

**What Explains Variation in Child Labor Statistics?
Evidence from a Survey Experiment in Tanzania**

Elena Bardasi
The World Bank

Kathleen Beegle
The World Bank

Andrew Dillon
International Food Policy Research Institute

Pieter Serneels
University of East Anglia

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Abstract

Child labor statistics are critical for assessing the extent and nature of child labor activities in developing countries. In practice, widespread variation exists in how child labor is measured. Questionnaire modules vary across countries and within countries over time along several dimensions, including respondent type and the structure and length of the questionnaire. Little is known about the effect of these differences on child labor statistics. This paper presents the results from a randomized survey experiment in Tanzania and estimates the effects of using different questionnaire designs (a shorter, rapid assessment versus a detailed, LSMS style questionnaire) and proxy response versus self-reporting on the statistics generated. We find that especially the use of a short versus a more detailed and structured questionnaire has a statistically significant effect on child labor force participation rates, and to a lesser extent working hours.

Key words: Child Labor, Survey Design, Tanzania

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1. Introduction and background

In the last decade, special attention has been paid to generating empirical evidence on child labor, especially for developing countries. Although there has been substantive discussion about the definition of child labor, much less attention has been spent to its measurement. In particular, the sensitivity of child labor statistics to the survey method used has received very limited attention. In fact, despite more attention to the collection of child labor statistics, the consistency of these statistics is widely variable across and within countries (UCW 2008). In Ghana, for instance, a comparison between the CWIQ survey (2003) and SIMPOC survey (2000) suggests a decline in child labor of 21.8% between over the three year period. In Kenya, the MICS2 (2000) and SIMPOC (1998/99) surveys would suggest an increase in child labor of 26.1% over the considered period. To what extent are these differences a consequence of using different survey methods?

We focus on two main areas where the survey method has a potential influence on the labor statistics it produces: the structure of the labor-related questions and the respondent type. The specific wording and style of employment questions are posited to have a large influence on labor statistics. This may be particularly relevant in a setting where a significant proportion of individuals are employed in household enterprises or home production and are not directly remunerated in the form of a salary or wage. For example, the question “Did you work in the last 7 days?” is hypothesized to systematically undercount persons who work in household enterprise activities without direct wage payments (e.g., unpaid family workers). Likewise, OECD-style employment questions (such as the one above) may be flawed if applied to settings where employment is highly seasonal or where a significant proportion of workers are casual workers.

Respondent type may also influence the labor statistics generated. Borgers et al. (2000) illustrate that given the appropriate question structuring and conditions of interview that children above 10 years of age have sufficient cognitive development to respond accurately to survey questions. However, differences in labor statistics may be generated by altering whether adults in the household are asked to respond about

the labor activities of the children in the household rather than the children themselves. In fact, we find in related work that the effect of proxy responses has a large and statistically significant effect on adult labor force participation, weekly hours worked, and daily earnings, among other labor statistics (Bardasi et al. 2009).

The survey experiment we describe here seeks to improve the quality of child labor statistics and the information base for analytical work on participation in child labor and hours worked. These improvements will include, among other things, better measuring labor force participation, the nature of work in terms of type and intensity (particularly work that occurs in household enterprises and farms), changing patterns in employment over time, and nuanced changes in labor market activity that could otherwise be missed in existing data collection instruments. The structure of the paper is as follows. We describe the experimental design and the identification strategy to test differences in questionnaire design and respondent type in the next section. The third section provides a description of the data collected, while the fourth section presents our results. The last section concludes.

2. The survey experiment

Whether changes in measurement have an effect on the statistics they produce is, ultimately, an empirical question. We designed and implemented a survey experiment focusing on two key dimensions of labor survey design: the level of detail of the questionnaire and the type of respondent (Table 1). Households were randomly selected for the survey, and, after being selected, randomly assigned to one of the four survey assignments based on these two dimensions. While the survey experiment was not intentionally designed to measure differences in child labor statistics, we analyze the child labor statistics generated from these data as part of a larger experiment in understanding the determinants of labor statistics, of which children's behavior is an important subset.

In the first dimension of our survey design, we developed a detailed labor module and a shortened labor module. The shortened labor module reflects the approach in shorter questionnaires, such as the Core Welfare Indicator Survey (CWIQ). This shorter module is often used in generating statistics with a higher frequency, for

example with annual regularity, in lieu of multi-topic households which are too demanding to implement on annual basis. In our survey experiment, the detailed module differs from the shortened module in two ways: in the set of screener questions and in asking about second and third jobs. The former is the more important difference. The detailed module includes several screener questionnaires about labor force participation, specifically, whether the person has worked for someone outside the household (as an employee), whether s/he has worked on the household farm, and whether s/he has worked in a non-farm household enterprise. These questions are asked with respect to the last 7 days and, if reported to not work in the last 7 days, the last 12 months. In the shorter module, there is only one question: has s/he worked in the last 7 days. For those identified as working in the last 7 days, the occupation, sector, employer, hours, and wage payments is collected. In the detailed module, these same set of questions are repeated for a second and a third job.

In the second dimension of the experiment, we vary whether questions are asked directly to the subject or asked of a proxy respondent. Response by proxy rather than self reflects the common practice to interview an informed household member (often the household head), rather than the individual him or herself. Although self-reporting is the established standard for multi-topic household surveys, in practice proxy respondents are often used when individuals are away from the household working or otherwise unavailable to interview in the time allotted in an enumeration area to conduct interviews. In the survey experiment, the proxy respondent is randomly chosen among household members at least 15 years old. The proxy respondent is then either the head of household, spouse of the head or an older child or older relative living in the household.¹ In practice, proxy respondents are not randomly chosen, but are normally selected by interviewers on the basis of availability. In this sense, the experiment does not exactly mimic the actual conditions of proxy respondents, although it is not clear which direction this would bias our findings. The survey design was intentionally designed to randomly select proxy respondents, so that the treatment effects of different respondent types could be estimated without potential contamination from proxy respondent selection bias.

