

MPRA

Munich Personal RePEc Archive

Measuring Time Poverty and Analyzing Its Determinants: Concepts and Application to Guinea

Elena Bardasi and Quentin Wodon

World Bank

January 2006

Online at <http://mpra.ub.uni-muenchen.de/11082/>

MPRA Paper No. 11082, posted 14. October 2008 04:48 UTC

Measuring Time Poverty and Analyzing Its Determinants: Concepts and Application to Guinea

*Elena Bardasi and Quentin Wodon*¹¹

The availability of better data on time use in developing countries makes it important to provide tools for analyzing such data. While the idea of “time poverty” is not new, and while many papers have provided measures of time use and hinted at the concept of time poverty, we have not seen in the literature formal discussions and measurement of the concept of time poverty alongside the techniques used for measuring consumption poverty. Conceptually, time poverty can be understood as the fact that some individuals do not have enough time for rest and leisure after taking into account the time spent working, whether in the labor market, for domestic work, or for other activities such as fetching water and wood. Unlike consumption or income, where economists assume that “more is better,” time is a limited resource—more time spent working in paid or unpaid work-related activities means less leisure, and therefore higher “time poverty.” Our aim in this paper is to provide a simple application of the concepts used in the consumption poverty literature to time use, in order to obtain measures of time poverty for a population as a whole and for various groups of individuals.

There has been an increase in interest in recent years in analytical work on the economic analysis of time use (see for example the papers in Hamermesh and Pfann 2005). The allocation of time has implications in a wide range of areas, as illustrated

11. The authors are with the World Bank. This work was prepared as a contribution to the Poverty Assessment for Guinea prepared at the World Bank. The authors acknowledge support from the Trust Fund ESSDD as well as the Belgian Poverty Reduction Partnership for research on this issue as part of a small research program on gender, time use and poverty in Sub-Saharan Africa which also benefited from funding from the GENFUND. Preliminary results from the paper were presented at a three-day workshop organized in Guinea in October 2005 in collaboration with the country’s National Statistical Office (*Direction Nationale de la Statistique*), and at a World Bank workshop in November 2005. We are grateful to Kathleen Beegle and Mark Blackden for comments. The views expressed here are those of the authors and need not reflect those of the World Bank, its Executive Directors or the countries they represent.

for example by work on transportation (Zhang, Timmermans, and Borgers 2005) and taxation (Apps and Rees 2004). In developing countries, the issue of time use has been discussed in relationship among others to the ability of household members to increase their supply of labor (Newman 2002), given strict time constraints due among others to limited access to basic infrastructure services. The role of illness in limiting the ability of women to take advantage of economic opportunities due to the burden of care has also been highlighted (Ilahi 2000 and 2001). A broader discussion of the implications of time use issues for growth and development is available in the report “Engendering Development” by the World Bank (2001; see also Blackden and Bhanu 1999; Gelb 2001; Apps 2004).

The importance of time use stems in part from the understanding that the welfare of individuals and households is a function not solely of their income or consumption, but also of their freedom in allocating time. Clearly, time use allocation and constraints, especially as they relate to labor markets, have implications for the ability of households to escape poverty. For example, Vickery (1977) argued that reaching the minimal level of consumption used for poverty measurement in the United States requires both money and time, which matters when designing income transfer programs. More generally, in their review of the literature on time use prepared for the World Bank’s manual on Living Standard Measurement Surveys, Harvey and Taylor (2000) argue that households need a minimum number of hours—the “household time overhead” concept—to complete domestic chores, with a lower such overhead leading to higher levels of welfare.

In Sub-Saharan Africa, the issue of time use is especially important because of the high workload carried by many and the relationship between time use and consumption poverty. Households have a high probability of being consumption poor, so that any opportunity to enable them to make a better livelihood, for example by shifting time from low- to high-productivity activities should be pursued. Furthermore, time use issues have strong gender dimensions, as African women often have to work long hours for domestic chores and the collection of water and wood apart from working in the fields or in other productive occupations.

On the data front, time use surveys have been implemented for many years in several developed countries, but in developing countries, their use had been more limited so far, with much of the evidence coming from small-scale village-level instruments or otherwise small samples. Recently, thanks to efforts by the United Nations’ statistics division, nationally representative time use surveys have been carried in India and Nepal in 1999, Benin in 1998, Nigeria in 1999, South Africa in 2000, Madagascar in 2001, and Mauritius in 2003. The results from these surveys are reviewed by Charmes (see Chapter 3). In addition, time use data have also been available in a range of other surveys similar to the Living Standards Measurement Surveys (LSMS) promoted by the World Bank. In Sub-Saharan Africa, examples of recent LSMS-type surveys with time use modules include Ghana in 1991–92 and 1998–99, Guinea in 2002–03, Malawi in 2004, Mauritania in 2000, and Sierra Leone in 2003. This is by no means an exhaustive list, but it does indicate that more data are becoming available to conduct work on these issues. In the United States as well, in recognition of the importance of better analytical work on time use issues, a new time use survey is being implemented (Hamermesh, Frazis, and Stewart 2005).

The availability of better data for time use analysis in developing countries makes it important to provide tools for analyzing such data. While the idea of “time poverty” is

not new, and while many papers have provided measures of time use and hinted at the concept of time poverty, we have not seen in the literature much formal discussion and measurement of the concept of time poverty alongside the techniques used for measuring consumption poverty. Conceptually, time poverty can be understood as the fact that some individuals do not have enough time for rest and leisure after taking into account the time spent working, whether in the labor market, for domestic work, or for other activities such as fetching water and wood. Another way to consider the issue of time poverty is to argue that individuals who are extremely pressed for time are not able to allocate sufficient time for important activities, and are therefore forced to make difficult tradeoffs. The analogy with consumption poverty would be a household that, because of insufficient income, would need to sacrifice some key basic needs in order to be able to afford other basic needs. However, unlike consumption or income, of which economists assume that “more is better,” time is a limited resource—more time spent working in paid or unpaid productive activities means less leisure, and therefore higher “time poverty.” Our aim in this paper is then to provide a simple application of the concepts used in the consumption poverty literature to time use, in order to obtain measures of time poverty for a population as a whole and for various groups of individuals.

Because there is less consensus on the benefits and costs of time spent working than on the value of a higher consumption or income level for households, the very concept of time poverty may be challenged. For example, can we consider as time poor relatively wealthy individuals or households whose members work longer hours in order to achieve higher levels of income or satisfaction at work? We would argue that time poverty would apply to such individuals, because long working hours will indeed reduce the time available for leisure, rest, or friends and family. This does not mean that time poor individuals are worse off than other individuals—simply, time poverty is one of the many dimensions that may affect an individual’s level of welfare and satisfaction with life.

Another question relates to the treatment of those who are not time poor in the measurement of time poverty. It is important to realize that all poverty measures are censored variables. That is, for consumption or income poverty, only those below the monetary poverty line affect the consumption poverty measure, while the individuals above the monetary threshold are assigned a value of zero for their contribution to aggregate consumption poverty. Similarly for time poverty, only those above the time poverty line affect the time poverty measure, while the individuals below the time poverty line are assigned a value of zero for their contribution to aggregate time poverty. This means that by considering in the time poverty measure only those individuals who work more hours than the time poverty line, the measure is itself silent on the situation of the non-time poor, apart from asserting that they are not time poor. In other words, no assumptions are made in terms of comparing the welfare in the time use dimension of those individuals who work, say, 40 hours versus 20 hours per week.

