

TIME DEFICITS AND POVERTY

The Levy Institute Measure of Time and Consumption Poverty for Turkey

Ajit Zacharias, Thomas Masterson, and Emel Memiş

January 2014
Final Report¹



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Preface

This report presents findings from the research project “Research and Policy Development on Time Use and Poverty” that the Levy Economics Institute undertook in collaboration with the United Nations Development Program-Turkey. The research was conducted jointly by scholars in the *Distribution of Income and Wealth* and *Gender Equality and the Economy* programs. The central objective of the project was to develop a measure of time and consumption poverty for Turkey that took into account household production (unpaid work) requirements. Based on this new measure, estimates of poverty are presented and compared with those calculated according to the official poverty lines. The research presented here is part of an ongoing project at the Levy Institute. Publications related to the project are available at our website. Similar studies have been completed for certain Latin American countries and the Republic of Korea.

Policies that are in place in Turkey to promote gender equality and economic well-being need to be reconsidered. This reconsideration should be based on a deeper understanding of the linkages between the functioning of labor markets, unpaid household production activities, and existing arrangements of social provisioning—including social care provisioning. Our hope is that the research reported here and the questions it raises will contribute to this goal.

We wish to express our gratitude to United Nations Development Program-Turkey, especially Berna Bayazit, for her financial and intellectual support, without which this undertaking would not have been possible. We are also grateful to our colleague and director of the Gender Equality program at the Levy Institute, Rania Antonopoulos, for her valuable support of the research conducted in this project. In addition, we also would like to convey our thanks to Özlem Sarıca and Mehmet Ali Karadağ at the Turkish Statistical Institute, who helped us gather the necessary information about the datasets we used. We also want to thank A. Mert Yakut for excellent research assistance. The results reported here represent our first step in contributing to the understanding of gender inequality and constraints faced by low-income households in Turkey. We plan to conduct additional research on Turkey as well as comparisons between Turkey and other countries as a part of our work on the Levy Institute Measure of Time and Income Poverty.

Executive Summary

Official poverty lines in Turkey and other countries ignore the fact that unpaid household production activities that contribute to the fulfillment of material needs and wants are essential for the household to reproduce itself as a unit. This omission has consequences. Taking household production for granted when we measure poverty yields an unacceptably incomplete picture and therefore estimates based on such an omission provide inadequate guidance to policymakers.

Standard measurements of poverty assume that all households and individuals have enough *time* to adequately attend to the needs of household members—including, for example, children. These tasks are absolutely necessary for attaining a minimum standard of living. But this assumption is false. For numerous reasons, some households may not have sufficient time, and they thus experience what are referred to as “time deficits.” If a household officially classified as nonpoor has a time deficit and cannot afford to cover it by buying market substitutes (e.g., hire a care provider), that household will encounter hardships not reflected in the official poverty measure. To get a more accurate calculus of poverty, we have developed the Levy Institute Measure of Time and Consumption Poverty (LIMTCP), a two-dimensional measure that takes into account *both* the necessary consumption expenditures and household production time needed to achieve a minimum living standard.

Our estimates for 2006 show that the LIMTCP poverty rate of persons was about *10 percentage points higher* than the official poverty rate (40 versus 30 percent). Ignoring time deficits in household production resulted in a grave undercounting of the poor in Turkey, as the ranks of the poor stood at 29.0 million by our reckoning compared to 21.4 million persons by the official measure, indicating the existence of 7.6 million hidden-poor persons. In the rural areas of Turkey, where poverty is more pervasive, we found that more than two-thirds of rural children lived in poverty. The LIMTCP estimates also expose the fact that the consumption shortfall of poor households is greater than implied by the official statistics (372 liras compared to 214 liras, or 1.74 times greater). These findings suggest that serious consideration should be given to the design of income-support programs to ensure that they (1) broaden their coverage to include the hidden poor, and (2) increase the level of support to offset the consumption shortfall emanating from time deficits.

There was a stark gender disparity in the incidence of time poverty among the employed, even after controlling for hours of employment. Time poverty is minuscule among part-time (defined as working less than 35 hours per week) male workers while it is sizeable among part-time female workers (4 versus 37 percent). Among full-time workers, the time poverty rate of women is nearly twice that of men (37 versus 70 percent). This suggests that the source of the gender difference in time poverty does not lie mainly in the difference in the hours of employment; it lies in the greater share of the household production activities that women undertake.

Rates of time poverty are also markedly different across the (LIMTCP) poverty line. Time poverty among consumption-poor households is much higher than among consumption-nonpoor (65 versus 37 percent). Similar patterns can also be observed for employed men (42 versus 29 percent) and women (68 versus 48 percent). Since other types of social and economic disadvantages tend to accompany income poverty, it is quite likely that the negative effects of time poverty will affect the income-poor disproportionately compared to the income-nonpoor.

We also examined the effectiveness of job creation for poverty reduction via a microsimulation model. The simulated scenario assumes that every nonemployed but employable adult becomes employed in a job that best fits (in a statistical sense) their characteristics (such as age and educational attainment). Under the prevailing patterns of pay and hours of employment, we found that there is a substantial reduction in consumption poverty as a result of nonemployed persons receiving employment. Yet, substantial proportion of individuals (26 percent) remained consumption-poor. The official consumption poverty rate for adults in Turkey as a whole was reduced to 11 percent from 26 percent, while the time-adjusted consumption poverty rate fell to 26 percent from 36 percent. These are both substantial reductions, but it is noteworthy that the time-adjusted consumption poverty rate is practically identical to the actual official rate for 2006. A large proportion of the newly employed enter into the ranks of the time-deficient working poor or near-poor.

Tackling the problems of gender inequality and challenges in the economic well-being of the low-income working population requires, in addition to creating more jobs, progress toward establishing a regime of decent wages, regulating the length of the standard workweek, and adopting other measures, such as child care provisioning. The crucial problem of income and time deficits can only be adequately dealt with in such a coherent and integrated manner. We

welcome the current emphasis on promoting women's employment. However, our findings suggest that promotion of "flexible" work arrangements and self-employment may not reduce time or consumption deficits for most women. The crucial links between employment and social policies are often overlooked in such narrowly conceived strategies.

1 INTRODUCTION

Conventional measures of poverty are based on household income or expenditures.² Poverty thresholds used in conventional measures implicitly assume that to attain any given standard of living, households must dedicate a certain minimum amount of time to household production which is combined with their income (or consumption expenditures). However, some poor and near-poor households may lack sufficient time for household production. As a consequence, existing poverty measures inadvertently assign misleading rankings: households that are reported as non-poor are poor. They also underestimate the income deficits (the difference between the poverty line and income) faced by some poor people. The bias stemming from the misclassification and underestimation of income deficits renders the policies and programs that use the official poverty line as the anchor subject to problems of inequity and inefficiency. Our study develops thresholds that aim to correct the bias in the official thresholds and thus contributes to a better measurement of poverty. Additionally, our analysis of the results from the new measure points to the need for more efficient and equitable poverty reduction policies.

The solution to this problem is the construction of thresholds that include, in addition to the minimal amount of money income (or consumption expenditures), the replacement cost of the required minimum amount of household production. This is important for the design of public policies, particularly with respect to: (a) combating poverty, (b) promoting a balance between work and other life-sustaining and enriching activities, and (c) promoting gender equitable interventions. Such a lens will allow policy making to better determine the allocation of diverse social support measures, increasing the efficiency of public investment on social spending. Different segments of the population will require cash transfers, in-kind transfers, or public service employment to alleviate poverty. Indeed, there may be segments that would require specific combinations of all of the above.

The onset of the recent economic crisis has placed higher priority on the issue of combating poverty in policy agendas around the globe, including Turkey. Income inequality, economic vulnerability and jobless growth are not phenomena merely due to the recent crisis; they appear to be structural and persistent aspects of the recent phase of economic development in Turkey. In addition to these structural issues, Turkey is currently facing the social risks

² Recently there are some new efforts to construct multidimensional poverty measures for Turkey by TUIK for which the preparations and work are still ongoing.

experienced by other middle income countries: the expansion of the need for care services; the increase in the social care deficit that comes along with demographic transformation; population policies; shifts in the welfare regime; industrialization and internal migration from rural to urban areas; and changing family and household structure.