¹ The Tanzanian CWIQ 2006 data indicate that the average Tanzanian household has between two to three adults who could serve as a proxy.

These different survey approaches reflect commonly used approaches in practice. The benchmark reference to which the other survey assignments are compared is the detailed self-report questionnaires. This, we believe, represents the “best practices” approach of household surveys: using a detailed questionnaire and interviews being held with the respondents themselves.

In each of the four designs, in addition to the labor module, the questionnaire also includes five other modules: household roster, household assets and dwelling characteristics, land, and consumption expenditures. In the detailed and shortened questionnaire, the questions follow the same sequence, identical types of questions follow the same phrasing, and recall periods are the same.

From an analytical perspective, we are interested in two types of questions: the respective effects of the change in survey design and whether these effects vary with respondent or other characteristics. To address the first question, we consider the treatment effects of the respective treatments. As a first descriptive approach we compare the statistics produced for the different groups listed in Table 1 and assess whether they are different across the groups (i.e. treatments).² We thus compare the mean outcomes in labor force participation, occupation, daily hours worked, and weekly earnings across the four groups. Since the treatments are randomly allocated, we can abstract from unobserved heterogeneity in individual, household or village characteristics. In a second step, we formally estimate the respective average treatment effects, taking the detailed survey with self respondents as the reference group.

$$y_i = \alpha_j + \beta_j T_i^j + \gamma X_i + \lambda V + \varepsilon_{i,j} \quad (\text{Eq. 1})$$

² To estimate the average treatment effect, we ideally want to estimate $\Delta = Y_t^1 - Y_t^0$ which is the difference of the outcome variable of interest at time t between two treatments denoted by the superscripts 1 and 0. However, since Δ is unobservable to the econometrician because a household does not receive two treatments simultaneously, one estimates the treatment effect given the observable data, i.e. $TE = E(Y_t^1 | T=1) - E(Y_t^0 | T=0)$. Since in a properly implemented randomized design, the treatment and comparison groups have identical characteristics because the groups were composed of randomly allocated households, differing only with respect to the treatment received, the selection bias, $E(Y_t^0 | T=1) - E(Y_t^0 | T=0)$, equals zero and the estimate of the treatment effect is unbiased.

Where y_i are the different labor statistics like labor force participation, labor supply, earnings and occupational choice for the i^{th} individual, while T_i^j is an indicator variable for the j^{th} respective treatment, X is a vector of individual and household characteristics for i^{th} individual, V is a village fixed effect, and $\varepsilon_{i,j}$ is the stochastic error term which is randomly distributed.

The experiment was implemented in Tanzania, which has different types of labor market surveys on going, among them the CWIQ and LFS, and was implemented by a well-established data collection enterprise, Economic Development Initiatives (EDI) which has demonstrated strong capacity to undertake high quality field studies. The reference approach as well as the treatments were carefully piloted in 24 households in a rural and urban area that were dropped from the survey proper. A qualitative debriefing with the field supervisors took place at the end of each day during the pilot, in order to solicit their feedback on a range of issues.³ In addition, a subset of five households was selected for qualitative interviews with the respondents, in order to see whether wording and structure of the questionnaire could be further improved.⁴ Training manuals and enumerator instructions were then revised based on these sources of feedback during the pilot. Enumerators were then trained and the survey was implemented.⁵

³ The feed back focused on nine areas: 1. General impressions of the respondent's comprehension; 2. Question phrasing; 3. Question sequencing; 4. Completeness of lists of question responses; 5. Clarity of interviewer instructions; 6. Completeness of interviewer manual to resolve field problems encountered; 7. Questions that should be restructured for greater clarity and respondent comprehension; 8. Conceptual or cultural difficulties in translating questions to local language; 9. Areas of emphasis for training enumerators. One of the most important parts of the questionnaire to pilot was the selection of proxy and self-reporting respondents. After a day of training, interviewers spent significant time practicing with examples. They appeared to have no trouble in the field selecting proxies or self-reported respondents using the current method in the questionnaire.

⁴ During this qualitative interview, respondents were asked open-ended questions to solicit how they thought about the questions, why they chose the responses they did, and how they thought about concepts such as work, household production, and their primary activities.

⁵ The enumerators were trained with the assistance of field supervisors who undertook the questionnaire pre-testing exercise. The training consisted of explaining the research objectives of the survey as well as the "sense" of each question, reinforcing the standards required for correct completion of the household questionnaire and the working relationship between enumerator and supervisor. A field experience to practice administering the questionnaire was part of the training. An interviewer manual was prepared to provide specific guidance during the training period, and to serve as a reference during the implementation. Throughout the training special emphasis was put on the standardization in the manner by which questions are posed and the correct selection of proxy and self-reporting respondents using a random number list.