We would argue that precisely because it would be difficult to make comparisons of time use welfare between individuals who are within the normal range of work hours—some may prefer to work 20 hours while others may prefer to work 40 hours, the time poverty concept is the right one to use for the analysis because it does not require such comparisons of time-based welfare below a threshold that would be sufficiently high so as to ensure that tradeoffs have to be made by individuals above that threshold. Said differently,

the fact that poverty measures are censored makes such measures especially well adapted to the analysis of time poverty by considering only in the measures those who are time poor and not requiring any specific assumption for the comparison of working hours among individuals who are not time poor.

Still another question is whether individuals are really time constrained, or whether, for almost all individuals, there would be an ability to work more, in which case the concept of time poverty would be for practical purposes mostly irrelevant. This is an empirical question, but evidence does suggest the presence of upper bounds on working time for individuals. For example, using data from Ecuador, Newman (2002) shows that when women took advantage of new labor market opportunities in the cut flower industry, their total labor time remained constant, so that men had to provide higher amounts of work in unpaid tasks. The analysis of seasonality in time use in Malawi provided in this volume by Wodon and Beegle (Chapter 5) also suggests that there may be labor scarcity at crucial periods of the year despite underemployment in many other periods. These examples suggest that the concept of time poverty is a potentially important one. In the rest of this paper, after outlining our analytical framework in the next section, we present empirical results obtained with a recent survey for Guinea on the extent of time poverty in that country. A brief conclusion follows.

Analytical Framework

This paper provides measures of time poverty in Guinea using the latest nationally representative household survey for the period 2002–2003. Our framework is straightforward as we simply apply the traditional concepts and techniques used for the analysis of income or consumption poverty to time poverty. For the reader who may not be familiar with these concepts, we follow their presentation as provided by Coudouel, Hentschel, and Wodon (2002), and simply adapt this presentation to the measurement of time poverty.

In most empirical research on poverty, poverty measures of the so-called FGT class (Foster, Greer, and Thorbecke 1984) are used. The first three measures of this class are the headcount index of poverty, the poverty gap, and the squared poverty gap. In a time poverty framework, the headcount index is the share of the population which is time poor, that is, the proportion of the population that works a number of hours y that is above a certain time poverty line z . Suppose we have a population of size n in which q individuals are time poor. Then the headcount index of time poverty is defined as:

$$H = \frac{q}{n} \tag{1}$$

The time poverty gap represents the mean distance separating the population from the time poverty line, with the non-time poor being given a distance of zero. This measures the time deficit of the entire population, in effect, the amount of time that would be needed to shift all individuals who are time poor below a given time poverty line through perfectly targeted “time transfers.” Such transfers are actually provided to some households in some developed countries, for example through the provision of subsidies for taking care of children in working families (or simply of large families—in Belgium,

households having three very young children may benefit from the help of a social worker at home.) Mathematically, the time poverty gap is defined as follows:

$$PG = \frac{1}{n} \sum_{i=1}^q \left[\frac{y_i - z}{z} \right] \quad (2)$$

where y_i is total working hours of individual i , and the sum is taken only among those individuals who are time poor. Consider for example a situation in which the time poverty gap is equal to 0.20. This means that the transfer of time needed to enable all time-poor individuals to escape time poverty represents 20 percent of the time poverty line on average. If the total time available (say, after accounting for a minimum amount of time devoted to rest) is equal to twice the time poverty line, the time transfer that would be needed to eradicate time poverty would represent 10 percent of the total time available. Such simple calculations can be used to communicate in an intuitive manner the meaning of the time poverty gap and the magnitude of the time reallocation that would be needed in order to eradicate time poverty. In practice however, given that perfectly-targeted time transfers to eradicate time poverty are neither feasible nor necessarily a good thing, one must be careful in their use. Note also that the time poverty gap can be written as being equal to the product of the headcount index of time poverty by the time gap ratio I , i.e. $PG = H * I$, with I itself defined as:

$$I = \frac{y_q - z}{z} \text{ where } y_q = \frac{1}{q} \sum_{i=1}^q y_i \text{ is the mean working hours of the time poor.} \quad (3)$$

As is well known in the poverty literature, the time gap ratio I is not a good measure of poverty in itself, because there may be situations where the time gap ratio is reduced over time. For example, if some individuals who are close to the time poverty line reduce their working hours, they may escape time poverty, so that aggregate time poverty as measured by the time poverty gap would be reduced, but with an increase in the time gap ratio computed among those individuals who remain time poor.

While the time poverty gap takes into account the distance separating the time poor from the time poverty line, the squared time poverty gap takes the square of that distance into account. When using the squared time poverty gap, more weight is given to those who have extra long working hours. Said differently, the squared poverty gap takes into account the inequality among the time poor. It is defined as:

$$SPG = \frac{1}{n} \sum_{i=1}^q \left[\frac{y_i - z}{z} \right]^2 \quad (4)$$

The headcount, poverty gap, and squared poverty gap are the FGT class of poverty measures whose formula includes a parameter α taking a value of zero for the headcount, one for the poverty gap, and two for the squared poverty gap in the following expression:

$$P\alpha = \frac{1}{n} \sum_{i=1}^q \left[\frac{y_i - z}{z} \right]^\alpha \quad (5)$$

In terms of interpretation, it is worth noting that contrary to what happens with monetary poverty measures, the (normalized) time poverty gap need not always be smaller than the

time headcount index, and the squared time poverty gap need not be smaller than the time poverty gap. When using $(z - y)/z$ as the household level indicator for consumption or income poverty, the normalization of $(z - y)$ by z implies that we always have values that are between zero and one. For time poverty by contrast, because the definition in (5) relies instead on the value of $(y - z)/z$, we may have relatively large values for $y - z$, so that some values at the individual level may be larger than one, and the poverty gap may itself have a higher value than the headcount index in the aggregate, especially if the time poverty line is set at a relatively low value. However, as long as one remembers that the division by z is only used for normalization purpose, so that it does not affect the key properties that poverty measures must observe, this should not lead to confusion. In case of confusion, it would suffice to use an alternative normalization, such as $(y - z)/168$ if we are using weekly hours as the benchmark (because there are 168 hours in a week), in order to make sure that all the time poverty measures are between zero and one.

A few more comments may be useful before presenting an empirical illustration. Firstly, when measuring time poverty, we have data at the individual level, while in most cases, when measuring income or consumption poverty, we only have aggregate data at the household level. This means that for time poverty, we can look at intra-household allocations and at the impact of intra-household time inequality on time poverty.

Secondly, there is always a difficulty in traditional poverty measurement in comparing the welfare of households of different sizes and composition, because of differences in needs between individuals, as well as economies of scale in consumption. To some extent, these difficulties persist for the measurement of time poverty, as there may be differences in needs for time poverty measurement, for example if children need more rest and leisure time than adults. By contrast, even though there are clearly economies of scale at the household level in terms of the amount of time required to perform some domestic tasks that benefit all household members at once, this is not problematic for the measurement of time use because we observe the hours of work of each individual.

Thirdly, although (1) to (3) above are written by considering the amount of work above a certain time poverty threshold, they could be modified to consider instead as time poor those individuals who have less than a certain amount of time for leisure and rest. This can be done because the amount of time available in one day is fixed, so that there is a perfect correspondence between the two approaches. If the amount of time available in a day were not bounded, we would need to use the “above the line” approach both for measurement and for assessments of the robustness time poverty comparisons, as done in the case of pollution and CO₂ emissions by Makdissi and Wodon (2004).

