 TLSS.

School Fees

5.7   The reasons for the increased participation of the poor were likely to be due to an upsurge of patriotism, and the reduction of the cost of schooling by means of the abolition of school fees, PTA contributions, and requirements for uniforms.

5.8   During the Indonesian Administration, the direct cost of schooling was high. Fees accounted for 13 percent of household spending on public primary education per capita of the poorest quintile in 1995, PTA charges for 9 percent, uniforms for 52 percent, textbooks for 16 percent, and other instructional materials 10 percent (Figure 5.7). Among the poorest quintile, the monthly per capita spending was about US$0.82 (in 2001 exchange rates and prices).

5.9   Under ETTA, due to donor financing of school rehabilitation, payment of teachers salaries and provision of textbooks, much of the charges and fees were abolished, and school uniforms were not required. In 2001, among the poorest quintile, fees only accounted for 1.6 percent of their monthly per capita spending, PTA charges for 0.6 percent, clothing and uniform together (as opposed to uniform alone under Indonesia) for 57 percent, textbooks for 0.4 percent, and other instructional materials for 31 percent (Figure 5.8). The monthly per capita spending on public primary education among the poorest quintile was only US$0.33[67]. Figure 5.9 to Figure 5.11 provide education spending across quintiles for different levels of education.

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[67] The table with the composition of household expenditures for different levels of schooling is in the Appendix. A study by Pradhan and Sparrow (2000) on Indonesian household education expenditure found that, in 1998, school fees in primary education accounted for about 38 percent of total household spending on education on average in Indonesia and 35 percent in other islands (i.e., not in Java and Bali, Kalimantan, Sumatra, Sulawesi, and Timor-Leste was one among these islands) (Table A.6). In junior and senior secondary education, fees accounted for as much as 41 to nearly 50 percentage of household expenditures on education (see the first table below). The private cost of education was indeed much higher under Indonesian administration (Table A.7).

Figure 5.7: Monthly Per Capita Household Expenditure on Public Primary Education, 1995
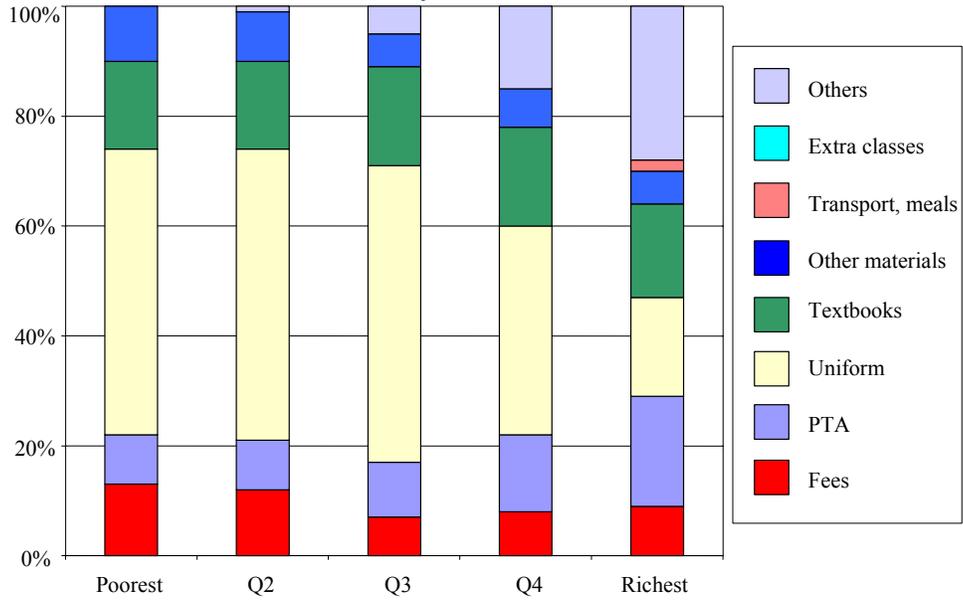
Source: 1995 Susenas.

Figure 5.8: Monthly Per Capita Household Expenditure on Public Primary Education, 2001
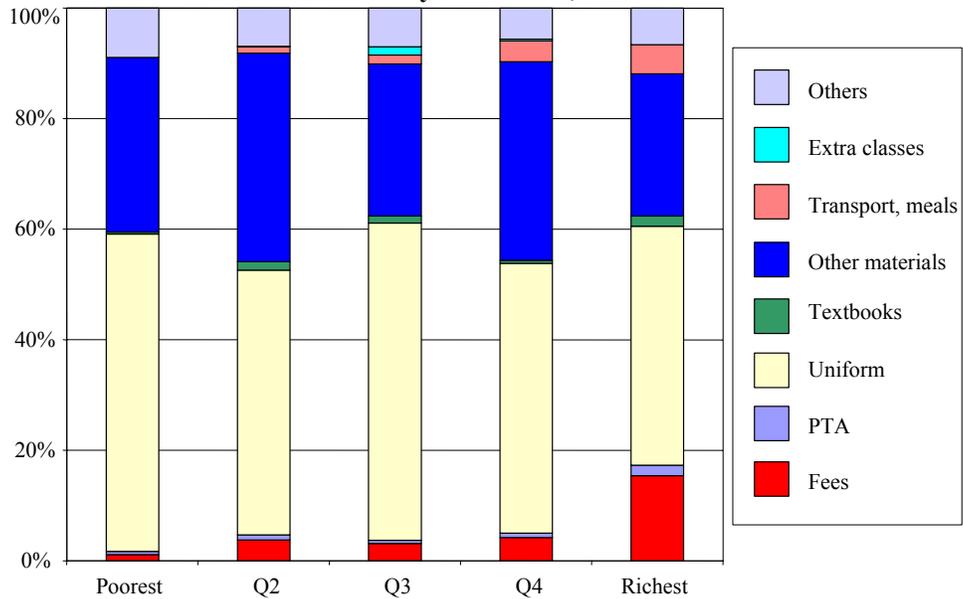
Source: 2001 TLSS.

Figure 5.9: Household Spending on Primary Education by Quintile, 2001
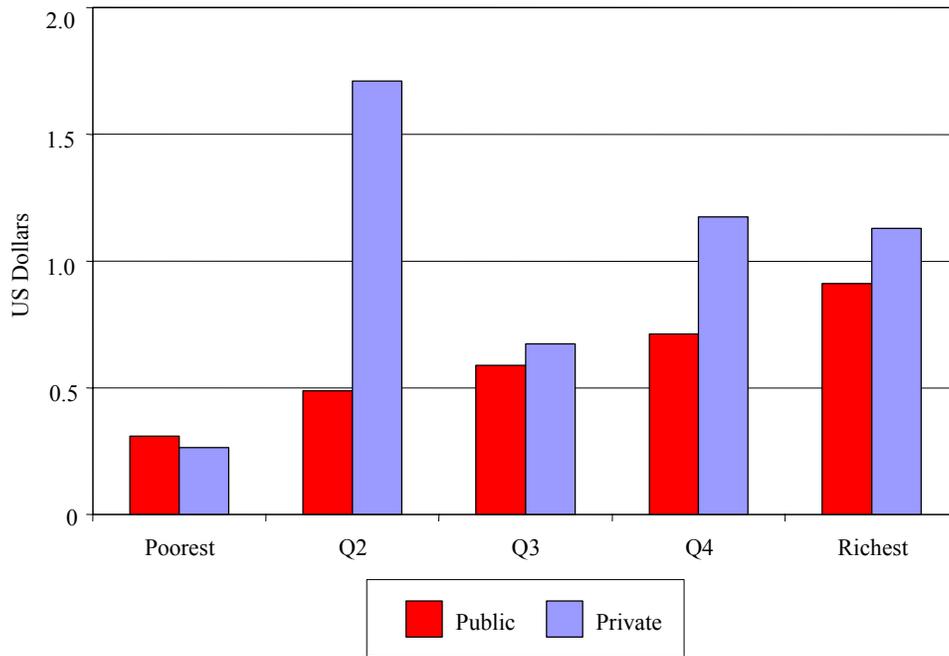
Source: 2001 TLSS.

Figure 5.10: Household Spending on Junior Secondary Education by Quintile, 2001
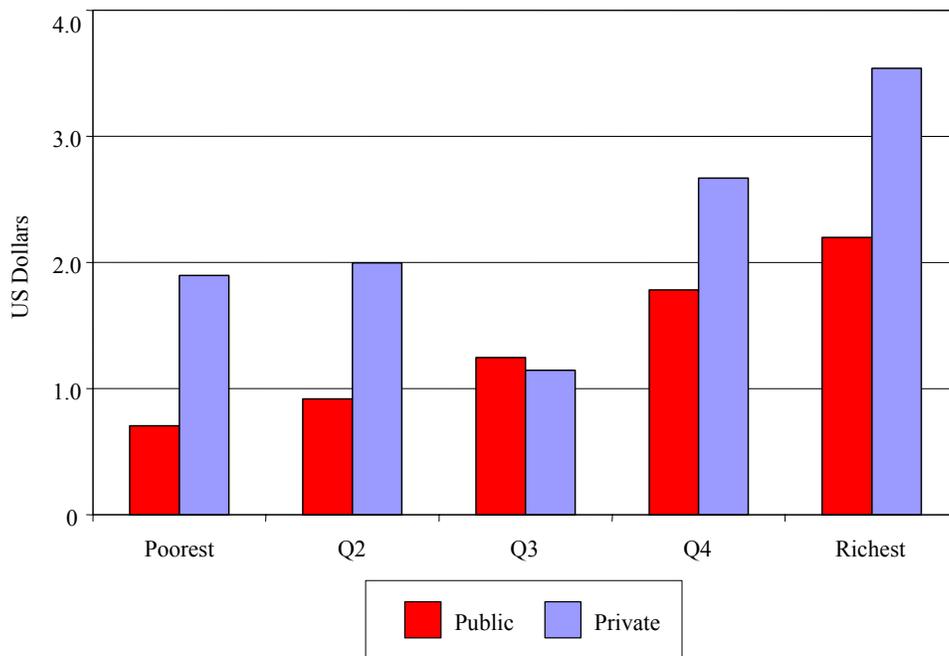
Source: 2001 TLSS.

Figure 5.11: Household Spending on Senior Secondary Education by Quintile, 2001
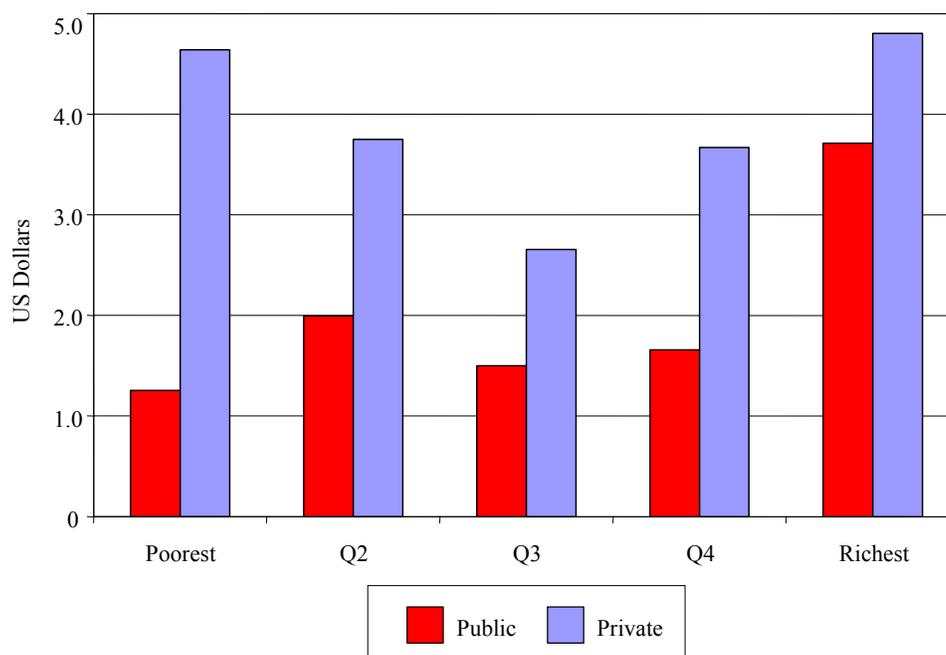
Determinants of Enrollment

5.10   Regression analyses found that household resources (represented by household expenditure) had a much weaker relationship with school enrollment in 2001 than in 1999 or 1995, after controlling for age, gender, and urban/rural residence.   These results are presented in Table 5.5[68]. For every 10 percent increase in household resources, enrollment rose by about 2 percentage points in 1995; 1.6 percentage point in 1999, 0.28 percentage point in 2001.

5.11   Age is by far the strongest predictor of enrollment in all models in 1995, 1999 and 2001, controlling for urban residence, gender and family resources. Unsurprisingly the relationship changes across the age distribution: at young ages every increase in 1 year of age, there will be an additional growth of enrollment. This is more so for the poor than the rich. At later ages (15 and above) the relationship is lower and will virtually flat by age 20.

5.12   Boys' enrollment increased more than girls as household resources rose. But boys benefited more in 1995 than in 1999 and 2001. Families prioritizing their sons' education over that of their daughters as incomes rise. The greater responsiveness to resources of boys enrollment relative to girls enrollment was still evident in 2001, but reduced to statistically insignificance.

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[68] See Appendix for additional regressions.

5.13   Both urban and rural enrollment responded to an increase in household resources. Rural people were much more likely to send their children to school than urban people even if their household resources rose at the same level. This was particularly striking in 1995 and 1999.   However, in 2001, there is no statistically meaningful association between family resources and enrollment.

5.14   In 1995, enrollment growth as household resources increased was largest in the 4th quintile (3.8 percentage point). In 1999, the poor began increase enrollment when household resources increased, but for the rich, the additional household expenditure did not lead to an additional increase in enrollment, presumably their children are already in school. In 2001, household resources have no statistically significant relationship to enrollment within each quintile. This is consistent with the pattern of enrollment expansion. The better off people benefited first from the expansion of the education system, and then as access was extended to the poor, they, too, benefited from it.

Table 5.5: Correlates of Enrollment (ages 5-24)

	1995	1999	2001
age spline ages 5-9	0.124	0.134	0.092
	(24.83) **	(25.25) **	(11.12) **
age spline ages 10-14	0.101	0.109	0.09
	(32.42) **	(33.28) **	(17.26) **
age spline ages 15-19	0.046	0.057	0.041
	(21.18) **	(24.65) **	(11.47) **
age spline ages 20-24	0.013	0.02	0.009
	(7.27) **	(10.52) **	(3.15) **
urban =1, else 0	0.083	0.139	0.14
	(4.58) **	(8.14) **	(6.71) **
male =1, else 0	0.049	0.005	0.005
	(4.83) **	(0.45)	(0.30)
log hh pc expend (nominal)	0.198	0.158	0.028
	(19.70) **	(14.09) **	(2.14) *
Sample	12,030	10,798	4,010

Note: Probit models with marginal effects shown. Absolute value of z-statistics in parentheses.
* Significant at 5% level   ** Significant at 1% level
Source: 1995 and 1999 Susenas, 2001 TLSS.

5.15   In spite of the accomplishments, many problems exist. These can be broadly grouped into three categories: (1) the broader demographic and societal context, (2) internal efficiency of the education system, and (3) the challenge to bring those out of school children into the system.

Broader demographic and societal context

Large share of school-age population

5.16   The population under the age of 15 accounts for 45 percent of total population, which is not uncommon among low income countries. For comparison, some OECD countries such as the United Kingdom and Japan, have less than 20 percent of its population under 15 year of age. Middle-income countries such as Peru are around 33 percent or more. In Timor-Leste, the population between birth and five is estimated to be 165,340, that between the ages of 6 and 11 is 151,604, and that between 12-14, 58,490 (Table 5.6). As the younger cohort is bigger than the older ones, the pressure on the state to provide education will keep growing in the foreseeable future.

Table 5.6: Estimated Population of Timor-Leste by Age Group

Age group	Estimated population
0 – 5	165,340
6 – 11	151,604
12 – 14	58,490
15 – 17	44,463
18 – 25	90,666

Source: 2001 TLSS.

Low adult educational attainment and literacy

5.17   At the same time, the adult population has very low educational attainment.. About 57 percent had had no or little schooling, 23 percent only primary education, 8 percent junior secondary education, 10 percent senior secondary education, and 1.4 percent higher education. The amount of schooling and literacy rates vary by age-groups and by consumption quintiles. The older the generation and the poorer they were, the least opportunity they had for education and more likely that they are illiterate. Among the adults who have attended school, grade attainment is low (Table 5.7 and Table 5.8).

5.18   Figure 5.13 and Figure 5.14 below show that the ability to read among the cohort who are 30 years of age and over are much lower than the 13-15 year-olds at all consumption quintiles. The implications are that the pool of well educated persons who could be recruited to teach in the schools is very small, posing a constraint to efforts to improve education quality. Moreover, since many parents are not literate, they could not be relied upon to help their children with homework.

Figure 5.12: Ever Attended School by Quintile and Age
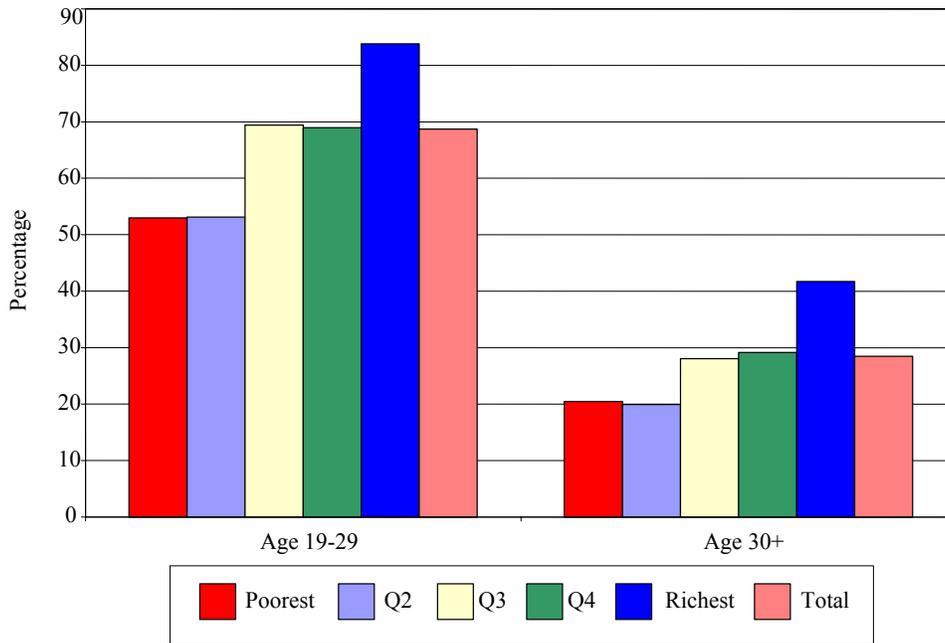
Source: 2001 TLSS.

Figure 5.13: Can Read A Letter by Quintile?, Adults 30 and older
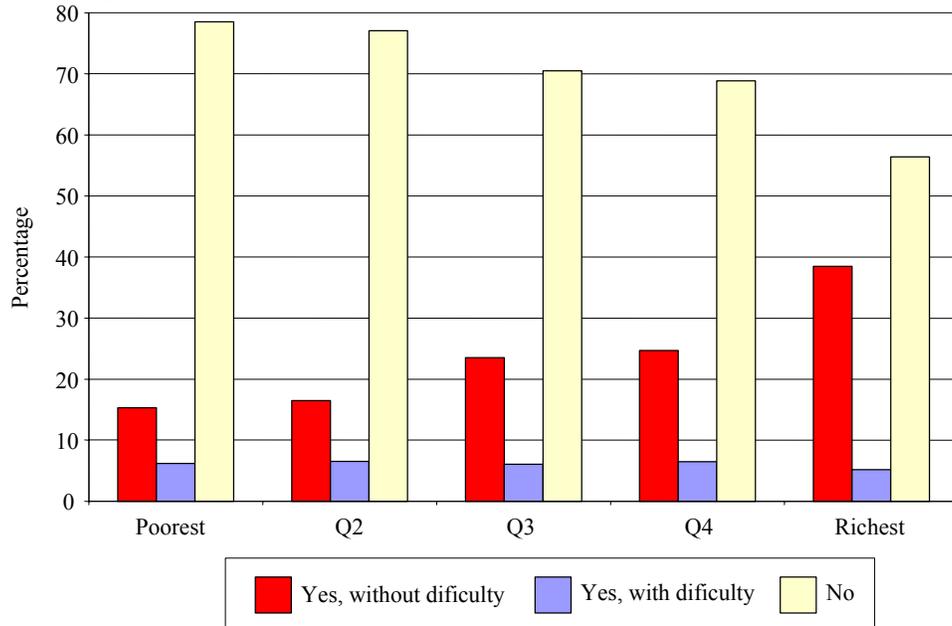
Source: 2001 TLSS.

Figure 5.14: Can Read A Letter by Quintile?, Ages 13-15
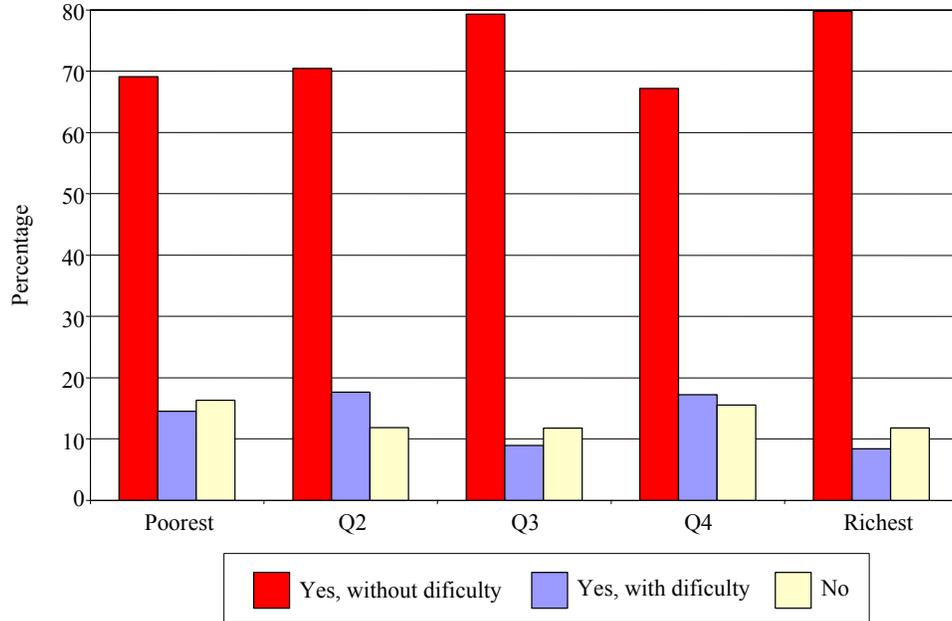
Source: 2001 TLSS.

Table 5.7: Highest Grade Completed among those who have attended, Ages 19-29

	Poorest	Quintile 2	Qunitile 3	Quntile 4	Richest	All
1	0.0	0.0	1.7	1.3	0.1	0.6
2	3.6	4.8	4.8	3.4	2.3	3.5
3	8.9	5.2	1.2	4.0	4.6	4.3
4	7.6	5.9	4.6	5.9	3.9	5.1
5	12.3	15.7	7.2	7.8	3.4	7.6
6	16.9	20.5	19.4	10.6	13.5	15.4
7	6.2	2.2	1.4	2.1	3.3	2.9
8	8.6	6.0	4.5	9.6	6.6	6.9
9	16.1	13.1	17.6	10.7	13.9	14.1
10	4.4	0.8	3.6	3.3	3.8	3.3
11	3.6	6.1	5.6	5.9	3.2	4.6
12	11.6	19.4	24.3	31.2	31.3	26.3
13	0.2	0.3	4.1	4.3	10.2	5.5

Source: 2001 TLSS.