3. Data

The survey experiment conducted was the Survey of Household Welfare and Labour in Tanzania (SHWALITA). This survey was purposively designed and fielded to study the implications of the alternative survey designs for consumption expenditure measures and labor market indicators. Here we focus on the component that applies to labor market indicators. The field work was conducted from September 2007 to August 2008 in villages and urban areas from 7 districts across Tanzania. : one district in the regions of Dodoma, Pwani, Dar es Salaam, Manyara, and Shinyanga region and two districts in the Kagera region. Households were randomly drawn from the listing of villages (urban clusters) and randomly assigned to one of the four labor experiments. The total sample is 1,344 households, with 336 households assigned to each of the four labor modules. Although the sample of 1,344 is not designed to be nationally representative of Tanzania, the districts were selected to capture variation in Tanzania both urban/rural as well as along other socio-economic dimensions. The basic characteristics of the SHWALITA households generally match the nationally representative data from the Household Budget Survey (2006/07) (results not presented here). Households were interviewed over 12 months, but because of small samples we do not explore the variations across main seasons (such as harvest time with peak labor demand and dry seasons with low demand).

The random assignment of households is validated when examining a set of household characteristics (Table 2). With the exception of household size and acres owned, slightly larger for households assigned the detailed self-report module, household traits are not statistically different across module assignment.

Turning to individuals, we classify individuals on the basis of the treatment they receive. Treatment is the combination of the module assigned to the household and sub-household assignment of individuals. In the case of proxy modules, one person is selected to self-report and to proxy report on a random household member. In the case of self-report modules, up to 2 persons over age 15 were randomly selected for to self-report. If persons randomly selected to self-report are unavailable, an alternative person is selected at random. In the “proxy” modules, one person self-reports in addition to reporting on another household member, so the number of self-reports is

about double the number of proxy reports. By survey assignment of respondents, we likewise observe random assignment from the set of household characteristics (Table 3).

4. Results

The results are presented in two parts. In the first part, we examine differences across the treatments for three key statistics regarding child labor: the labor force participation rate, weekly hours and the main activity. We also consider time use statistics focusing on two household chores that are often carried out by children, namely the collection of firewood and water. In the second part, we estimate the average treatment effects for each of these statistics using standard regression analysis (probit, OLS, multinomial logit) with labor force participation, weekly hours, and main activity as left hand side variable and the treatment as well as household and individual characteristics as right hand side variables. In both parts we are especially interested how the indicators generated by the short module compare to the ones from the detailed module; how the proxy reports compare to the self-reported ones, and how the combined short proxy results compare to the others.

Differences in Labor Indicators across Treatments

Table 4 presents the findings for labor force participation, weekly hours, and time spent on firewood and water collection, disaggregated by gender. In each case we test for a difference in means across treatment groups using a t-test. Row 1 of Table 4, for instance, first reports mean labor force participation of boys obtained from the short module (55.4%) and compares this with mean labor force participation for boys obtained from the detailed module (70.9%) and tests whether the difference (-15.4) is statistically different from zero. Domestic duties are not included in labor force participation.

We find that there is a significant difference in reported labor force participation for boys as well as girls. The short module generates 15% lower labor force participation rates. The difference between the proxy and self-reported statistic, however, is not

significant for either boys or girls (-2.3 and -2.6 respectively). The short proxy questionnaire also yields significantly lower labor force participation rates than the other designs for both genders, with more than 10 percentage points (pp) difference in both cases. Reported weekly hours (of those who are working) tend to be higher in the short module, but the difference is only significant for girls and not for boys. Response by proxy or self does not generate different results, while the short proxy module also generates higher working hours than the other modules only for girls (-4.2). Reported time spent on the collection of firewood and water tends to be insensitive to the survey method used, with two exceptions: boys are reported to spend more time on collecting firewood when reported by proxy, while girls are reported to spend less time on collecting firewood when using the short proxy module compared to others.

In Table 5 we turn to the distribution of main activities and their sector. Participation in domestic duties, while not formally included in a labor force statistic, are commonly collected, especially in a child labor context.⁶ This is usually done by including domestic duties as a possible answer to the questions regarding the main activity. This approach is followed in both the short and detailed module. However, in the detailed module, like in most multi purpose modules, this question is preceded by three other questions, which aim to find out the type of work of the respondent in more detail.⁷ The results in Table 5 indicate that this difference in questionnaire design between the short and detailed module has a large and statistically significant impact on reports by both men and women. We find that the short questionnaire yields lower participation in agriculture and more domestic duties for both boys and girls. ‘No work’ is also lower for girls, while there is almost no difference between the statistics generated by self and proxy (except for slightly less boys working in other sectors). The short proxy, compared to the others, on the other hand, generates higher figures for domestic duties for both boys and girls, lower figures for boys in agriculture and other sectors and lower figures for girls in ‘no work’.⁸

⁶ Measuring the extent of domestic duties allow for instance to see how important they are compared to traditional labor force participation.

⁷ The three questions at the start of the detailed modeule ask whether the respondent worked for a non-household member; for his own account, or on the farm or in the business of a household member (see appendix for the exact questions).

⁸ We aggregate all the other specialized sectors in one crest category; they are: mining/quarrying/manufacturing/processing, gas/water/electricity, construction, transport, buying and

Together this suggests that the additional questions work as ‘screening questions’ filtering out at least part of the domestic duties.⁹ It is not clear at this point whether some of the domestic duty reports that are ‘screened out’ in the detailed module, are then reclassified by respondents as “no work”, especially for girls. Indeed, the proportion of girls with no work is significantly higher for the detailed module. It is also higher in the short proxy module.

The above also reveals that the differences in the distribution of main activity across treatments are mostly driven by ‘shifts’ between work, domestic duties and no work. This is confirmed when we exclude the last two categories and assess the sectoral distribution of only those participating in the labor force, and find that there is no significant difference in sectoral distribution in the narrow sense across treatments.