Fourthly, what is perhaps more arbitrary when analyzing time poverty as compared to consumption poverty is the choice of the time poverty line above which individuals are considered as overworked or time poor, and thereby lacking enough time for leisure and rest. In the income/consumption poverty literature, we often have clear nutritional-based “cost of basic needs” approaches to estimating poverty lines. When dealing with time poverty, the correct level for the time poverty line is less clear, at least if one wants to consider an allocation of time for leisure on top of what is strictly needed for rest from a health point of view. In practice, depending on the social context of the country for which the analysis is conducted, we may want to use relative as opposed to absolute time poverty lines together with some tests for the robustness of comparisons of time poverty obtained over time or across households groups to the choice of the time poverty line.

Data and Results

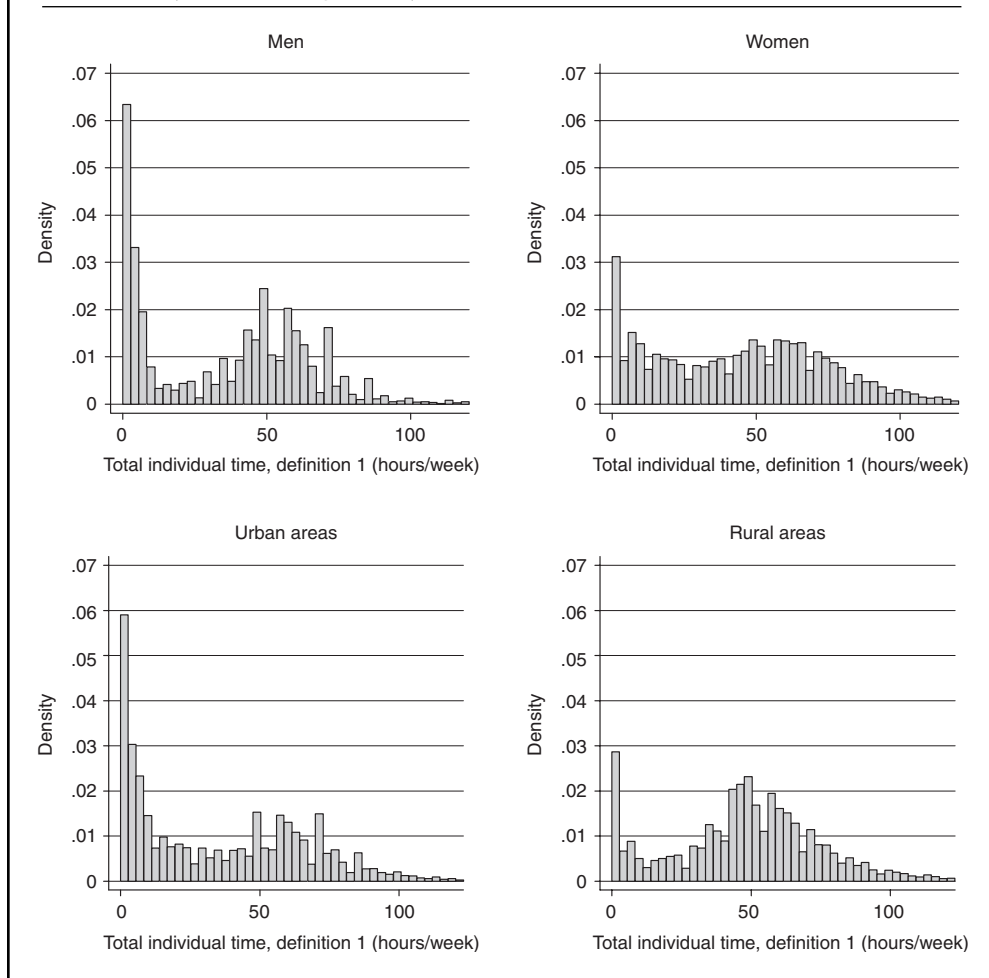
Time Use Statistics

To illustrate time poverty measurement and comparisons, we use data from Guinea for the year 2002–2003. The data are from the EIBEP (*Enquête Intégrale de Base pour l'Évaluation de la Pauvreté*) survey implemented between October 2002 and October 2003 by the *Direction nationale de la statistique* (DNS) of the Ministry of Planning. The individual-level indicator that we use to determine who is time poor is the total amount of time spent by individuals working, whether in the labor market, in domestic chores or in collecting water and wood. Note that we have no information about the time spent caring for children, sick household members and disabled people. This probably leads us to underestimate the workload of individuals, even if we could argue that this activity is often performed as a “secondary activity” in combination with one of the other productive or domestic activities recorded in the questionnaire and included in our estimates of the total time devoted to work. We also create a second definition of the total time allocated to work by adding to the components of the first definition the amount of time spent helping other households and in community services (this is done because it is unclear whether these activities are more for work than for leisure).

Figure 4.1 shows the distribution of the total individual working hours per week for adult individuals (aged 15+), separately for men and women, as well as for urban and rural areas. Women work a much higher number of hours than men, and a larger proportion of men than women do not work at all (9.9 percent of men versus 6.4 percent of women). Similarly, individual working hours are much higher in rural than in urban areas, and the hours worked distribution in urban areas is highly skewed with a large proportion of low values. For example, while in urban areas 10.4 percent of individuals do not work any hour at all, this percentage is 6.8 in rural areas. Table 4.1 provides data on the main uses of working time (more details on the distribution of time worked are provided in appendix Tables 4.A1 and 4.A2). For example, under the first definition of working time, the mean working time in urban areas is 36.2 hours for the adult population (above 15 years of age), 38.8 hours for women, and 33.6 hours for men. While men spend more time on the labor market, the amount of time spent by women on domestic chores is much higher than for men. Girls also work longer hours than boys, again mainly due to a higher burden from domestic work, but the amount of work remains fairly reasonable, at an average of 5.5 hours per week. In rural areas by contrast, children work substantially more, for an average of 19.6 hours according to the first definition of working time. For adults, the average working time is 48.6 hours, again with a higher level for women than for men.

The average number of total working hours, the median, and the 25th and the 75th percentiles in the distribution of working hours are provided in Table 4.2 at the national level and for various groups of individuals. Clearly, throughout the distribution of time use, there are large differences between men and women, and between urban and rural areas. Using the second definition of total time worked (which includes also the time spent helping other households and in community services) slightly decreases the gender gap because men are relatively more likely than women to spend time in community services), but the qualitative results do not change. As for comparisons across urban and rural areas, the median total individual working time in rural areas is more than twice the median in

**Figure 4.1. Distribution of Individual Working Time by Sex and Area
(Individuals aged 15+)**



Source: Authors' estimation using EIBEP 2002–2003.

urban areas. Interestingly, the gap between urban and rural areas in total individual working time according to definition 2 is larger than the gap according to definition 1 because individuals living in rural areas spend relatively more hours helping other households and in community services than urban individuals, despite their already higher total time spent in work and household activities.