Table 5.8: Highest Grade Completed among those who have attended, Ages 30 and older

	Poorest	Quintile 2	Qunitile 3	Quntile 4	Richest	All
0	0.0	0.0	0.0	0.7	0.0	0.2
1	5.3	2.7	2.4	0.3	0.3	1.7
2	8.6	12.0	11.9	10.1	5.9	9.1
3	7.2	16.0	11.9	9.2	10.4	10.7
4	14.3	9.6	9.8	7.7	4.5	8.2
5	8.0	6.8	4.6	4.3	3.2	4.8
6	28.7	14.3	23.5	17.0	17.4	19.5
7	1.4	1.6	0.8	2.4	0.4	1.2
8	0.5	3.3	3.1	5.5	3.4	3.4
9	15.7	16.0	12.4	13.4	11.6	13.3
10	0.0	1.2	1.1	0.0	0.2	0.5
11	0.0	3.2	0.2	2.3	2.6	1.8
12	10.0	12.2	18.0	25.0	34.1	23.1
13	0.4	1.2	0.1	2.2	6.0	2.7

Source: 2001 TLSS.

Low Internal Efficiency of the Education System

Over-aged students are the vast majority in the system

5.19   Although many students who did not enroll in 1999 did so in 2000 or 2001, most of them attended lower grades in primary education. For example, in 2000/01, over 70,000 students enrolled in Grade 1, more than double the estimated number of the 6-year-old (Figure 5.15).

5.20   Gross and net enrollment rates in Timor-Leste are, thus, far apart.[69] The gross enrollment ratio in primary education at 102 at first appeared to be respectable. However, net enrollment ratio shows that only 73 percent of the students in primary education are of the right age group. This misalignment of grade by age signals serious internal efficiency problems.

5.21   Since most of the students enrolled only in lower grades, whatever skills they were learning must be very low level. As late entrance is common, students tend to have fewer years of schooling, particularly among the poor because they tend to drop out once they reach adolescents and can help the family. Even if they do not have to leave school to work, for the content of education is likely to be inappropriate for over-aged students. They could easily lose interest and drop out.

5.22   Table 5.9 shows the number of students of various ages in each grade. The dark shading indicates the number of students who are of the right age in the right grade. The light shading shows a very large number of students, often more numerous, are older than the age they are supposed to be in that grade.

5.23   Table 5.10 converts the number of students into percentage to show the distribution. In Grade 1, about 31 percent of students are of the right age. They declined to 5 percent by Grade 9. This indicates a serious problem of inefficiency in the education system.

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[69] Gross enrollment ratio in primary education is derived from the number of students in a given cycle of education, irrespective of their age, divided by the total number of children of the relevant age group. Net enrollment ratio is the number of students of the right age enrolling in the right cycle.

Figure 5.15: Enrollment by Grade and Relevant School-Age Population
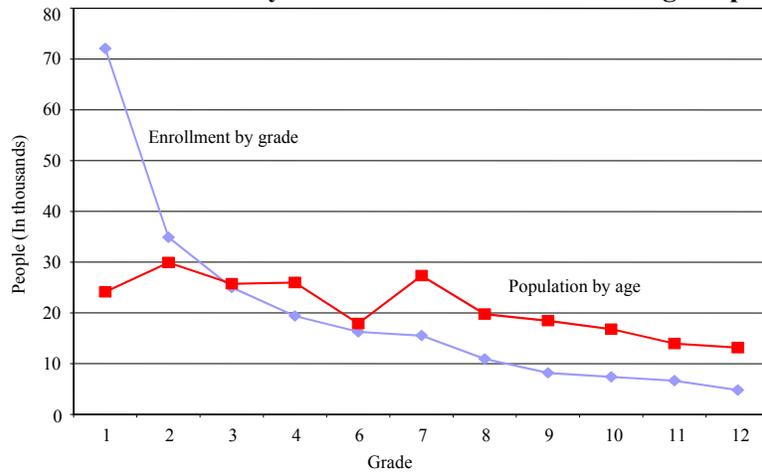
Source: 2001 TLSS.

Figure 5.16: Population by Age and Enrollment by Grade, 2000/01
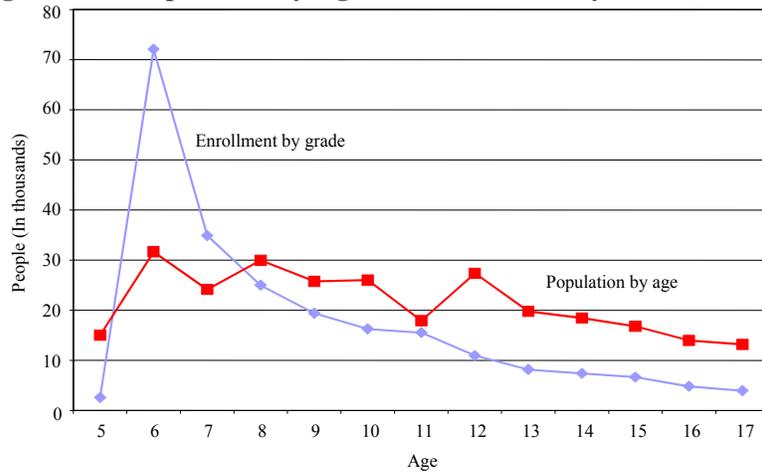
Source: 2001 TLSS.

Figure 5.17: Enrollment by Grade at the Right Age, 2000/01

Source: 2001 TLSS.

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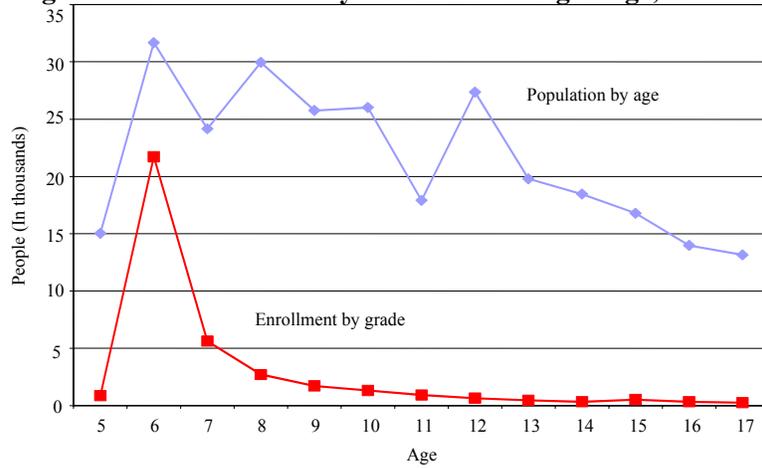
Table 5.9: Students by Grade and Age, 2001

	Pre primary	Grade 1	2	3	4	5	6	7	8	9	10	11	12
3	251	61											
4	664	207	10	1									
5	861	1,526	51	12									
6	607	21,725	764	39									
7	92	20,278	5,641	367	32	10							
8	9	12,385	8,776	2,722	206	8	2						
9		6,354	6,984	4,995	1,729	167	10						
10		3,612	4,700	5,573	3,553	1,337	139						
11		1,643	2,747	3,920	3,897	2,634	935	42	4				
12		967	1,865	2,920	3,777	3,458	2,183	646	66	4			
13		479	941	1,726	2,579	3,168	3,046	1,318	471	71	2		
14		246	543	828	1,611	2,474	3,229	2,059	1,045	344	91	32	1
15		185	334	431	785	1,381	2,674	2,429	1,664	939	522	151	12
16		77	160	308	405	703	1,903	1,933	1,950	1,621	1,155	340	115
17		17	60	161	77	187	535	1,436	1,545	1,826	1,504	935	258
18		8	15	85	33	61	178	645	866	1,297	1,349	1,156	771
19		2	2	41	22	18	110	235	357	856	912	966	944
20								43	60	211	352	542	732
21								14	35	95	130	237	459
22								3	7	17	24	75	192
23								3		3	5	22	105
24								2		6	1	12	60
25										3	3	3	44
Total	2,484	69,772	33,593	24,129	18,706	15,606	14,944	10,743	7,968	6,958	5,535	3,580	2,101

Source: School Mapping 2001.

Table 5.10: Students by Grade and Age (%), 2001

	Pre primary	Grade												
		1	2	3	4	5	6	7	8	9	10	11	12
3	10.1	0.1												
4	26.7	0.3	0.0											
5	34.7	2.2	0.2	0.1										
6	24.4	31.1	2.3	0.2										
7	3.7	29.1	16.8	1.5	0.2	0.1								
8	0.4	17.8	26.1	11.3	1.1	0.1	0.0							
9		9.1	20.8	20.7	9.2	1.1	0.1							
10		5.2	14.0	23.1	19.0	8.6	0.9							
11		2.4	8.2	16.3	20.8	16.9	6.3	0.4	0.1					
12		1.4	5.6	12.1	20.2	22.2	14.6	6.0	0.8	0.1				
13		0.7	2.8	7.2	13.8	20.3	20.4	12.3	5.9	1.0	0.0			
14		0.4	1.6	3.4	8.6	15.9	21.6	19.2	13.1	4.9	1.6	0.9	0.1
15		0.3	1.0	1.8	4.2	8.9	17.9	22.6	20.9	13.5	9.4	4.2	0.6
16		0.1	0.5	1.3	2.2	4.5	12.7	18.0	24.5	23.3	20.9	9.5	5.5
17		0.0	0.2	0.7	0.4	1.2	3.6	13.4	19.4	26.2	27.2	26.1	12.3
18		0.0	0.0	0.4	0.2	0.4	1.2	6.0	10.9	18.6	24.4	32.3	36.7
19			0.0	0.2	0.1	0.1	0.7	2.2	4.5	12.3	16.5	27.0	44.9
20								0.4	0.8	3.0	6.4	15.1	34.8
21								0.1	0.4	1.4	2.4	6.6	21.9
22								0.0	0.1	0.2	0.4	2.1	9.1
23								0.0		0.0	0.1	0.6	5.0
24								0.0		0.1	0.0	0.3	2.9
25										0.0	0.1	0.1	2.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: School Mapping 2001.

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Table 5.11: Gross and Net Enrollment Ratios

	1998/99	1999/00	2000/01	2001/02
Gross enrollment ratio				
Primary (7-12 years old)	89%	84%	113%	110%
Jr. secondary (13-15 years old)	44%	42%	47%	51%
Sr. secondary (16-18 years old)	19%	21%	26%	28%
Net enrollment ratio				
Primary (7-12 years old)	51%	52%	67%	70%
Jr. secondary (13-15 years old)	24%	21%	22%	25%
Sr. secondary (16-18 years old)	11%	12%	16%	17%

Source: 2001 TLSS.

Table 5.12: Net Enrollment Ratio Using Age 6 as the starting age (as proposed)

	1998/99	1999/00	2000/2001	2001/2002
Primary (6-11 years old)	57%	50%	68%	64%
Jr. secondary (12-14 years old)	17%	14%	15%	16%
Sr. secondary (15-17 years old)	7%	9%	9%	7%

Source: 2001 TLSS.

The poverty dimension is largely manifested through the grade-age mis-alignment.

5.24   Poor children tend to concentrate in lower grades whereas children from upper quintiles tend to distribute a little more evenly across different grades. Even if the total years of school are the same, the richest quintile has a higher level of attainment than the poor. Figure 5.18 shows the distribution of students from the poorest and the richest quintile by age and grade (see Table 5.13 for underlying statistics).

5.25   The mis-alignment was worst among the poorest quintile (Table 5.14). Only 10% of children of the poorest quintile started Grade 1 at age 7; 26% of them started at age 9. By contrast, 29% of children of the richest quintile started Grade 1 at age 7 (Table 5.15). Boys were doing worse than girls on the whole. Although more of them started Grade 1 at age 7 (22% versus girls' 14%), girls over-took boys by Grade 3 due to lower repetition rates. Rural children were by far worse off than urban children. Only 16% of rural children started Grade 1 at age 7, compared with 28% of urban children. By Grade 4, only 6% were of the right age, compared with 12% of urban children.

Figure 5.18: Enrollment by Grade and by Poorest and Richest Quintiles
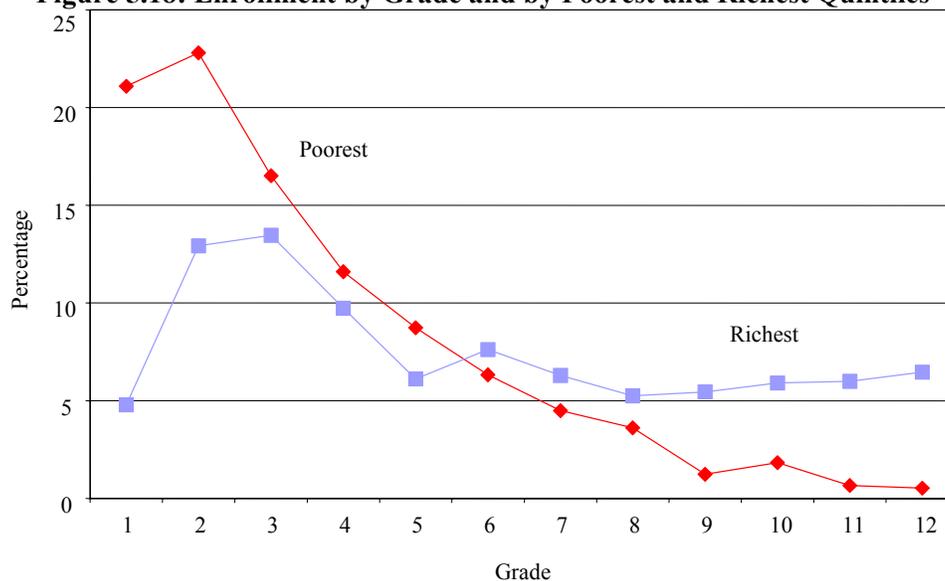
Source: 2001 TLSS.

Table 5.13: Enrollment by Quintile and Grade, 2001

	Poorest	Quintile 2	Quintile 3	Quintile 4	Richest
0	0.1	0.0	0.7	0.1	0.4
1	21.1	14.3	12.0	8.6	4.8
2	22.8	24.3	20.7	18.6	12.9
3	16.5	16.5	13.3	15.1	13.5
4	11.6	10.9	12.7	11.5	9.7
5	8.7	10.5	8.7	8.3	6.1
6	6.3	9.0	7.4	9.4	7.6
7	4.5	5.3	6.4	6.8	6.3
8	3.6	2.4	5.1	7.3	5.3
9	1.2	2.9	4.0	3.9	5.5
10	1.8	1.3	3.4	3.9	5.9
11	0.7	1.3	2.3	1.9	6.0
12	0.5	0.9	0.8	2.2	6.5
13	0.4	0.5	1.1	1.5	4.2
14	0.0	0.0	0.5	0.4	1.8
15	0.0	0.1	0.6	0.3	1.2
16	0.0	0.0	0.2	0.3	1.2
17	0.0	0.0	0.0	0.0	0.3
18	0.0	0.0	0.1	0.1	0.5
19	0.1	0.0	0.0	0.0	0.4

Source: 2001 TLSS.

Table 5.14: Age Distribution by Grade of the Poorest Quintile (%)

	G-1	G-2	G-3	G-4	G-5	G-6	G-7	G-8	G-9	G-10	G-11	G-12
5	3.6	1.5										
6	6.7	2.7										
7	10.3	4.0	2.1									
8	21.8	6.8	4.6	2.6								
9	26.0	17.1	5.3	1.6								
10	8.6	20.9	14.6	10.1	10.2							
11	12.8	21.5	15.3	8.3		5.9						
12	4.5	10.6	14.4	20.0	17.7							
13	1.0	5.9	21.5	26.1	11.9	15.1	3.6	25.9				
14	3.0	3.9	11.7	15.5	13.6	21.1	26.5					
15	1.0	1.8	2.4	12.9	18.9	13.8	22.6		16.3	5.2		25.3
16	0.8		8.3		24.8	24.5	18.6	44.9	18.0	14.9		
17		1.3		3.0	1.5	11.4	13.2	29.2	14.4	22.2		28.8
18		2.0			1.4	1.9			5.2	17.1		25.3
19						6.4	6.6		7.6	40.6	46.3	16.8
20							8.8		38.6		53.7	
23												3.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: 2001 TLSS.

Table 5.15: Age Distribution by Grade of the Richest Quintile (%)

	G-1	G-2	G-3	G-4	G-5	G-6	G-7	G-8	G-9	G-10	G-11	G-12
5	2.4											
6	8						0.7					
7	28.5	11.7	4.8		1.4							
8	20.6	18.6	4.7	1.3	1							
9	14.5	23.4	26	7.4	1.8							
10	11.4	15	32.4	7.9		2.5	1.7					
11	2.7	6.4	4.8	14.9	10.7	1.5	1.6					
12	8.2	18.4	8.4	24.2	12.2	21.4	5.4	9.4				
13		3.3	5.4	9.4	30.4	20.8	8.9	9.4				
14		3.2	3.9	19.3	13.5	18.3	21.9	8.4	7.8			
15	2.4		2.2	5.5	6.2	18.2	28.1	18	3.2	2.9	2.2	
16			3.4	2.1	12.1	10.8	12	22.1	13.1	6.6	4.2	4.4
17	1.3		4.1			1.4	12.7	10.2	18.3	32.5	18.8	
18					10.8		2.2	15	26.2	27.1	35.1	25
19							2.4	7.5	23.2	22.9	7.1	15.5
20						5.2			8.3	3.8	3.2	17.1
21							2.2			4.3	15.1	12.8
22											2.8	4.2
23				8.1							3.3	10.8
24											8.3	4.2
25												6.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: 2001 TLSS.

High repetition and dropout rates

5.26   Table 5.16 shows statistics on repetition and drop-out rates. Between 20-25 percent of children repeated and around 10 percent dropped out each grade in primary education and junior secondary education (Grade 7-9). Senior secondary education has lower dropout and repetition rates who move up to that level are more persistent and also tend to come from wealthier families who do not need their labor to support the family. Girls have lower repetition and dropout rates and higher promotion rates.

5.27   A cohort flow analysis found that at this level of internal efficiency, only 67 percent of children would reach Grade 4, and 47 percent would eventually complete grade 6, while 53 percent would drop out. On average, the dropouts would complete 4 grades. The cost per student for 6 years of primary education is about $300.00. The cost per graduate, however, is twice as much because of the repetition and dropout rates.

5.28   This high level of wastage has serious implications. From the educational point of view, the levels of skills acquired by those who have enrolled are likely to be low because about half of them are not in school long enough to learn. From the fiscal perspective, this entails high levels of spending without educating as many children as it should. The cost per graduate is the key measure of efficiency of resource use. The large number of children who are still out of school and a larger younger cohort that need to be educated in the future are bearing the real cost of inefficient use of resources.

Table 5.16: Repetition, Promotion and Dropout Rates by Grade (%)

Primary Grades	G-1	G-2	G-3	G-4	G-5	G-6
Males						
Repetition	20	24	25	25	25	23
Promotion	70	68	66	67	66	68
Dropout	11	9	9	9	10	9
Females						
Repetition	20	23	24	24	23	20
Promotion	70	69	68	68	69	72
Dropout	10	8	8	8	9	8
Secondary Grades	G-7	G-8	G-9	G-10	G-11	G-12
Males						
Repetition	23	25	24	9	10	11
Promotion	71	68	69	87	86	87
Dropout	6	6	7	3	4	2
Females						
Repetition	21	23	24	9	8	8
Promotion	75	70	70	89	90	90
Dropout	5	7	6	2	3	2

Source: School Mapping 2001.

Out-of-school children

5.29   Most of those out of school children are the 6- and 7-year-olds from the lower quintiles (Table 5.17). As the poor tend to have more children, so the school-age population in the poorest quintile is also larger than that in other quintiles. The proportion of out-of-school children is also largest among the bottom quintile. Table 5.18 presents an estimate of the percentage and the number of out-of-school children between the ages of 6 and 14 by quintile.

5.30   Since the vast majority of children in school are over-aged, it should not be read that some 54,000 new places need to be created permanently in primary schools over and above the existing ones to accommodate the out-of-school children. If the over-aged students can attend upper grades or move to junior secondary education, more space will be available to accommodate many the out of school children between 6 and 11 so that the need for additional places is not so enormous.

5.31   Table 5.19 illustrates the point. The current enrollment in primary education exceeds the total number of the relevant aged children. Therefore, if the age by grade distribution becomes more normal, there will be sufficient places in primary schools to accommodate many of those who are out of school now. However, to make room for them, junior secondary education has to be expanded. Eventually, senior secondary has to be expanded as well to accommodate the incoming cohort.

Figure 5.19: Out of School Children and Youth by Age, 2001

Source: 2001 TLSS.
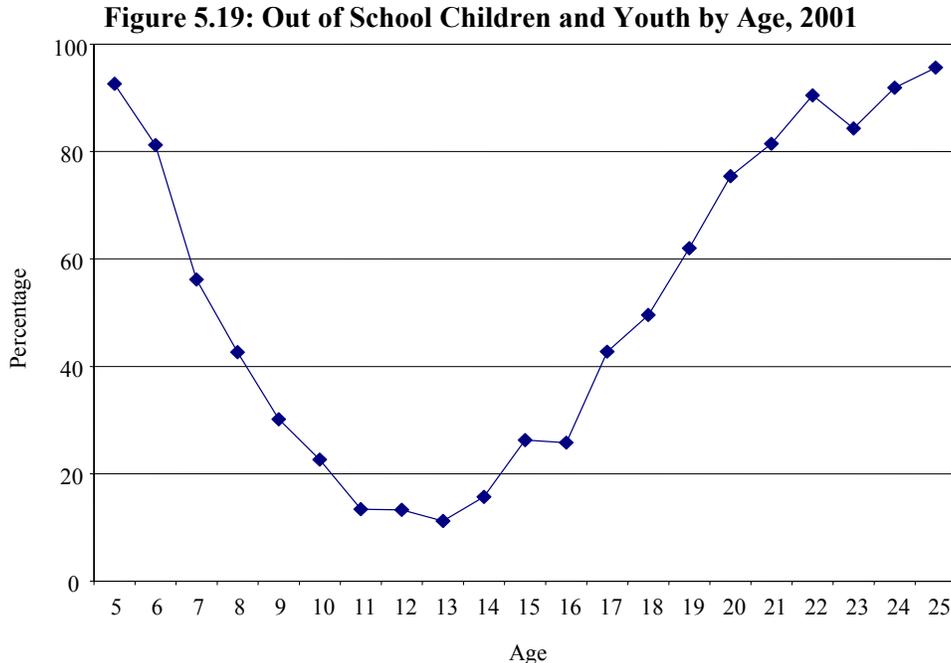
Table 5.17: Out-of-School Children by Quintile and Age (%)

	Poorest	Quintile 2	Quintile 3	Quintile 4	Richest
6	86	76	73	88	85
7	71	55	60	58	7
8	45	40	48	43	32
9	39	22	33	32	13
10	15	21	25	31	23
11	10	16	18	12	12
12	19	16	10	19	0
13	16	11	5	12	11
14	18	26	13	4	11

Source: 2001 TLSS.

Table 5.18: Out-of-School Children by Quintile and Age

	Poorest	Quintile 2	Quintile 3	Quintile 4	Richest
6	6,458	5,511	4,947	5,476	3,160
7	4,372	3,434	3,820	2,729	172
8	2,967	2,536	2,859	2,529	1,035
9	3,196	1,018	1,565	1,265	426
10	778	1,193	900	1,458	791
11	501	579	762	526	184
12	877	834	423	563	
13	739	451	181	570	281
14	790	1,199	526	98	286

Source: 2001 TLSS.

Table 5.19: Number of Enrolled and Relevant Age Population

	Primary	Junior Secondary	Senior Secondary
Enrollment in 2000	183,268	26,542	15,443
Relevant age population	155,487	65,595	43,945

Source: ETTA Education Division Statistics and 2001 TLSS.

5.32   Given the challenges, the priorities should be given first to primary education and then junior secondary education.