Regression Results

To obtain the treatment effects we estimate Equation 1, controlling for individual characteristics (age, gender, education), household characteristics (household composition, asset holdings) and village-level fixed effects. In each case we include separate dummy variables for the short module, the proxy module and the combined short proxy module. The results for child labor force participation, obtained by using a probit model, are reported in the first columns of Table 6, and indicate that the short module yields 18.4 percentage points lower participation rates for boys and 32.6 percentage points lower for girls. But neither response by proxy or the use of a short proxy questionnaire produces statistics that are significantly different from the self or the other treatments respectively. These treatment effects are large and consistent with the widespread variation in child labor statistics noted by UCW (2008). In comparing our results to the descriptive analysis from the UCW paper on consistency in child labor statistics, they find that in the four African countries (Togo, Lesotho, Burkina Faso, and Ghana) where they could find a CWIQ survey which uses a shorter

selling, personal services, education/health, and public administration. Buying and selling activities are the most frequently reported of these activity (4-7%, depending on the treatment group).

⁹ It is not clear at this point whether the domestic duty reports of women that are ‘screened out’ in the detailed module are then reclassified by respondents as “no work”, as reports of “no work in the last seven days” are higher for women in the detailed modules than in the short proxy modules.

questionnaire design and another more detailed household survey implemented within a year or two of each other, the CWIQ results were also lower than the estimates from the more detailed survey. The last column of Table 6 report the results for weekly hours of work using OLS and indicates that weekly hours of work are only different for girls when asked by proxy or short, proxy.

Using a multinomial logit we also estimate how the treatments affect the allocation across three categories: agriculture, other sectors and the omitted category out of the labor force (containing domestic duties and no work). The results in Table 7 confirm that both boys and girls are less likely to be reported in agriculture and in other sectors than in no work and domestic duties when using the short module. They are also less likely to be reported in other sectors when using the proxy or the short proxy modules, and this effect is stronger for boys than for girls.

5. Conclusions

Child labor has received increased attention over the last decade and empirical measurement has now become common practice. How child labor is measured, does, however, differ across countries and within countries over time, potentially creating problems of comparability. Little is known whether different survey methods generate different results for child labor statistics. This paper presents a randomized experiment whereby we use two commonly varied survey design decisions, the level of detail in the questionnaire and the choice of respondent, to estimate the effects of these decisions on the labor statistics that they generate.

Our findings suggest that using the short method generates a much lower incidence of child labor, and has some effect on working hours. Both boys and girls are reported to have lower participation in agriculture and more domestic duties using the short module, or the short proxy module. Response by proxy, seems to have no effects on the statistics compared to the self-reported response by the child. These observations are confirmed when controlling for a wide range of individual, household and village characteristics. When we employ probit analysis to estimate the treatment effects we find that the short module yields 18.4 percentage points lower participation rates for boys and 32.6 percentage points lower for girls. Using a multinomial logit we find

that both boys and girls are less likely to be reported in agriculture and in other sectors than in no work and domestic duties when using the short module. However, neither response by proxy or the use of a short proxy questionnaire produces statistics that are significantly different from the self or the other treatments respectively. This is in sharp contrast with the effect of survey methods on labor statistics of adults, where it is response by proxy that has an effect most frequently (see Bardasi et al , 2009)

These results provide clear evidence that survey design *does* matter for measuring labor outcomes. Although we considered only on two dimensions of survey design, the evidence sends a strong signal: in order to compare, monitor and analyse child labor more attention needs to go to harmonizing the survey approach that generates these statistics.

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Table 1: Four sub groups receiving different treatments

	Self-reported	Response by proxy
Detailed module	Group A	Group B
Shortened module	Group C	Group D

Table 2: Household characteristics, by experiment assignment of household

	Households by experiment assignment			
	Detailed	Detailed	Short	Short
	Self-report	Proxy	Self-report	Proxy
Head: female (%)	21.7	19.6	19.6	19.0
Head: age	46.5	45.8	45.8	47.7
Head: years of schooling	4.6	4.7	4.8	4.7
Head: married (%)	72.3	74.1	70.8	75.0
Household size*	5.5	5.0	5.0	5.3
Adult equivalence household size*	4.0	3.6	3.6	3.9
Share of members less 6 years*	19.3	18.2	17.5	17.1
Share of members 6-15 years	24.9	23.7	23.8	24.0
Share of members 65+*	7.4	6.7	7.9	9.8
Concrete/tile flooring (non-earth) (%)	25.0	25.3	24.7	25.9
Main source for lighting is electricity/generator/solar panels (%)	10.4	8.9	10.4	11.3
Owns a mobile telephone (%)	30.1	30.1	28.6	32.5
Bicycle (%)	42.9	39.9	44.3	44.9
Owns any land (%)	78.9	80.1	78.3	81.3
Acres of land owned (incl 0s)*	4.6	3.7	3.4	4.0
Month of interview (1=Jan, 12=Dec)	6.0	5.9	5.9	5.9
N	336	336	336	336

Notes: * indicates statistical difference across at least two pairs at 5%.

**Table 3: Household characteristics of individuals,
by experiment assignment of individual**

	Individual treatment			
	Detailed	Detailed	Short	Short
	Self-report	Proxy	Self-report	Proxy
Head: female (%)	19.6	17.5	18.9	16.8
Head: age*	46.0	47.4	46.7	48.2
Head: years of schooling	4.6	4.7	4.7	4.8
Head: married (%)*	75.3	80.4	74.8	82.3
Household size*	5.4	5.8	5.2	6.2
Adult equivalence household size*	3.9	4.2	3.8	4.5
Share of members less 6 years*	19.3	18.1	17.7	17.6
Share of members 6-15 years*	25.4	27.9	24.6	28.6
Share of members 65+*	6.4	5.0	8.2	6.5
Concrete/tile flooring (non-earth) (%)	24.3	25.7	24.5	24.6
Main source for lighting is electricity/generator/solar panels (%)	9.4	10.4	10.4	11.8
Owns a mobile telephone (%)	29.9	32.3	29.8	33.5
Bicycle (%)*	43.2	43.2	45.9	49.6
Owns any land (%)*	79.9	83.2	80.7	83.6
Acres of land owned (incl 0s)*	4.3	4.1	3.8	4.5
Month of interview (1=Jan, 12=Dec)	6.1	5.8	5.9	5.8
N	939	530	935	536

Notes: * indicates statistical difference across at least two pairs at 5%.