The report is organized as follows. In the first section of the next chapter (2.1), we provide an overview of recent trends in employment as well as trends in household income distribution and poverty. This is followed by a review of the major studies on poverty, with a special emphasis on studies that focus on the gender and labor market aspects of poverty (2.2). We then turn to a discussion of the welfare state regime (2.3) and the official measure of poverty in Turkey (2.4). In the subsequent chapter (Chapter 3), we provide an exposition of our methodology and data sources. The following two chapters are devoted to the discussion of the findings. In Chapter 4, we describe the patterns of time deficits and their impoverishing effects on individuals and households. The next chapter (Chapter 5) describes the results from our labor force simulation. The concluding chapter (Chapter 6) outlines the policy implications suggested by the broad approach of the study and its specific findings.

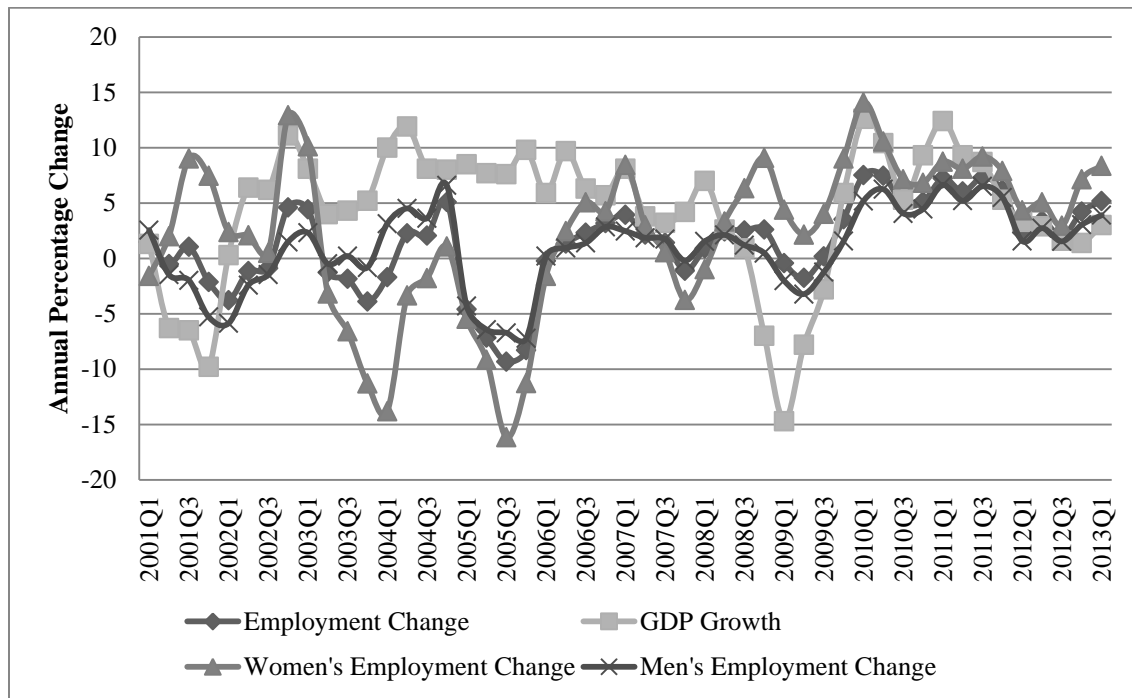
2 BACKGROUND AND LITERATURE REVIEW

2.2 Trends in Employment, Income and Poverty

2.2.1 Trends in the employment of men and women

Growth in employment has lagged behind output growth by a substantial margin in the recent past (Figure 1). Excluding 2001 (a crisis year), the average quarterly growth rate of GDP was 5.2%, whereas the rate of change in employment averaged only 1.4% over the period 2002.I – 2013.I Women’s employment had generally grown at a faster rate than men’s during most of the recent past (albeit from a much lower base). Unemployment rates for both sexes rose sharply during the early 2000s and remained stubbornly high (around 10 percent) before rising sharply toward the end of the 2000s, and then tapering off somewhat, especially for men (Figure 2). The slower decline in women’s unemployment rate since 2011 was partly a reflection of the rising rate of labor force participation among women, a trend that has been quite marked since 2008 (Figure 3). In spite of the rise in female participation, the gender gap still remains very high with a little under two-thirds of women that are out of the labor force citing “being a housewife” as the main reason for their nonparticipation (see the next section for further discussion). The tardy growth in employment suggests that although Turkey now enjoys a demographic window of opportunity for accelerated economic growth—the combination of a relatively large share of working-age population, significant increase in the size of the labor force, and slow growth in overall population—this potential may not be realized unless employment-centered policies are in place.

Figure 1 Annualized Rate of Change in Employment and GDP Growth (2001.I to 2013.I)



Source: Turkish Statistical Institute (TUIK), Household Labour Force Surveys.

Note: Quarterly employment data has been revised by TUIK based on 2008 Population Projections starting from 2005. Results of the Household Labour Force Surveys were announced on quarterly basis between 2000-2003. Starting with January 2005, Household Labour Force Survey results are announced in every month based on the moving averages of three months. The weighting coefficients are calculated based on the mid-month population projections and results are identified by the name of the middle month for the sake of clarity. In this new series, the Press Releases of February, May, August and November refer to the results of 1st, 2nd, 3rd and 4th quarter respectively which has been published since 2000.

Figure 2 Seasonally Adjusted Unemployment Rates (2001.I to 2013.I)



Source: Turkish Statistical Institute (TUIK), Household Labour Force Surveys.

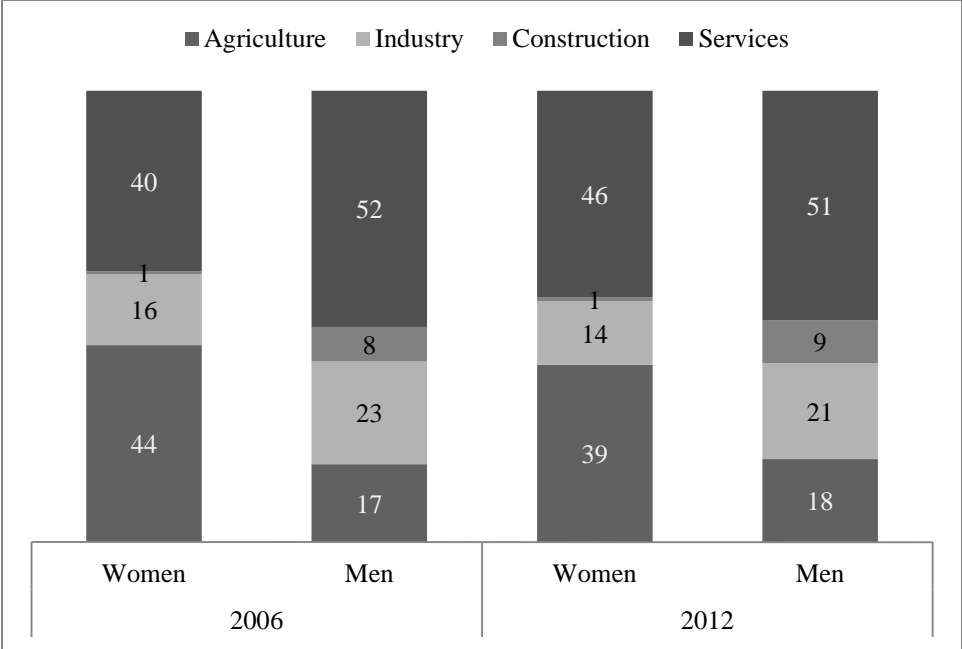
Figure 3 Seasonally Adjusted Labor Force Participation Rates (2001.I to 2013.I)



Source: Turkish Statistical Institute (TUIK), Household Labour Force Surveys.

The sectoral distribution of employment by sex reveals that, in 2012, about 51 and 46 percent, respectively, of all employed men and women were in Services (Figure 4). There was a much larger difference in the proportion of employment in Industry, with 30 percent of employed men engaged in Industry including the Construction sector compared to only 15 percent of employed women. In so far as employment in the third main sector, Agriculture, is concerned, the gender disparity runs in the other direction: while only 18 percent of all employed men were in this sector, about 40 percent of all employed women work in agriculture by 2012.