5.33   To enroll those who are currently out of school should be the first priority in primary education. To align age and grade should be simultaneously undertaken by encouraging parents to send their children to school no later than age 7, and by accelerating the progress of over-aged students to higher grade in order to make room for new comers. To reduce dropout of existing students should be part of the efforts to universalize primary education, which entails ensuring that all students complete the primary cycle and become literate and numerate. This is critical to improving the skills of the future work force both for nation building and for economic development. If resources are extremely constrained, the government should focus on achieving these objectives in primary education.

5.34   However, if additional resources are available, they should be spent on junior secondary education. Expansion of junior secondary education would enable older children to enroll in the grade suitable for their age instead of staying in primary education. Expansion is also necessary even to maintain the transition rate from primary to secondary to accommodate the increasing number of students coming out of primary education. To impart high levels of skills and to preempt the problems of youths-at-risks (which would have implications for crime and violence and for public expenditures on police and correctional services), it is important to channel their youthful energy to meaningful and construction activities through schooling.

Proposed Strategies

5.35   To design successful strategies to reach the above-mentioned objectives, it is important to understand why people do not enroll their children and why students drop out. Different strategies are needed to address the supply-side and the demand-side issues and to address the major constraints.

<div align="center">**DEMAND SIDE ISSUES**</div>

5.36   Demand side issues can be assessed from the reasons for non-attendance given by parents. They vary across age groups.

Reason for never attending

5.37   Figure 5.20-Figure 5.22 highlight the key determinants of non-attendance for school age children 5-15 years[70]. The vast majority of out-of-school children are 5- and 6-year-old, and the reasons given for non-enrollment by their parents is that they belief

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[70] The tables in the Appendix present details of all the possible reasons for non-attendance, including those that turn out to be less of determining factors.

that the children are not of the right school age. The issue could be relatively easy to address by providing public information that the right school age for Grade 1 is ages 6. At the same time, teachers should be informed that they should not turn 6-year-olds away from school.

5.38   The reasons for never attending school are more complicated for 7-12 year olds. Only about 27 percent or so considered that they were not of the right school age (most probably the 7-year-olds who were considered to be below school age). The demand side issues seem to be more of the determining factor. About 32 percent of the poorest and 26 percent of the richest had "no interest" in schooling. "No supplies" and "too expensive" are the concerns for the bottom two quintiles. "Illness" also affects the poor more than the rich. On the supply side, "school too far" is a key factor cited for non-attendance. "No teachers" is also another factor that affects the poor more than the rich.

5.39   Multi-pronged strategies are needed to bring the out of school children in this key age group into schools. The lack of interest might be related to the relevance of schooling to their lives and their future livelihood. In Timor-Leste, the labor market is largely informal and there is no obvious link between educational attainment and jobs outside of the public sector. Therefore, there is less of an economic incentive for people to attend school.

5.40   There is no immediate recourse but making the curriculum more relevant (perhaps more information on health, natural/science/environmental studies, and social studies could help). Given the dispersion of ages, multi-grade teaching techniques and instructional materials to enable children to progress on their own pace could be helpful. The use of interaction radio to teach math, language(s), and other subjects, which has proven to be very cost effective in many countries, could be explored, both to help teachers and perhaps to mitigate the "no teacher" problem, and make schooling more interesting.

5.41   If schools are to be built in order to bring them closer to remote communities, the location should be considered carefully. The entire teacher support strategy (such as multigrade teaching and supporting text material for student self-learning) has to be part of the school building program otherwise a simple supply of school places would not address the lack of demand problem.

5.42   For those ages 13-15, the lack of interest is cited as the major reason for never attended school (Figure 5.22). The strategies could be similar to above. At the same time, there are competing demand for the adolescents' labor in agriculture and home. The increasing complexity in the reasons for never attended school reiterates the earlier points that the sooner the children go to school, the more years of schooling they will have before the onset of these new problems which deter them from attending school.

Figure 5.20: Reasons for Never Attended, Ages 5-6, 2001
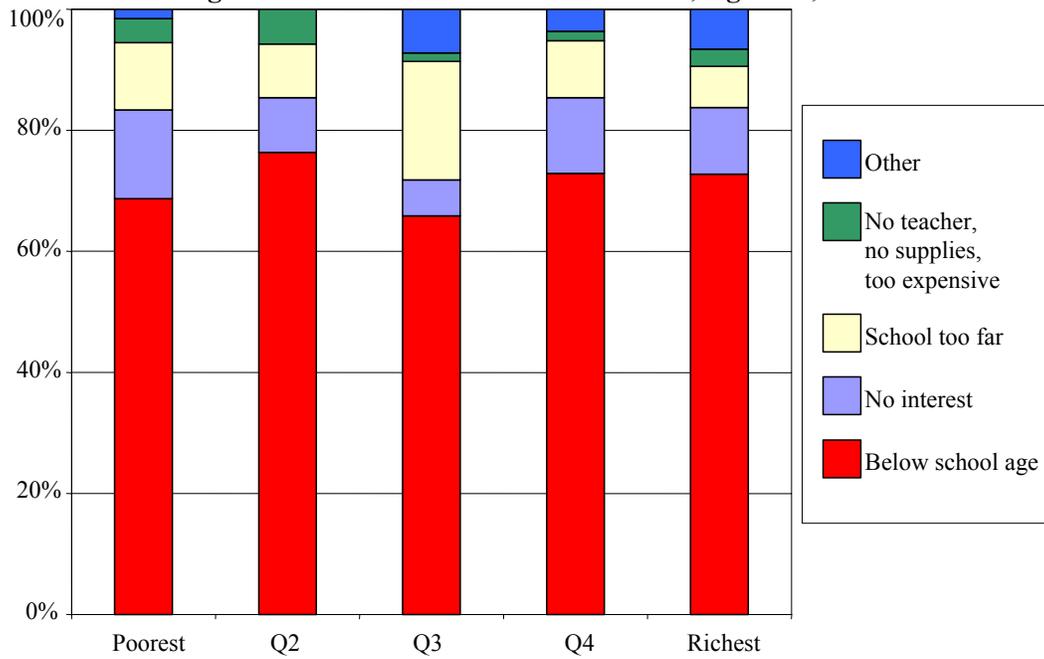
Source: 2001 TLSS.

Figure 5.21: Reasons for Never Attended, Ages 7-12, 2001

Source: 2001 TLSS.

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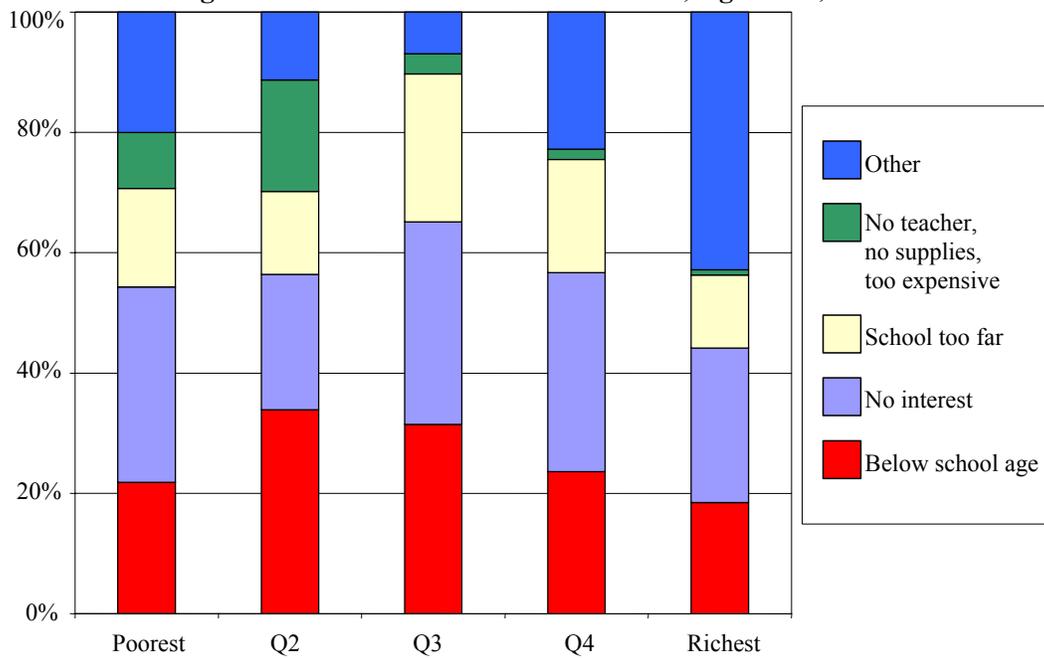
Figure 5.22: Reasons for Never Attended, Ages 13-15, 2001
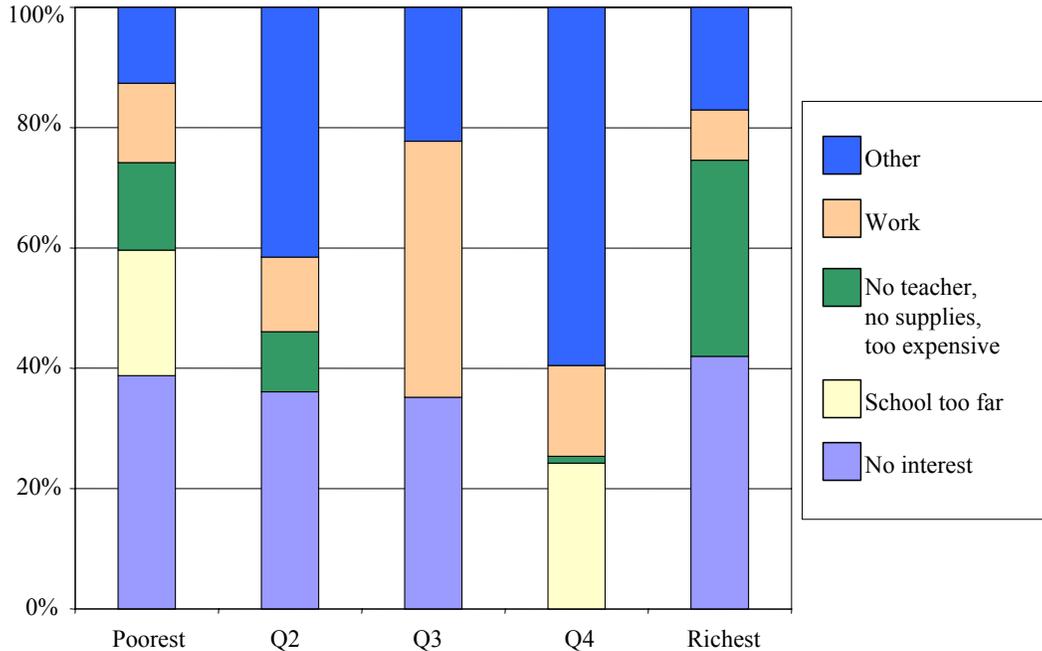
Source: 2001 TLSS.

Absenteeism

5.43   The number of days student were absent in 2000/01 among those who attended is a good indicator of whether they find it worthwhile to go to school. Table 5.20-Table 5.21 show that the poorest two quintiles have the lowest absenteeism in primary education, while the top quintile has the highest. The vast majority has no more than six days absence within a three month period, which is not bad. Similar patterns hold for junior secondary and senior secondary education.

5.44   In primary school, the overwhelming reason for absence was illness (66 percent), across all quintiles (Table 5.22). Distance from the school weighs more heavily for the lower 4 quintiles but does not affect the richest quintile at all. Work accounted for more reasons of absenteeism of the upper quintile than lower quintile.

5.45   By junior secondary education, illness still accounts for 77 percent of absenteeism across all quintile (Table 5.24). School too far and work at home affect the poorest disproportionate more than the other quintiles. In senior secondary education, illness again accounts for the highest percentage of absenteeism (81 percent) and affects students across the board (Table 5.26). These findings show remarkable persistency among those who attend school to come to school. Illness is a major reason for absenteeism. It is important for the Ministry of Education to join with Ministry of Health to address the health issue as a common problem facing these two sectors.

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Table 5.20: Any Days Absence in Primary Education within the last 3 months

	Poorest	Quintile 2	Quintile 3	Quintile 4	Richest
Zero	78	72	57	65	54
1 day or more	22	28	43	35	46

Source: 2001 TLSS.

Table 5.21: Number of Days Absence in Primary Education within the last 3 months

	Poorest	Quintile 2	Quintile 3	Quintile 4	Richest	All
0	77.8	72.3	55.8	65.0	54.0	66.4
1	1.7	3.1	3.5	1.9	4.0	2.7
2	3.5	5.7	9.6	5.5	10.0	6.5
3	2.6	2.7	4.1	2.3	5.8	3.3
4	1.3	3.1	3.7	5.8	5.5	3.6
5	2.5	4.5	3.9	4.2	4.4	3.8
6	3.3	1.5	9.2	6.9	5.7	5.1
7	1.0	0.4	0.9	3.5	3.3	1.6
8	0.9	1.3	0.7	0.5	2.5	1.1
9	0.0	0.0	0.7	0.0	0.0	0.1
10	0.9	3.0	3.0	2.0	2.1	2.2
12	1.8	1.0	1.8	0.0	1.2	1.2
13	1.0	0.0	0.5	0.1	0.3	0.4
14	0.4	0.0	0.0	0.0	0.0	0.1
15	0.4	0.0	0.0	0.1	0.0	0.1
16	0.0	0.6	0.0	0.0	0.0	0.1
18	0.3	0.4	0.0	0.9	0.0	0.3
20	0.5	0.1	1.2	0.0	0.0	0.4
21	0.0	0.0	0.0	0.9	0.0	0.2
26	0.0	0.0	0.5	0.0	0.0	0.1
28	0.0	0.0	0.0	0.0	0.3	0.1
30	0.0	0.3	1.2	0.0	0.0	0.3
35	0.1	0.0	0.0	0.0	0.0	0.0
38	0.0	0.0	0.0	0.5	0.0	0.1
60	0.0	0.0	0.0	0.0	0.2	0.0
80	0.0	0.0	0.0	0.0	0.7	0.1

Source: 2001 TLSS.

Table 5.22: Reasons for Absenteeism in Primary Education

	Poorest	Quintile 2	Quintile 3	Quintile 4	Richest	All
Illness	68.5	78.2	63.1	57.1	65.4	66.1
Other	12.9	9.1	7.4	3.2	11.9	8.6
School too far	9.6	2.2	6.1	8.5	0.0	5.2
No interest	3.3	1.1	4.0	3.4	0.0	2.5
Family illness/death	1.6	0.0	0.0	1.5	1.1	0.8
Safety	1.4	0.0	0.0	0.0	0.0	0.2
No supplies	1.4	0.7	0.0	0.0	0.0	0.4
No teacher	0.8	0.7	0.5	0.0	0.0	0.4
Harassment	0.5	1.5	1.9	0.0	0.7	1.0
Completed studies	0.0	0.0	0.0	0.0	0.8	0.2
Too expensive	0.0	0.0	0.0	0.0	1.3	0.3
Agricultural work	0.0	4.1	3.3	16.3	3.1	5.4
Work at home	0.0	1.2	11.1	9.4	14.5	7.7
Other work	0.0	0.0	0.9	0.0	1.2	0.5
Displaced	0.0	0.0	0.0	0.5	0.0	0.1
Language	0.0	1.3	1.8	0.0	0.0	0.7

Source: 2001 TLSS.

Table 5.23: Number of Days Absence in Junior Secondary Education within the last 3 months

	Poorest	Quintile 2	Quintile 3	Quintile 4	Richest	All
0	78.1	72.0	58.8	64.8	71.2	67.9
1	1.7	7.5	3.0	5.9	1.3	3.7
2	0.0	4.4	5.6	5.3	2.6	3.8
3	2.1	3.9	15.2	6.0	3.5	6.7
4	0.0	0.0	7.7	4.7	1.9	3.4
5	4.1	7.8	1.1	4.5	3.8	3.9
6	5.8	0.0	2.6	5.0	7.0	4.5
7	0.0	0.0	1.9	0.0	4.1	1.6
8	0.0	2.2	0.0	0.0	1.8	0.8
10	3.9	2.2	1.5	1.3	0.0	1.5
12	4.3	0.0	2.6	0.0	0.0	1.2
15	0.0	0.0	0.0	0.0	1.6	0.5
21	0.0	0.0	0.0	0.7	0.0	0.2
30	0.0	0.0	0.0	0.0	1.1	0.3
90	0.0	0.0	0.0	1.8	0.0	0.4

Source: 2001 TLSS.

Table 5.24: Reasons for Absenteeism in Junior Secondary Education

	Poorest	Quintile 2	Quintile 3	Quintile 4	Richest	All
Illness	47.5	84.0	77.1	93.0	71.1	77.7
School too far	33.7	0.0	18.3	0.0	1.7	9.0
Work at home	18.8	0.0	0.0	7.0	6.1	4.9
Below school age	0.0	0.0	0.0	0.0	2.1	0.5
Agricultural work	0.0	0.0	3.4	0.0	7.6	2.9
No supplies	0.0	0.0	0.0	0.0	3.8	0.9
Family illness/death	0.0	16.0	0.0	0.0	7.6	3.8
Other	0.0	0.0	1.1	0.0	0.0	0.3

Source: 2001 TLSS.

Table 5.25: Number of Days Absence in Senior Secondary Education within the last 3 months

	Poorest	Quintile 2	Quintile 3	Quintile 4	Richest	All
0	84.5	63.5	71.4	77.8	72.8	73.5
1	0.0	3.7	0.0	0.0	0.0	0.3
2	13.7	10.7	9.1	8.6	7.0	8.4
3	0.0	8.5	6.3	7.6	6.0	6.2
4	0.0	0.0	1.8	1.6	1.5	1.3
5	0.0	2.7	7.9	0.0	4.3	3.7
6	0.0	0.0	3.5	0.0	2.7	1.9
7	1.9	0.0	0.0	1.8	2.1	1.5
10	0.0	11.0	0.0	2.7	1.7	2.3
12	0.0	0.0	0.0	0.0	1.1	0.5
15	0.0	0.0	0.0	0.0	0.8	0.4

Source: 2001 TLSS.

Table 5.26: Reasons for Absenteeism in Senior Secondary Education

	Poorest	Quintile 2	Quintile 3	Quintile 4	Richest	All
Illness	88.1	76.4	100.0	93.5	71.4	81.5
Other	11.9	0.0	0.0	0.0	10.5	5.7
Work at home	0.0	10.1	0.0	0.0	9.9	6.1
No teacher	0.0	6.0	0.0	0.0	4.1	2.8
Family illness/death	0.0	0.0	0.0	6.5	4.1	3.0
Harassment	0.0	7.5	0.0	0.0	0.0	0.9

Source: 2001 TLSS.

Other Aspects of School Attendance

5.46   Distance from school and means of transportation may affect the decision to go to schools. Table 5.27 shows that almost all the poor walk to school. Even the majority of the richest quintile also walks. The table below shows the average minutes to get to school among those who attended. Some people may take twice as long while others take much less.

5.47   The vast majority also has had breakfast before school. Thus, the lack of energy may not be a likely reason for non-attendance for the majority. However, for that minority who did not have breakfast, it could be an important factor. In the season when food is scarce, a school breakfast program might induce attendance.

Table 5.27: Aspects of School Attendance

	Poorest	Quintile 2	Quintile 3	Quintile 4	Richest
Means of Transportation to School (%)					
Walk	97	96	94	94	73
Bicycle	1	0	0	0	1
Car	0	0	0	0	4
Bus	2	4	6	6	22
Minutes of Walking to School					
Primary	18	21	31	25	28
Junior Secondary	71	52	61	45	30
Senior Secondary	19	54	45	36	26
Have Breakfast before Going to School? (%)					
Yes	93	98	95	98	99
No	7	2	5	2	1

Source: 2001 TLSS.

SUPPLY SIDE ISSUES THAT MAY AFFECT DEMAND

5.48   The quality of education often affects the notion as to whether schooling is worthwhile. Therefore, supply related issues, such as availability of textbooks and furniture, presence of teachers, could affect student enrollment and absenteeism. Table 5.28 shows the extent to which these inputs, which were funded by multilateral and bilateral agencies and implemented by ETTA, are available to most students.

5.49   About half of the students do not have a complete set of textbooks and this is across all quintiles. It is advisable to give immediate and serious attention to this issue. Among those who have some textbooks, the vast majority of them obtained the books first from the school (Table 5.29). This was across all quintiles. The second most common way to obtain the books is by purchasing second-hand books (

5.50

5.51

5.52   Table 5.30).

5.53   About 81 percent of students have desk to work on and chair to sit on but 19 percent do not (Table 5.32). Again, this school quality element is important in making it worthwhile for children to come to school.

5.54   The vast majority found their teachers present either all the time (63 percent) or almost all the time (31 percent), but still about 7 percent experience teacher absenteeism.

5.55   The language of instruction in school is divided almost evenly between Tetum and Bahasa Indonesian, with about 8 percent in Portuguese. Tetum is more commonly used in the school attended by the poorest quintile, whereas a higher proportion of schools attended by the rich use Portuguese. The introduction of Portuguese as a language of instruction in school is likely to adversely affect the poor more so than the rich.

5.56   The average number of hours of homework per week is low by international standards. The rich tend to spend more time on homework, which is both an indicator of their school quality (which requires homework) and their own performance.

5.57   In summary, a lot has been accomplished in terms of making furniture available to about 80 percent of students and books available to about half of the students. Teacher absenteeism does not appear to be a major issue. Nonetheless, it is what has NOT been accomplished that could affect the decision of those who do not enroll, not to come to school. Therefore attention to the supply side issues is equally important.

5.58   Therefore, additional interventions from the supply side must aim at providing these inputs to all students to ensure a minimum standard in their schooling. However to improve the quality of education, and given the age-by-grade distortion and the language complexity, it is important to train teachers to handle multi-grade teaching, to support them with self-learning materials for students, and interactive radio so as to make the schooling experience more exciting to worth the while of students to walk long distance daily and to give up their work to come to school, as well as spend more time on homework.

5.59   Since aligning grade-age is a key measure to improve internal efficiency, after school programs and summer school could be organized to give extra lessons to the over-aged students so that they can move on more quickly and make room for new comers. Standardized tests need to be developed for each grade in order to make sure that students do not merely pass through the system without learning the requisite skills. To normalize

the grade-age distribution would take at least 6 or 7 years. Teaching extra classes after school or during the summer would require extra work from teachers. Without a clause written in the teachers' contract to include extra lessons and summer schools as part of the duties, this intervention would not be budget neutral. This measure would also help reduce dropout of existing students and to ensure that all students complete the primary cycle and become literate and numerate. Incentives in the form of cash award can be given to the schools, which improve their grade-age alignment faster with minimal repetition and dropout. If the effort to improve the age-grade distribution does not get started now, the problem will only be worsen in the future as the younger cohorts are much bigger than the current ones.

Table 5.28: Schooling Characteristics

	Poorest	Quintile 2	Quintile 3	Quintile 4	Richest
Availability of Textbooks (%)					
Yes, complete	5	3	2	7	10
Only some	48	47	38	37	37
None	45	50	60	56	53
Language of Instruction in School (%)					
Tetum	52	53	43	47	36
Indonesian	44	43	47	43	54
Portuguese	4	5	10	10	10
Hours of Home Work					
Primary	1.2	1.2	2.2	2.7	3.1
Jr. Second.	1.8	2.3	2.6	3.7	3.4
Sr. Second.	3.0	1.9	2.4	2.3	3.1

Source: 2001 TLSS.

Table 5.29: How Obtained Textbooks?, First Source

	Poorest	Quintile 2	Quintile 3	Quintile 4	Richest	All
Provided by the school, can take home	25.7	33.2	29.0	37.5	46.1	33.8
Provided by the school, cannot take home	69.1	54.0	62.5	55.2	36.9	56.2
Newly purchased from the school	2.2	0.7	0.7	0.0	2.7	1.3
Newly purchased from private market	3.0	11.9	6.1	3.2	5.8	6.1
Gift	0.0	0.0	0.0	0.0	2.1	0.4
Passed down from older relative	0.0	0.2	0.7	1.0	2.3	0.7
Purchased used	0.0	0.1	1.0	1.4	3.9	1.2
Other	0.0	0.0	0.0	1.8	0.3	0.4

Source: 2001 TLSS.