Among the sample assigned to self-report, some were unavailable and are re-categorized as a proxy response: 32 of 635 respondents (5%) for the detailed module, 35 of 636 respondents (6%) of the shortened module.

Table 4: Child labor statistics by survey assignment

	A.			B.			C.		
	Short	Detailed	Diff	Proxy	Self-rep	Diff	Short Proxy	Other	Diff
<i>Labor force participation (%)</i>									
Boys	55.4	70.9	-15.4***	61.7	64.0	-2.3	54.2	66.0	-11.8**
Girls	43.5	58.9	-15.4***	50.0	52.6	-2.6	43.9	54.5	-10.6**
<i>Weekly hours last week</i>									
Boys	15.0	13.2	1.78	14.3	14.0	-0.3	14.3	14.1	-0.2
Girls	15.1	11.5	3.58***	13.4	13.3	-0.1	16.2	12	-4.2***
<i>Minutes of firewood collection in last 24 hours</i>									
Boys	27	29	-2	34	20	14**	32	26	6
Girls	19	20	-1	17	23	6	13	22	-9**
<i>Minutes of water collection in last 24 hours</i>									
Boys	25	24	1	26	23	3	24	24	0
Girls	37	33	4	35	36	-1	36	35	1

Notes: *** indicates statistical significant mean differences at 1%, ** at 5%. Samples for weekly hours and daily earnings are conditional on any wage work in the last 7 days (they exclude zeros).

Table 5: Main Activity in Last 7 Days by survey assignment

	Boys			Girls		
<i>A. Short or Detailed</i>	Short	Detailed	Diff	Short	Detailed	Diff
<i>All individuals</i>						
Agriculture	52.5	68.5	-16.0***	42.9	58.2	-15.4***
Other sectors	2.9	2.4	0.5	0.6	0.7	0
Domestic Duties	30.2	9.4	20.8***	44.8	8.2	36.6***
No work	14.4	19.7	-5.3	11.7	32.9	-21.2***
Number of individuals	139	127		154	146	
<i>B. Proxy or Self-rep</i>	Proxy	Self-rep	Diff	Proxy	Self-rep	Diff
<i>All individuals</i>						
Agriculture	60.3	60.0	0.3	49.5	51.8	-2.3
Other sectors	1.4	4	-2.6*	0.5	0.8	-0.3
Domestic Duties	21.3	19.2	2.1	26.9	27.2	-0.3
No work	17.0	16.8	0.2	23.1	20.2	2.9
Number of individuals	141	125		186	114	
<i>C. Short proxy or not</i>	Short, Proxy	Other	Diff	Short, Proxy	Other	Diff
<i>All individuals</i>						
Agriculture	54.2	62.4	-8.2	42.9	54.0	-11.1**
Other sectors	0	3.6	-3.6*	1.0	0.5	0.5
Domestic Duties	29.2	17.0	12.2**	43.9	18.8	25.1***
No work	16.7	17.0	-0.3	12.2	26.7	-14.5***
Number of individuals	72	194		98	202	

Notes: Other sectors are specifically listed on the questionnaire and include mining/quarrying, manufacturing/Processing, gas/water/electricity, construction, transport, trading, personal services, education/health, public administration, and other. *** indicates statistical significant mean differences with the detailed self-report at 1%, ** at 5%, * at 1%.

Table 6: Regression analysis of labor statistics by survey assignment and gender

	(1)			(2)		
	Labor Force Participation			Conditional Hours Worked		
	Pooled	Boys	Girls	Pooled	Boys	Girls
Short	-0.200*** (0.054)	-0.184* (0.105)	-0.326*** (0.098)	0.113 (0.172)	0.267 (0.200)	-0.219 (0.176)
Proxy	-0.093 (0.077)	-0.0695 (0.127)	-0.119 (0.112)	-0.0168 (0.151)	0.261 (0.240)	-0.360* (0.206)
Short, proxy interaction	0.0502 (0.102)	0.081 (0.189)	0.14 (0.130)	0.103 (0.199)	-0.125 (0.318)	0.582*** (0.206)
Observations	566	259	299	320	167	153

Notes: Standard errors in parentheses. *** indicates statistical significance at 1%, ** at 5%, * at 1%. Regressions control for household and individual characteristics as well as village fixed effects. Labor force participation estimates are conducted using a probit model and we report marginal effects. Sample sizes between the pooled regression and the boys plus girls regressions vary because some observations are perfectly predicted by the village fixed effects.

Table 7: Regression analysis of main activity in last 7 days by survey assignment and gender

	Pooled		Boys		Girls	
	Agriculture + Other Sectors	Domestic Work	Agriculture + Other Sectors	Domestic Work	Agriculture + Other Sectors	Domestic Work
Short	0.556** (0.275)	2.676*** (0.541)	0.393 (0.580)	2.672*** (0.765)	0.24 (0.533)	2.987*** (0.858)
Proxy	-0.262 (0.355)	0.351 (0.542)	0.144 (0.620)	1.372** (0.656)	-0.456 (0.520)	-0.0845 (0.858)
Short, proxy interaction	-0.0231 (0.508)	-0.448 (0.667)	-0.138 (0.993)	-1.499* (0.825)	0.382 (0.638)	0.0359 (1.064)
Observations	566	566	266	266	300	300

Notes: Regressions control for household and individual characteristics as well as village fixed effects. The multinomial logit model uses three categories: agriculture and other sectors, domestic work, and the omitted category, no work. Relative risk ratios are reported. See Table 5 note for explanation of other sectors. Sample sizes between the pooled regression and the boys plus girls regressions vary due to dropped observations from perfect prediction from village fixed effects specification. *** indicates statistical significance at 1%, ** at 5%, * at 1%.