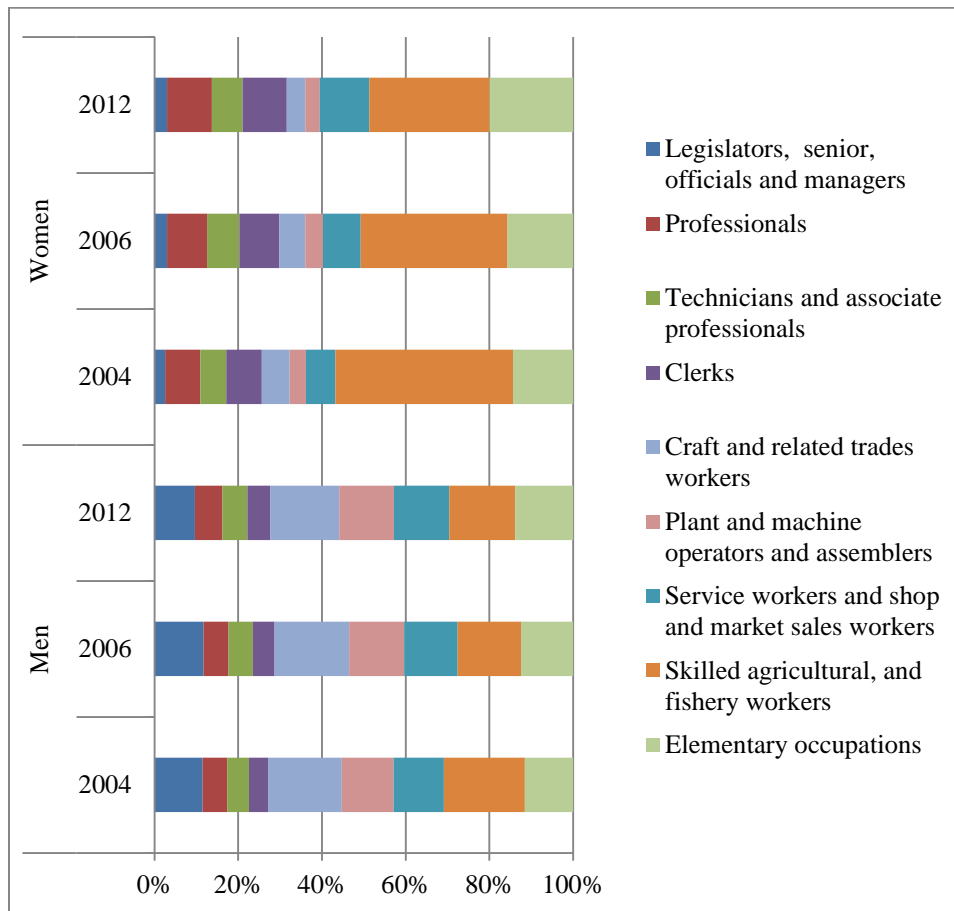
Figure 4 Sectoral Employment Shares by Sex, 2006 and 2012 (percent)



Source: Turkish Statistical Institute (TUIK), Household Labour Force Surveys.

Sex segregation in employment is visible not just in terms of the sectoral composition of employment, but also in the occupational distribution of employment. In 2012, almost 50% percent of employed women worked either in Elementary occupations, or in Skilled agricultural or fishery occupations as compared to 30% percent of employed men (Figure 5). Despite a relatively significant rise in women’s labor force participation in recent years, the profile of the new jobs created for women have not led to any transformation in occupational segregation. The share of employed women working in Elementary occupations, Agricultural work, Services and sales made up about 60 percent compared to 40 percent of employed men in 2006.

Figure 5 Occupational Distribution, 2004, 2006 and 2012



Source: Turkish Statistical Institute (TUIK), Household Labour Force Surveys.

Sectoral and occupation segregation by sex contributes to the economic vulnerability of women workers. Greater concentration of employed women in agriculture, in conjunction with the gender bias in intrahousehold power relations, is associated with the fact that a much larger proportion of women serve as unpaid female family workers than do men (34 versus 5 percent in 2012, Table 1). It appears that the lower coverage of social security among women workers compared to men (46 versus 67 percent) stems mainly from the large proportion of agricultural, unpaid family workers among the former. Occupational segregation in nonagricultural employment may account for the slightly lower coverage of social security among female nonagricultural workers compared to their male counterparts (63 versus 66 percent). The absence of social security leaves workers out of a system that could protect them when faced with serious health issues and in old age; and they are deprived exercising their rights in employment termination (Ecevit, 2010). Over the last four years there has been a considerable rise in

women's labor force participation (rising from 23.6 percent in 2006 to 29.5 percent) and employment rate (from 21 percent in 2009 to 26.3 percent in 2012). These changes came along with a major decline in the share of women's employment in agriculture (from 44 to 39 percent) and an increase in the share of employed women with social security (from 37 to 46 percent). However, the absolute number of employed women without social security increased by 20 percent between 2006 and 2012 in contrast to a decline of 9 percent among men, suggesting that some of the growth in nonagricultural employment for women has been in vulnerable and informal forms of work that are often characterized by low pay (Table 2). Another factor contributing to women's vulnerability in employment derives from the type of workplace in which they are employed. About 60 percent of female workers (58 percent) in 2011 were employed in places such as houses, fields, or mobile workplaces

Table 1 Gender Based Analysis (GBA) in Canada: Lessons for India

		TOTAL					Agriculture					Non-Agriculture				
Percent		Total	Reg. and casual employee	Employer	Own account worker	Unpaid family worker	Total	Reg. and casual employee	Employer	Own account worker	Unpaid family worker	Total	Reg. and casual employee	Employer	Own account worker	Unpaid family worker
Percent in Total, 2006	All	100	59	6	22	13	24	2	0	11	11	76	57	5	12	2
	Men	100	62	7	26	5	17	2	1	12	3	83	60	7	14	2
	Women	100	51	1	13	35	44	3	0	8	32	56	48	1	4	3
Percent in Total, 2012	All	100	63	5	19	13	25	2	0	10	11	75	60	5	8	2
	Men	100	67	7	22	5	18	2	0	12	3	82	64	6	10	1
	Women	100	54	1	11	34	39	3	0	6	31	61	51	1	5	3
Percent in Sector Total, 2006	All	100	59	6	22	13	100	9	2	44	45	100	75	7	15	3
	Men	100	62	7	26	5	100	10	3	67	19	100	72	8	17	2
	Women	100	51	1	13	35	100	7	0	19	74	100	85	2	8	6
Percent in Sector Total, 2012	All	100	63	5	19	13	100	10	1	42	46	100	80	6	11	2
	Men	100	67	7	22	5	100	12	2	68	18	100	79	8	12	2
	Women	100	54	1	11	34	100	7	0	14	78	100	85	2	8	5
Social Security, 2006	All	53	69	73	35	5	12	13	30	22	2	66	71	77	48	19
	Men	59	69	74	39	12	22	18	33	26	6	66	70	77	50	21
	Women	37	67	67	10	2	1	4	10	2	1	65	71	76	26	15
Social Security, 2012	All	61	78	81	36	8	16	19	42	27	6	75	80	84	47	25
	Men	67	78	81	41	16	27	24	46	31	14	76	80	84	53	22
	Women	46	77	81	10	6	4	9	13	3	4	73	81	87	18	28

Table 2 Distribution of Employed by Main Sector, Type of Employment, With/Without Social Security and change in those with and without Social Security, 2006 and 2012

		TOTAL					Agriculture					Non-Agriculture				
Percent		Total	Reg. and casual employee	Employer	Own account worker	Unpaid family worker	Total	Reg. and casual employee	Employer	Own account worker	Unpaid family worker	Total	Reg. and casual employee	Employer	Own account worker	Unpaid family worker
Percent in Total with Social Security, 2006	All	100	76	8	15	1	6	1	0	4	0	94	76	8	10	1
	Men	100	73	9	17	1	6	1	0	5	0	94	72	9	12	1
	Women	100	92	2	4	2	2	0	0	1	1	99	92	2	3	1
Percent in Total with Social Security, 2012	All	100	80	7	11	2	7	1	0	5	1	93	80	6	6	1
	Men	100	78	8	13	1	8	1	0	6	1	92	77	8	8	0
	Women	100	91	2	2	4	3	1	0	0	2	97	90	2	2	2
Percent in Sector Total with Social Security, 2006	All	100	76	8	15	1	100	9	5	79	8	100	80	8	11	1
	Men	100	73	9	17	1	100	9	5	81	6	100	77	9	13	1
	Women	100	92	2	4	2	100	23	3	33	40	100	93	2	3	1
Percent in Sector Total with Social Security, 2012	All	100	80	7	11	2	100	12	3	69	16	100	85	7	7	1
	Men	100	78	8	13	1	100	11	4	76	9	100	83	8	8	0
	Women	100	91	2	2	4	100	17	1	12	70	100	94	2	2	2
Percent change in # without social security, 2006-2012	All	1	-9	-25	2	18	18	31	-30	11	23	-13	-14	-25	-10	-13
	Men	-9	-14	-26	-2	-6	15	33	-31	17	6	-20	-17	-25	-24	-29
	Women	20	5	-22	20	27	22	30	-22	-6	28	15	0	-21	85	15

Source: Turkish Statistical Institute (TUIK), Household Labour Force Surveys.