Table 5.30: How Obtained Textbooks?, Second Source

	Poorest	Quintile 2	Quintile 3	Quintile 4	Richest	All
Provided by the school, can take home	3.9	13.3	33.0	24.2	23.8	20.4
Provided by the school, cannot take home	26.0	44.7	28.8	41.4	20.9	31.8
Newly purchased from the school	0.0	0.0	7.3	0.0	9.5	3.9
Newly purchased from private market	55.0	6.6	4.8	3.5	19.4	17.0
Gift	0.0	1.5	0.0	0.0	1.0	0.5
Passed down from older relative	12.5	34.0	12.3	22.7	13.1	18.6
Purchased used	1.6	0.0	9.1	8.2	12.4	6.6
Other	1.0	0.0	4.7	0.0	0.0	1.3

Source: 2001 TLSS.

Table 5.31: How Obtained Textbooks?, Third Source

	Poorest	Quintile 2	Quintile 3	Quintile 4	Richest	All
Provided by the school, can take home	0.0	0.0	0.0	30.5	0.0	3.5
Provided by the school, cannot take home	0.0	0.0	0.0	15.3	14.2	2.8
Newly purchased from the school	0.0	0.0	0.0	8.7	7.5	1.5
Newly purchased from private market	0.0	0.0	0.0	15.7	10.2	2.5
Gift	0.0	10.9	0.0	0.0	0.0	3.1
Passed down from older relative	0.0	0.0	14.1	12.3	20.9	6.1
Purchased used	100.0	89.1	76.1	11.0	47.3	77.6
Other	0.0	0.0	9.8	6.5	0.0	3.0

Source: 2001 TLSS.

Table 5.32: Has a Desk/Chair at School?

	Poorest	Quintile 2	Quintile 3	Quintile 4	Richest	All
Yes	84	73	80	83	84	81
No	16	27	20	17	16	19

Source: 2001 TLSS.

Table 5.33: Were Teachers in School?

	Poorest	Quintile 2	Quintile 3	Quintile 4	Richest	All
All the time	74.7	60.8	58.2	62.8	58.0	63.1
Almost all the time	21.3	30.1	36.3	32.9	33.6	30.7
Three quarters	2.9	7.8	4.4	3.0	5.8	4.8
About half the time	0.0	0.0	0.6	0.0	0.5	0.2
Quarter to half	0.0	0.1	0.3	0.0	1.1	0.3
One fourth	0.0	0.0	0.0	1.3	0.0	0.3
Barely there	1.1	1.3	0.2	0.0	1.1	0.7

Source: 2001 TLSS.

CHALLENGES

5.60   Some interventions do not cost very much and can be implemented immediately, such as enacting regulations on the code of conducts for teachers and students to regulate absenteeism (particularly by teachers) and harassment. Publicity campaigns through the radio are probably not very costly either. However, the development of materials, training of teachers and building of schools certainly takes time. Developing an effective strategy to address the language of instruction issue will be critical to improving internal efficiency, education quality and to reducing drop out. However, this is a politically sensitive issue, may take longer to resolve and will have serious cost implications due to the need to develop textbooks. Therefore, sequencing of interventions to take account of the capacity and resources is equally important. The table below presents some policy options to meeting the challenges.

Challenges	Determinants	Policy Options
Demand issues: Never attended or drop out	• Parental belief that their child is below school age. • No interest in attending • School too far • Work at home or agricultural work • Harassment	▪ Publicity campaigns and parent education ▪ Make curriculum relevant by introducing more science-based topics (which help children to deal with the physical world) ▪ Rather than spending scarce resources to build more school, it might be better to develop self-learning materials and interactive radio so that students do not have to come to school every day. It is also more cost-effective to educate parents about good child rearing practices and to enlist their supervision of children studying at home. ▪ Strict regulations and penalty on harassment by teachers and students.

| Supply issue that affects demand for education: Quality | • Insufficient supply of well-educated teachers.
• Mis-alignment of grade by age
• Inappropriate learning materials
• Inefficient internal efficiency – high repetition and drop out/push out
• Still lack of furniture and books in some cases
• Insufficient places in junior secondary education | ▪ Development of teacher guides, self-instructional materials, radio and audio cassettes in order to support teachers and to enable students learn on their own.
▪ Teacher in-service training and pre-service training, with a strong focus on multi-grade teaching.
▪ Make sure children full master all the content at the end of each grade otherwise they would lose interest and drop out.
▪ Introduce student assessment to ensure that students learn and also to allow those who have already above the standards to skip grades and progress to the appropriate levels.
▪ Institute after school extra classes and summer schools to accelerate learning of over-aged students in order to improve student flow and normalize the age-grade distribution.
▪ Build junior secondary schools |

Public and Private Schools

This Appendix provides data on public and private schools to show the distribution of enrollment. Although it is not a burning issue as much as those raised above, how to deliver educational services in an integrated manner would entails examination the partnership between public, private religious and private secular schools. This issue should be revisited in the next few months.

Although the overwhelming majority of students enroll in public schools, there is a sizable private and religious sector (see Figure A.1).

Attendance in private schools actually cut across all quintiles, although the richest quintile tend to have twice high enrollment in private religious schools as the poorest (Table A.1). For the 5-6-year-olds, their pattern of attendance in these schools is very similar to the overall picture (Table A.2). The pattern for the 7-12 year-olds, they display the same pattern of attendance in these schools (Table A.3). By Age 13-15, more of the rich tend to attend private schools than the poor (Table A.4). It is also due to the fact that many of the secondary schools are run by religious bodies.

Figure A.1: Enrollment by School Type, 2000/2001
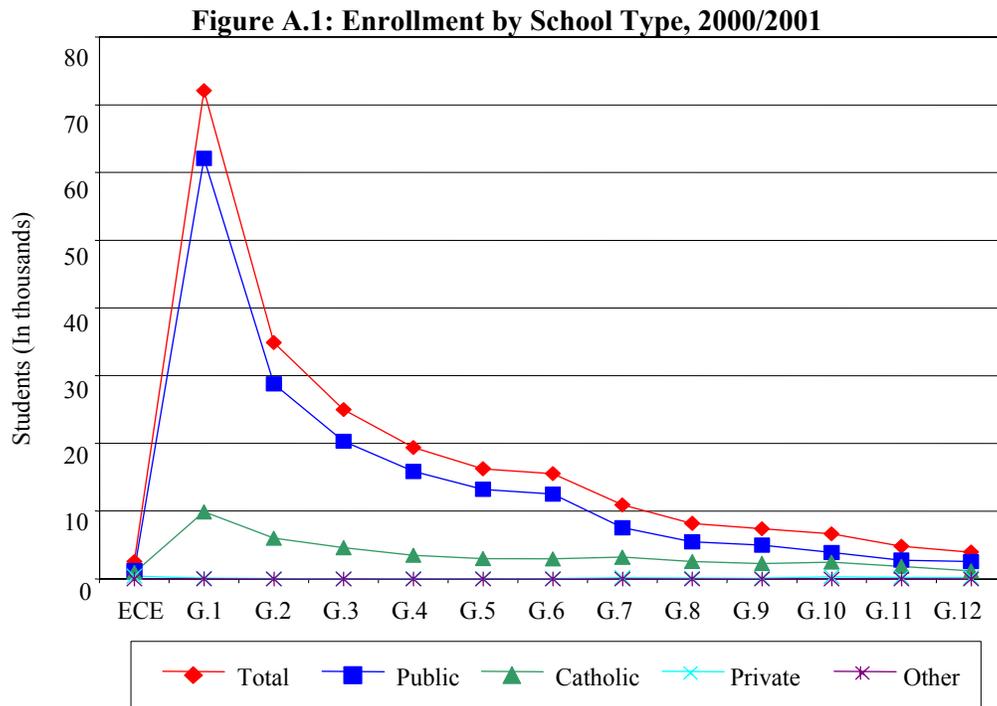
Source: 2001 TLSS.

Table A.1: Type of School Attended in 2000/01 (among those who attended)

	Poorest	Quintile 2	Quintile 3	Quintile 4	Richest	All
Public	88.5	91.5	86.3	83.1	84.2	86.5
Private secular	2.4	3.4	5.6	3.8	5.5	4.3
Private religious	9.1	5.1	8.0	13.1	10.3	9.3
Other	0.0	0.0	0.0	0.0	0.1	0.0

Source: 2001 TLSS.

Table A.2: Type of School Attended in 2000/01 (among those who attended), Ages 5-6

	Poorest	Quintile 2	Quintile 3	Quintile 4	Richest	All
Public	85.5	97.5	77.9	78.6	85.6	85.7
Private secular	0.0	2.5	6.3	0.0	3.5	2.6
Private religious	14.5	0.0	15.8	21.4	10.9	11.7

Source: 2001 TLSS.

Table A.3: Type of School Attended in 2000/01 (among those who attended), Ages 7-12

	Poorest	Quintile 2	Quintile 3	Quintile 4	Richest	All
Public	90.1	92.3	84.8	80.4	80.8	86.5
Private secular	2.5	3.8	4.7	3.5	7.3	4.1
Private religious	7.4	3.9	10.5	16.1	11.9	9.5

Source: 2001 TLSS.

Table A.4: Type of School Attended in 2000/01 (among those who attended), Ages 13-15

	Poorest	Quintile 2	Quintile 3	Quintile 4	Richest	All
Public	93.1	94.1	87.9	84.2	81.7	88.8
Private secular	0.5	1.5	5.0	1.4	5.2	2.5
Private religious	6.5	4.5	7.1	14.4	13.2	8.7

Source: 2001 TLSS.

Supplementary Tables and Figures

Figure A.2 Enrollment in Primary, Jr. Secondary and Sr. Secondary Education, 1976-1998
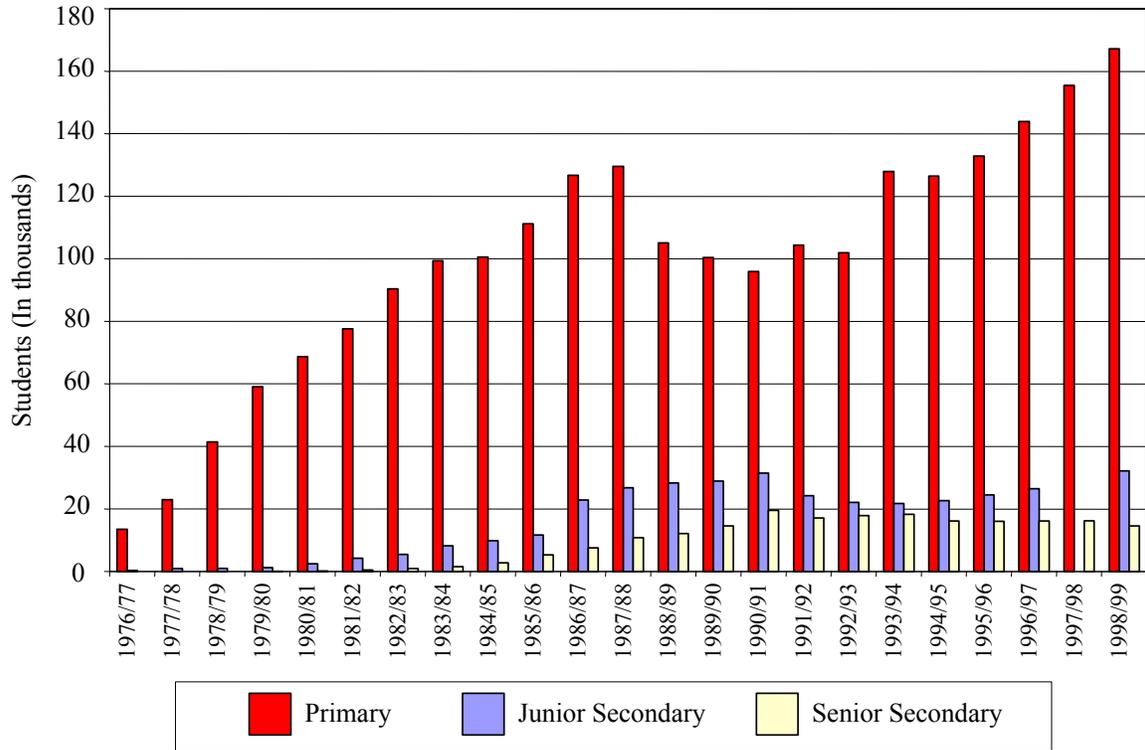
Source: 2001 TLSS.

Table A.5 Monthly Expenditure on Schools, 2001

	Tuition (%)	PTA (%)	Uniforms (%)	textbooks (%)	Other education materials (%)	Meals and transport (%)	Extra classes (%)	Other (%)	Total (%)	Level (US Dollars)
Public Primary										
Poorest	1.1	0.6	57.4	0.4	31.6	0.0	0.0	8.9	100.0	0.31
Q2	3.8	0.9	47.9	1.6	37.7	1.2	0.1	6.9	100.0	0.49
Q3	3.1	0.6	57.4	1.3	27.5	1.6	1.5	7.0	100.0	0.59
Q4	4.2	0.8	48.8	0.5	35.9	3.8	0.3	5.6	100.0	0.71
Richest	15.4	1.9	43.2	1.9	25.7	5.3	0.0	6.6	100.0	0.91
Private Primary										
Poorest	42.1	0.0	24.0	0.0	27.5	1.3	0.0	5.0	100.0	0.26
Q2	54.2	1.9	15.1	0.0	13.5	10.1	0.0	5.1	100.0	1.71
Q3	36.0	4.6	22.8	0.0	32.3	0.9	0.0	3.3	100.0	0.67
Q4	36.0	2.3	30.2	0.7	23.2	4.0	0.0	3.5	100.0	1.17
Richest	31.5	7.5	14.0	0.0	23.3	10.1	2.2	11.3	100.0	1.13
Public Junior Secondary										
Poorest	12.5	0.9	49.8	0.0	24.7	0.0	0.0	12.1	100.0	0.70
Q2	7.8	0.0	45.5	0.0	23.1	12.4	0.7	10.5	100.0	0.92
Q3	8.3	2.0	37.0	2.7	25.4	17.2	0.0	7.4	100.0	1.25
Q4	14.4	0.3	44.2	0.2	21.4	13.9	0.0	5.5	100.0	1.78
Richest	17.1	1.4	29.3	1.3	16.3	28.3	0.1	6.2	100.0	2.20
Private Junior Secondary										
Poorest	56.8	0.0	17.1	0.0	10.6	4.2	0.0	11.3	100.0	1.90
Q2	29.4	3.1	30.8	0.7	20.1	9.7	0.0	6.1	100.0	2.00
Q3	33.4	6.0	21.8	0.0	32.8	2.8	0.0	3.2	100.0	1.14
Q4	42.1	5.4	15.5	3.4	21.5	6.4	1.0	4.6	100.0	2.67
Richest	40.3	1.9	38.4	2.1	8.2	5.2	0.8	3.2	100.0	3.54
Public Senior Secondary										
Poorest	1.6	28.8	33.4	0.0	25.3	0.0	0.0	11.0	100.0	1.25
Q2	6.6	0.0	28.4	0.0	16.2	30.9	0.0	17.8	100.0	1.99
Q3	10.7	2.0	9.6	14.9	33.7	24.1	0.0	5.1	100.0	1.50
Q4	18.4	0.0	27.5	1.2	37.0	7.9	0.1	7.9	100.0	1.65
Richest	23.1	2.8	11.2	2.5	15.8	36.2	0.4	8.0	100.0	3.71
Private Senior Secondary										
Poorest	81.2	0.0	7.5	0.0	7.5	3.8	0.0	0.0	100.0	4.64
Q2	27.7	25.4	23.3	0.5	10.5	8.2	0.0	4.4	100.0	3.75
Q3	56.3	10.0	8.8	3.5	12.6	8.7	0.0	0.0	100.0	2.65
Q4	37.9	18.4	20.0	1.9	7.3	7.3	0.0	7.3	100.0	3.67
Richest	48.4	5.9	10.1	4.1	13.1	14.5	0.3	3.6	100.0	4.80

Source: 2001 TLSS.

Table A.6: Household education expenditure by main catagory, education level and region in Indonesia, 1998 (per student per year)

	School fees	Supplies	Transport and tutor	Others	Total
Other islands					
Primary	35.0	44.3	1.7	19.0	100.0
junior secondary	41.5	30.3	16.3	11.8	100.0
senior secondary	44.5	21.8	25.5	8.3	100.0
Indonesia					
Primary	38.4	36.7	4.8	20.1	100.0
junior secondary	47.2	23.3	17.1	12.4	100.0
senior secondary	49.4	16.3	26.0	8.3	100.0

Source: Pradhan and Sparrow (2000).

Table A.7: Household education expenditure by quintile and education level in Indonesia (per student per year, Rupiah in 1995 real prices)

	1995	1998
Poorest		
Primary	32,030	38,840
Junior secondary	91,600	126,560
Senior secondary	155,730	253,990
Q2		
Primary	44,120	49,530
Junior secondary	114,460	151,370
Senior secondary	189,500	297,960
Q3		
Primary	61,450	64,310
Junior secondary	145,400	181,460
Senior secondary	237,900	337,210
Q4		
Primary	82,220	93,990
Junior secondary	188,530	242,020
Senior secondary	289,490	409,040
Richest		
Primary	156,100	186,130
Junior secondary	305,310	376,180
Senior secondary	423,240	571,510

Note: The exchange rate was 2,200 Rupiah to $1 before the 1997
financial crisis; 9,784 Rupiah to $1 in 1998/99. In Timor-Leste
it was 10,000 Rupiah to $1 in 2001/02.
Source: Pradhan and Sparrow (2000).

Table A.8: Correlates of Enrollment by gender and urban/rural 1999 (ages 5-24)

	Male	Female	Urban	Rural
age spline ages 5-9	0.137	0.131	0.151	0.132
	(18.89) **	(16.79) **	(7.75) **	(24.03) **
age spline ages 10-14	0.112	0.106	0.109	0.109
	(24.95) **	(22.05) **	(9.39) **	(31.96) **
age spline ages 15-19	0.058	0.056	0.06	0.057
	(18.44) **	(16.39) **	(7.55) **	(23.52) **
Age spline ages 20-24	0.023	0.016	0.027	0.018
	(9.03) **	(5.91) **	(4.48) **	(9.27) **
urban =1, else 0	0.162	0.115		
	(6.86) **	(4.64) **		
male =1, else 0			0.062	0.003
			(1.82)	(0.30)
log hh pc expend (nominal)	0.166	0.149	0.142	0.159
	(10.74) **	(9.15) **	(4.69) **	(13.18) **
Sample	5,615	5,183	927	9,871

Note: Probit models with marginal effects shown. Absolute value of z-statistics in parentheses.
* Significant at 5% level   ** Significant at 1% level
Source: 1999 Susenas.

Table A.9: Correlates of Enrollment by quintile, 1999 (ages 5-24)

	Poorest	Quintile 2	Quintile 3	Quintile 4	Richest
age spline ages 5-9	0.120	0.111	0.168	0.133	0.159
	(12.28) **	(10.48) **	(13.61) **	(10.50) **	(9.90) **
age spline ages 10-14	0.100	0.097	0.133	0.111	0.117
	(16.26) **	(14.71) **	(17.23) **	(14.23) **	(12.14) **
age spline ages 15-19	0.052	0.048	0.074	0.058	0.060
	(11.81) **	(10.09) **	(13.67) **	(10.63) **	(9.33) **
age spline ages 20-24	0.014	0.006	0.034	0.019	0.026
	(3.41) **	(1.47)	(7.98) **	(4.40) **	(5.23) **
urban =1, else 0	0.070	0.043	0.137	0.252	0.161
	(1.50)	(1.08)	(3.09) **	(6.92) **	(5.10) **
male =1, else 0	-0.001	-0.006	0.007	-0.020	0.056
	(0.04)	(0.26)	(0.27)	(0.79)	(2.01) *
log hh pc expend (nominal)	0.099	-0.164	0.424	0.337	-0.065
	(2.09) *	(1.14)	(2.49) *	(2.47) *	(1.47)
Observations	2,655	2,515	2,087	1,963	1,578

Note: Probit models with marginal effects shown. Absolute value of z-statistics in parentheses.
* Significant at 5% level   ** Significant at 1% level
Source: 1999 Susenas.

Table A.10: Correlates of Enrollment by gender and urban/rural, 2001 (ages 5-24)

	Male	Female	Urban	Rural
age spline ages 5-9	0.120	0.062	0.102	0.088
	(10.28) **	(5.25) **	(8.06) **	(7.96) **
age spline ages 10-14	0.110	0.068	0.092	0.087
	(14.78) **	(9.32) **	(11.77) **	(12.63) **
age spline ages 15-19	0.057	0.024	0.049	0.038
	(11.25) **	(4.70) **	(9.31) **	(7.86) **
age spline ages 20-24	0.022	-0.004	0.019	0.004
	(5.28) **	(1.02)	(4.46) **	(0.91)
urban =1, else 0	0.160	0.114		
	(5.53) **	(3.74) **		
male =1, else 0			0.048	-0.025
			(1.98) *	(1.07)
log hh pc expend (nominal)	0.034	0.022	0.061	0.008
	(1.88)	(1.13)	(3.99) **	(0.39)
Sample	2,095	1,915	1,810	2,200

Note: Probit models with marginal effects shown. Absolute value of z-statistics in parentheses.
* Significant at 5% level   ** Significant at 1% level
Source: 2001 TLSS.

Table A.11: Correlates of Enrollment by quintile, 2001 (ages 5-24)

	Poorest	Quintile 2	Quintile 3	Quintile 4	Richest
age spline ages 5-9	0.076	0.085	0.083	0.123	0.104
	(4.44) **	(4.35) **	(4.29) **	(6.00) **	(5.58) **
age spline ages 10-14	0.076	0.085	0.086	0.116	0.095
	(6.97) **	(7.10) **	(7.15) **	(8.71) **	(8.21) **
age spline ages 15-19	0.03	0.037	0.037	0.06	0.047
	(3.90) **	(4.40) **	(4.46) **	(6.73) **	(6.09) **
age spline ages 20-24	-0.003	0.001	0.004	0.025	0.015
	(0.43)	(0.17)	(0.62)	(3.51) **	(2.52) *
urban =1, else 0	0.005	0.105	0.16	0.181	0.172
	(0.09)	(1.75)	(3.22) **	(4.32) **	(4.84) **
male =1, else 0	-0.051	0.027	-0.074	0.01	0.078
	(1.31)	(0.63)	(1.86)	(0.27)	(2.29) *
log hh pc expend (nominal)	0.019	0.214	-0.166	-0.167	0.011
	(0.21)	(1.00)	(0.79)	(1.12)	(0.36)
Sample	770	676	754	801	1,009

Note: Probit models with marginal effects shown. Absolute value of z-statistics in parentheses.
* Significant at 5% level   ** Significant at 1% level
Source: 2001 TLSS.

Figure A.3: Estimated Population by Age, 2001
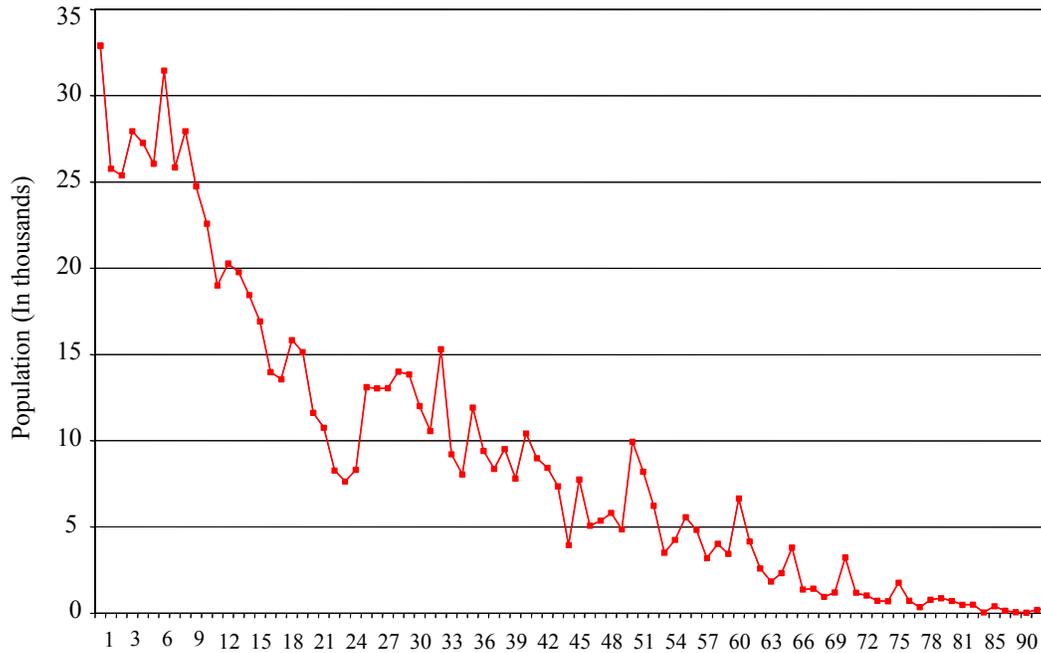
Source: 2001 TLSS.