Table 4.2 also provides data on time use for children. On average, children spend about 16 hours a week working in paid and unpaid tasks. The large difference between the mean and the median and the 25th and the 75th percentile suggests that these working hours are very unequally distributed. Working hours are much higher for children that do not go to school (about 25 hours/week on average) than for children that are currently in school (about 7 hours/week). Although this is not shown in the table, it is worth noting that children that

Table 4.1. Average Number of Weekly Hours Spent for Various Activities, by Sex and Age

	Age 6–14			Age 15+		
	Male	Female	All	Male	Female	All
National level						
1 Cooking	0.2	2.3	1.2	0.2	8.5	4.8
2 Cleaning	0.4	1.6	1.0	0.4	2.6	1.6
3 Washing	0.9	1.7	1.3	0.8	2.9	1.9
4 Ironing	0.2	0.2	0.2	0.5	0.7	0.6
5 Market	0.3	0.8	0.5	0.6	2.9	1.9
6 All domestic chores (1 to 5)	1.9	6.5	4.2	2.5	17.5	10.8
7 Collection of wood	1.9	1.1	1.5	1.1	1.8	1.5
8 Collection of water	1.3	2.1	1.7	0.6	2.7	1.7
9 Aid to other households	0.2	0.3	0.2	0.8	0.8	0.8
10 Community activities	0.2	0.1	0.1	0.9	0.5	0.7
11 Work for a wage	0.4	0.5	0.5	17.8	11.6	14.4
12 Work in a farm of family business	8.0	7.8	7.9	16.9	15.8	16.3
13 Work in labor market (11 + 12)	8.4	8.3	8.4	34.7	27.4	30.7
14 Total time (definition 1)	13.4	18.0	15.7	38.8	49.3	44.6
15 Total time (definition 2)	13.8	18.4	16.1	40.5	50.6	46.1
Urban areas						
1 Cooking	0.1	1.2	0.6	0.2	6.8	3.4
2 Cleaning	0.4	1.4	0.9	0.5	2.3	1.4
3 Washing	0.8	1.3	1.0	0.8	2.4	1.6
4 Ironing	0.2	0.2	0.2	0.7	1.1	0.9
5 Market	0.2	0.5	0.4	0.2	3.0	1.6
6 All domestic chores (1 to 5)	1.7	4.6	3.2	2.4	15.5	8.9
7 Collection of wood	0.3	0.1	0.2	0.2	0.2	0.2
8 Collection of water	0.6	0.9	0.8	0.4	1.2	0.8
9 Aid to other households	0.1	0.1	0.1	0.2	0.4	0.3
10 Community activities	0.1	0.1	0.1	0.3	0.2	0.3
11 Work for a wage	0.4	0.5	0.5	25.9	18.7	22.3
12 Work in a farm of family business	1.0	0.9	0.9	4.8	3.2	4.0
13 Work in labor market (11 + 12)	1.3	1.4	1.4	30.7	21.9	26.3
14 Total time (definition 1)	3.9	7.1	5.5	33.6	38.8	36.2
15 Total time (definition 2)	4.0	7.2	5.6	34.1	39.4	36.7
Rural areas						
1 Cooking	0.2	2.7	1.4	0.3	9.2	5.4
2 Cleaning	0.4	1.7	1.0	0.4	2.8	1.8
3 Washing	0.9	1.8	1.3	0.7	3.1	2.1
4 Ironing	0.1	0.2	0.2	0.3	0.5	0.4

(continued)

Table 4.1. Average Number of Weekly Hours Spent for Various Activities, by Sex and Age (Continued)

	Age 6–14			Age 15+		
	Male	Female	All	Male	Female	All
	Rural areas					
5 Market	0.3	0.8	0.6	0.9	2.8	2.0
6 All domestic chores (1 to 5)	1.9	7.3	4.5	2.6	18.3	11.7
7 Collection of wood	2.5	1.5	2.0	1.6	2.4	2.1
8 Collection of water	1.5	2.6	2.0	0.7	3.3	2.2
9 Aid to other households	0.2	0.3	0.3	1.1	1.0	1.1
10 Community activities	0.2	0.1	0.2	1.2	0.6	0.9
11 Work for a wage	0.4	0.5	0.5	13.1	8.6	10.5
12 Work in a farm of family business	10.6	10.6	10.6	23.9	21.0	22.2
13 Work in labor market (11 + 12)	11.0	11.0	11.0	37.0	29.7	32.7
14 Total time (definition 1)	16.9	22.4	19.6	41.8	53.7	48.7
15 Total time (definition 2)	17.3	22.9	20.0	44.2	55.2	50.6

Note: Zeros are included. Total time (definition 1) is the sum of 6 (all domestic chores), 7 (collection of wood), 8 (collection of water), and 13 (work in labor market). Total time (definition 2) is the sum of total time (definition 1), 9 (aid to other households), and 10 (community activities).

Source: Authors' estimation using EIBEP 2002–2003.

are out of school spend about 17 hours/week on average in *paid* work (or farm or family business), while the median of their hours of paid work is zero. The time spent in paid work by children who go to school is by contrast negligible (0.5 hours/week on average). Therefore, while almost all children who work in the labor market (or family farm or business) are out of school, the opposite is not true; moreover, a large part of child labor is spent in domestic tasks and in fetching water and wood, among children both in and out of school. Finally, as is the case for adults, girls spend more time than boys in paid and particularly unpaid work (as previous tables had suggested). The gap at the mean is 34 percent—even higher than the one existing between adult men and women (25 percent). This gap is larger for children who are enrolled in school, suggesting that it may be more difficult for girls to find the time to study, especially in rural areas.

Time Poverty

Because we have data at the individual level, we focus on individual-level measures of time poverty, although we could compute household time poverty measures as well through some aggregation procedure. In the absence of well-established practices to measure time poverty, we use two alternative relative poverty lines, a lower threshold equal to 1.5 times the median of the total individual working hours distribution and a higher threshold equal to 2 times the median. We have calculated the threshold separately for children aged 6–14

Table 4.2. Selected Values in the Cumulative Distribution of Working Time for Various Groups

	Mean	Median	25th Percentile	75th Percentile
Adult population (15 years of age and older), definition 1				
All	44.6	47.0	19.0	64.0
Men	38.8	44.0	8.0	57.0
Women	49.3	51.0	25.0	70.0
Gender gap (%)	+27.1	+15.9	+212.5	+22.8
Urban	36.2	31.0	5.0	61.0
Rural	48.7	49.0	32.0	65.0
Area gap (%)	+34.5	+58.1	+540.0	+6.6
Adult population (15 years of age and older), definition 2				
All	46.1	48.0	20.0	66.0
Men	40.5	46.0	9.0	60.0
Women	50.6	52.0	26.0	72.0
Gender gap (%)	+24.9	+13.0	+188.9	+20.0
Urban	36.7	32.0	5.0	62.0
Rural	50.6	51.0	34.0	68.0
Area gap (%)	+37.9	+59.4	+580.0	+9.7
Children (below 14 years of age), definition 1				
All	15.7	6.0	1.0	22.0
Boys	13.4	4.0	1.0	15.0
Girls	18.0	8.0	2.0	28.0
Gender gap (%)	+34.3	+100.0	+100.0	+86.7
Urban	5.5	2.0	0.0	6.0
Rural	19.6	9.0	3.0	35.0
Area gap (%)	+256.4	+350.0	n.d.	+483.3
Children (below 14 years of age), definition 1, by school enrollment status				
Not enrolled all	25.4	16.0	2.0	45.0
Not enrolled boys	24.1	13.0	1.0	45.0
Not enrolled girls	26.5	18.0	4.0	45.0
Gender gap (%)	+10.0	+38.5	+300.0	0.0
Enrolled all	6.8	4.0	1.0	9.0
Enrolled boys	5.5	3.0	0.0	7.0
Enrolled girls	8.4	5.0	1.0	11.0
Gender gap (%)	+52.7	+66.7	n.d.	+57.1

Note: Zeros are included. Total time (definition 1) is the sum of 6 (all domestic chores), 7 (collection of wood), 8 (collection of water), and 13 (work in labor market). Total time (definition 2) is the sum of total time (definition 1), 9 (aid to other households), and 10 (community activities). The “area gap” in total hours is expressed as the higher percent of total hours of rural with respect to urban area. The gender gap in total hours is expressed as the higher percent of total hours of women with respect to men, or girls with respect to boys.