2.2.2 Trends in household income and poverty

Income inequality in Turkey is generally much higher than in most Organisation for Economic Co-operation and Development (OECD) countries (OECD, 2008). Microdata on household income that is relatively consistent across years is available from 2006 onwards from the Survey of Income and Living Conditions (SILC), a survey designed by TUIK to be in compliance with its European Union counterparts.³ Estimates from the SILC show that the Gini coefficient of household income has declined from 0.40 to 0.38 between 2006 and 2011.⁴ The decline was more notable in rural areas (from 0.40 to 0.37) than in the urban areas (0.39 to 0.37). Each of the bottom three quintiles saw an increase in their income shares, nationally as well as in both urban and rural areas between 2006 and 2011. While the top quintile's share did decline over the period, it was still about 45 percent in 2011—a full 12 percentage points higher than the income share of the bottom 60 percent.⁵

Recent research has highlighted the role of gender disparities in understanding income inequality in Turkey. Based on 2008 budget survey data, Dayıoğlu and Başlevent (2012) estimate that women have both less labor and non-labor income and constitute a higher proportion of those with lower incomes. The authors show that a significant proportion of women (63 percent) do not receive any personal income and constitute over 90 percent of working age adults with no personal income. In addition, employed women earn considerably less than men; on average, women's annual earnings are about 55 percent of men's and earnings were more unequally distributed compared to men's. The majority of recipients of non-labor income were men (75 percent) and women constitute only a small percentage (19 percent) of

³ TUIK's first effort to produce statistics on income distribution goes back only to 1987 when the Household Income and Consumption Expenditure Survey was conducted. After that, an independent survey on income distribution in 1994 has been carried on and comparable income distribution statistics were produced from the household budget survey between 2002 and 2005. Since 2006, TUIK started to conduct "Income and Living Conditions Survey". Income and living conditions survey has been conducted within the scope of the studies compliance with European Union (EU) and field application of the survey is carried out regularly in every year.

⁴ Household income used here is the inflation adjusted net household disposable income, which is the sum of disposable income of all members of the household (total of the income in cash or in kind such as salary-wage, daily wage, enterprises income, pension, widowed-orphan salary, old-age salary, unpaid grants, etc.), including the total of yearly income for the household (such as real property income, unreturned benefits, incomes gained by household members less than age 15, etc.) net of taxes paid during the reference period of income and regular transfers to the other households or persons.

⁵ With most of the poorest provinces located in the Southeastern and Eastern regions, regional income inequality—acting both as a driver and outcome of ongoing internal migration—is a major aspect of overall inequality. Decomposition of income inequality by income sources has suggested that the single largest contributor of rural income inequality was the earnings from primary jobs whereas in urban areas income from other sources has been a major contributor (Silber and Özmucur, 2000) particularly the interest component of income earned by the top income quintile (Başlevent and Dayıoğlu, 2005).

recipients of asset income, suggesting greater control of assets by men. Overall, the findings of the study support the case for a comprehensive employment policy that includes raising the income and education levels of women. The study also underlines the fact that women's limited participation in the labor market is related to several issues ranging from "protective" social security legislation,⁶ social values, and a high reservation wage compared to earnings potential.

In spite of the improving income shares of those at the bottom of the income distribution, the incidence of consumption poverty seems to have remained stable at about 18 percent between 2006 and 2009 (the latest year for which we have official consumption poverty data) for the country as a whole (Table 3).⁷ However, there was a stark contrast between the urban and rural areas. While the poverty rate in urban areas actually declined (from 9.3 to 8.9 percent), rural poverty increased dramatically (from 32 to 39 percent). Poverty rates based on a "relative" definition also showed virtually the same pattern. It is striking that more than half of the poor people (52 percent based on 50 percent median income) lived in the South, North and Central Eastern Anatolia in 2012, where there is a greater deficiency of investment and employment opportunities. The poverty rates in these regions were more than ten times higher than the western regions in 2012. Despite the fact measures of poverty constructed based on per capita household consumption cannot provide complete information on poverty of individuals within the households, statistics disaggregated by sex reveal higher poverty rates for women (Figure 6). Between 2006 and 2009, the women's poverty rate was above that of men but the difference widened in 2009 when the women's poverty rate increased to 19 percent while the rate among men was 17 percent. Considerable research has been devoted to understanding the dynamics of poverty in Turkey—a topic that we turn to next.

⁶ Social security legislation provides early retirement and the right to receive survivor benefits from multiple sources for women; for example, unmarried women, irrespective of age, for instance, can receive pensions from their deceased parents, while widowed women (with some exceptions) can receive their husband's, as well as pensions through their deceased parents.

⁷ In addition to official measurements provided by TUIK, TÜRK-İŞ one of the main trade unions, also publishes a food and general poverty line on a monthly basis. UNDP publishes statistics on various variants of its Human Development Index in its annual Human Development Reports. There is also a rising attention among the researchers as well as by TUIK to bring multidimensional measures of poverty by ethnic dimensions of poverty and social exclusion (Erdoğan, 2007; Yüksekler, 2009). Based on an integrated fuzzy and relative approach to measurement of poverty, Karadağ (2010) provides a multidimensional poverty index for Turkey.

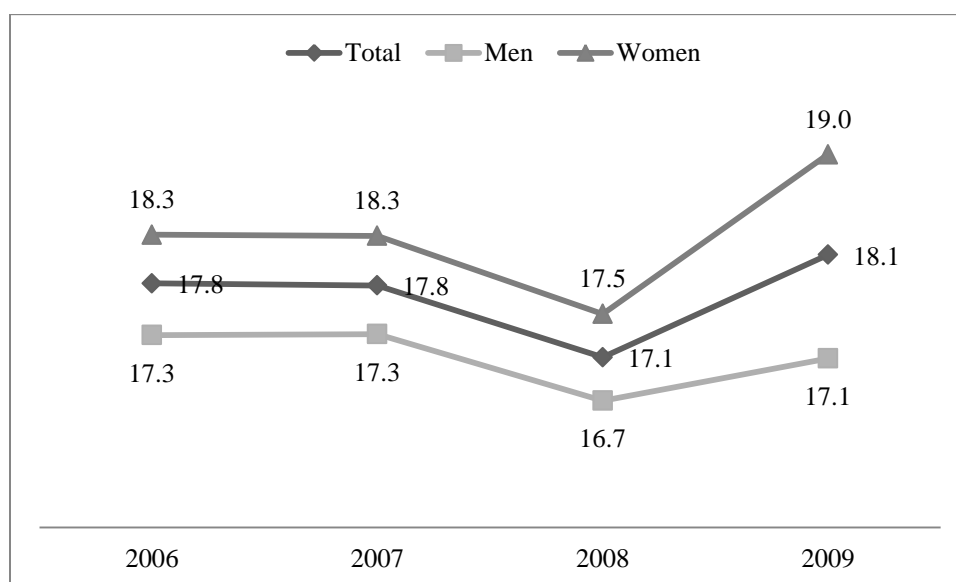
Table 3 Trends in Poverty

Year	TURKEY		URBAN		RURAL	
	Complete poverty ⁽³⁾	Relative poverty ⁽¹⁾⁽³⁾	Complete poverty ⁽³⁾	Relative poverty ⁽¹⁾⁽³⁾	Complete poverty ⁽³⁾	Relative poverty ⁽¹⁾⁽³⁾
2002	26.96	14.74	21.95	11.33	34.48	19.86
2003	28.12	15.51	22.3	11.26	37.13	22.08
2004	25.6	14.18	16.57	8.34	39.97	23.48
2005	20.5	16.16	12.83	9.89	32.95	26.35
2006	17.81	14.5	9.31	6.97	31.98	27.06
2007 ⁽²⁾	17.79	14.7	10.36	8.38	34.8	29.16
2008	17.11	15.06	9.38	8.01	34.62	31
2009	18.08	15.12	8.86	6.59	38.69	34.2

Source: 2011 Results of Poverty Study, TUIK.

Notes: (1) Relative poverty is based on 50 percent of equivalised median consumption expenditure. (2) New population projections are used beginning in 2007. (3) Complete poverty refers to food plus non-food poverty rates. The rates have not been calculated since 2010 due to ongoing methodological revision.