Table A.12: Reasons for never attending school, Ages 5-6

	Poorest	Quintile 2	Quintile 3	Quintile 4	Richest	All
Below school age	68.7	76.4	65.9	72.9	72.8	71.3
Completed studies	0.0	0.0	0.0	0.0	2.2	0.3
Too expensive	0.5	3.5	0.0	1.6	2.8	1.7
No interest	14.7	9.0	5.9	12.5	11.0	10.6
Work at home	0.0	0.0	1.7	0.0	0.0	0.3
Other work	0.0	0.0	1.2	0.0	0.0	0.3
School too far	11.1	8.9	19.6	9.4	6.8	11.4
No teacher	0.0	2.2	0.0	0.0	0.0	0.6
No supplies	3.5	0.0	1.4	0.0	0.0	1.1
School not functional	0.0	0.0	1.4	0.0	0.0	0.3
Illness	0.0	0.0	0.0	0.6	0.0	0.1
Family illness/death	1.2	0.0	0.0	0.0	0.0	0.3
Displaced	0.4	0.0	0.0	1.1	0.0	0.3
Other	0.0	0.0	2.9	2.0	4.4	1.5

Source: 2001 TLSS.

Table A.13: Reasons for never attending school, Ages 7-12

	Poorest	Quintile 2	Quintile 3	Quintile 4	Richest	All
Below school age	21.9	33.9	31.5	23.6	18.5	27.2
Too old	1.5	0.0	0.0	0.0	0.0	0.4
Too expensive	0.9	11.3	0.9	1.7	0.9	3.6
No interest	32.4	22.5	33.6	33.1	25.7	29.9
Agricultural work	0.0	0.0	0.0	3.4	0.0	0.7
Work at home	0.0	4.0	0.0	2.7	18.9	2.8
School too far	16.4	13.8	24.6	18.8	12.1	17.8
No teacher	2.6	7.2	0.0	0.0	0.0	2.4
No supplies	5.8	0.0	2.5	0.0	0.0	2.0
School not functional	0.0	1.6	0.0	0.0	0.0	0.4
Illness	0.6	2.9	2.6	4.1	3.0	2.5
Family illness/death	4.3	0.0	0.0	0.0	0.0	1.1
Displaced	6.1	2.8	2.8	0.0	0.0	2.8
Safety	0.0	0.0	0.0	1.8	0.0	0.4
Harassment	3.1	0.0	0.0	2.3	1.9	1.4
Other	4.4	0.0	1.5	8.7	19.0	4.5

Source: 2001 TLSS.

Table A.14: Reasons for never attending school, Ages 13-15

	Poorest	Quintile 2	Quintile 3	Quintile 4	Richest	All
Too expensive	6.3	0.0	0.0	1.2	32.6	6.5
No interest	38.8	36.1	35.2	0.0	42.0	31.4
Agricultural work	6.8	0.0	0.0	4.0	8.4	3.9
Work at home	6.4	12.4	42.6	11.1	0.0	14.6
School too far	20.9	0.0	0.0	24.2	0.0	10.6
No teacher	8.2	10.0	0.0	0.0	0.0	4.5
School not functional	0.0	12.4	0.0	0.0	0.0	2.4
Illness	5.8	2.1	5.9	8.3	0.0	4.7
Displaced	0.0	11.8	10.2	0.0	0.0	4.3
Harassment	6.8	6.4	0.0	12.0	0.0	5.4
Other	0.0	8.7	6.2	39.3	17.0	11.8

Source: 2001 TLSS.

6.   DISADVANTAGED GROUPS

INTRODUCTION[71]

6.1   In many Asian countries, some groups are excluded from the benefits of economic developments. Parentless children, elderly, widows, and women are often found to be vulnerable, as economic, social, cultural, and institutional barriers combine to result in low living standards. These groups depend particularly on cooperation from others. Identifying disadvantaged groups is a first step towards developing support strategies that prevent poverty, marginalization, and social disintegration.

6.2   Welfare is a characteristic of individuals, not of households. Deprivation can affect entire households or certain members within a household. Families draw both on joint household resources, like housing and land, and on individual receipts, such as wages. Common funds may be distributed unevenly within the family, and salary recipients may not redistribute these earnings to other members. If women receive systematically less than men, or children and old people are worse off than prime-age adults, we will be overstating distribution-sensitive welfare by assuming equal allocations.

6.3   In this chapter, we take a closer look at the TLSS evidence on social and economic inequities experienced by specific groups. We use demographic and family characteristics to categorize the population,[72] and investigate whether particular household groups, or segments within a household, are especially disadvantaged. Information on household composition is shown in Table 6.1. In most households, different generations live together.[73] About nineteen in twenty individuals live in such families. Furthermore, over nine in ten persons reside in households with both prime-aged adults and children. The typical household structure is a two-generational family with prime-aged adults and children. In addition, almost three in ten individuals live in three-generational households. Effectively all children stay with prime-aged adults, and two thirds live with elderly. The high incidence of multi-generational households implies that the fates of different generations are closely intertwined.

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[71] This chapter was written by Kaspar Richter.
[72] Poor health, migration, and ethnicity are other features that can define disadvantage groups.
[73] Children include all individuals less than 15 years of age, prime-age adults cover individuals between the ages of 15 and 49, and elderly are 50 years and older.

Table 6.1: Demographic Household Composition

Household type	Percentage
Three-generational	29
Two-generational Prime & Children	56
Two-generational Prime & Elderly	7
Two-generational Elderly & Children	2
One-generational Prime	4
One-generational Elderly	2
Children with no parent deceased	89
Children with at least one parent deceased	11

Source: 2001 TLSS.

GENDER

6.4   Gender is an important aspect in the debate on development. Policy researchers and development practitioners have begun building a body of evidence and experience that links attention to gender in policies and projects to equitable, efficient, and sustainable outcomes in development. There is growing evidence that societies that discriminate on the basis of gender tend to experience more poverty, slower economic growth, and a lower quality of life than societies in which gender inequality is less pronounced. In all countries, but particularly in the poorest, giving women and men the same rights – allowing them equal access to education, jobs, property and credit, and fostering their participation in public life – produces positive outcomes, such as decreased child mortality, improved public health, and a strengthening of overall economic growth.

6.5   Attempts to estimate the number of women living in poverty has generated a considerable amount of debate around the world. The main stumbling block is the lack of an acceptable indicator for gender comparisons. The basic poverty measures in this report are based on household resources, and incorporate the essentially arbitrary assumption of equal distribution within the household. They do not capture any female poverty deriving from intra-household inequality. With this caveat in mind, it is nevertheless useful to ask whether, under this "conservative" assumption, there is evidence for gender bias in poverty.

Table 6.2: Poverty and Gender

	National		0 to 6		7 to 14		15 to 49		50 or older	
	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
Headcount	39.7	39.7	42.6	44.7	49.1	45.7	36.0	35.3	31.1	33.1
	(3.0)	(2.8)	(3.5)	(3.5)	(3.8)	(3.5)	(2.8)	(2.7)	(3.6)	(3.4)
Poverty Gap	12.0	11.7	13.0	13.5	15.1	14.1	10.8	10.2	9.3	8.8
	(1.4)	(1.3)	(1.7)	(1.6)	(1.8)	(1.6)	(1.3)	(1.1)	(1.5)	(1.2)
Severity	5.1	4.8	5.5	5.6	6.4	6.0	4.5	4.1	3.8	3.3
	(0.7)	(0.6)	(0.9)	(0.8)	(0.9)	(0.9)	(0.7)	(0.5)	(0.7)	(0.5)
Memorandum items:										
Household size	6.0	6.1	6.3	6.4	6.7	6.8	5.9	5.8	4.5	4.9
Dependency ratio (%)	125	125	158	166	161	164	103	92	73	81
Population share	49	51	11	12	10	11	22	21	6	6

Source: 2001 TLSS.

6.6   We display poverty statistics disaggregated by age and gender in Table 6.2. There are no significant differences across poverty rates. Household demographics differ little within each age category, implying that this result is robust to changes in equivalence scales.[74] This finding reflects that, even once age groups are distinguished, females do not live systematically in different households than males. The exception is females 50 years or older, who live in smaller households with lower child share than males of the same age-group. Upon closer inspection, it emerges that average female poverty increases relative to male poverty as we move from the crude headcount measure to more distribution sensitive measures. For the severity of poverty, female statistics are consistently higher than male statistics, and the difference widens as we go from children to the elderly. For example, girls younger six years old or younger face 1 percent less severe poverty than boys, while elderly women experience 15 percent more severe poverty than elderly men. Nevertheless, due to high standard errors the difference remains statistically insignificant, and allowing for economies of scale would narrow the gap. Overall, assuming equality in the distribution of household resources across gender, we find at best weak evidence that women face more severe poverty than men.

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[74] By the same token, household demographics vary across age groups, so the poverty ranking across age groups is affected by the choice of equivalence scale, as discussed in Chapter 1, Volume II.

Table 6.3: Welfare and Gender

	0 to 6		7 to 14		15 to 49		50 or older	
	Female	Male	Female	Male	Female	Male	Female	Male
Immunization								
BCG	52.2	55.8						
	(4.1)	(3.8)						
Polio	57.9	61.1						
	(4.3)	(3.9)						
DPT	53.3	57.0						
	(4.9)	(4.2)						
DPT3	8.3	9.1						
	(1.1)	(1.4)						
Measles	51.7	49.0						
	(4.8)	(4.5)						
Vitamin A	6.5	7.6						
	(1.2)	(1.4)						
Health								
No health complaints last month	73.2	72.7	86.8	87.4	79.0	83.0	61.3	58.2
	(1.7)	(2.0)	(1.8)	(1.5)	(1.5)	(1.5)	(2.5)	(2.7)
Subjective health status (1 to 5)			3.97	3.91	3.85	3.91	3.56	3.60
			(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)
Education								
Net Primary Enrollment Rate			63.4	60.5				
			(1.9)	(2.3)				
Net Primary Class Enrollment Rate			19.2	17.0				
			(1.8)	(1.4)				
Schooling			82.1	77.7	47.9	66.2	2.9	12.8
			(1.7)	(2.0)	(1.8)	(2.0)	(0.7)	(1.5)
Grade completed (1 to 6)					1.9	2.3	1.0	1.2
					(0.0)	(0.1)	(0.0)	(0.0)
Literacy (%)					49.8	67.3	6.1	14.3
					(1.8)	(2.0)	(1.0)	(1.7)
Subjective Welfare								
Happiness (1 to 5)					3.2	3.2	3.1	3.1
					(0.0)	(0.0)	(0.1)	(0.0)
Change in living standard since violence (1 to 3)					1.8	1.8	1.9	1.8
					(0.0)	(0.0)	(0.0)	(0.0)
Economic status (1 to 9)					2.4	2.4	2.2	2.4
					(0.1)	(0.1)	(0.1)	(0.1)
Change in economic status since violence (-8 to 8)					0.1	0.2	0.1	0.1
					(0.1)	(0.1)	(0.1)	(0.1)
Power status (1 to 9)					3.8	3.9	3.5	3.7
					(0.1)	(0.1)	(0.1)	(0.1)
Change in power status since violence (-8 to 8)					2.1	2.2	1.9	2.0
					(0.1)	(0.1)	(0.1)	(0.1)

Note: Standard errors in parentheses.
Source: 2001 TLSS.

6.7   More evidence on gender bias is provided in Table 6.3. It focuses on non-consumption indicators, including immunization, health, education, and subjective well-being. Looking at these indicators not just shades light on these dimensions of poverty. It also has conceptual advantages, as education and health measures are gathered for individuals rather than households (Case and Deaton 2002). We observe the actual value per individual, rather than having to rely on an arbitrary assumption of equal allocation of household level resources across individuals, as we have to for household consumption. The precise set of indicators is aligned to the specificity of each age group.

6.8   Before turning to gender differences, we consider the variation across age groups to see whether it accords to our expectations. Health indicators deteriorate as we move from children, to prime-age, and the elderly. Similarly, younger age-groups outscore older in education, in line with the broad improvement in schooling over the last decades. The same ranking is evident in the indicators of subjective welfare. Overall, these regularities give us some comfort in the quality of the data.

6.9   For children under the age of 7, boys tend to show higher immunization rates than girls, but the differences are not statistically significant. No consistent pattern in health emerges for the age group 7 to 14, while education indicators are better for girls than boys, but again the gap is too small to be significant. For prime-age adults, men are better off than women both in health and education. Finally, the differences in health reveal no clear ranking for the old-age by gender, but elderly men are better educated and score higher in terms of today's subjective well-being, while the evidence on the perceived changes over the last two years shows no consistent pattern. Overall, female adults are less well educated and perceive to have lower economic and power status, especially at old age, than their male counterparts.

6.10   This section documents that evidence on gender bias in Timor-Leste is mixed. First, women do not live in poorer households than men. This finding comes however with a strong caveat. TLSS provides no information on the gender allocation of consumption within the household. More research into intra-household distribution is required to conclude that this household-level finding translates into an absence of gender bias at the individual level. In addition, we also find little systematic differences across gender-age groups. Immunization rates are higher for boys, and education indicators better for girls, but the gaps are statistically insignificant. For adults, male educational standards are generally higher, which says more about gender inequalities in the past than today. Finally, subjective indicators tend to rank men higher than women, especially for those 50 years or older, but the differences are small, and the evidence on changes since the violence inconclusive.

FEMALE HEADSHIP

6.11   The analysis so far focuses on characteristics of gender-age groups cutting across households. It does not capture deprivations linked to particular households features. One salient household characteristic is the gender of the household head. In this section, we focus on differences in welfare between male and female-headed households. We want to explore, whether, as a result of economic and perhaps cultural constraints, female-headed households experience lower welfare than male-headed households.

6.12   In Timor-Leste, cultural values in general, and traditions of family life specifically, are primarily based on catholic beliefs. In this context, female headship arises for two main reasons. First, some families have lost their male breadwinner as a result of the years of violence during the Indonesian period and the time of the referendum. Second, women have a higher life expectancy than men. Overall, over 19 in 20 female heads are widows.

6.13   Both factors suggest that female-headed households have fewer household members than male-headed households, while the second aspect implies that female heads are on average older than male heads, and in turn are likely to have lower child shares. Overall, more than one in seven household heads are women. Female headed households are indeed smaller than male headed households (4.1 members relative to 6.3 members), so in terms of population, about one in ten individuals live in households whose head is a woman. For male headed households, seven in ten individuals have a head who is younger than 50. The corresponding number for female headed households is only 5 in 10. The child share in male headed households is on average 20 percent higher than in female headed households.

Table 6.4: Poverty and Gender of the Household Head

| | National | | 0 to 6 | | 7 to 14 | | 15 to 49 | | 50 or older | |
	Female head	Male head	Female head	Male head	Female head	Male head	Female head	Male head	Female head	Male head
Headcount	29.7	40.8	31.9	44.5	43.8	47.7	26.2	36.6	19.4	34.9
	(3.9)	(3.0)	(5.8)	(3.4)	(6.0)	(3.4)	(3.9)	(2.8)	(3.4)	(3.5)
Poverty Gap	8.3	12.2	8.9	13.6	13.7	14.6	6.4	10.9	5.6	9.8
	(1.5)	(1.4)	(2.3)	(1.6)	(2.6)	(1.6)	(1.3)	(1.2)	(1.1)	(1.4)
Severity	3.4	5.1	3.8	5.7	5.8	6.2	2.4	4.5	2.2	3.9
	(0.8)	(0.7)	(1.1)	(0.9)	(1.4)	(0.9)	(0.6)	(0.6)	(0.5)	(0.6)
Memorandum items:										
Household size	4.1	6.3	4.8	6.5	4.7	7.0	4.1	6.1	2.9	5.1
Dependency ratio (%)	126	125	213	159	197	158	82	99	68	79
Children (% household size)	38	46	61	57	59	56	28	40	18	27
Population share	10	90	2	22	2	19	4	39	2	9

Note: Standard errors in parentheses.
Source: 2001 TLSS.

6.14   When taking on the role as household head, women can face difficulties if they have limited education and job opportunities. However, the figures shown in Table 6.4 appear to suggest that female headship is associated with lower poverty. Poverty is between one third to one half higher for male headed households, and the standard errors imply that the differences are significant. However, as the previous paragraph indicates, male and female headed households differ in size and composition. Especially, allowing for economies of scale can reverse the ranking as male headed households are one third larger than female headed households. In addition, as male headed households have a higher child share, factoring in a needs-discount for children would further reduce the gap. For example, assuming economies of scale of 25 percent, and a cost ratio of children to adults of one third, and the poverty headcount for both headship categories becomes equal. We conclude that the poverty rankings of male and female headed households are not robust to changes in equivalence scales across a plausible range.

Table 6.5: Female Headship and Welfare

	0 to 6		7 to 14		15 to 49		50 or older	
	Female head	Male head	Female head	Male head	Female head	Male head	Female head	Male head
Immunization								
BCG	39.2	54.9						
	(10.0)	(3.6)						
Polio	40.3	60.6						
	(10.0)	(3.8)						
DPT	40.7	56.1						
	(10.2)	(4.2)						
DPT3	5.6	8.9						
	(2.2)	(1.0)						
Measles	37.5	51.1						
	(10.4)	(4.2)						
Vitamin A	2.4	7.3						
	(1.4)	(1.0)						
Health								
No health complaints last month	70.7	73.1	83.7	87.5	77.2	81.4	55.3	60.7
	(4.4)	(1.6)	(3.9)	(1.4)	(2.6)	(1.4)	(4.4)	(2.3)
Subjective health status (1 to 5)			3.9	3.9	3.8	3.9	3.3	3.6
			(0.0)	(0.0)	(0.0)	(0.0)	(0.1)	(0.0)
Education								
Net Primary Enrollment Rate			57.1	62.4				
			(3.9)	(1.7)				
Net Primary Class Enrollment Rate			12.8	18.6				
			(2.7)	(1.2)				
Schooling			76.2	80.2	53.5	57.3	2.3	9.2
			(3.7)	(1.5)	(3.4)	(1.8)	(1.1)	(1.1)
Grade completed (1 to 6)					2.1	2.1	1.0	1.1
					(0.1)	(0.0)	(0.0)	(0.0)
Literacy (%)					54.1	58.9	5.5	11.3
					(3.5)	(1.8)	(1.7)	(1.3)
Subjective Welfare								
Happiness (1 to 5)					3.0	3.2	3.0	3.1
					(0.1)	(0.0)	(0.1)	(0.0)
Change in living standard since violence (1 to 3)					1.8	1.8	1.9	1.8
					(0.0)	(0.0)	(0.0)	(0.0)
Economic status (1 to 9)					2.2	2.4	1.9	2.3
					(0.1)	(0.1)	(0.1)	(0.1)
Change in economic status since violence (-8 to 8)					0.2	0.1	0.0	0.1
					(0.1)	(0.1)	(0.1)	(0.1)
Power status (1 to 9)					3.7	3.9	3.3	3.6
					(0.1)	(0.1)	(0.1)	(0.1)
Change in power status since violence (-8 to 8)					2.1	2.2	1.9	2.0
					(0.1)	(0.1)	(0.1)	(0.1)

Note: Standard errors in parentheses.
Source: 2001 TLSS.

6.15   We turn towards broader notions of well-being, covering education, health, and subjective well-being. Again, we note that indicators deteriorate as we move from younger to older age groups, in line with our expectations. The findings shown in Table 6.5 are surprisingly clear-cut: male-head households are better off than female headed households across all dimensions. Children under 6 in male-headed households have significantly higher immunization rates for all six indicators. Children of school age

report more health complaints and have worse educational indicators compared to those living in female headed households. The same holds for both prime age adults and the elderly. Finally, the subjective welfare indicators suggest that adults in male-headed households feel to have a higher economic and power status. Encouragingly, with regard to the changes in living standards since the violence, female-headed households score slightly better, even though the differences are not generally significant.

6.16   To summarize, classifying households by gender of the household head brings out a clear pattern. Male-head households are consistently better off than female-headed households, with the exception of consumption poverty – which again is subject to the caveat of lack of information on intra-household distribution. However, better welfare in male headed households may not be linked to gender bias, but in fact simply reflect that female-headed households are deprived of one important breadwinner. The subsequent sections will shed more light on this issue, when we look at the welfare of widows and children who lost their parents.

WIDOWS

6.17   As discussed in the previous section, the large incidence of female headed households is owed to Timor-Leste's violent recent past. Almost all female heads are widows, but about one third of all widows are not head of households. Widowhood not just alters the family structure, but often changes the economic and social roles of women in households and communities. It can affect the physical safety, identity and mobility of women and children, their access to basic goods and services necessary for survival, and their rights to inheritance, land and property. Widows may become responsible for her late husband's dependants, but she may also be taken in by his family. The death of the main breadwinner can cause a breakdown in the familiar division of labor because women take over roles traditionally carried out only by men.

6.18   Before we analyze welfare indicators, it is instructive to review basic demographic information. Among married women ('wives') up to age 50, the average age at marriage is 21 years. Most women get married between the ages of 15 to 25. In the following, we restrict attention to women aged 15 and older, and contrast welfare of widows and wives. Overall, three in five of women aged 15 or older are married and one in six widowed. In order to limit differences in the average age across groups, we split the sample at the age of 50.

Table 6.6: Poverty and Widowhood

	Aged 15 to 49		Aged 50 or older	
	Married	Widowed	Married	Widowed
Headcount	37.9	31.9	31.6	29.9
	(2.9)	(2.0)	(4.0)	(4.3)
Poverty Gap	10.9	10.0	9.1	9.2
	(1.3)	(2.5)	(1.6)	(1.7)
Severity	4.4	4.4	3.7	3.9
	(0.6)	(1.3)	(0.8)	(0.9)
Memorandum items:				
Household size	5.8	4.2	4.6	4.4
Dependency ratio (%)	118	132	63	79
Children (% household size)	46	41	21	24
Age	33	37	56	61
Population share	50	5	9	11

Note: Population refers to women aged 15 or older. Standard errors in parentheses.
Source: 2001 TLSS.

6.19   For women younger than age 50, wives are poorer than widows, however, with the exception of the headcount, the differences are not statistically significant (see Table 6.6). Furthermore, wives live in substantially larger households with slightly lower dependency ratio, even though the child share is higher. Alternative assumptions regarding equivalence scales affect the ranking, in particular once we allow for economies of scale. For example, assuming that the economies to scale are 25 percent instead of zero, the poverty headcount for widows becomes 4 percent higher than for wives. Widows aged 50 or older display a slightly higher poverty gap and severity measure than wives of the same age group. Again, the poverty ranking is not clear-cut, depending on the exact choices of poverty indicator and equivalence scale.