Source: Authors’ estimation using EIBEP 2002–2003.

Table 4.3. Time Poverty Rates (Share of individuals in the group that are time poor)

	Adult population					
	Time poverty line 70.5 hours/week			Time poverty line 94 hours/week		
	Urban	Rural	All	Urban	Rural	All
Men	11.7	8.3	9.5	2.7	1.8	2.1
Women	18.6	26.5	24.2	4.7	7.9	7.0
All	15.1	18.8	17.6	3.7	5.3	4.8
	Children					
	Time poverty line 9 hours/week			Time poverty line 12 hours/week		
	Urban	Rural	All	Urban	Rural	All
Boys	7.7	40.9	32.0	5.4	36.1	27.9
Girls	20.4	56.9	46.5	14.4	49.9	39.8
All	14.2	48.7	39.2	10.0	42.8	33.8

Note: For adults, the “time poverty line” of 70.5 hours/week corresponds to 1.5 times the median number of hours of all adults aged 15+ (47 hours/week). The “time poverty line” of 94 hours/week corresponds to 2 times the median. For children, the “time poverty line” of 9 hours/week corresponds to 1.5 times the median number of hours of work among children and the “time poverty line” of 12 hours/week corresponds to 2 times the median among children.

Source: Authors’ estimation using EIBEP 2002–2003.

and adults aged based on their own respective distribution. The resulting poverty lines are 9 hours and 70.5 hours per week for the lower threshold for children and adults respectively, and 12 hours and 94 hours for the higher threshold.

Table 4.3 shows the time poverty rates based on the two alternative poverty lines for men and women living in urban and rural areas. According to the lower threshold about 18 percent of all individuals are time poor. This rate is much higher for women (24.2 percent) than men (9.5 percent), and in rural areas (18.8 percent) as compared to urban areas (15.1 percent). More women living in rural areas are time poor (26.5 percent) than women living in urban area (18.6 percent). For men, it is the reverse, with urban men more likely to be time poor than rural men (11.7 vs. 8.3 percent). When we adopt a higher threshold the time poverty rates are lower, with the overall time poverty rate dropping to 4.8 percent, but the patterns in terms of comparisons between groups are very similar. The differences between men and women are in this case even larger—moving from the lower to the higher threshold makes time poverty rates for women decrease by a factor of 3, while time poverty rates for men decrease by a factor of almost 5.

Table 4.3 also shows the child time poverty rates. Given that the time poverty lines have been computed separately for children and adults, in each case with reference to *their own* hour distribution, we may very well have higher relative rates of time poverty among children than among adults since both the lower and the higher time poverty lines turn out to be significantly lower than for adults, at 9 and 12 hours/week respectively. Looking first at the results obtained with the lower threshold, we notice that the time poverty rates are again much higher in rural (49 percent) than in urban areas (14 percent); they are also

Table 4.4. Time Poverty Gap and Squared Time Poverty Gap

	Time poverty gap, adult population					
	Time poverty line 70.5 hours/week			Time poverty line 94 hours/week		
	Urban	Rural	All	Urban	Rural	All
Men	2.8	1.9	2.2	0.6	0.4	0.5
Women	4.4	7.1	6.3	0.7	1.4	1.2
All	3.6	4.9	4.5	0.7	1.0	0.9
	Squared time poverty gap, adult population					
	Time poverty line 70.5 hours/week			Time poverty line 94 hours/week		
	Urban	Rural	All	Urban	Rural	All
Men	1.4	0.9	1.1	0.2	0.1	0.2
Women	1.9	3.3	2.9	0.2	0.4	0.3
All	1.6	2.3	2.1	0.2	0.3	0.3

Note: For adults, the “time poverty line” of 70.5 hours/week corresponds to 1.5 times the median number of hours of all adults aged 15+ (47 hours/week). The “time poverty line” of 94 hours/week corresponds to 2 times the median.

Source: Authors’ estimation using EIBEP 2002–2003.

higher for girls (47 percent) than for boys (32 percent). Using the higher threshold decreases the time poverty rates somewhat, but the same pattern arises.

In order to illustrate the use of higher poverty measures, we provide time poverty gap and squared time poverty gaps for the adult population in Table 4.4, using the time poverty line for the normalization. As for Table 4.3, all values have been multiplied by 100. The key conclusions in terms of comparing urban and rural areas, as well as men and women, are the same with these measures as what was observed with the headcount index.

Correlates of Time Poverty

What are the determinants or correlates of time poverty? To answer this question we ran probit regressions to explain the probability of being time poor as a function of personal, household and area variables. The analysis is again carried out at the individual level, that is, each individual is classified as time poor or not depending on his or her own individual total time worked. Among the regressors we included, beside the usual demographic variables (age, sex, and marital status), the educational qualifications, religion, the consumption quintile of the household, the number of infants (aged 0–5) and children (aged 6–14), adults (aged 15–64) and senior people (aged over 65), and their square values. We also included dummy variables for the presence of disabled people, and for households with only women.¹² Finally, we included geographical dummies for rural/urban areas and for the region of residence. Separate regressions were estimated for men and women, as well as for rural and urban areas. The results are reported in Table 4.5.

12. We preferred this variable to the alternative “female headed household,” because many female headed households include several adult men.

**Table 4.5. Probit Regression for the Probability of Being Time Poor
(Lower time poverty line)**

	All	Men	Women	Men		Women	
				Urban	Rural	Urban	Rural
Age	0.012*** (0.001)	0.010*** (0.001)	0.015*** (0.001)	0.015*** (0.001)	0.003** (0.001)	0.019*** (0.002)	0.012*** (0.002)
Age squared	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)
Female	0.033*** (0.006)						
Rural	-0.067*** (0.007)	-0.037*** (0.006)	0.014* (0.008)				
Female*rural	0.101*** (0.010)						
Disabled	-0.087*** (0.007)	-0.045*** (0.009)	-0.139*** (0.011)	-0.043*** (0.013)	-0.044*** (0.012)	-0.122*** (0.013)	-0.159*** (0.018)
Monogamous	0.077*** (0.008)	0.015* (0.009)	0.138*** (0.014)	0.021* (0.011)	-0.001 (0.013)	0.108*** (0.016)	0.130*** (0.024)
Poligamous	0.079*** (0.009)	0.013 (0.011)	0.132*** (0.014)	0.023 (0.016)	0.005 (0.015)	0.100*** (0.018)	0.126*** (0.022)
Divorced	0.088*** (0.019)	0.051* (0.028)	0.140*** (0.027)	0.029 (0.034)	0.071 (0.044)	0.106*** (0.031)	0.128*** (0.045)
Widow/er	0.023* (0.014)	0.030 (0.036)	0.070*** (0.021)	0.029 (0.052)	0.022 (0.044)	0.066** (0.026)	0.028 (0.032)
Christian	0.023*** (0.009)	0.002 (0.009)	0.049*** (0.014)	-0.010 (0.011)	0.025 (0.018)	0.006 (0.015)	0.187*** (0.030)
Other religion	0.008 (0.013)	0.009 (0.016)	0.014 (0.020)	0.130** (0.065)	0.009 (0.019)	-0.074* (0.040)	0.175*** (0.035)
Primary	-0.068*** (0.005)	-0.049*** (0.005)	-0.078*** (0.010)	-0.048*** (0.006)	-0.043*** (0.008)	-0.055*** (0.011)	-0.142*** (0.023)
Secondary 1st	-0.077*** (0.006)	-0.054*** (0.005)	-0.095*** (0.012)	-0.058*** (0.006)	-0.029* (0.017)	-0.083*** (0.011)	0.026 (0.119)
Secondary 2nd	-0.078*** (0.014)	-0.050*** (0.010)	-0.122*** (0.036)	-0.056*** (0.010)	0.008 (0.084)	-0.097*** (0.035)	
Technical	-0.078*** (0.008)	-0.050*** (0.007)	-0.108*** (0.016)	-0.065*** (0.007)	0.086 (0.056)	-0.095*** (0.014)	
University	-0.093*** (0.007)	-0.065*** (0.005)	-0.089*** (0.033)	-0.073*** (0.005)	-0.048* (0.027)	-0.086*** (0.026)	
Unknown ed.	-0.013 (0.033)	-0.047* (0.029)	0.021 (0.054)	-0.041 (0.037)		-0.045 (0.051)	0.140 (0.107)