Figure 6 Poverty Rates, 2002-2011



Source: Turkish Statistical Institute (TUIK), Household Budget Surveys.

2.3 Literature Review: Poor and Low-Income Individuals and Households

One strand of the literature on poverty has focused on the measurement of poverty (i.e., criticizing the official approach and developing alternatives) and subgroup differences in poverty status, such as those based on age, sex, education, employment status and sector, home ownership, and housing facilities (Dağdemir (1992), Erdoğan (1996), Dumanlı (1996), Dansuk (1997), Uygur and Kasnakoğlu (1998), Erdoğan (1998), Erdoğan (2002), Alici (2002) and Pamuk (2002)). Another group of studies has explored the links between poverty and macroeconomic policies. Celasun (1986), for example, analyzed the effects of changes in internal terms of trade over the 1973–78 and 1978–83 periods on income distribution and poverty. The worsening terms of trade for agriculture in the latter period led to a rise in income inequality and poverty along with an acceleration in migration from rural to urban areas. Low-income groups have also been found to benefit from public expenditures and social transfers (Pinar (2004), thus pointing to the importance of the mix of fiscal policies for poverty alleviation. The importance of economic growth for poverty alleviation has been emphasized strongly by the World Bank (World Bank, 2003), among others.

However, recent research has shown that poverty does not decrease dramatically with better macroeconomic performance or higher economic growth alone. This line of research has introduced the concept of “new poverty” to describe situations where certain groups find themselves mired in poverty for a stubbornly long period of time because of the lack of jobs with sustainable income (Buğra and Keyder, 2003; Kalaycıoğlu and Rittersberger, 2002). Several qualitative case studies have focused on poverty in major cities such as Adana, Ankara, Diyarbakır, İstanbul, İzmir, and Gaziantep. These studies suggest that most of the “new poverty” is concentrated in urban areas that experienced internal migration from rural areas as well as regions with poor employment opportunities (Adaman and Keyder, 2006; Işık and Pınarcıoğlu, 2001). Persistent poverty is also a rural phenomenon, particularly in east and southeast regions, and is linked to infertile land, low educational attainment, migration, low productivity, poor infrastructure, and lack of access to jobs (Akder, 2000; World Bank, 2000). In both urban and rural areas, poverty rates are higher for casual employees, own-account workers, and unpaid

family workers.⁸ Economic forces that promote informal forms of employment,⁹ such as growing international competition and privatization of state enterprises, have been found to increase poverty risks (Tansel, 2001; Kalaycioglu and Rittersberger, 2002).

We have already referred to the low rates of labor force participation and higher poverty rates among women. Research and policy debates have also focused a great deal on these two issues separately and, to a lesser extent, on the interconnections between these two aspects of women's economic outcomes (World Bank 2009; Ministry of Labour and Social Security, 2012). Among the studies on the determinants of women's labor force participation, Dayıođlu and Kasnakođlu (1997) found, based on the 1987 Households Income and Expenditures Survey (HIES), that being married, having children, household income, unearned income, and education level of the head of household negatively influence participation, while being the head of household and size of the household have positive effects. As education level increases, participation rate increases, except for individuals without a diploma, and the effect of age on participation follows a hump-shaped profile which has a peak at 31-35 (relative to the age group 61-65). They also found strong regional effects among women in urban areas in all regions more likely to participate (relative to East/South-East Anatolia), and, as would be expected, the regional effect was the strongest for the Aegean/Marmara region. A later study, using the Household Labor Force Survey (HLFS) and Health Survey (DHS) conducted by Hacettepe University covering the period between 1988-2006, also finds similar results regarding the factors affecting women's labor force participation (Dayıođlu and Kirdar, 2010). Additionally, the study reported that married women's labor supply was conditional on their husband's labor force status and on the business cycle. The question of the relative importance of the "added worker effect" (i.e., wives increasing their labor supply in a downturn) and "discouraged worker effect" (i.e., wives reducing their labor supply because jobs are hard to find in a downturn) has since been taken up in a number of studies. For example, Bařlevant and Onaran (2003) found, based on the 1988 and 1994 rounds of the HLFS, that the added worker effect was dominant in 1994 but was not statistically significant in 1988. Kızılırmak (2008) also argued, using the 2003

⁸ The poverty rates of regular employees and employers were 6.1 and 2.3 percent, respectively, in 2009. In contrast, the poverty rates of casual employees, own-account workers, and unpaid family workers were, respectively, 26.9, 22.5 and 29.6 percent.

⁹ Informal employment is defined as employment without social security coverage. About half of the employed, (i.e., 11 million out of 22 million employed) were doing informal work in 2000. This ratio increased up to 57 percent during the 2001 crisis.

HBS data, for the presence of added worker effect; however, the estimates also showed that the duration of husbands' unemployment inversely affects the probability of wives' participation, thus lending some support to the discouraged worker effect over a longer period. More recent studies (e.g., İlkaracan (2012); Karaođlan and Ökten (2012)), while providing a more nuanced picture, have also found support for the added worker effect and generally confirmed the role of demographic factors that were found to be important in previous studies, such as the presence of young children acting as a retarding force on wives' labor force participation.

The literature on gender and poverty in Turkey¹⁰ has been growing in recent years, but empirical studies using nationwide data have focused solely on women's low labor market participation in relation to poverty (World Bank 2009; Toksöz 2007; Tan et al., 2008). Several of these studies do shed light on the constraints that the burden of unpaid housework imposes on women's employment. Bora (2007), for example, suggests that the mobility limitations enforced by the nature of care work is one of the reasons behind low participation of women, given their limited access to affordable child and elder care services as well as the traditional gender division of labor. Similarly, the higher incidence of irregular and home-based employment among women has been associated with high unpaid work obligations; in turn, such work yields low earnings and provides no social security coverage, thus heightening the risk of poverty (Hattatođlu, 2001). Local area studies suggest that women in poor households bear heavy burdens of unpaid activities (in addition to "normal" housework) as a part of the survival strategy for themselves and their families. Kardam and Alyanak (2002) found that much of the activities such as foraging for leftovers from local food markets; salvaging fuel and construction materials; substituting homemade alternatives for clothes and processed food; and, searching for bargain items fall upon women because the responsibility of "having to make do with little" falls disproportionately on them.¹¹ In a similar vein, the often lengthy and arduous process of obtaining public aid (e.g., networking for information, compiling with bureaucratic requirements, travel, waiting in line etc.) generally appear to fall disproportionately on women Gül (2005).¹²

¹⁰ For a recent survey see Ulutaş (2009).

¹¹ This study was based on a survey of women in poor households in Ankara.

¹² The findings reported here emerged from an analysis of a set of interviews with 54 female recipients of public poverty aid in the Ankara region.

Lifetime impacts of the uneven division of household production tasks between female and male children have not been explored much either in the Turkish context or other countries. Recent research on Turkey has established a strong link between the unequal unpaid work burden of male and female children and school dropout rates. A sizeable proportion of female children in rural and urban areas (10.2 and 6.5 percent respectively) claimed “to help with household chores” as the reason for dropping out of school (Şahabettinoğlu et.al. 2001). Therefore, unpaid work responsibilities in early life can have a crucial impact on poverty in adult life.

The body of research that was quickly surveyed above establishes important links between labor force participation, lack of social security, lower education level of women, and poverty. Each of these factors’ contribution to poverty is argued to be closely related to the uneven gender-based unpaid work distribution, making the issue an integral aspect of public policy design. Our study contributes to this body of literature by introducing the household production needs of low-income families as integral to the assessment of poverty. Through our simulation exercise, we will also shed light on the effectiveness of increasing labor force participation as a way out of poverty in light of the time deficits low-wage men and women encounter.

2.4 The Turkish Welfare State in the Last Decade

In Turkey, the first social security¹³ institution to serve public officers, namely Emekli Sandığı, was established in 1945, while the first legal framework for social assistance¹⁴ was an old-age annuity (paid to individuals aged 65+ with no social security) that was formed in 1976 (Metin, 2012: 139-140). The first institution to perform social assistance was established in 1986 as the Social Assistance and Solidarity Fund (SASF). In 2004, the fund was transformed into the General Directory of Social Assistance and Solidarity (GDSAS) and since June 2011 became a subdivision under the Ministry of Family and Social Policies (MFSP). Currently, the principal

¹³ The social security system consisted of three different institutions. The institution for laborers (Institute of Social Insurance-SSK) was established in 1965 and the institution for partisans and self-employed (Social Security Organization for Artisans and the Self-Employed-Bağ-Kur) was constituted in 1971. As a major part of the social security reform, SGK (Sosyal Güvenlik Kurumu-Social Security Institution) was formed in 2006 to obtain unity in social security administration (Değer, 2011).