Table 6.7: Widowhood Status and Welfare

	Aged 15 to 49		Aged 50 or older	
	Married	Widowed	Married	Widowed
Education				
Schooling (%)	41.1	21.5	4.3	1.2
	(2.0)	(4.3)	(1.4)	(0.5)
Grade completed (1 to 6)	1.8	1.4	1.1	1.0
	(0.0)	(0.1)	(0.02)	(0.01)
Literacy (%)	42.8	22.5	7.3	4.8
	(2.1)	(4.4)	(1.8)	(1.3)
Health				
No health complaints last month (%)	77.4	68.0	63.4	60.1
	(1.9)	(6.1)	(4.0)	(3.3)
Subjective health status (1 to 5)	3.9	3.7	3.6	3.5
	(0.0)	(0.1)	(0.1)	(0.1)
Subjective Welfare				
Happiness (1 to 5)	3.2	2.9	3.1	3.0
	(0.0)	(0.1)	(0.1)	(0.1)
Change in living standard since violence (1 to 3)	1.8	1.9	1.8	1.9
	(0.0)	(0.0)	(0.0)	(0.0)
Economic status (1 to 9)	2.4	2.2	2.3	2.0
	(0.1)	(0.1)	(0.1)	(0.1)
Change in economic status since violence (-8 to 8)	0.1	0.1	0.1	0.1
	(0.1)	(0.1)	(0.1)	(0.1)
Power status (1 to 9)	3.8	3.2	3.6	3.3
	(0.1)	(0.2)	(0.1)	(0.1)
Change in power status since violence (-8 to 8)	2.1	1.7	1.9	1.8
	(0.1)	(0.2)	(0.1)	(0.1)

Note: Standard errors in parentheses.
Source: 2001 TLSS.

6.20   Non-income dimensions of welfare include education, health, and subjective well-being. A stark and uniform picture emerges. Wives are better off,[75] and have experienced a larger improvement than widows (Table 6.7).[76] With regard to schooling, wives have more schooling, higher degrees, and are more literate than widows. Since these indicators are unlikely to change as a result of widowhood, they suggest that widowhood affects disproportionately less educated women. The education indicators for the prime age group are higher than for the elderly, reflecting the large increase in school enrollment during Indonesian time. The absolute differences across widowhood status are larger for the prime age group, but the differences remain statistically significant even at old age. Wives report fewer health complaints and a (marginally) better subjective health status. Finally, they are happier, and enjoy a higher subjective economic and power status than widows. They also report a greater improvement since the violence in terms of general living standards and power status.

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[75] We cannot establish whether widows are worse off than wives *as a result* of the loss of their spouse or whether widows lived already in disadvantaged families when their husband was still alive.

[76] We also find that elderly women, almost uniformly, are worse off than younger women.

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6.21   Women in Timor-Leste have shown commendable courage, resourcefulness and resilience in carrying on despite the trauma of their loss, the isolation imposed by being widows and the difficult tasks of earning a living and protecting themselves and their dependent family members. While many of the complex implications of widowhood cannot be adequately analyzed with the survey, the data shows that widows live in adverse circumstances resulting in lower welfare than wives.

PARENTLESS CHILDREN

6.22   The counterpart of widows, from the point of view of the children generation, is boys and girls without living fathers. In any country, one of the most disadvantaged groups is children without parents. In Timor-Leste, as a legacy of a long history of violent conflict, over one in ten children have only one or none living parent. The largest group is the children without fathers, accounting for four in five of the children without at least on parent.[77] This part discusses the welfare of parentless children.

Table 6.8: Child Poverty and Parental Living Status

	Father and mother alive	Father dead, mother alive	Father alive, mother dead
Headcount	45.3	51.2	42.5
	(3.2)	(6.1)	(9.0)
Poverty Gap	13.8	15.7	13.6
	(1.6)	(2.9)	(3.1)
Severity	5.8	6.8	5.7
	(0.9)	(1.4)	(1.6)
Memorandum items:			
Household size	6.7	5.2	5.8
Dependency ratio (%)	159	202	180
Population share	84	6	3

Note: Children are all individuals less than 15 years of age. Population refers to children.
Standard errors in parentheses.
Source: 2001 TLSS.

6.23   A simple way to identify the impact of having lost a parent is to compare the welfare of children with and without fathers and mothers. In Table 6.8, we separate three groups: those with both parents alive, those whose father has died and whose mother is still alive, and those whose mother has died and whose father is still alive.[78] The categories represent 89 percent, 6.5 percent, and 3.5 percent of all children under the age

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[77] Out of the children with both natural parents alive, more than nine in ten of these children live together with both of them, and almost all of them with at least one of them.
[78] Among the children below the age of 15, 19 in 20 children have a living mother.

of 15, respectively.[79] Let us first consider the two largest groups, children with both parents alive versus those with a living mother and a deceased father. Fatherless children live in households without the typical main breadwinner, so we expect high poverty. This is indeed the case. Child poverty rates are 13 to 17 percent higher for those without a living father than for those where the father has deceased. This ranking is robust to chances in the equivalence scale. Children without fathers live in smaller households with a higher dependency ratio and child share than the other children. As a result, allowing for economics of size or differences in needs by age groups leaves the ranking unchanged.[80]

6.24   Let us turn to children with a living father and a deceased mother. Poverty is slightly lower than for children with both parents. However, the differences are not statistically significant. Furthermore, changes in the equivalence scales reverse the ranking, since motherless children live in smaller households with higher dependency ratio.[81] While there is no clear pattern in the comparison to children with both parents alive, children without mothers are poorer than children without fathers. This result holds regardless of the choice of the equivalence scale. Overall, we find that fatherless children with living mothers are worse of than children with living fathers. For children with living fathers, no clear pattern emerges relative to the living status of the mother.

6.25   Does this pattern carry over to other notion of well-being, like education and health? Let us consider education first. Table 6.9 shows three educational enrollment indicators. They consistently show that children without either father or mother are worse off than children with both parents alive: they are less like to have received any schooling; have a lower net enrollment rate, both for primary school as a whole and for each primary school grade. The difference widens as we move from a coarse (ever attending school) to fine indicators (enrolled in the grade corresponding to age). A similar picture emerges with regard to child health and immunization. Children with both parents have fewer health complications during the last month, and for children less than 5 years of age, all six variables indicate that higher immunization for children with fathers than without. No clear pattern emerges comparing children without fathers to children without mothers.

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[79] We do not have a sufficient number of observations on orphaned children (1.0 percent of all children) to present reliable statistics.
[80] This result is confirmed in sensitivity analysis with regard to equivalence scales.
[81] For example, assuming that the economies to scale are 25 percent instead of zero, the poverty headcount for children without living mothers is 2 percent higher than for children with living mothers.

Table 6.9: Child Welfare and Parental Living Status (%)

	Father and mother alive	Father dead, mother alive	Father alive, mother dead
Education			
Schooling	66.6	63.6	57.9
	(1.5)	(4.7)	(6.8)
Enrolled in age-specific school	63.6	52.8	51.8
	(1.7)	(3.9)	(6.1)
Enrolled in age-specific grade	19.4	10.2	11.9
	(1.2)	(2.2)	(3.8)
Immunization			
BCG	55.0	27.8	50.6
	(3.6)	(9.9)	(19.0)
Polio	60.7	36.6	50.6
	(3.6)	(10.7)	(19.0)
DPT	56.0	47.2	39.9
	(4.0)	(16.0)	(16.9)
DPT3	9.0	4.2	0.0
	(1.0)	(3.0)	(0.0)
Measles	50.7	47.1	44.6
	(4.0)	(15.5)	(17.2)
Vitamin A	7.4	0.0	1.8
	(1.0)	(0.0)	(1.8)
Health			
No health complaints last month	40.5	31.6	34.3
	(3.4)	(5.1)	(7.3)

Note: Education and health figures consider children under 15 years. Immunization rates are for children under 5 years.
Standard errors in parentheses.
Source: 2001 TLSS.

6.26 Our analysis shows that fatherless children experience more often, and deeper, poverty and lower welfare than children with living fathers.[82] This examination is preliminary only and calls for more research to uncover the impact of child care arrangements on the welfare of parentless and orphaned children. Nevertheless, these numbers suggest that the presence of fathers lowers poverty. In addition, we find that with regard to education and immunization, parentless children, being either with a deceased mother or father, are consistently worse of than children with both parents.

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[82] This analysis does not establish whether parentless children suffer *as a result* of the loss of parents or whether disadvantaged families were *originally* more affected by the death of parents.

POLICY AND RESEARCH ISSUES

6.27   The analysis in this chapter confirms evidence from other countries. Female-headed households, widows, and parentless children experience severe hardship. More research is required to fully explore the complicated dynamics between family structure, community support, and welfare. Nevertheless, the results point to the need to develop a policy response. Possible interventions range from support to traditional community structures; transfers or income-generating activities to widows and households fostering fatherless children; targeted support for schooling and health care; and institutional care arrangements.

7. FOOD SECURITY

INTRODUCTION[83]

7.1   Poverty means more than inadequate consumption, education, and health. It also means dreading the future. Living with the risk that a crisis may descend at any time, not knowing whether one will cope, is part of life for poor people. Poor people are often among the most vulnerable in society because they are the most exposed to a wide array of risks. Low income implies poor people are less able to save and accumulate assets, which in turn restricts their ability to deal with a crisis when it strikes. Poor people have developed elaborate mechanisms of dealing with risk, but they often offer short-term protection at long-term cost, preventing any escape from poverty.

7.2   Risk is a pervasive characteristic of life in developing countries. Different risks include natural and weather risks (for example, landslide, earthquake, drought), health risks (illness, disability, epidemic), economic risks (unemployment, resettlement), social risks (crime, civil conflict), environmental risks (pollution, deforestation), and political risks (coup d'etat). Some of them affect an individual or household (illness, unemployment), others an entire village (drought), and yet others a nation as a whole (civil conflict). This distinction is important, as, for example, a risk that affects an entire village cannot be insured solely within the village. While it is beyond the scope of this report to discuss these aspects comprehensively, TLSS allows us to explore one issue of vulnerability in more detail: food security.

PREVALENCE

7.3   Food security refers to assured access to enough food at all times for an active and healthy life. It includes the availability of nutritionally adequate and safe foods, and a guaranteed ability to acquire acceptable foods in socially acceptable ways (without resorting to emergency food supplies, scavenging or stealing, for example). Perhaps the most important risk to food security for farming households in Timor-Leste is weather risk. Agriculture is inherently dependent on the vagaries of weather, like variation in rainfall. This leads to production (or yield) risk, and affects the farmers' ability to repay debt, to meet land rents, and, foremost, to provide adequate and sustainable food supplies.

7.4   Is the population exposed to food insecurity? At first sight, it would seem that TLSS has little to say on food security. Ideally, we would want to draw on nutritional and anthropometrical data collected over the entire course of the year, covering the different stages of the agricultural season. Yet, TLSS surveyed households only between late

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[83] This chapter was written by Kaspar Richter.

August to early December, and did not measure dietary intake or malnutrition.[84] However, to compensate for these data gaps, the survey included a range of questions on the perception of food security. While these subjective indicators raise questions with regard to the comparability of responses,[85] they nevertheless give instructive pointers both to the extent and pattern of food insecurity.

Table 7.1: Food Security: Summary by Domain

	National	Urban		Rural			Rural		
		Major	Other	West	Center	East	Flat	Mid	High
Not enough food (# months)	3.6	1.8	3.7	3.9	3.7	4.2	3.9	3.9	3.9
	(0.1)	(0.2)	(0.2)	(0.3)	(0.1)	(0.2)	(0.7)	(0.2)	(0.1)
Enough food (# months)	6.7	9.7	5.8	6.0	6.1	6.8	6.5	6.1	6.4
	(0.1)	(0.2)	(0.3)	(0.3)	(0.3)	(0.3)	(0.3)	(0.3)	(0.3)
More than enough food (# months)	1.7	0.4	2.6	2.1	2.1	1.0	1.7	2.0	1.6
	(0.1)	(0.1)	(0.4)	(0.4)	(0.3)	(0.2)	(0.5)	(0.3)	(0.3)
At least one month not enough food (%)	86	39	94	92	93	92	81	93	95
	(1.5)	(3.6)	(2.2)	(4.8)	(2.4)	(2.1)	(8.6)	(2.7)	(1.8)
Never more than enough food (%)	54	87	36	39	44	73	52	48	53
	(3.6)	(3.1)	(9.1)	(9.2)	(6.6)	(4.9)	(11.1)	(5.9)	(7.8)
Not enough rice or maize (# months)	3.6	1.8	3.7	3.9	3.8	4.2	3.9	3.9	4.0
	(0.1)	(0.2)	(0.2)	(0.3)	(0.1)	(0.2)	(0.6)	(0.2)	(0.1)
Monthly food insecurity index (FII) (1 - 3)	2.2	2.1	2.1	2.1	2.1	2.3	2.2	2.2	2.2
	(0.0)	(0.0)	(0.0)	(0.1)	(0.0)	(0.0)	(0.1)	(0.0)	(0.0)
FII (coefficient of variation, %)	27	10	33	31	31	24	26	30	29
	(0.9)	(1.0)	(2.2)	(1.7)	(1.6)	(1.3)	(1.9)	(1.4)	(1.8)

Note: Standard errors in parentheses.
Source: 2001 TLSS.

7.5   A summary of self-perceived food security is shown in Table 7.1. The first five variables summarize the responses to food adequacy (not enough, enough, more than enough) for each month of the last year. On average, the population got through 3.6 months with inadequate food during the last year, compared to only 1.7 months with more than adequate food. Not having enough food is a common situation for the population. It affected almost nine in ten persons for at least one month during the last year. At the same time, more than half of the population did not experience a single month with more than enough food.

7.6   We can verify the estimate on the number of months with insufficient food using a second question. It asked about the total number of months at which the household did not have enough rice or maize to eat. The statistics, both for the country as a whole and in the regional breakdown, are very close to our first estimate. This suggests that in the perception of the population, food security is closely associated with having enough rice or maize to eat.

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[84] This omission was deliberate for two reasons. First, accurate collection of nutritional and anthropometrical indicators requires intensive special training of the enumerators, which appeared infeasible in view of time and budgetary constraints. Second, such information will be provided in the Demographic and Health Survey, planned to be fielded during 2003.

[85]For example, is not having "enough" food equivalent to not meeting the required dietary norm? Is the notion of having "enough" food the same in urban and rural areas?

7.7   How does food security vary across regions? The breakdown reveals a strong divide between major urban centers and the rest of the country. Dili and Baucau experienced only 1.8 months of inadequate food, whereas from other urban centers to the rural east, this number ranged from 3.7 to 4.2. Similarly, only four in ten dwellers in the major urban centers went through at least one month of inadequate food, while this share is more than four fifths for the rest of the country. However, households in Dili and Baucau were less likely than families in other parts of the country to have *more* than enough food. Inhabitants of the two main cities had surplus food for less than half a month, compared to an average of 1.9 months for the rest of the country. Just over one in ten persons in the major urban centers had more than enough food for at least one month, while in the rest of the country every other person shared in this experience.

7.8   Another perspective on the difference between Dili and Baucau and other parts of the country is provided by the variability of food security. Table 7.1 shows the mean and the coefficient of variation of the monthly food insecurity index (FII).[86] This index is a summary statistics on food availability over the course of the year, and its coefficient of variation measures its variability. Its average percentage deviation from the average is 27 percent. In major urban centers, the average deviation is only 10 percent, compared to 30 percent in the rest of the country. In other words, the variability of food security is three times as high in rural areas and other urban centers than in Dili and Baucau.

7.9   These findings point to the following split: major urban centers have typically constant access to just enough food throughout the year, while other parts of the country face greater fluctuation in food availability, and experience food shortage about twice as often as food excess. One interpretation of this evidence is the difference in capacity to keep consumption constant over the year. The greater reliance on non-agricultural income sources allows households in Dili and Baucau to keep consumption constant at an adequate level across the year. Two factors could explain this ability of consumption smoothing. First, urban incomes are likely to be less variable as they depends less on the agricultural seasons. Second, as they receive a higher share of income in cash, city dwellers may be able to engage more in saving and dis-saving of income.

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[86] For a given month, this index equals 1 for more than enough food, 2 for just enough food, and 3 for not enough food. FII increases in food insecurity.

Figure 7.1: Household Food Security by Month
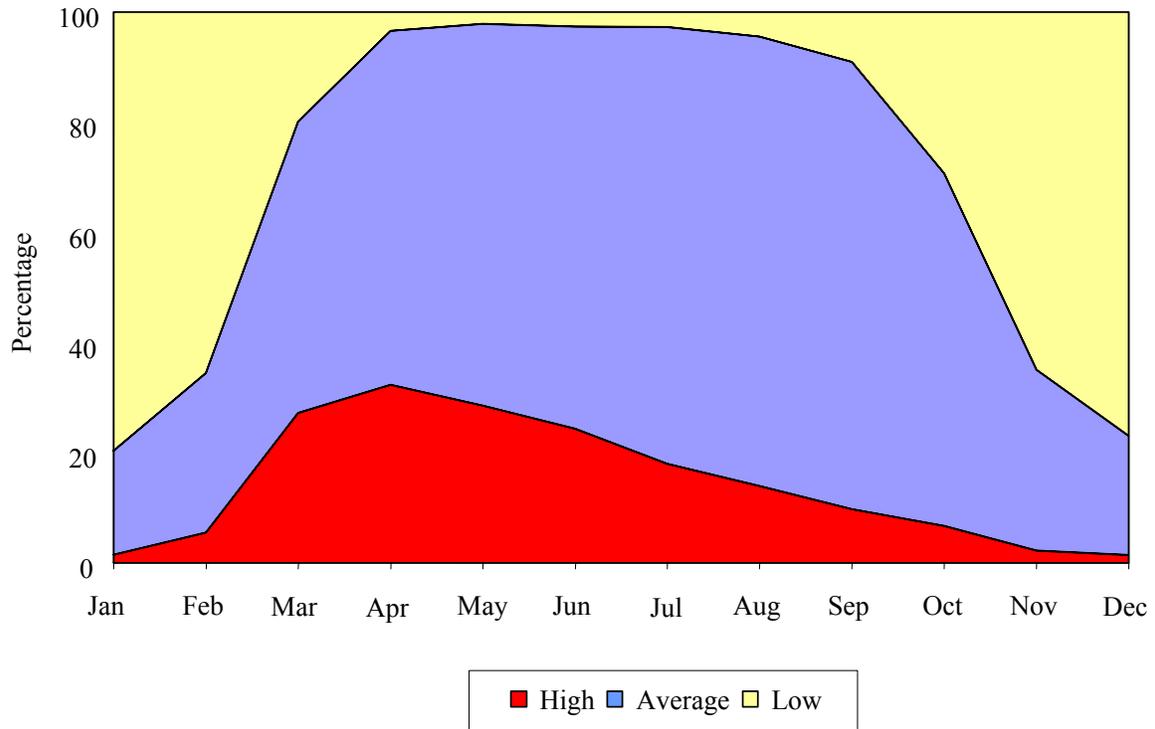
Source: 2001 TLSS.

7.10 The previous discussion suggests that, at least outside Dili and Baucau, some month are characterized with plentiful food while in others there is a shortage. In Figure 7.1 we trace the three responses on food availability over the course of the twelve months preceding the survey. The striking feature is the strong seasonality. Food security is lowest from November to February, with over two thirds of the persons not having enough food. In contract, from April to August, less than one in twenty individuals suffer from insufficient food. Food shortages are linked to the harvest cycle, as they are greatest at the end of the rice harvest and before the maize harvest. Rice is harvested from April to October, while the maize harvest starts only in February and lasts to around April.

Figure 7.2: Not Enough Food by Domain
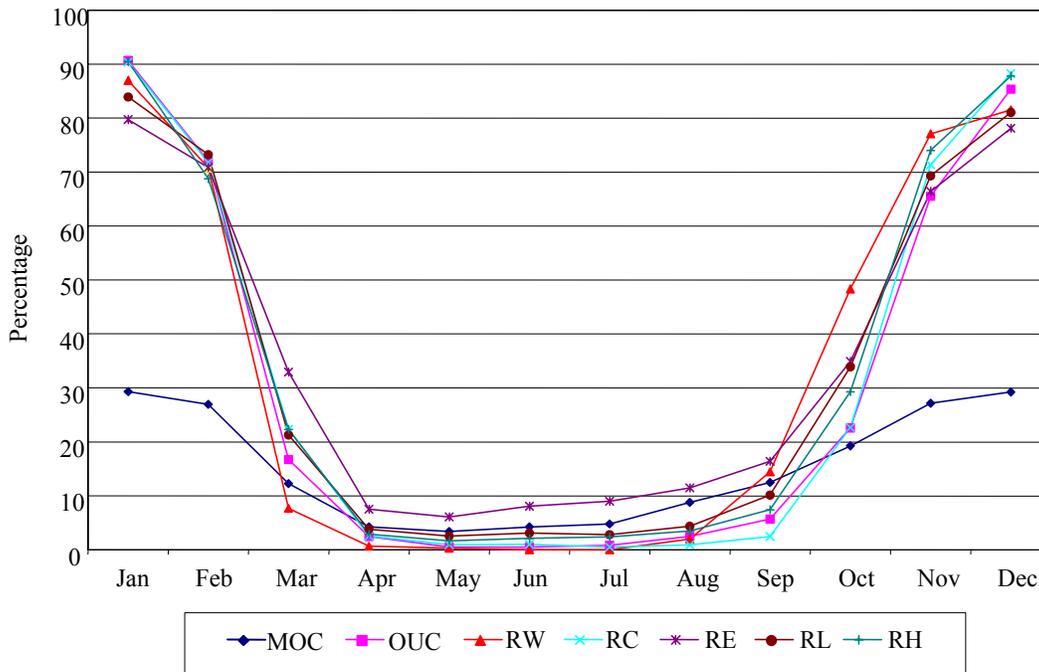
Source: 2001 TLSS.

7.11   Does the seasonal pattern of food security carry over at the regional level? Figure 7.2 shows the percentage shares stating not to have enough food for each month of the year. It reveals the remarkable homogeneity of the food availability circle across regional domains. In urban and rural categories alike, food security is lowest from November to February. The figure also highlights the split between Dili and Baucau and the rest of the country. While the vast majority of households in the rural domains and other urban centers have not enough food in the lean season, the percentage of persons suffering from not enough food in the major urban centers rises never about 30 percent.

7.12   Outside Dili and Baucau, the typical household is a subsistence farmer, with little market access and non-farm sources of income, dependent on its own crop production for food provision. This evidence illustrates that across regions, these farmers engage in crop production with broadly similar seasonality, leading to a comparable monthly food security profile.

7.13   To summarize, subjective assessments of food adequacy suggest that food insecurity is widespread. Close to nine in ten persons experience inadequate food provision at some point during the year, while fewer than one in two have too much food during any month in the year. Food security is closely tied to having enough rice and maize. Food shortages are aligned with the harvest cycle at the national and regional level. They are greatest during November and February, at the end of the rice harvest and before the maize harvest. Major urban centers have typically access to just enough food all throughout the year, while other parts of the country face greater fluctuation in food availability, and experience food shortage about twice as often as food excess.

7.14   Agriculture is of overwhelming importance for living standards. About seven in ten persons live with heads of households who work on a household farm, and over three quarters are with heads whose main occupation is farming. Given this dependence on the moods of agricultural seasons, what is the implication of the intra-year cycle of food security for poverty?