(continued)

**Table 4.5. Probit Regression for the Probability of Being Time Poor
(Lower time poverty line) (Continued)**

	All	Men	Women	Men		Women	
				Urban	Rural	Urban	Rural
Infants (0–5)	–0.003 (0.003)	0.005 (0.003)	–0.010** (0.004)	0.006 (0.006)	0.010** (0.004)	–0.010 (0.007)	–0.009 (0.006)
Infants squared	0.001** (0.000)	0.000 (0.000)	0.001** (0.001)	–0.001 (0.001)	–0.000 (0.001)	0.001 (0.001)	0.001* (0.001)
Children (6–14)	–0.005** (0.002)	–0.007*** (0.002)	–0.003 (0.003)	–0.012*** (0.003)	–0.001 (0.003)	0.001 (0.004)	–0.004 (0.005)
Children squared	0.001*** (0.000)	0.000** (0.000)	0.001*** (0.000)	0.001** (0.000)	0.000 (0.000)	0.000 (0.000)	0.001*** (0.000)
Adults (15–64)	–0.013*** (0.001)	–0.003* (0.002)	–0.025*** (0.002)	–0.000 (0.002)	–0.015*** (0.005)	–0.020*** (0.003)	–0.041*** (0.007)
Adults squared	0.000*** (0.000)	0.000 (0.000)	0.001*** (0.000)	–0.000 (0.000)	0.001** (0.000)	0.001*** (0.000)	0.001** (0.001)
Seniors (65+)	0.011 (0.007)	0.005 (0.009)	0.012 (0.011)	0.015 (0.012)	–0.005 (0.012)	0.013 (0.015)	0.005 (0.018)
Seniors squared	–0.007* (0.004)	–0.002 (0.005)	–0.010* (0.006)	–0.005 (0.006)	–0.002 (0.006)	–0.003 (0.007)	–0.017* (0.009)
Disabled ind.	0.003 (0.005)	–0.007 (0.006)	0.012 (0.009)	–0.019** (0.008)	0.013 (0.010)	–0.005 (0.011)	0.029** (0.014)
Only women	0.021* (0.012)		0.015 (0.015)			0.021 (0.022)	–0.003 (0.021)
2nd quintile	0.011 (0.008)	0.026** (0.011)	–0.000 (0.011)	0.023 (0.020)	0.029** (0.012)	0.015 (0.021)	–0.015 (0.014)
3rd quintile	0.027*** (0.008)	0.026** (0.010)	0.031*** (0.012)	0.027 (0.018)	0.021 (0.013)	0.015 (0.020)	0.043*** (0.016)
4th quintile	0.025*** (0.008)	0.037*** (0.011)	0.016 (0.012)	0.027 (0.018)	0.056*** (0.015)	0.012 (0.019)	0.013 (0.017)
5th quintile	0.036*** (0.008)	0.044*** (0.011)	0.032*** (0.012)	0.037** (0.018)	0.057*** (0.017)	0.028 (0.020)	0.029 (0.018)
Conakry	–0.005 (0.008)	0.032*** (0.010)	–0.046*** (0.011)	0.032*** (0.011)		–0.005 (0.014)	
Faranah	0.010 (0.008)	0.001 (0.010)	0.015 (0.013)	0.018 (0.015)	–0.022* (0.013)	0.057*** (0.019)	–0.036** (0.018)
Kankan	–0.005 (0.008)	0.028** (0.011)	–0.032*** (0.011)	0.003 (0.014)	0.048** (0.017)	0.016 (0.018)	–0.077*** (0.015)
Kindia	0.022*** (0.008)	0.021* (0.011)	0.023* (0.013)	0.019 (0.015)	0.023 (0.015)	0.055*** (0.019)	–0.010 (0.018)

(continued)

**Table 4.5. Probit Regression for the Probability of Being Time Poor
(Lower time poverty line) (Continued)**

	All	Men	Women	Men		Women	
				Urban	Rural	Urban	Rural
Labe	-0.021*** (0.008)	0.018 (0.012)	-0.054*** (0.011)	0.006 (0.015)	0.032* (0.019)	-0.002 (0.018)	-0.106*** (0.015)
Mamou	0.034*** (0.010)	0.037*** (0.014)	0.031** (0.014)	0.064*** (0.020)	-0.004 (0.016)	0.050** (0.021)	0.008 (0.020)
Nzerekore	-0.044*** (0.007)	0.011 (0.011)	-0.094*** (0.010)	0.010 (0.014)	-0.000 (0.016)	0.008 (0.017)	-0.230*** (0.014)
Observed probability	0.161	0.096	0.217	0.106	0.082	0.185	0.255
Predicted probability	0.130	0.081	0.183	0.084	0.069	0.154	0.215
Pseudo R ²	0.110	0.066	0.103	0.091	0.056	0.101	0.115
Log likelihood	-11711	-4074	-7527	-2583	-1424	-3747	-3681
Number of observations	29793	13761	16032	8419	5334	8699	7325

Notes: Marginal effects (rather than coefficients) shown in the table. The marginal effect is computed at the mean of regressors. For dummy variables it is given for a discrete change from 0 to 1. Standard errors in parentheses; *significant at 10%; **significant at 5%; ***significant at 1%. Sample is restricted to individuals aged 15+. “Adults” are individuals aged 15–64; “seniors” are individuals aged 65+. The ‘time poverty line’ is 70.5 hours/week. The reference categories are: male, not disabled, urban, single never married, muslin, no education level (or never in school), no children aged 0–5 in the household, no children aged 6–14 in the household, no disabled people in the household, household with also men, first consumption quintile, and living in Boke. Predicted probability computed at the mean of the regressors.

Source: Authors’ estimation using EIBEP 2002–2003.

Table 4.5 gives the marginal effects estimated at the mean of the variables rather than the coefficients—for dummy variables the marginal effect represents the change in probability when the dummy variable changes from 0 to 1. For example, the first column (pooled regression) indicates that women are 3 percentage points more likely to be time poor than men; for women living in rural area this probability increases by an additional 10 percentage points. The coefficient of living in rural areas is estimated to be negative (–7 percentage points), but this is driven by the male sample; by comparing the marginal effect of the rural dummy reported in columns 2 and 3, where different regressions are estimated for men and women, we notice that men living in rural area are *less* likely to be time poor, while for women the opposite is true. Obviously, being disabled significantly and substantially decreases the probability of being time poor, given that disabled people are less able to work in paid and unpaid tasks. Marital status is also associated with variations in the probability of being time poor, but this effect is significant (and substantial) only for women. Married women (either in monogamous or polygamous union) are more likely to be time poor than single never married women (about 10–11 percentage points more in urban area and 13 percentage points in rural area; see columns 6 and 7). A similar effect is estimated for divorced women. Interestingly, women living in rural areas who are Christian

or belong to a religion other than Muslim are more likely to be time poor, about 18–19 percentage points more than Muslim rural women.