Appendix: Shortened and Detailed Questionnaire Modules

SHORTENED MODULE

1. Did [NAME] do any type of work in the <u>last seven days</u> ? Even if for 1 hour	YES...1 (»3) NO....2	
2. Did NAME do any type of work in the <u>last 12 months</u> ?	YES...1 (»12) NO....2 (»12)	
3. What is NAME 's primary occupation in NAME 's main job? MAIN OCCUPATION IN THE LAST 7 DAYS	a. OCCUPATION	b. OCCUPATION CODE (TO BE FILLED IN BY SUPERVISOR)
4. In what sector is this main activity? READ ALL RESPONSES	AGRICULTURE. . . .1 MINING/QUARRYING .2 MANUFACTURING/ PROCESSING. . . .3 GAS/WATER/ ELECTRICITY4 CONSTRUCTION. . . .5	TRANSPORT.6 BUYING AND SELLING . . .7 PERSONAL SERVICES. . . .8 EDUCATION/HEALTH9 PUBLIC ADMINISTRATION .10 DOMESTIC DUTIES11 OTHER, SPECIFY. . . .12
5. For how many hours did NAME work in the <u>last 7 days</u> . IF DID NOT WORK ENTER <u>0</u>	HOURS	
6. What is NAME 's employment status in NAME 's main job? READ ALL RESPONSES	PAID EMPLOYEE1 SELF-EMPLOYED WITH EMPLOYEES .2 (>>12) SELF-EMPLOYED, NO EMPLOYEES . .3 (>>12)	UNPAID FAMILY WORKER. .4 (>>12) DOMESTIC EMPLOYEE. . .5 OTHER, SPECIFY.6
7. Who is NAME 's employer in NAME 's main job? READ ALL RESPONSES	GOVERNMENT. . . .1 NGO2 COOPERATIVE . . .3 INTERNATIONAL ORGANIZATION. . .4	PRIVATE SECTOR. . .5 HOUSEHOLD6 OTHER, SPECIFY. . .8
8. Did NAME receive wages, salary, cash payments or other in kind payments from this employer for this work?	YES...1 NO....2 (»12)	
9. How much was NAME 's last payment? IF NONE ENTER 0	a. AMOUNT (in TSH)	b. TIME UNIT HOUR1 DAY2 WEEK3 MONTH4 YEAR5
10. Did [...] receive any in-kind payment or regular allowance for the work [...] performed for this employer? IF NONE ENTER 0	a.IN KIND ITEM ALLOWANCE.1 HOUSING.2 TRANSPORT3 PRODUCE.4 ANIMALS.5 MEALS.6 CLOTHING7 MEDICATION8 OTHER, DURABLE GOODS SPECIFY.9 OTHER, NON-DURABLE GOODS SPECIFY . .10	b. VALUE (ESTIMATE AMOUNT IN TSH) c. TIME UNIT HOUR1 DAY.2 WEEK3 MONTH. . . .4 YEAR5
11. Did [NAME] receive any other in-kind payment or regular allowance for the work [NAME] performed for this employer? IF NONE ENTER 0	a.IN KIND ITEM ALLOWANCE.1 HOUSING.2 TRANSPORT.3	b. VALUE (ESTIMATE AMOUNT IN TSH) c. TIME UNIT

	PRODUCE. 4	HOUR 1
	ANIMALS. 5	DAY. 2
	MEALS. 6	WEEK 3
	CLOTHING 7	MONTH. . . . 4
	MEDICATION 8	YEAR 5
	OTHER, DURABLE GOODS SPECIFY. 9	
	OTHER, NON-DURABLE GOODS SPECIFY . . 10	
12. Now I would like to ask about activities that you or [NAME] does for the household. How much time in the last 24 hours did you or [NAME] spend on any of the following activities for the household?		
IF NONE ENTER 0		
a. COLLECTING FIREWOOD?	HOURS	MINUTES
b. FETCHING WATER?	HOURS	MINUTES
13. Does you or [NAME] usually do any of the following activities?		
a. WASHING CLOTHES?	YES...1	NO....2
b. COOKING?	YES...1	NO....2
c. TAKING CARE OF SICK/ELDERLY?	YES...1	NO....2

DETAILED MODULE

1. During the <u>past 7 days</u> , has [NAME] worked for someone who is not a member of your household, for example, an enterprise, company, the government or any other individual?	YES...1 (»3) NO....2
2. At any time during the <u>past 12 months</u> , has [NAME] worked for someone who is not a member of your household, for example, an enterprise, company, the government or any other individual?	YES...1 NO....2
3. During the <u>past 7 days</u> , has [NAME] worked on a farm owned, borrowed or rented by a member of your household, whether in cultivating crops or in other farm maintenance tasks, or have you cared for livestock belonging to a member of your household?	YES...1 (»5) NO....2
4. At any time during the <u>last 12 months</u> has [NAME] worked on a farm owned, borrowed or rented by a member of your household, whether in cultivating crops or in other farm maintenance tasks, or have you cared for livestock belonging to a member of your household?	YES...1 NO....2