Figure 7.3: National Poverty and Interview Date
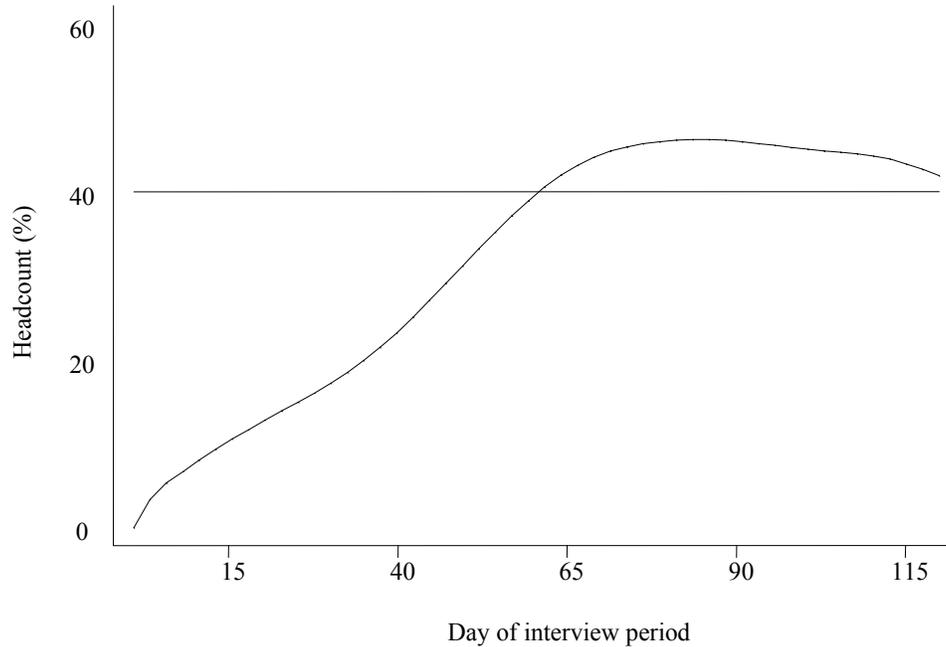
Source: 2001 TLSS.

7.15   In order to explore the impact of seasonality on poverty properly, we would need to draw on consumption data covering both lean and harvest seasons. TLSS was fielded over a period of about four month, lasting from about mid-August 2001 to mid-December 2001. The subjective food security indicators showed that in 2001 food availability was closely aligned to the harvest cycle. August was the last month of the plentiful season, and lack of food became more severe from September until the end of the year, and had its peak in January. On the basis of this pattern, we would expect poverty to show broadly an increase from early in the survey to the end of the survey. In Figure 7.3, we display the national pattern, linking the average poverty headcount to a count of the days in the survey. We find indeed a strong dependence of the poverty headcount to the timing of the interview. Fewer than one in ten persons live below the poverty line at the beginning of the survey. The share of the poor rises continuously until about three month after the start of the survey, or about mid-November, peaking at about 45 percent. This share then remains fairly constant during the last month.

Figure 7.4: Regional Poverty and Interview Date
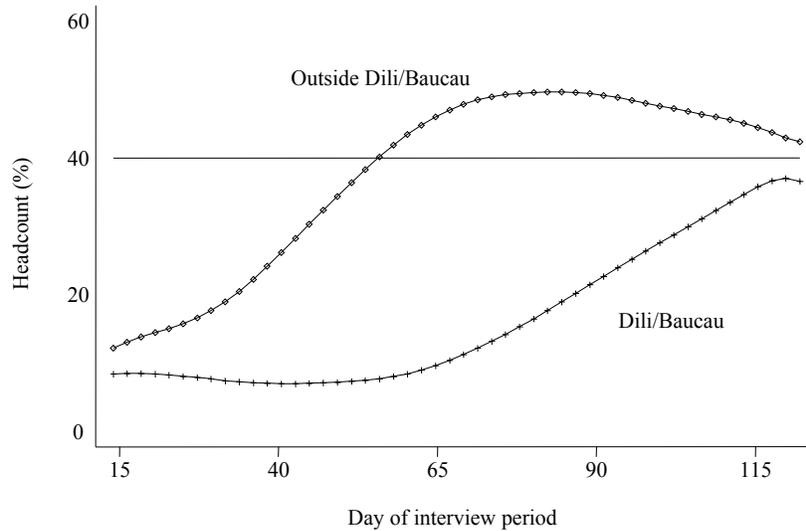
Source: 2001 TLSS.

7.16   Does this national picture also hold at the regional level? In our analysis of food security, we found a different food security profile for the major urban centers than for other parts of the country. In Figure 7.4, we display separate plots for Dili and Baucau and the rest of the country.[87] Again, these two parts of the country show marked differences. Poverty in Dili and Baucau is overall much lower, and starts rising from the second month of the survey period onwards, and increases right through until the end of the survey period. It confirms that even Dili and Baucau are affected by the lean season. The delayed rise in poverty could point to a greater, even though imperfect, capacity to smooth consumption.

7.17   This strong evidence for seasonality of poverty raises an immediate question. In the analysis of the poverty profile, we argue that about two fifth of the population live below the poverty line. In view of the intra-year fluctuations of living standards, this estimate is specific to the survey period. How representative is therefore this poverty rate of 40 percent for the year as a whole? In the absence of information of consumption behaviour throughout the year, we have to rely on subjective food security for a rough assessment. We compare the average value of food security for the survey period with the annual average. Taking as weights the percentage shares of interviews conducted in August, September, November, and December, we calculate that the share of not having enough food for the survey period is 30 percent. The annual average for this variable is 34 percent. Overall, this comparison suggests that the "survey" poverty rate is fairly close, and possibly slightly higher, to the "annual" poverty rate.

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[87] Separating out domains also serves as a cross-check on the finding of an increase in poverty over the survey period. For example, a sequencing of interviews first in urban areas (with low poverty) and then rural areas (with high poverty) could have produced such a spurious relationship between poverty and interview date. The sequencing of TLLS interviews across the domains was designed to be broadly representative at different months.

7.18   What happens when a family is faced with a risk of food shortages? And how does a household respond to a food crisis? Farmers have always been exposed to weather risks, and for a long time have developed ways of reducing, mitigating, and coping with these risks (Besley 1995, Dercon 2002). Traditional risk management covers actions taken both before ("ex-ante") and after ("ex-post") the risky event occurs (Siegel and Alwang 1999). These strategies are often costly, as they lower vulnerability in the short term at the expense of higher vulnerability over the longer term: a farmer's decision to undertake, or not to undertake, a certain activity is not just dependent on achieving the highest expected return but also on the variance of the returns. In particular, to limit vulnerability, farmers give up higher income from specialization in return for a lower variability of income. We can draw on the survey to explore the relevance of various actions in the context of Timor-Leste.

Ex-Ante Strategies

7.19   Farmers reduce and mitigate the risk of a food shortage before it occurs. At the household level, such ex-ante strategies range from the accumulation of buffer stocks as precautionary savings, to varying cropping practices (planting different crops, or in different fields, staggered over time, inter-cropping, and relying on low risk inputs), and to the diversification of income-generating activities (working in farm and non-farm small businesses, and seasonal migration). At the community level, villages mitigate food insecurity with irrigation projects and conservation tillage that protects soil and moisture.

7.20   In Table 7.2, we pull together key variables that characterize ex-ante household coping strategies. It provides information on the main assets (savings, livestock holdings, and land), cropping patterns, and job holdings. We distinguish Dili/Baucau from the rest of the country. We also separate households who experienced in the last year food shortages for more than a third of the year ("food insecure") from those who suffered no more than four months of lack of food. About one in five persons were food insecure in Dili/Baucau over the last year, compared to one in three in other parts of the country.

7.21   Is food security associated with more ex-ante coping? In Dili/Baucau, the distinguishing feature of households in terms of food security is being employed in the non-agricultural sectors. By contrast, outside Major Urban Centers, dependence on agriculture is almost universal, and food security is related not just to and being more diversified, but also having more assets and outputs, in terms of savings, livestock, crops, and jobs.

Table 7.2: Food Security and Ex-Ante Coping Strategies

	Sample	Dili/Baucau		Other domains	
		Secure	Insecure	Secure	Insecure
Savings					
%	All	22	10	54	44
		(4)	(4)	(5)	(6)
US Dollars per capita	Assets holders	87.9	11.0	35.0	18.8
		(115,514)	(48,391)	(31,820)	(21,982)
Livestock holding					
%	All	54	68	90	89
		(4)	(8)	(2)	(3)
# per capita	Livestock holders	1.2	1.4	2.3	2.0
		(0)	(0)	(0)	(0)
US Dollars per capita	Livestock holders	0.047	0.070	0.114	0.088
		(106)	(152)	(131)	(114)
Land					
%	All	19	57	95	94
		(3)	(9)	(1)	(1)
Ha per capita	Land holders	0.21	0.29	0.31	0.32
		(0.04)	(0.06)	(0.02)	(0.02)
US Dollars per capita	Land holders	0.505	0.326	0.727	0.829
		(1,235)	(532)	(406)	(675)
Crops					
%	All	19	57	95	93
		(3)	(9)	(1)	(2)
# per capita	Crop holders	0.68	0.65	0.85	0.78
		(0.07)	(0.05)	(0.03)	(0.04)
% selling	Crop holders	46	56	72	55
		(8)	(9)	(4)	(6)
Jobs					
# per capita	All	0.23	0.27	0.37	0.33
		(0.01)	(0.02)	(0.01)	(0.02)
% agriculture	Job holders	17	53	84	89
		(3)	(11)	(2)	(1)
% secondary jobs	Job holders	4	2	8	7
		(1)	(2)	(1)	(1)
Shares		82	18	67	32

Note: Secure refers to households who experienced food shortages for at most four months during the last year, and
insecure to all other households. Standard errors in parentheses.
All Rupiah values from the survey were converted to US Dollars using an exchange rate of 10,000 Rupiah/US Dollar.
Source: 2001 TLSS.

Ex-Post Strategies

7.22   The survey provides also information on actions that households undertook in response to a food shortage. Table 7.3 shows the ex-post actions taken by families when faced with lack of food. Household heads were asked to give up to three responses, ranked by degree of importance. Almost all families (99 percent) reported two actions, and close to 90 percent three actions. The need to resort to multiple strategies is in itself an indication of vulnerability. The number of coping strategies is linked to poverty: of those engaged in at most two actions, only one in four are poor, compared to almost one in two for those reporting three strategies.

Table 7.3: Coping Strategies When Not Enough Food

	By relevance			Overall	
	First	Second	Third	Dili/Baucau	Other domains
Ate less food	66	17	10	89	93
	(3)	(2)	(1)	(3)	(1)
Changed diet	21	65	10	96	96
	(2)	(2)	(1)	(2)	(1)
Sold livestock or assets	5	7	42	29	51
	(1)	(1)	(2)	(5)	(3)
Borrowed money	4	5	11	15	19
	(1)	(1)	(2)	(4)	(2)
Got food aid	0	0	1	0	1
	(0)	(0)	(0)	(0)	(0)

Note: The responses by relevance do not sum to 100 due to the omission of the "Others" category.
Standard errors in parentheses.
Source: 2001 TLSS.

7.23   Separating out the coping strategies suggests a sequencing of responses. At first, the household head experiences anxiety about food insufficiency, leading to decisions to reduce the household's food budget by altering the quality or variety of food consumed by the family. Overall, almost all households either change their diet or skip meals when faced with insufficient food (see Table 7.3). These two actions were not just most widespread, but also took priority over other responses.

7.24   Only if the situation required further adjustment, then households also undertook distress sales of livestock and other farm assets. Every other household reported this response, most of them as third action. Selling productive assets is clearly a last resort. It make ends meet today at the cost of lowering the future income stream. Furthermore, it requires having marketable assets in the first place. For example, only one quarter of those without livestock holdings reported asset sales, compared to over half for those owning animals.

Table 7.4: Coping Strategies: Intrahousehold Transfers

	Percentage	Number of transfers	% relatives	% same posto	US Dollars	% of expenditure
Donors						
Grants	12.4	3.1	98	54	1.65	5.1
	(1.2)	(0.3)	(7)	(5)	(2,369)	(0.7)
Loans	3.0	1.6	94	63	0.94	2.9
	(0.6)	(0.2)	(14)	(12)	(1,716)	(0.4)
Recipients						
Grants	8.9	3.4	97	61	2.09	7.6
	(0.9)	(0.4)	(7)	(5)	(3,273)	(1.2)
Loans	12.1	1.4	64	n.a.	2.42	11.3
	(1.3)	(0.1)	(5)	n.a.	(8,792)	(0.4)
Donors or recipients						
Total	30.8	3.0			0.80	2.9
	(1.9)	(0.2)			(3,932)	(1.5)
Non-poor	34.2	3.5			1.05	3.0
	(2.0)	(0.3)			(5,860)	(1.7)
Poor	25.7	1.8			0.29	2.6
	(2.6)	(0.1)			(919)	(0.8)

Note: Standard errors in parentheses. All Rupiah values from the survey were converted to US Dollars
using an exchange rate of 10,000 Rupiah/US Dollar.
Source: 2001 TLSS.

7.25   Other strategies played a minor little role. Private transfers are informal ways in which individuals exchange cash, food, and clothing, informal loans and assistance with work and child-care. Only about one in fifth families obtained resources from friends, relatives, and neighbors. Over half of the households receiving private transfers state this only as the third line of response. The limited role of private transfers, especially for poor and vulnerable families, is confirmed by the evidence presented in Table 7.4. It gives summary statistics on grants and loans received and given over the last twelve months. Overall, three in ten persons live in households that were engaged in either given or receiving transfers. The amount of monthly net transfers (grants and loan received minus those given) was minor, totaling on average less than 3 percent of household expenditures among those giving and/or receiving. Net transfers accounted for more than 10 percent of household expenditures for only about one in thirty persons. The vast majority of transactions is among relatives, and transfers occur predominately among households living in the same posto. Private transfers are more widespread and frequent, and larger in both absolute amount and relative to expenditure among the non-poor than among the poor. Food aid, either from government, NGOs, or the international community, was irrelevant – only one in a hundred persons benefited from such relief.

7.26   The overwhelming importance of dietary adjustments compared to reliance on asset sales and support from others or is also related to the nature of the risk. Food insecurity is related both to the agricultural cycle and weather-related production risks,

and is a "covariate" risk. It concerns many households in a community or region at the same time. Under great stress, informal arrangements tend to break down, as the members of the community, or "risk pool", are commonly affected. The income of the village as a whole is reduced, triggering a collapse of community-based informal insurance arrangements (Morduch 1998). For example, as farmers attempt to sell livestock to make ends meet after a drought, livestock prices will fall as supply outstrips demands. Similarly, when farmers seek off-farm employment in response to a natural disaster, the sudden rise in labor supply will drive down market wages. Furthermore, the family's neighbors and friends are faced with the same negative income shock, and are likely to be reluctant or incapable to provide loans or grants to them.

Table 7.5: Coping Strategies When Not Enough Food: Who Suffers?

	By relevance			Overall	Population
	First	Second	Third		
Head	27	3	6	35	21
	(3)	(0)	(1)	(3)	(0)
Wife/husband	4	24	10	33	15
	(1)	(3)	(1)	(3)	(0)
Children	59	65	73	84	53
	(3)	(3)	(2)	(1)	(1)
Grandchild	4	4	4	7	3
	(1)	(1)	(1)	(1)	(0)
Niece/nephew	1	1	2	2	2
	(0)	(0)	(0)	(0)	(0)
Father/mother	1	1	2	3	1
	(0)	(0)	(1)	(1)	(0)
Sister/brother	1	1	1	2	2
	(0)	(0)	(0)	(0)	(0)
Son/daughter in law	0	0	1	1	1
	(0)	(0)	(1)	(0)	(0)
Brother/sister in law	0	0	0	0	1
	(0)	(0)	(0)	(0)	(0)
Others	1	1	1	2	1
	(0)	(0)	(0)	(0)	(0)

Note: Standard errors in parentheses.
Source: 2001 TLSS.

7.27   When households cut back on meals or change nutrition, who suffers the most? The survey asked families to identify up to three household members, who are affect most in case of a food shortage. The responses are shown in Table 7.5. The striking result is that children appear to take the brunt of the adjustment. They account for between three fifth to three quarters of the three most affected individual, even though they represent just over half of all household members. Since malnutrition at young age can lead to long-term health problems, this points to a potentially permanent detrimental consequence of even occasional food shortages.

7.28   Subjective assessments of food adequacy suggest that food insecurity is widespread. Food availability is aligned with the harvest cycle at the national and regional level. Major urban centers typically have access to just enough food throughout the year, while other parts of the country face greater fluctuation in food availability, and experience food shortage about twice as often as food excess. Food insecurity during the lean seasons is also associated with higher poverty. Households have multiple ways of dealing with food insecurity, which often lower vulnerability in the short term at the expense of higher vulnerability over the longer term. Almost all households either change their diet or skip meals when faced with insufficient food –to the detriment of especially children.

7.29   These findings call for more survey work explicitly designed to capture the temporal dimension of food security and poverty, and to investigate household coping strategies. Understanding the underlying causes of food security (lack of cash incomes which allow households to purchase food during periods of shortfall, lack of availability of food in markets, or lack of storage) would help design appropriate policies. Overall, policies should be aimed at helping poor people manage risk better by reducing and mitigating risk and lessening the impact or shocks. They comprises multiple measures, ranging from developing human resources, improving access to productive resources and remunerative employment, expanding markets, infrastructure, and institutions, to sound governance and trade and macroeconomic policies.

8. DETERMINANTS OF POVERTY

INTRODUCTION[88]

8.1 Poverty has many causes – economic, demographic, social and cultural. As the analysis in this report has confirmed, this is true also for Timor-Leste. How can we disentangle the impact of these factors on poverty? Although two-way tables are informative about associations between factors, they cannot answer the key question whether these relationships hold up when other influences are held constant. For example, there is a clear correlation between the education of the household head and poverty. But this link could be due to third factors related to both education and poverty, like occupation or household assets.[89]

8.2 The standard tool to address this issue is to conduct a multivariate analysis of the determinants of living standards. Such examination can be helpful in identifying correlations between variables, such as those between consumption, characteristics of the household head, household demographics and assets, and community features. In this section, we analyze the determinants of one particular dimension of living standards: household consumption per capita and the implied probability of being consumption-poor.

8.3 For the interpretation of these results, it is important to distinguish between the characteristics of the poor and the roots of poverty. For example, the analysis shows that the poor live in rural areas and with household heads whose human capital is low. This finding as such does not yet identify a cause of poverty, but explains part of the variation in per capita consumption, taking as given past household demographics, human capital, physical assets, and community characteristics. The estimates do not account for the process by which households or communities acquired these features. It is dangerous to conclude those characteristics are causes and then draw policy conclusions.

MODEL

8.4 In this section, we describe the basic approach to modeling the determinants of poverty. We adopt a two-step procedure.[90] First, we regress the log of real per capita consumption on a range of determinants:

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[88] This chapter was written by Kaspar Richter.
[89] However, in some cases, like geographical targeting, simple profiles without controlling for other factors can be more useful (Ravallion 1996).
[90] This approach follows Chaudhuri (2000), Datt and Jolliffe (2001), Hentschel et al (2000), IFPRI (1998) and Ravallion (1996).

$$\ln c_j = \alpha + \beta^1 x_j^1 + \ldots + \beta^k x_j^k + \varepsilon_j$$

where c_j is real per capita consumption of household j, x^k is a set of K ($k=1,\ldots,K$) household and community characteristics, and ε_j is a normally distributed random error term with mean zero and constant variance, capturing unobserved variables. In the second step, we derive from this regression the predicted poverty headcount:

$$p_j^{HC} = \max[(1 - c_j / z), 0]$$

where z denotes the poverty line equal to Rp154,374, or US$0.51 in current exchange rates.[91] [92] We allow for regional differences by estimating the regression separately for the five core analytical domains Dili/Baucau, Other Urban Centers, Rural West, Rural Center, and Rural East.[93]

8.5   In order to estimate the regression, we have to specify the determinants of consumption. The selection of variables is driven by five considerations. First, the empirical analysis is obviously limited to factors that are observed and measured in the TLHS and the Suco Survey. As such, it cannot identify all of the various determinants and correlates of poverty. In particular, the role of exclusion and social capital in promoting poverty cannot be adequately analyzed due to gaps in the available data sets. Second, the bivariate analysis on the welfare profile suggested a number of key drivers for consumption and poverty that we should take account of in the analysis. Thirdly, we can only include variables that are arguably exogenous to current consumption.[94] In particular, we do not include detailed housing characteristics, as they determine actual or imputed rents which are one component of the consumption aggregate. Fourth, we also include a set of community level determinants, both at the Aldeia (12 variables) and Suco level (10 variables). This not only ensures that the household level factors are purged from observed community-level determinants, but it also allows us later to simulate the impact of community level variables on household consumption.[95] Fifth, we also allow for interactions between factors, but in most cases the parameter estimates become more imprecise due to collinearity with other variables, so we limit the number of interactions included.

8.6   The determinants can be grouped into the following categories:[96]

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[91] An alternative approach would be to directly link the poverty headcount, a binary variable, to the explanatory factors, but this procedure does not exploit fully the information contained in consumption.

[92] The same approach can be used to derive alternative poverty measures, like the poverty gap or the severity of poverty.

[93] We test for equality of parameter estimates across the three rural and two urban groupings, and strongly reject this homogeneity hypothesis.

[94] Correlation between the explanatory variables and error terms leads to inconsistent parameter estimates.

[95] An alternative approach is to include indicator variables (fixed-effects) at the community level. While this would control for both observed and unobserved community time-invariant effects, we would no longer be able to identify the impact of specific community level factors on consumption.

[96] The community level determinants were taken from the Suco Survey.

a. *Household demographics:* household size (number of persons) and number of persons in these age groups (under 6, 7 – 14, 15 – 49, and 50 plus).

b. *Head characteristics:* gender, age, age squared, five education categories (no schooling, lower primary (year 1 – 3), upper primary (year 4 – 6), lower secondary, and post-lower secondary (including university)), and six occupation categories (housework, farmer, non-farm worker, trader, teacher/civil servant, and other).

c. *Spouse characteristics:* indicator variable for spouse present, age and age squared, and the five education categories.[97]

d. *Agriculture and assets:* value of total crop production, livestock holdings, and savings, all in Rupiah per capita; land holding per capita (hectare); and three indicators for crop mix (coffee, rice, and maize).

e. *Housing:* indicator variable for house ownership, and number of years lived in this dwelling.

f. *Infrastructure:* three indicator variables on household access to safe drinking water, sanitation, and electricity.

g. *Access:* minutes from dwelling to paved road, indicator whether this road is accessible during the rainy season, and distance in kilometer from aldeia to suco center (from Suco Survey).

h. *Aldeia:* twelve indicator variables on community facilities (primary school, secondary school, health center, church, kiosk, shop, everyday market, periodic market, bank, mill, vehicle passable road, paved road).

i. *Suco:* indicator variable on irrigation, also interacted whether household is rice producing; indicator variable on presence of major private employer (more than five employees); ratios of number of teachers per student and number of classrooms per teacher; ratios of number of midwives and traditional birth attendants per population and days in month of operating health service per population.

j. *Community Leaders:* average characteristics of respondents in Suco Survey in terms of years of age, years of education, and years lived in Suco.

ESTIMATION RESULTS

8.7   The parameter estimates and t-statistics of the 60 regressors for the five regions, including the omitted categories for the categorical variables,[98] are shown in Table 8.1. The fit of the overall regression equals to 0.61, implying that the model explains three

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[97] No spouse gender indicator is included as there are only three households with female heads and male spouses. Spouse occupation characteristics were generally insignificant and therefore omitted. Allowing for spouse characteristics is very similar to interacting head characteristics with the head's gender indicator.

[98] Coefficients of categorical variables have to be interpreted relative to the omitted group.

fifth of the observed variation in consumption.[99] The model has largest explanatory power in Rural West, and lowest accuracy in Rural East.[100] The statistical significance and coefficients differ across regions and variables, but most signs are consistent with the regularities emphasized in the bivariate analysis. With the dependent variable specified in natural logarithm, the coefficients measure the percentage change in real per capita consumption from a unit change in the right-hand side variable, keeping other factors constant. We now turn to a brief discussion of the empirical findings.

8.8   *Demographic factors* have an important influence on consumption in both rural and urban areas. Larger families are worse off than smaller families.[101] As expected, for a given household size, consumption declines with more children. In terms of *head characteristics*, male gender has in three of the five regions a positive sign but is only in Other Urban Centers statistically significant.[102] The picture on the impact of age also varies from region to region. Education has the expected effect, with especially primary education boosting consumption. Farmers tend to have lower living standards than traders and civil servants, but again the picture differs between regions. *Spouse characteristics* have a similar impact as head characteristics, although the coefficients, including for education, are generally less significant.