The educational qualification is also a powerful predictor of time poverty, for both men and women, and especially in urban areas. Increasing education is associated with lower probabilities of being time poor; in rural areas where people with qualifications above primary education are extremely rare, especially among women, having completed primary education makes individual less likely to be time poor compared to those with no educational qualifications (–4 percentage points for men and –14 percentage points for women). By contrast, well-being measured by the consumption quintile appears to be more weakly associated with time poverty. A significant effect exists for men living in rural area—those in the top 4th and 5th quintile are about 6 percentage points more likely to be time poor than the poorer men. For men living in urban areas, those in the 5th quintile are 4 percentage points more likely to be time poor. However, no significant effect is estimated for women (except that women living in rural area who are in the 3rd quintile are 4 percentage points more likely to be time poor than the remaining women).

The coefficients for the number of infants and children do not provide a clear story. We included these variables among the regressors to test the idea that the presence of young children may require more time from adult members (but recall that time spent in child-care is not explicitly collected in the survey), while older children may provide substitute labor and therefore make adult members save time. In fact, a positive coefficient is estimated only for men living in rural areas—indicating that only for this group each extra child increases the probability of being time poor (1 percentage point for each additional child). On the other hand, a negative coefficient for the number of older children is estimated for men living in urban areas—for them each extra child aged 6–14 decreases the probability of being time poor, at a decreasing rate (so that one child decreases this probability by 1 percent, while at six children the change in probability is zero and after that the variation becomes slightly positive). Women’s time poverty, by contrast, does not seem to be affected by the number of either young or older children living in the household. More adults in the household, on the other hand, make everybody less likely to be time poor, indicating that the workload will be more equally distributed across members. This effect is stronger for women living in rural area (the first adult decreases the time poverty probability by about 4 percentage points, and each subsequent adult slightly less than that); smaller marginal effects are estimated for women living in urban area and men living in rural area. The presence of disabled people in the household increase the probability of being time poor for women living in rural areas (about 3 percentage points), while it decreases the probability of being time poor for men living in urban areas by about 2 percentage points. Finally, there are also geographical differences in the probability of being time poor according to Guinea’s main natural regions.

Conclusion

Time poverty has long been recognized as a constraint to development in Sub-Saharan Africa, with women working especially long hours due in part to a lack of access to basic infrastructure services such as water and electricity, but also due to the rising demands from the “care economy.” The very concept of time poverty and the evidence on high

workloads for women could be of use for policymakers. However, when combined with other dimensions of welfare, such as consumption or income poverty, the analysis of time poverty can be even more revealing. Other papers in this volume provide simulations of the impact that increases in hours of work (working up to a certain time poverty line or norm) could have on monetary poverty. The gains from what could be referred to as full employment can be compared to gains that would be achieved from higher pay per hour working.

Apart from looking at the link between time poverty and consumption or income poverty, work also needs to be carried out on the relationship between time poverty and other development outcomes. When looking at the targets set out in the Millennium Development Goals, it is clear that the time spent by children working may have a detrimental impact on their enrollment in school. Yet, time poverty may also affect other outcomes, such as the nutritional status of children. Conversely, conditions related to health (such as the HIV/AIDS crisis) may increase time poverty and thereby reduce the amount of time that households and individuals may allocate to work.

Despite a growing number of studies on time use in Africa and elsewhere, time poverty has remained loosely defined. In this paper, we have argued that the techniques used for the measurement and analysis of the determinants of poverty can be applied readily to the issue of time poverty. While the concepts and examples presented in this paper have not dealt with the issue of the impact of time poverty on development outcomes, we hope that they have provided some ideas on how to use the measurement and analysis techniques that have been developed for the analysis of monetary poverty in this new and exciting area of work that time poverty represents.

References

- Apps, P. 2004. "Gender, Time Use, and Models of the Household." Policy Research Working Paper Series: 3233, The World Bank, Washington, D.C.
- Apps, P., and R. Rees. 2004. "The Household, Time Use and Tax Policy." *CESifo Economic Studies* 50:479–500.
- Blackden, C.M., and C. Bhanu. 1999. *Gender, Growth, and Poverty Reduction*. Special Program of Assistance for Africa 1998 Status Report on Poverty, World Bank Technical Paper No. 428, Washington, D.C.
- Charmes, J. 2005. "A Review of Empirical Evidence on Time Use in Africa from UN-sponsored Surveys." (Chapter 3 of this volume.)
- Coudouel, A., J. Hentschel, and Q. Wodon. 2002. "Poverty Measurement and Analysis." In J. Klugman, editor, *A Sourcebook for Poverty Reduction Strategies, Volume 1: Core Techniques and Cross-Cutting Issues*. Washington, D.C.: The World Bank.
- Foster, J.E., J. Greer, and E. Thorbecke. 1984. "A Class of Decomposable Poverty Indices." *Econometrica* 52:761–766.
- Gelb, A. 2001. "Gender and Growth: Africa's Missed Potential." Findings No. 197, Africa Region, The World Bank, Washington, D.C.
- Hamermesh, D.S., and G.A. Pfann, eds. 2005. *The Economics of Time Use*. Contributions to Economic Analysis, vol. 271. Amsterdam, San Diego and Oxford: Elsevier.

- Hamermesh, D.S., H. Frazis, and J. Stewart. 2005. "Data Watch: The American Time Use Survey." *Journal of Economic Perspectives* 19:221–32.
- Harvey, A.S., and M.E. Taylor. 2004. "Time Use." In M. Grosh and P. Glewwe, eds., *Designing Household Survey Questionnaires: Lessons from Fifteen Years of the Living Standards Measurement Study*. Washington, D.C.: The World Bank.
- Ilahi, N. 2000. "The Intra-household Allocation of Time and Tasks: What Have We Learnt from the Empirical Literature?" Policy Research Report on Gender and Development, Working Paper Series No. 13, World Bank Development Research Group, Washington, D.C.
- Ilahi, N. 2001. "Gender and the Allocation of Adult Time: Evidence from the Peru LSMS Panel Data." Policy Research Working Paper Series No. 2744, The World Bank, Washington, D.C.
- Ilahi, N., and F. Grimard. 2001. "Public Infrastructure and Private Costs: Water Supply and Time Allocation of Women in Rural Pakistan." *Economic Development and Cultural Change* 49:45–75.
- Makdissi, P., and Q. Wodon. 2004. "Robust Comparisons of Natural Resource Depletion Indices." *Economics Bulletin* 9(2):1–9.
- Newman, C. 2002. "Gender, Time Use, and Change: The Impact of the Cut Flower Industry in Ecuador." *World Bank Economic Review* 16: 375–95.
- Zhang, J., H. Timmermans, and A. Borgers. 2005. "A Model of Household Task Allocation and Time Use." *Transportation Research: Part B: Methodological* 39:81–95.
- Vickery, C. 1977. "The Time-Poor: A New Look at Poverty." *Journal of Human Resources* 12:27–48.
- Wodon, Q., and K. Beegle. 2005. "Labor Shortages Despite Underemployment? Seasonality in Time Use in Malawi." (Chapter 5 in this volume.)
- World Bank. 2001. *Engendering Development: Through Gender Equality in Rights, Resources, and Voice*. World Bank Policy Research Report. Washington, D.C.