5. During the <u>past 7 days</u> , has [NAME] worked on your own account or in a business enterprise belonging to you or someone in your household, for example, as a trader, shop-keeper, barber, dressmaker, carpenter or taxi driver?	YES...1 (»7) NO....2
6. At any time during the <u>last 12 months</u> , has [NAME] worked on your own account or in a business enterprise belonging to you or someone in your household, for example, as a trader, shop-keeper, barber, dressmaker, carpenter or taxi driver?	YES...1 NO....2
7. CHECK THE ANSWERS TO QUESTIONS 1, 3 AND 7. (WORKED IN <u>LAST 7 DAYS</u>)	ANY YES..1 ALL NO...2 (»37)
8. What is [NAME]'s primary occupation in [NAME]'s main job? (MAIN OCCUPATION IN THE LAST 7 DAYS)	a. OCCUPATION b. OCCUPATION CODE (TO BE FILLED IN BY SUPERVISOR)
9. In what sector is this main activity?	AGRICULTURE. . . .1 MINING/QUARRYING .2 MANUFACTURING/ PROCESSING. . . .3 GAS/WATER/ ELECTRICITY4 CONSTRUCTION. . . .5 TRANSPORT.6 BUYING AND SELLING . . .7 PERSONAL SERVICES. . . .8 EDUCATION/HEALTH9 PUBLIC ADMINISTRATION .10 DOMESTIC DUTIES11 OTHER, SPECIFY. . . .12
10. For how many hours did [NAME] work in the <u>last 7 days</u> in [NAME]'s main job? (IF NOT WORKED, ENTER 0)	HOURS
11. What is [NAME]'s employment status in [NAME]'s main job? READ ALL RESPONSES	PAID EMPLOYEE1 SELF-EMPLOYED WITH EMPLOYEES .2 (>>17) SELF-EMPLOYED, NO EMPLOYEES . .3 (>>17) UNPAID FAMILY WORKER. .4 (>>17) DOMESTIC EMPLOYEE. . .5 OTHER, SPECIFY. . . .6
12. Who is [NAME]'s employer in [NAME]'s main job? READ ALL RESPONSES	GOVERNMENT. . . .1 NGO2 COOPERATIVE . . .3 INTERNATIONAL ORGANIZATION. . .4 PRIVATE SECTOR. . .5 HOUSEHOLD6 OTHER, SPECIFY. . .8
13. Did [NAME] receive wages, salary, cash payments or other in kind payments from this employer for this work?	YES...1 NO....2 (»17)
14. How much was [NAME]'s last payment?	a. AMOUNT (in TSH) b. TIME UNIT HOUR1 DAY2 WEEK3 MONTH4 YEAR5
15. Did [NAME] receive any in-kind payment or regular allowance for the work [NAME] performed for this employer?	a. IN KIND ITEM ALLOWANCE.1 HOUSING.2 TRANSPORT.3 PRODUCE.4 ANIMALS.5 MEALS.6 CLOTHING7 MEDICATION8 OTHER, DURABLE GOODS SPECIFY.9 b. VALUE (ESTIMATE AMOUNT IN TSH) c. TIME UNIT HOUR1 DAY. . . .2 WEEK3 MONTH. . . .4 YEAR5

	OTHER, NON-DURABLE GOODS SPECIFY . . 10	
16. Did [NAME] receive any other in-kind payment or regular allowance for the work [NAME] performed for this employer?	a. IN KIND ITEM ALLOWANCE. 1 HOUSING. 2 TRANSPORT. 3 PRODUCE. 4 ANIMALS. 5 MEALS. 6 CLOTHING 7 MEDICATION 8 OTHER, DURABLE GOODS SPECIFY. 9 OTHER, NON-DURABLE GOODS SPECIFY . . 10	b. VALUE (ESTIMATE AMOUNT IN TSH) c. TIME UNIT HOUR 1 DAY. 2 WEEK 3 MONTH. . . . 4 YEAR 5
17. Did [NAME] have a second job or economic activity in the <u>last seven days</u> ?	YES...1 NO....2 (»37)	
18. What is [NAME]'s primary occupation in [NAME]'s second job in the last 7 days?	a. OCCUPATION b. OCCUPATION CODE (TO BE FILLED IN BY SUPERVISOR)	
19. In what sector is this secondary activity? READ ALL RESPONSES	AGRICULTURE. . . . 1 MINING/QUARRYING . 2 MANUFACTURING/ PROCESSING. . . . 3 GAS/WATER/ ELECTRICITY 4 CONSTRUCTION. . . . 5	TRANSPORT. 6 BUYING AND SELLING . . . 7 PERSONAL SERVICES. . . . 8 EDUCATION/HEALTH 9 PUBLIC ADMINISTRATION .10 DOMESTIC DUTIES 11 OTHER, SPECIFY.12
20. For how many hours did [NAME] work in the <u>last 7 days</u> in [NAME]'s second job? IF NOT WORKED ENTER 0	HOURS	
21. What is [NAME]'s employment status in [NAME]'s second job? READ ALL RESPONSES	PAID EMPLOYEE1 SELF-EMPLOYED WITH EMPLOYEES .2 (>>27) SELF-EMPLOYED, NO EMPLOYEES . .3 (>>27)	UNPAID FAMILY WORKER. .4 (»27) DOMESTIC EMPLOYEE. . . 5 OTHER, SPECIFY.6
22. Who is [NAME]'s employer in [NAME]'s second job? READ ALL RESPONSES	GOVERNMENT. . . . 1 NGO 2 COOPERATIVE . . . 3 INTERNATIONAL ORGANIZATION. . . 4	PRIVATE SECTOR. . . 5 HOUSEHOLD 6 OTHER, SPECIFY. . . 8
23. Did [NAME] receive wages, salary, cash payments or other in kind payments from this employer for this work?	YES...1 NO....2 (»27)	
24. How much was [NAME]'s last payment?	a. AMOUNT (in TSH)	b. TIME UNIT HOUR 1 DAY 2 WEEK 3 MONTH 4 YEAR 5
25. Did [NAME] receive any in-kind payment or regular allowance for the work [NAME] performed for this employer? IF NONE ENTER 0	a. IN KIND ITEM ALLOWANCE. 1 HOUSING. 2 TRANSPORT. 3 PRODUCE. 4 ANIMALS. 5 MEALS. 6 CLOTHING 7	b. VALUE (ESTIMATE AMOUNT IN TSH) c. TIME UNIT HOUR 1 DAY. 2 WEEK 3 MONTH. . . . 4