¹⁴ On the other hand, Social Service and Children Protection Institution, which currently operates under the Ministry of Family and Social Policies, was established in 1983 and it was the first public institution to perform “social services” in Turkey (Metin, 2012: 139).

responsible government agency to conduct social assistance in Turkey is the General Directory of Social Assistance and Solidarity (GDSAS), which functions under the Ministry of Family and Social Policies (MFSP).¹⁵ The expenditures are made out of the Social Assistance and Solidarity Fund (SASF). Major programs include family assistance (food, fuel and shelter assistance), educational assistance (educational material assistance, conditional cash transfers, lunch assistance, fellowships for university students, etc.), health assistance (treatment assistance, conditional health assistance¹⁶), soup kitchens and payments to terror and natural disaster victims. As can be seen in Table 4, the majority of expenditures are education aid and periodic cash transfers.¹⁷ Total social assistance expenditures constituted 1.43 percent of GDP in 2012. Apart from social assistance, there are also transfer payments that can be considered as social insurance expenditures. They include old-age annuity payments, divorced and orphan pension (paid to divorced women and orphan children), veteran, and disability benefits payments. In addition, the government also provides direct cash assistance and fuel assistance (paid to farmers with titles conditional on cultivating the land). Yet another program that is worth mentioning is the Social Assistance in Rural Areas (SARA) program (in effect since 2003), which provides interest-free loans to rural residents to conduct agricultural and livestock activities. Another program, Revenue Generating Projects, is implemented in both urban and rural areas to support individuals with subsidized loans to help them become sustainable own-account workers.

¹⁵ In addition, there are some programs that are administered by local governments

¹⁶ This assistance is conditional on children aged 0-6 in the household undergoing regular health checks.

¹⁷ Periodical cash transfers includes cash transfers by the Fund to the households under poverty through nonprofit charities and cash transfers made for the religious feasts (e.g., Ramadan Feast and the Feast of Sacrifice).

Table 4 Composition of Social Assistance Expenditures (Percent)

	2012 (Million TL)⁽¹⁾	2012	2003-2012
Periodical cash transfers	650,912.2	21	20
Health assistance	185,974.9	6	10
Educational assistance	1,239.8	40	42
Project Support	185.9	6	9
Family assistance	557.9	18	12
Other Social assistance	278.9	9	7
Total (from GDSAS resources)	3,099.6	100	100
Total Transfers	19,595⁽²⁾		
Total Transfers /GDP	1.19%⁽³⁾		

Source: Social Assistance Statistics Bulletin, 2012.

Notes: SASF: Social Assistance and Solidarity Fund

(1) These figures are calculated by the authors based on the total assistance provided by GDSAS resources and the shares of each item provided by Social Assistance Statistics Bulletin, 2012. (2) Projected value based on all the institutions and ministries expenditures in 2011. (3) This figure is 1.12 percent in the Ministry of Development reports. The discrepancy is due to (2) the differences in calculation methodology by the two ministries. Calculation of expenditures by the municipalities is different. SGK non-premium payments are not included, student fellowships by YURTKUR are counted excluding the assistance other than for meals by the Ministry of Development.

Turkey still lacks detailed information about the demographic characteristics of the recipients of social assistance, as well as reliable detailed data on program expenditures.¹⁸ Some light on recipient demographics was cast by a report commissioned by the GDSAS titled *Perceptions of Social Assistance and Poverty* (2010). The report presented characteristics of 2,032 households that were receiving social assistance for at least two years. The majority (about two-thirds) of the recipients were of working age. Since conditional cash transfers related to education and health and other transfers related to children are paid to wives, 63 percent of recipients were women. Little over half of the female recipients were either illiterate or literate without diploma and most of the remaining women were primary school graduates. Nearly one-third and one-tenth of the recipients reside, respectively, in slum houses and houses made by sun-dried brick. The homeownership rate was only 40 percent. Employed individuals were rather scarce among the recipients (only 11 percent). More than half of the recipients had no work experience (57.2 percent). Only 25 percent of all the respondents were looking for a job and the main reasons for not looking for a job for the remaining 75 percent reported vary: due to health problems (41 percent), being a housewife / women (37 percent), or being elderly, sick, disabled (14.5 percent). In the recipient households, either there is no (65.9 percent) or only one (29.9 percent) income earner. About 90 percent of the recipients reported unemployment as the main reason for receiving assistance. In nominal terms, 70 percent of the households' monthly income was under 300 TL (the food and complete poverty line for a family of four by TUIK in 2008, the research year, was calculated as 275 and 767 TL, respectively). Another distinct feature of the recipient households was that 44 percent of them have migrated to their current residence and 56 percent have lived in their current residence for more than 15 years. As one would expect from their employment status, 87 percent of the recipients have no social security and 82.7 percent of them have a Green Card.¹⁹

An important issue that has been discussed widely in the literature is the potential effects of social assistance programs on labor supply. Though studies of this nature are limited in the Turkish context, it is worthwhile to review the main findings from the major studies. Angel-

¹⁸ A myriad of factors, including the lack of cooperation between different agencies, bureaucratic ineptitude, lack of accountability, non-transparency and political maneuvering, have been cited as contributing to this situation (see, inter alia, Buğra and Adar, 2007; and, Yentürk, 2013).

¹⁹ This is a non-contributory health service providing program formed in 1992. Individuals who are working in an informal job and living in a household whose income is below one third of the net minimum wage were eligible. Due to social security reform, as of January 1, 2012, individuals under coverage have to pay a premium according to per capita household income to minimum wage.

Urdinola et al. (2009) investigated whether the Green Card encouraged choosing informal employment and/or part-time work using the 2006 Household Budget survey (HBS) data. They found no disincentive effect and attributed this to the high wage differential between informal and formal sectors. A similar lack of significant disincentive effects was also reported in a recent study that examined whether the annual hours of employment of male heads of urban households were negatively affected by the amount of unconditional government transfers they received (Yakut. 2013). According to the results of a quintile regression analysis, based on the 2003-2010 rounds of the HBS, even for the poorest quintile, one unit (100 TL - more than twofold) increase in the transfer amount led only to a decrease of less than 2 percent in annual hours of employment. However, there is some evidence of the so-called “dependency trap” for unemployed individuals (i.e., the reciprocity of social assistance contributes toward keeping them in a state of unemployment [Demir Şeker, 2011]).

The current orientation of the reform of the social assistance system puts a great deal of emphasis on “moving people to work” or active labor market policies. Their design is based upon participation requirements (i.e., in order to receive assistance the recipient has to participate in vocational training, job search activities, public services etc). Vocational assistance programs are conducted by the Turkish Labor Agency (İŞKUR). Promoting women’s employment and youth employment are major targets of the agency. In 2011, 9,856 women participated to job training and 914 of them got a job; 780 women participated to entrepreneurship courses and 113 of them established their own business and 631 women started home-based production. As part of the active labor market programs, nearly 250,000 individuals, 41.2 percent of whom are women, were involved in different kinds of courses designed for different target groups, such as the unemployed, former prisoners, disabled etc. The recent reform efforts of the Turkish government are not limited to active labor market programs. Its basic target is replacing all disbursed transfers with one transfer item, called as regular income support which is similar to the policy of “minimum income for social inclusion” that is in place in several countries of the European Union.²⁰ As mentioned by Yentürk (2013: 459), the major obstacles in establishing this policy include the absence of a well-defined legal framework and political will, and detecting needy individuals by using objective criteria.

²⁰ For the effects of Minimum Insertion Income (RMI) on labor supply behavior in Italy and France, please see Berliri and Parisi (2006) and Bargain and Doorley (2011).

2.5 Official Poverty Measure

Following the two basic approaches to poverty measurement, TUIK currently provides both absolute and relative poverty measures for Turkey. These measures were developed based on the methodology prepared jointly by TUIK and the World Bank in 2003, and approved at the World Bank Concept Paper Review meeting, (WB and TUIK, 2005).²¹ The measure estimates consumption-poverty rather than income-poverty. For our purposes, we present the derivation of the absolute measure of poverty rates by TUIK from the 2003 Household Budget Survey data.