Appendix Table 4A.1. Number of Weekly Hours Spent for Various Activities, by Sex, Time Spent Collecting Water, and Urban/Rural Area

<i>Urban</i>		Men 15+				Women 15+			
		0 Hrs	1–4 Hrs	4+ Hrs	All	0 Hrs	1–4 Hrs	4+ Hrs	All
1	Cooking	0.1	0.5	0.4	0.2	5.6	7.8	10.8	6.8
2	Cleaning	0.3	1.2	2.3	0.5	1.8	2.6	4.5	2.3
3	Washing	0.6	1.7	3.7	0.8	1.8	2.8	4.6	2.4
4	Ironing	0.5	1.3	2.6	0.7	0.8	1.3	2.1	1.1
5	Market	0.1	0.4	0.7	0.2	2.4	3.4	5.9	3.0
6	All domestic chores (1–5)	1.6	5.1	9.6	2.4	12.5	17.8	27.7	15.5
7	Collection of wood	0.1	0.4	0.8	0.2	0.1	0.3	0.4	0.2
8	Collection of water	0.0	1.6	7.5	0.4	0.0	1.9	7.5	1.2
9	Aid to other households	0.2	0.4	0.3	0.2	0.2	0.5	0.9	0.4
10	Community activities	0.3	0.3	0.2	0.3	0.2	0.3	0.4	0.2
11	Work for a wage	28.3	16.9	8.7	25.9	18.4	18.9	20.4	18.7
12	Work in a farm of family business	4.7	5.1	6.0	4.8	2.6	4.0	3.9	3.2
13	Work in labor market (1 + 12)	33.0	21.9	14.8	30.7	21.0	22.9	24.3	21.9
14	Total time (definition 1)	34.7	29.0	32.6	33.6	33.5	42.9	60.0	38.8
15	Total time (definition 2)	35.2	29.7	33.1	34.1	33.9	43.7	61.3	39.4
<i>Rural</i>									
1	Cooking	0.1	0.8	1.4	0.3	4.8	9.4	13.2	9.2
2	Cleaning	0.2	0.9	1.3	0.4	1.3	2.4	4.9	2.8
3	Washing	0.3	1.5	4.2	0.7	1.3	2.8	5.5	3.1
4	Ironing	0.2	0.8	0.8	0.3	0.2	0.5	0.7	0.5
5	Market	0.8	0.9	2.2	0.9	1.3	2.7	4.5	2.8
6	All domestic chores (1–5)	1.6	4.9	9.9	2.6	8.9	17.9	28.9	18.3
7	Collection of wood	1.2	2.4	7.1	1.6	0.9	2.1	4.6	2.4
8	Collection of water	0.0	1.7	8.8	0.7	0.0	2.2	9.0	3.3
9	Aid to other households	1.1	1.1	1.3	1.1	0.5	1.0	1.5	1.0
10	Community activities	1.3	0.9	1.1	1.2	0.3	0.6	0.8	0.6
11	Work for a wage	13.4	12.3	10.8	13.1	6.5	8.9	10.2	8.6
12	Work in a farm of family business	25.1	20.1	21.8	23.9	15.8	22.6	23.2	21.0
13	Work in labor market (11 + 12)	38.5	32.4	32.6	37.0	22.3	31.5	33.4	29.7
14	Total time (definition 1)	41.2	41.4	58.4	41.8	32.1	53.6	75.9	53.7
15	Total time (definition 2)	43.7	43.4	60.8	44.2	32.9	55.2	78.2	55.2

Note: Zeros are included. Total time (definition 1) is the sum of 6 (all domestic chores), 7 (collection of wood), 8 (collection of water), and 13 (work in labor market). Total time (definition 2) is the sum of total time (definition 1), 9 (aid to other households), and 10 (community activities).

Source: Authors' estimation using EIBEP 2002–2003.

Appendix Table 4A.2. Number of Weekly Hours Spent for Various Activities, by Sex, Time Spent Collecting Wood, and Urban/Rural Area

<i>Urban</i>	Men 15+				Women 15+			
	0 Hrs	1–4 Hrs	4+ Hrs	All	0 Hrs	1–4 Hrs	4+ Hrs	All
1 Cooking	0.1	0.7	0.3	0.2	6.7	7.5	11.7	6.8
2 Cleaning	0.5	0.9	1.3	0.5	2.2	2.5	5.0	2.3
3 Washing	0.8	1.2	1.9	0.8	2.3	2.5	5.5	2.4
4 Ironing	0.6	1.0	1.5	0.7	1.0	1.3	2.6	1.1
5 Market	0.2	0.7	0.2	0.2	3.0	2.9	6.0	3.0
6 All domestic chores (1–5)	2.2	4.6	5.2	2.4	15.3	16.8	30.7	15.5
7 Collection of wood	0.0	1.6	9.1	0.2	0.0	1.6	8.0	0.2
8 Collection of water	0.3	1.0	1.6	0.4	1.1	1.9	3.1	1.2
9 Aid to other households	0.2	0.7	1.1	0.2	0.3	0.7	1.3	0.4
10 Community activities	0.3	0.7	1.1	0.3	0.2	0.7	1.4	0.2
11 Work for a wage	26.3	20.2	12.5	25.9	18.6	20.0	22.6	18.7
12 Work in a farm of family business	4.7	4.9	15.7	4.8	3.1	3.7	8.1	3.2
13 Work in labor market (11 + 12)	31.0	25.1	28.2	30.7	21.7	23.7	30.7	21.9
14 Total time (definition 1)	33.6	32.2	44.1	33.6	38.1	43.9	72.4	38.8
15 Total time (definition 2)	34.1	33.6	46.2	34.1	38.6	45.3	75.1	39.4
<i>Rural</i>								
1 Cooking	0.1	0.5	0.5	0.3	7.1	9.2	13.9	9.2
2 Cleaning	0.2	0.6	0.8	0.4	2.2	2.6	4.7	2.8
3 Washing	0.2	1.1	2.2	0.7	2.1	2.9	6.1	3.1
4 Ironing	0.1	0.5	0.6	0.3	0.2	0.6	0.9	0.5
5 Market	0.7	1.0	1.6	0.9	2.0	2.6	5.0	2.8
6 All domestic chores (1–5)	1.3	3.7	5.6	2.6	13.6	17.9	30.5	18.3
7 Collection of wood	0.0	2.1	8.8	1.6	0.0	2.3	8.4	2.4
8 Collection of water	0.2	0.9	2.4	0.7	2.0	3.1	7.0	3.3
9 Aid to other households	1.0	1.2	1.4	1.1	0.6	1.1	1.7	1.0
10 Community activities	1.2	1.1	1.6	1.2	0.3	0.7	0.9	0.6
11 Work for a wage	14.8	11.3	10.2	13.1	6.6	9.0	12.1	8.6
12 Work in a farm of family business	23.0	24.4	26.7	23.9	18.6	22.3	23.0	21.0
13 Work in labor market (11 + 12)	37.8	35.7	36.9	37.0	25.2	31.3	35.1	29.7
14 Total time (definition 1)	39.2	42.4	53.7	41.8	40.8	54.4	81.0	53.7
15 Total time (definition 2)	41.4	44.7	56.7	44.2	41.7	56.2	83.7	55.2

Note: Zeros are included. Total time (definition 1) is the sum of 6 (all domestic chores), 7 (collection of wood), 8 (collection of water), and 13 (work in labor market). Total time (definition 2) is the sum of total time (definition 1), 9 (aid to other households), and 10 (community activities).

Source: Authors' estimation using EIBEP 2002–2003.