	MEDICATION 8 OTHER, DURABLE GOODS SPECIFY 9 OTHER, NON-DURABLE GOODS SPECIFY . . 10	YEAR 5
26. Did [NAME] receive any other in-kind payment or regular allowance for the work [NAME] performed for this employer? IF NONE ENTER 0	a. IN KIND ITEM ALLOWANCE 1 HOUSING 2 TRANSPORT 3 PRODUCE 4 ANIMALS 5 MEALS 6 CLOTHING 7 MEDICATION 8 OTHER, DURABLE GOODS SPECIFY 9 OTHER, NON-DURABLE GOODS SPECIFY . . 10	b. VALUE (ESTIMATE AMOUNT IN TSH) c. TIME UNIT HOUR 1 DAY 2 WEEK 3 MONTH . . . 4 YEAR 5
27. Did [NAME] have a third job or economic activity in the <u>last seven</u> days?	YES...1 NO....2 (»37)	
28. What is [NAME]'s primary occupation in [NAME]'s third job?	a. OCCUPATION b. OCCUPATION CODE (TO BE FILLED IN BY SUPERVISOR)	
29. In what sector is this third activity? READ ALL RESPONSES	AGRICULTURE 1 MINING/QUARRYING . 2 MANUFACTURING/ PROCESSING 3 GAS/WATER/ ELECTRICITY 4 CONSTRUCTION . . . 5	TRANSPORT 6 BUYING AND SELLING . . 7 PERSONAL SERVICES . . . 8 EDUCATION/HEALTH . . . 9 PUBLIC ADMINISTRATION .10 DOMESTIC DUTIES11 OTHER, SPECIFY12
30. For how many hours did [NAME] work in the <u>last 7 days</u> in [NAME]'s third job?	HOURS	
31. What is [NAME]'s employment status in [NAME]'s second job? READ ALL RESPONSES	PAID EMPLOYEE 1 SELF-EMPLOYED WITH EMPLOYEES . 2 (>>37) SELF-EMPLOYED, NO EMPLOYEES . . 3 (>>37)	UNPAID FAMILY WORKER . . 4 (»37) DOMESTIC EMPLOYEE . . . 5 OTHER, SPECIFY 6
32. Who is [NAME]'s employer in [NAME]'s second job? READ ALL RESPONSES	GOVERNMENT 1 NGO 2 COOPERATIVE . . . 3 INTERNATIONAL ORGANIZATION . . 4	PRIVATE SECTOR . . . 5 HOUSEHOLD 6 OTHER, SPECIFY . . . 8
33. Did [NAME] receive wages, salary, cash payments or other in kind payments from this employer for this work?	YES...1 NO....2 (»37)	
34. How much was [NAME]'s last payment?	a. AMOUNT (in TSH)	b. TIME UNIT HOUR 1 DAY 2 WEEK 3 MONTH 4 YEAR 5
35. Did [NAME] receive any in-kind payment or regular allowance for the work [NAME] performed for this employer? IF NONE ENTER 0	a. IN KIND ITEM ALLOWANCE 1 HOUSING 2 TRANSPORT 3 PRODUCE 4 ANIMALS 5 MEALS 6	b. VALUE (ESTIMATE AMOUNT IN TSH) c. TIME UNIT HOUR 1 DAY 2 WEEK 3

	CLOTHING 7 MONTH. . . . 4 MEDICATION 8 YEAR 5 OTHER, DURABLE GOODS SPECIFY. 9 OTHER, NON-DURABLE GOODS SPECIFY . . 10
36. Did [NAME] receive any other in-kind payment or regular allowance for the work [NAME] performed for this employer? IF NONE ENTER 0	a. IN KIND ITEM b. VALUE ALLOWANCE. 1 (ESTIMATE AMOUNT IN TSH) HOUSING. 2 TRANSPORT. 3 c. TIME UNIT PRODUCE. 4 HOUR 1 ANIMALS. 5 DAY. 2 MEALS. 6 WEEK 3 CLOTHING 7 MONTH. . . . 4 MEDICATION 8 YEAR 5 OTHER, DURABLE GOODS SPECIFY. 9 OTHER, NON-DURABLE GOODS SPECIFY . . 10
37. Now I would like to ask about you or [NAME]'s activities that you or [NAME] does for the household. How much time in the last 24 hours did you or [NAME] spend on any of the following activities for the household?	
a. COLLECTING FIREWOOD?	HOURS MINUTES
b. FETCHING WATER?	HOURS MINUTES
38. Does [NAME] usually do any of the following activities?	
a. WASHING CLOTHES?	YES...1 NO....2
b. COOKING?	YES...1 NO....2
c. TAKING CARE OF SICK/ELDERLY?	YES...1 NO....2