TUIK uses the cost of basic needs approach (i.e., the welfare approach to poverty) where the poverty line is constructed based on the observed consumption patterns of sample households. A minimum amount of food expenditures required for survival is first identified (food poverty line). Next, an appropriate number is chosen regarding the share of food expenditures in total consumption expenditures. Dividing the minimum amount of food expenditures by the chosen budget share of food yields the poverty line.

Construction of the food poverty line (FPL) is the first step in the derivation of the poverty line. The exercise begins with the adoption of a nutritional anchor (i.e., the minimum caloric intake). This is specified as 2,100 kcal per person per day, as per the guidelines suggested by the Food and Agriculture Organization (FAO). The next step is to determine the food basket that would deliver the required caloric intake and the cost of the basket. In principle, the caloric intake can be met by a variety of diets. To resolve this issue, the diet that is actually observed for a “reference group” was used. The reference group was defined as the third and fourth deciles of the *distribution among persons of per capita food expenditure*. Per capita expenditure is simply total household expenditures divided by the number of persons in the household. The food basket consisting of over 80 separate items and meeting the caloric requirement of 2100 kcal was identified based on the actual consumption expenditures of the reference group. The cost of the basket was calculated on the basis of the prices reported in the HBA and turned out to be equal, in 2002, to TL 1,083,359 per day *per person* (WB-TUIK 2005: 7,125). The cost of the basket has been updated in the successive years using the prices of the 80 items in the corresponding waves of the HBA.²²

²¹ A detailed explanation of the methodology can also be found in the methodology Annex of the Turkey Joint Poverty Assessment Report, JPR, 2005.

²² TUIK uses not the prices of the reference group but the average prices paid by all the households in the survey.

The poverty line includes some expenditure on nonfood items, too. However, unlike food, there is no external anchor such as a nutritional requirement for nonfood consumption. As mentioned above, a method that is generally followed to construct the complete (food plus nonfood) poverty line (CPL) is the following: the share of food expenditures in total expenditure is calculated for a chosen reference group; and, their FPL is divided by the share of food expenditures to yield the CPL. The reference group used in the calculation consisted of *persons with per capita total consumption (household consumption divided by household size) that is just above the FPL* as the reference group. The estimated share of roughly 43 percent was used in conjunction with FPL to obtain a CPL of TL 2,510,930 per day per person.²³ This amount represents the minimum expenditure required to meet the daily “basic needs” of the average person.

Poverty evaluation requires a measure of needs and a measure of resource availability. The latter is a household-level measure, namely, total household consumption expenditures. Therefore, the CPL per person had to be converted into a household-level measure of needs.²⁴ An equivalence scale was used to this end. The purpose of the scale is to account for variations in needs that arises from variations in the size and composition (number of adults and children) across households. Accordingly, the scale is in effect a formula that converts the number of adults and children in the household into the number of “equivalent adults” in the household. The WB-TUIK formula is: $S = (A + 0.9C)^{0.6}k$ with k defined as $k = (A^o + C^o)/(A^o + 0.9C^o)^{0.6}$, S representing the number of equivalent adults, A representing the number of adults, C representing the number of children and the superscript ' o ' representing the values of the variables for the reference or “normalizing” household.²⁵ A unique combination of the number of adults and number of children constitute a particular type of household. *For each type of household, the poverty line is set equal to the product of the number of equivalent adults and the CPL per person. Similarly, the food poverty line for each type of household is calculated by multiplying the number of equivalent adults and the FPL per person.*

²³ An adjustment is done each year for the change in the non-food consumption share of the reference groups of households

²⁴ The same result would also result from converting consumption expenditures into equivalent consumption expenditures.

²⁵ The two parameters, 0.9 and 0.6, attempt to take into account the following features of household consumption: on average, children consume less than adults; and, consumption rises less than proportionately with household size.

The WB-TUIK methodology suffers from three key problems. The first problem is that multiplying the requirements *per person* by the number of equivalent adults to obtain the household-level requirements constitutes a simple error. To yield meaningful estimates of household-level requirements that are stated in terms of the needs of *equivalent adults*, the FPL should be based on the caloric requirement for *adults*, not all persons (adults and children combined). According to the report, the caloric requirement for adults is 2,450 kcal per day (WB-TUIK 2005: 5) as compared to 2,100 kcal for all persons. The FPL corresponding to the adult caloric norm is TL1,262,752 (WB-TUIK 2005: 168), about 17 percent higher than the FPL actually used in the official estimates.

A separate problem arises from the use of the WB-TUIK equivalence scale. It is quite unlikely that the resulting food poverty line would have a nutritional anchor, the stated starting point of the whole exercise. The reason is that nutritional requirements, as represented in the standard energy requirements tables, vary primarily by age and sex of the individual. Generally, nutritional equivalence scales attaches weights greater than 1 to adult males and teenage boys. They also attach weights lower than 1 for women (excluding breast-feeding or pregnant women), girls and young children. Individuals over 50 years of age are also assigned weights lower than 1. By construction, they do not explicitly account for differences in household size. For poverty lines to reflect nutritional norms, it is necessary to build the household-level food requirements from the requirements of its individual members (i.e., differentiated by sex and broad age groups such as very young children, teenagers, prime age, older age etc).

Finally, the economies of scale in food consumption stipulated in the WB-TUIK scale are hard to justify because food is mostly a private good within the household (e.g., Deaton and Zaidi 2002: 48). However, there is some positive correlation between the age of household members on the one hand and household size on the other. Children generally tend to live with adults while considerable numbers of adults tend to live alone. This might suggest that the use of WB-TUIK scale may not result in systematically lower food poverty lines than food poverty lines based on nutritional scales. This impression is misleading because the economies of scale presupposed in the WB-TUIK scale are generally much greater than the implicit economies of scale in standard nutritional scales. As a result, we suspect that the official measure would tend to overstate the incidence of poverty among smaller households and understate the incidence among larger households. Since the latter group of households are more likely to fall into poverty

it is quite possible that the official estimates of food poverty in Turkey are understated. Given the large share of food expenditures in the CPL, it is also likely that the overall poverty rate is underestimated relative to the poverty rate that would have resulted from poverty lines that took nutritional needs explicitly into account.

3 MEASUREMENT FRAMEWORK AND EMPIRICAL METHODOLOGY

3.2 Measurement Framework

Our model builds on earlier models that explicitly incorporate time constraints into the concept and measurement of poverty (Vickery 1977; Harvey and Mukhopadhyay 2007). The key differences between our approach and the earlier models are that we explicitly take into account intrahousehold disparities in time allocation and do not rely on the standard neoclassical model of time allocation. A detailed comparison of the alternative models has been discussed elsewhere (Zacharias 2011). The empirical methodology to implement the model has been elaborated in the context of three Latin American countries (Zacharias, Antonopoulos, and Masterson 2012).

Our starting point is the basic accounting identity of time allocation. Assuming the unit of time to be a week, we can express the identity as:

$$168 \equiv L_i + U_i + C_i + V_i \quad (1)$$

In the equation above, the physically fixed number of total hours equals the sum of L_i , the time spent on employment by individual i , U_i , the time spent on household production, C_i , the time spent on personal care, and V_i , the time available for everything else (leisure, volunteering, etc). The equation for time deficit/surplus is derived from the identity by introducing the threshold values for personal care and household production:

$$X_{ij} = 168 - M - \alpha_{ij}R_j - L_{ij} \quad (2)$$

The time deficit/surplus faced by the individual i in household j is represented by X_{ij} . The minimum required time for personal care and nonsubstitutable household activities is represented by M . Personal care includes activities such as sleeping, eating and drinking, personal hygiene, rest, etc. The idea behind including nonsubstitutable household activities is that there is some minimum amount of time that household members need to spend in the household and/or with other members of the household if the household is to reproduce itself as a unit.²⁶

²⁶ Vickery (1977, p.46) defined this as the minimum amount of time that the adult member of the household is required to spend on “managing the household and interacting with its members if the household is to function as a

The minimum amount of substitutable household production time that is required for the household to subsist with the poverty-level consumption is denoted by R . As we discussed above, poverty lines generally rely on the implicit assumption that households around or below the poverty line have the required number of hours to spend on household production available. Numerous studies based on time use surveys have documented that there are well-entrenched disparities in the division of household production tasks among the members of the household, especially between the sexes. Women tend to spend far more time in household production relative to men. The parameter α_{ij} is meant to capture these disparities. It is the individual's share of the total time that their household needs to spend in household production to survive at the income poverty level.