8.9   *Agriculture and assets* are clearly essential in a subsistence economy. Crop production and land holdings have typically the expected signs, but are not always significant. The indicator variables on coffee, rice, and maize matter, suggesting that, for given asset endowment, coffee production boosts consumption, while maize, as a low value crop, tends to be associated with lower living standards. For most regions, consumption rises with more livestock and savings. Ownership of *housing* is a better predictor for consumption in rural than in urban areas, while the number of years lived in the same dwelling is mostly important in Other Urban Areas. Regarding *infrastructure*, sanitation and electricity have a more consistent and larger impact than safe drinking water. Close a*ccess* to a paved road is in four of the five cases associated with higher consumption, but it is significant only in Rural West. In addition, there is evidence that, in Rural Center and Rural East, aldeias far removed from suco centers are worse off.

8.10   Finally, *community variables* determine consumption. The coefficients and signs of the aldeia facility indicators, capturing school, health, church, and economic infrastructure, depend on the region, and are volatile due to collinearity, but they are jointly highly significant. The picture is similar for suco infrastructure, which accounts for irrigation, presence of private employers, and education and health service variables. There is also evidence that older community leader are related to higher living standards in rural areas.

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[99] This R^2 applies to the pooled regression, where the x^i variables are interacted with the regional indicators. In order to fully replicate the results of the separate regional regressions, we adjust the variance of the residual in the pooled regression to differ by region.

[100] The regional R^2 varies from 0.64 in Rural West, to 0.61 in Other Urban Centers, to 0.59 in Rural Center, to 0.48 in Dili/Baucau, and to 0.46 in Rural East.

[101] This result holds for plausible alternative values of equivalence scales.

[102] This confirms the results of the bivariate analysis on gender of headship. It is important to remember that there is evidence for large differences on other welfare dimensions.

Table 8.1: OLS Regressions on Log Per Capita Consumption

	Dili/Baucau		Other Urban		Rural West		Rural Center		Rural East	
	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat
Household demographics										
Size (#)	-0.073	-4.9	-0.061	-1.9	-0.083	-3.7	-0.010	-0.5	-0.052	-2.0
Age groups										
# 15-49 (omitted category)										
# 0-6	-0.004	-0.1	-0.080	-1.8	-0.053	-1.4	-0.142	-5.1	-0.090	-2.3
# 7-14	-0.091	-3.1	-0.037	-0.8	-0.037	-1.0	-0.082	-2.9	0.015	0.4
# 50 plus	0.014	0.2	-0.163	-2.0	-0.012	-0.2	-0.079	-1.6	0.031	0.5
Head										
Male	0.018	0.1	0.319	1.7	-0.038	-0.3	0.113	1.2	-0.190	-1.3
Age (years)	0.037	2.0	-0.019	-1.1	0.009	0.6	0.013	1.1	0.024	1.5
Age square	0.000	-2.2	0.000	1.0	0.000	-0.5	0.000	-1.1	0.000	-1.2
Head's education										
No schooling (omitted category)										
Lower primary	0.286	2.1	0.354	2.8	0.195	1.8	0.187	2.4	0.073	0.8
Upper primary	0.445	4.7	0.234	2.2	0.118	1.5	0.104	1.5	0.143	1.4
Lower secondary	0.461	3.6	-0.202	-1.2	0.040	0.3	0.145	1.7	-0.028	-0.2
Post lower secondary	0.433	3.7	0.102	0.7	0.110	0.8	0.254	2.3	-0.098	-0.6
Head's occupation										
Farmer (omitted category)										
Housework	-0.094	-0.4	0.216	0.8	-0.250	-1.4	0.340	1.4	-0.022	-0.1
Non-farm worker	-0.037	-0.3	-0.153	-0.7	-0.247	-0.9	0.434	3.2	0.353	1.6
Trader	0.096	0.7	0.719	3.3	0.249	1.2	0.099	0.5	0.292	0.6
Teacher/Civil servant	-0.011	-0.1	-0.051	-0.3	0.142	0.8	0.178	1.4	0.314	1.4
Other	0.105	0.9	0.160	1.4	0.129	0.8	-0.027	-0.3	-0.132	-1.1
Spouse										
Spouse	0.282	0.6	0.340	0.5	-0.330	-1.0	-0.398	-1.1	-1.169	-2.0
Age (years)	-0.013	-0.5	-0.011	-0.3	-0.015	-0.8	-0.030	-1.7	-0.058	-2.1
Age squared	0.000	1.0	0.000	0.9	0.000	0.7	0.000	1.9	0.001	1.9
Spouse's education										
No schooling (omitted category)										
Lower primary	0.061	0.4	0.184	1.0	0.002	0.0	-0.058	-0.6	0.021	0.1
Upper primary	0.053	0.5	0.176	1.5	0.184	1.7	0.095	1.2	0.149	1.3
Lower secondary	0.102	0.9	0.571	3.9	0.050	0.4	0.136	1.4	0.407	2.9
Post lower secondary	0.418	3.7	0.444	2.6	-0.180	-1.2	-0.018	-0.1	0.597	3.5
Agriculture and Assets										
Coffee?	0.894	2.7	0.117	0.8	0.187	1.2	0.239	4.1	0.036	0.1
Rice?	0.247	1.1	-0.125	-0.9	-0.166	-1.3	-0.112	-1.1	-0.029	-0.4
Maize?	-0.145	-1.3	0.043	0.3	-0.001	0.0	-0.241	-3.8	-0.063	-0.7
Crop value per capita (Rp)	0.000	-0.2	0.000	0.9	0.000	1.2	0.000	2.6	0.000	0.2
Land per capita (has)	0.001	0.4	0.027	0.3	0.140	2.0	0.005	1.4	0.003	0.5
Animal value per capita (Rp)	0.000	2.6	0.000	-0.3	0.000	0.9	0.000	2.8	0.000	1.4
Savings per capita (Rp)	0.032	0.4	0.022	0.2	0.102	1.3	0.299	6.0	-0.031	-0.4
Housing										
Owned?	-0.001	0.0	-0.072	-0.6	-0.235	-2.0	-0.169	-1.7	-0.171	-1.0
Years lived	-0.002	-0.4	0.022	4.1	0.019	3.1	0.005	1.6	-0.004	-0.8

	Dili/Baucau		Other Urban		Rural West		Rural Center		Rural East	
	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat
Infrastructure										
Safe drinking water?	-0.056	-0.7	-0.042	-0.5	-0.075	-1.4	0.038	0.9	-0.075	-1.0
Sanitation?	0.250	2.7	0.107	1.3	0.159	2.5	-0.100	-2.1	0.207	2.8
Electricity?	0.478	3.6	0.175	2.0	0.088	0.7	0.278	3.3	0.076	0.8
Access										
Paved road (mins)	-0.002	-0.7	0.000	-0.1	-0.007	-1.8	0.000	0.1	0.000	-0.3
Road accessible during rainy season	0.008	0.1	-0.009	-0.1	-0.023	-0.2	0.008	0.1	0.079	0.8
Suco center (kms)	-0.003	-0.1	-0.018	-1.1	0.001	0.1	-0.015	-2.5	-0.066	-4.1
Aldeia										
Primary school?	0.127	1.2	0.171	1.4	0.046	0.3	-0.076	-1.2	0.230	2.5
Secondary school?	-0.146	-1.4	0.011	0.1	0.133	0.9	-0.192	-1.9	0.396	3.0
Health center?	-0.174	-1.7	0.244	1.5	0.223	1.6	-0.110	-1.4	-0.496	-3.2
Church?	0.053	0.7	-0.010	-0.1	0.091	1.0	-0.086	-1.2	-0.050	-0.5
Kiosk?	0.225	0.8	0.367	1.3	0.268	1.0	-0.065	-1.0	0.117	1.3
Shop?	0.128	1.4	-0.055	-0.3	0.022	0.1	0.336	1.1	n.a.	n.a.
Everyday market?	0.019	0.2	-0.030	-0.1	n.a.	n.a.	-0.178	-0.8	-0.598	-3.2
Periodic market?	0.310	2.1	0.028	0.2	0.012	0.1	0.469	6.0	-0.023	-0.2
Bank?	-0.134	-0.5	0.390	1.3	-0.259	-1.1	n.a.	n.a.	0.474	1.9
Mill?	-0.174	-1.5	-0.075	-0.5	0.146	1.2	-0.040	-0.5	-0.030	-0.3
Vehicle passable road?	-0.573	-1.3	-0.339	-1.0	n.a.	n.a.	-0.175	-1.9	-0.237	-1.3
Paved road?	0.325	1.5	-0.031	-0.2	-0.724	-3.1	0.030	0.5	-0.061	-0.6
Suco										
Irrigation?	0.083	0.7	0.282	2.1	-0.096	-0.8	-0.023	-0.3	0.105	0.9
Irrigation if rice-producing household	0.583	1.3	-0.056	-0.3	-0.149	-0.9	0.272	2.0	0.391	2.4
Private employer?	-0.018	-0.2	0.332	1.5	-0.581	-2.5	0.261	3.6	0.325	2.0
Teacher-student ratio	0.000	0.0	0.000	0.0	0.013	1.5	0.005	2.7	0.000	0.2
Classroom-teacher ratio	-0.019	-0.1	0.661	2.0	-0.701	-2.0	-0.130	-2.3	0.119	1.3
Birth attendants per population	-38.2	-0.7	114.3	1.2	483.6	1.3	-165.6	-1.9	11.7	0.3
Health service per population (days/month)	72.1	1.9	-124.4	-1.5	-94.8	-1.5	21.3	1.5	220.9	3.9
Community leader characteristics										
Age (years)	-0.006	-0.5	-0.039	-1.5	0.042	1.8	0.015	1.9	0.048	4.3
Education (years)	0.019	0.8	-0.075	-1.0	-0.056	-1.2	0.050	2.5	-0.016	-0.5
Living in suco (years)	0.011	1.6	-0.005	-0.4	-0.024	-1.6	-0.001	-0.4	-0.013	-2.8
Constant	11.0	13.4	13.8	6.3	12.8	15.0	11.7	19.7	11.9	14.7
Observations	450		252		252		504		342	
R-Square	0.48		0.61		0.64		0.59		0.46	

SIMULATION METHODOLOGY

8.11 We now use the estimated model to predict the impact of changes on explanatory variables on poverty. These simulations are obtained in three steps. First, we use the estimated parameters $\hat{\beta}$ to generate predicted consumption $\ln \hat{c}_j = \hat{\alpha} + \hat{\beta}^1 x_j^1 + ... + \hat{\beta}^k x_j^k$ where $\wedge$ indicates an estimated parameter. Then, we derive under the assumption of standard normally distributed error terms the probability of household j to be poor:

$$\hat{p}_j^{HC} = \Pr(\ln \hat{c}_j < \ln z)$$

$$= \phi \left[(\ln z - \overset{\wedge}{\alpha} - \overset{\wedge}{\beta}^1 x_j^1 - \ldots - \overset{\wedge}{\beta}^k x_j^k)/\overset{\wedge}{\sigma} \right].$$

where ϕ represents the standard normal distribution function, and σ the standard error of the regression. Finally, we compare the predicted probability of being poor under observed population characteristics, our reference point, with the one obtained when certain key determinants of living standards change in value. As can be seen from Table 8.2, predicted consumption and poverty, evaluated at the means of the right-hand side variables in the five regional regressions, match closely with actual numbers.

Table 8.2: Actual and Predicted Consumption and Poverty

	Actual	Predicted
Per Capita Consumption (Rupiah per month)		
National	252,525	245,586
Dili/Baucau	482,923	431,598
Other Urban Areas	258,741	251,337
Rural West	188,554	188,881
Rural Center	205,398	204,265
Rural East	245,733	250,298
Poverty Headcount (% population)		
National	39.7	38.3
Dili/Baucau	13.9	16.6
Other Urban Areas	38.4	35.6
Rural West	47.5	45.5
Rural Center	49.3	46.1
Rural East	32.0	32.4

Source: 2001 TLSS.

8.12   Before we discuss the results of the simulations, it is important to clarify the purpose of this exercise. Our simulations illustrate the impact on poverty of changes in policy variables and other determinants. Looking at factors beyond those directly under the control of decision makers is also important for policy purposes, as it can give useful information for targeting public resources to population or regional subgroups. This approach has advantages compared to just looking at regression coefficients. Simulations help to derive the overall impact of variable changes, including the joint change in more than one factor. We can calculate the combined impact nationwide, or for any subgroup of the population. In addition, while regressions focus on statistical significance, simulations emphasis the economic significance of determinants. The overall effect of a change in a variable derives from the quantitative relationship between this factor and consumption, the share of the population affected by the policy change, and the size of

the considered change in the determinant. In particular, a statistically significant variable may still have only a negligible impact on poverty, as its coefficient may be small. These simulations can therefore be informative on the determinants of poverty.

8.13   Yet, they are unlikely to provide us with the key counterfactual living standard, resulting from a particular policy or economic change, due to seven caveats. First, we only consider one dimension of living standards. Other welfare outcomes are also important and have to be taking into account when assessing the relative merits of two policy interventions. Second, the quality of the simulations can only be as good as the underlying model. Our model accounts overall for three fifth of consumption variability, implying that two fifth are due to factors we do not control for. Furthermore, as discussed at the introduction, our estimates do not as such uncover causal relationship, but only conditional correlations. In particular, our model draws only on cross-sectional data and therefore cannot reveal dynamic interaction between factors. Third, the simulations are conducted under the "ceteris paribus" assumption, implying that the considered change in the determinant does not affect the model parameters or other variables. This assumption may be defendable for marginal or incremental changes, but it becomes implausible for large policy reforms. For example, changing the occupation of one person from farmer to trader is unlikely to affect market outcomes. By contrast, if many farmers are involved, the remuneration of these occupations and prices of products will adjust, and households, even those originally unaffected, will modify their behavior in response. Such "general equilibrium effects" make it difficult to predict the impact of major policy and economic adjustments.

8.14   Fourth, the impact of a change in one determinant is likely to differ across households. However, our model accounts only for the differential impacts by regions through separate regional parameters, applying the same mean effect to all households affected by the change within regions. Fifth, the right-hand side variables differ with regard to both the extent to which they are amenable to policy decisions, and the time horizon in which they are likely to adjust. One the one hand, factors that are directly affected by policy with a fast response time can contribute most to poverty alleviation over the short horizon. This group includes infrastructure, education, and health variables. On the other hand, some determinants, like demographic variables, are more removed from policy intervention and slow to change, yet they still may be important for reducing poverty from one generation to another. Sixth, the simulations concentrate only on the potential benefits in terms of poverty reduction, but ignore any cost differences across the various interventions. For example, we will find that expanding electricity to the entire population reduces poverty by more than providing all households with basic sanitation.[103] Yet, the first intervention may well be more costly than the second one. This difference could be large enough so that in the end, for a given level of resources, poverty will drop more if the government invest into basic sanitation rather than electricity. Finally, Timor-Leste has already changed substantially since the time of the survey - when it still was called East Timor. Yet, the model reflects the economic environment during late 2001.

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[103] Again, these simulations ignore any general equilibrium effects on the consumption determinants.

Simulation Results

8.15   The findings from the simulations are shown in Table 8.3. We consider 17 simulations over five groups of variables (demography, education, agriculture, infrastructure, and economy). The results are presented for six different populations: nationwide, and urban and rural separately, both for the total population and for the "affected" population only, i.e. those households for whom the value of at least one right-hand side variable was changed. The table displays the percentage changes of both per-capita consumption and poverty. In our discussion of the results, we concentrate on the poverty impacts.

8.16   *Demographics.* Household size, composition, and, in urban areas, gender of the head matter for poverty. Reducing household size by one for all households with more than one member lowers poverty by 7 percent nationwide,[104] and more in urban than in rural areas. By contrast, changing household composition by replacing one child up to age 6 by one prime-aged adult reduces poverty by about twice as much in households with at least one child, and the effect is larger in rural than in urban areas. Finally, male headed households have lower poverty only in urban areas. These findings imply that, compared to urban households, rural families are less affected by size and gender of the head, but more by age composition. While demographic characteristics are only evolving over generations, this information can still be used for targeting public assistance or investment programs.

8.17   *Education.* Building human capital of heads and spouses leads to lower poverty. This is confirmed in Simulations 4 and 5, where we look at the impact of lifting all heads, and all spouses, to at least four years of schooling. This is a large experiment - it affects about seven in ten heads and spouses – with substantial payoff: poverty drops by about 12 to 15 percent nationwide. In view of the large number of affected people, it is clearly unrealistic that the returns to education remain unchanged, casting doubt over the point estimates. Nevertheless, even for small changes, three messages remain. First, education lowers poverty. Second, remarkably, the overall gains are larger from the increase of the education grade of spouses than from those of heads.[105] Third, while the effect of spouse education is the same for urban and rural areas, head's education matters about twice as much in cities than in villages. One possible explanation is that heads are the main breadwinner, and the returns to education of occupations are higher in urban than in rural areas.

8.18   *Agriculture.* Non-agricultural activity, high-valued crops, and irrigation are three main exits from rural poverty, as shown in Simulations 6 to 12. Again, we illustrate the impact of large reforms, so our main focus is on the direction rather than the point estimate of the changes. Switching heads from being farmers, accounting for about three quarters of the population, to traders triggers a drop in poverty of one quarter (Simulation 6). The benefits are especially marked in urban areas, suggesting that trading is more profitable in cities than in villages. The right crop portfolio is essential: maize farmers are

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[104] Only one percent of the population lives in single-member households.

[105] However, the spouse education coefficients are less significant than the head ones.

poor, while coffee farmers are non-poor. For given inputs and crop production, improving the crop mix to high value crops, as simulated through cultivating coffee or ceasing maize production reduces poverty by 15 percent (Simulations 7 and 8). However, keeping the crop mix constant, boosting productivity, cultivating more land, or increasing livestock holdings, reduces poverty by no more than 1 to 4 percent (Simulations 9 t o11). Finally, expanding around-the-year irrigation to all sucos lowers poverty in affected areas, representing about two fifth of all households, by about 10 percent (Simulation 12).

8.19 *Infrastructure.* Sanitation and electricity are important to improve living standards. Providing basic sanitation to all households lower poverty by 9 percent among the newly covered families, and by up to 20 percent among those households in cities (Simulation 13). Giving electricity to all households, a financially more expensive intervention than expanding sanitation, reduces poverty by more than one quarter among the beneficiaries (Simulation 14). By contrast, improving access to paved roads has little payoff, partly because most households are already within less than 10 minutes walking distance to roads (Simulation 15).

8.20 *Economy.* Infrastructure other than irrigation can also provide substantial benefits to communities. This is illustrated in two simulations, even though a high covariation of community factors makes it problematic to isolate a particular intervention. Presence of major private employers reduces the poverty headcount by almost one tenth, and more than one fifth in urban areas (Simulation 16). Establishing -fledged periodic markets in all sucos is associated with poverty reductions of more than 30 percent in rural areas (Simulation 17).

Table 8.3: Simulations of % Changes in Consumption and Poverty

Description	Indicator	Entire Population			Affected Population		
		National	Rural	Urban	National	Rural	Urban
Demography							
1 Reduce by one the number of	PCC	5.0	4.0	7.2	5.1	4.0	7.2
household members	POV	-6.7	-5.9	-10.6	-6.7	-5.9	-10.6
	POP	100	100	100	100	100	100
2 Replace one child aged 0-6 by	PCC	3.8	6.5	-1.4	8.6	11.6	2.8
one adult aged 15-49	POV	-9.1	-10.5	-1.3	-13.8	-15.0	-7.1
	POP	100	100	100	72	72	71
3 Move headship from female to male	PCC	0.3	-0.2	1.3	2.5	-1.9	14.3
	POV	-0.3	0.1	-2.6	-3.8	2.0	-30.9
	POP	100	100	100	10	10	9
Education							
4 Increase head's education to 4-6	PCC	8.0	6.8	10.4	13.9	9.9	30.5
years of primary school	POV	-11.5	-9.9	-20.4	-15.3	-12.8	-31.2
	POP	100	100	100	66	72	46
5 Increase spouse's education to 4-6	PCC	8.6	10.4	5.2	13.5	14.1	11.4
years of primary school	POV	-15.0	-15.3	-13.3	-18.8	-18.8	-18.8
	POP	100	100	100	71	77	55
Agriculture							
6 Move head's occupation from farmer	PCC	20.1	17.8	24.6	30.9	21.7	79.3
to trader	POV	-26.1	-23.3	-41.8	-30.3	-25.8	-64.0
	POP	100	100	100	76	86	44
7 Introduce coffee for all crop-producing	PCC	12.0	8.6	18.8	23.6	14.1	58.7
households	POV	-16.1	-14.7	-24.0	-23.6	-21.5	-35.5
	POP	100	100	100	59	64	45
8 Abolish maize for all crop-producing	PCC	8.4	12.3	0.6	12.4	14.8	1.7
households	POV	-14.3	-16.9	0.0	-16.3	-18.8	0.0
	POP	100	100	100	78	86	52
9 Increase crop production by 50% for	PCC	0.9	1.5	-0.2	1.2	1.6	-0.6
all crop-producing households	POV	-0.7	-1.0	1.1	-0.7	-1.1	1.3
	POP	100	100	100	85	95	55
10 Increase landholdings by 0.1 ha per	PCC	1.3	1.8	0.5	1.8	1.9	1.2
capita for all land-holding households	POV	-3.4	-3.7	-1.4	-3.6	-3.8	-1.7
	POP	100	100	100	86	95	55
11 Increase animal holdings by 50% for	PCC	1.5	2.3	-0.2	1.8	2.5	-0.3
all animal holding households	POV	-1.6	-1.6	-1.4	-1.8	-1.8	-1.7
	POP	100	100	100	85	90	71
12 Expand around-the-year irrigation	PCC	5.8	5.1	7.4	14.8	11.8	22.7
to all sucos	POV	-4.1	-2.9	-10.6	-9.5	-6.8	-25.2
	POP	100	100	100	41	43	36
Infrastructure							
13 Expand basic sanitation to all	PCC	4.4	4.7	3.7	8.4	7.0	16.6
households	POV	-5.5	-5.0	-8.3	-8.9	-7.6	-20.0
	POP	100	100	100	58	67	30
14 Expand electricity to all households	PCC	12.9	17.0	4.9	20.9	20.2	28.8
	POV	-22.3	-23.8	-14.1	-25.7	-25.5	-28.0
	POP	100	100	100	74	89	28
15 Reduce time to nearest road by 10%	PCC	0.0	0.0	0.1	0.1	0.1	0.1
for all households	POV	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
	POP	100	100	100	80	81	77
Economy							
16 Expand private employer (more than 5	PCC	11.1	14.9	3.6	14.8	17.3	6.7
employees) to all sucos	POV	-7.7	-6.7	-13.1	-9.2	-7.6	-22.1
	POP	100	100	100	79	87	53
17 Expand periodic market to all sucos	PCC	22.9	22.7	23.2	28.2	28.6	27.5
	POV	-25.0	-26.2	-18.0	-30.4	-32.3	-20.7
	POP	100	100	100	81	80	85

Note: PCC stands for real per capita consumption, POV for poverty headcount, and POP for population.
Source: 2001 TLSS.

SUMMARY

8.21   This section has used an econometric approach to pull together some of the key findings of this report. It went beyond the analysis of other chapters by providing a joint analysis of the structural determinants of consumption and poverty. The estimated model allows us to run a series of simulations, deriving the poverty impact of economic and policy changes. However, as emphasized before, we have to interpret these results with great caution, as the approach suffers from a number of limitations (single dimension of living standards; omitted factors; only marginal changes; only average impacts; not just short-term policy variables; no costing of inputs; and economic environment as of late 2001).

8.22   With those qualifications in mind, the simulations convey important messages. Lowering the dependency ratio and size of households, boosting male and female human capital, promoting non-farm activities, encouraging the production of high-value crops, developing extension services like irrigation, constructing sanitation and electricity infrastructure, creating a favorable business environment for private employers, and improving market networks all help to lower poverty.

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