An individual suffers from a time deficit if the *required* weekly hours of personal care and household production plus the *actual* weekly hours the individual spends on employment is greater than the number of hours in a week. In general, time deficits occur because hours of employment exceed the time available after setting aside the required hours of personal care and household production. We refer to this type of time poverty as the “employment time-bind.” Studies that we mentioned in the previous section recognize only this route to time deficits. However, in our framework, time deficits can occur even before the hours of employment are taken into account due to excessive burdens of household production (“housework time-bind”). Such burdens can be the result of highly inequitable division of household work or inordinately high demands of household production or a combination of both. Indeed, some individuals might suffer from both types of time poverty (“double time-bind”). The three cases are summarized in Table 5.

unit.” She assumed that this amounted to 14 hours per week. Harvey and Mukhopadhyay (2007) made no allowance for this. Burchardt (2008, p.57) included a minimal amount of parental time for children that cannot be substituted. It is arguable that the inclusion of activities of “managing the household” in this category might be double-counting, if we include household management activities in the definition of household production. However, it can also be argued that most of the nonsubstitutable time consists of the time that the household members spend with each other and that poverty-level household production does not include a “realistic” amount of time for household management. In practice, this is a relatively small amount of time and, therefore, either methodological choice would have no appreciable effect on the substantive findings.

Table 5 Types of Time Poverty

X_{ij}	A_{ij}	L_{ij}	Type
Less than zero	Greater than zero	Greater than zero	Employment time-bind
Less than zero	Less than zero	Equal to zero	Housework time-bind
Less than zero	Less than zero	Greater than zero	Double time-bind

Note: $A_{ij} = 168 - M - \alpha_{ij}R_j$. See equation (2). X_{ij} , A_{ij} and L_{ij} refer, respectively to the time deficit/surplus, available time, and employment hours for individual i in household j .

To derive the time deficit at the household-level, we add up the time deficits of the n individuals in the household, thus ruling out automatic redress of the time deficit of an individual in the household by the time surplus of another individual of the same household:

$$X_j = \sum_{i=1}^n \min(0, X_{ij}) \quad (3)$$

Now, if the household has a time deficit, i.e., $X_j < 0$, then it is reasonable to consider that as a shortfall in time with respect to R_j ; that is, we assume that the household does not have enough time to perform the requisite amount of substitutable household production. Neglecting such deficits can render the use of standard poverty thresholds fundamentally inequitable. Consider two households that are identical in all respects that also happen to have an identical amount of consumption expenditures. Suppose that one household does not have enough time available to devote to the necessary amount of household production while the other household has the necessary time available. To treat the two households as equally consumption-poor or consumption-nonpoor would be inequitable towards the household with the time deficit.

We resolve this inequity by revising the consumption thresholds. We assume that the time deficit can be compensated by purchasing market substitutes and so assess the replacement cost. The latter can then be added to the consumption poverty threshold to generate a new threshold that is adjusted by time deficit:

$$y_j^o = \bar{y}_j - \min(0, X_j) p, \quad (4)$$

where y_j^o denotes the adjusted threshold, \bar{y}_j the standard threshold, and p the unit replacement cost of household production. Obviously, the standard and modified thresholds would coincide if the household has no time deficit.

The thresholds for time allocation and modified consumption threshold together constitute a two-dimensional measure of time and consumption poverty. We consider the household to be consumption-poor if its consumption, y_j , is less than its adjusted threshold, and we term the household as time-poor if any of its members has a time deficit:

$$\begin{aligned} y_j < y_j^o &\Rightarrow \text{consumption-poor household; } X_j \\ &< 0 \Rightarrow \text{time-poor household} \end{aligned} \quad (5)$$

For the individual in the household, we deem them to be income-poor if the consumption of the household that they belong to is less than the adjusted threshold, and we designate them as time-poor if they have a time deficit:

$$y_j < y_j^o \Rightarrow \text{consumption-poor person; } X_{ij} < 0 \Rightarrow \text{time-poor person} \quad (6)$$

The LIMTCP allows us to identify the "hidden" consumption-poor—households with consumption above the standard threshold but below the modified threshold—who would be neglected by official poverty measures and therefore by poverty alleviation initiatives based on the standard thresholds. By combining time and consumption poverty, the LIMTCP generates a four-way classification of households and individuals: (a) consumption-poor and time-poor; (b) consumption-poor and time-nonpoor; (c) consumption-nonpoor and time-poor; and (d)

consumption-nonpoor and time-nonpoor. This classification offers a richer framework for thinking about the impacts of employment and consumption growth on poverty.

3.3 Empirical Methodology and Data Sources

3.3.1 Statistical Matching

The measurement of time and consumption poverty requires microdata on individuals and households with information on time spent on household production, time spent on employment, and household consumption expenditures. Given the importance of the intrahousehold division of labour in our model, it is necessary to have information on the time spent on household production by all persons²⁷ in multi-person households. Good data on all the relevant information required is not available in a single survey. But, good information on household production was available in the time use survey, the 2006 Zaman Kullanım Anketi (ZKA), and good information regarding time spent on employment and household consumption expenditures was available in the income and expenditure survey, the 2006 Hanehalkı Bütçe Anketi (HBA). Our strategy was to statistically match the HBA and ZKA surveys so that hours of household production can be imputed for each individual aged 15 years and older in the HBA. Basic information regarding the surveys is shown in Table 6.

²⁷ Our basic concern is that we should have information regarding household production by both spouses (partners) in married-couple (cohabitating) households, and information on older children, relatives (e.g., aunt), and older adults (e.g., grandmother) in multi-person households.

Table 6 Surveys Used in Constructing the Levy Institute Measure of Time and Consumption Poverty

Survey subject	Name	Sample size
Income and expenditure	HANEHALKI BÜTÇE ANKETİ - MİKRO VERİ SETİ, 2006	34,939 persons in 8,556 households. There were 24,867 individuals aged 15 years or older.
Time-use	ZAMAN KULLANIM ANKETİ - MİKRO VERİ SETİ, 2006	16,413 persons in 4,345 households. Completed time diaries were available for 10,893 individuals that were 15 years or older.

The surveys are combined to create the synthetic file using constrained statistical matching (Kum and Masterson, 2010). The basic idea behind the technique is to transfer needed information from one survey (the "donor file") to another (the "recipient file"). In this study, the donor file is the time-use survey (ZKA) and the recipient file is the income and consumption survey (HBA). Time allocation information is missing in the recipient file (HBA) but is necessary for research purposes. Each individual record in the recipient file (HBA) is matched with a record in the donor file (ZKA), where a match represents a similar record, based on several common variables in both files. The variables are hierarchically organized to create the matching cells for the matching procedure. Some of these variables are used as strata variables, i.e., categorical variables that we consider to be of the greatest importance in designing the match. For example, if we use sex and employment status as strata variables, this would mean that we would match only individuals with identical sex and employment status. Within the cells, we use a number of variables of secondary importance as match variables. The matching progresses by rounds in which strata variables are dropped from matching cell creation in reverse order of importance, first individually then more than one at a time. The rounds continue until we exhaust the weights in the recipient and donor file.

The matching is performed on the basis of the estimated propensity scores derived from the strata and match variables. For every recipient in the recipient file, an observation in the donor file is matched with the same or nearest neighbour based on the rank of their propensity scores. In this match, a penalty weight is assigned to the propensity score according to the size and ranking of the coefficients of strata variables not used in a particular matching round. The quality of match is evaluated by comparing the marginal and joint distributions of the variable of interest in the donor file and the statistically matched file (see Appendix A for a detailed description of the statistical matches).

3.3.2 *Estimating Time Deficits*

We estimated time deficits for individuals aged 18 to 70 years. We restrict our attention to individuals in this age group because they constitute the overwhelming bulk of the employed population (95 percent in 2006) and account for most of the household production labor performed in the economy (93 percent in 2006).

To estimate time deficits, we begin with an accounting identity: the physically fixed total number of hours available to any individual (i.e., 24 hours in a day or 168 hours in a week) equals the sum of time spent on income-generation activities, household production, personal maintenance, nonsubstitutable household production, and everything else (e.g., volunteer work, watching TV etc). We next define the committed time of the individual as the sum of (1) *required* weekly hours of personal maintenance and nonsubstitutable household production; (2) *required* weekly hours of household production; and, (3) the *actual* weekly hours the individual spends on income generation. An individual suffers from a time deficit if their committed time is greater than the number of hours in a week.

The minimum required weekly hours of personal maintenance were estimated as the sum of minimum necessary leisure (assumed to be equal to 10 hours per week)²⁸ and the weekly average (for all individuals aged 18 to 70 years) of the time spent on personal care, estimated from the time use survey separately for the urban and rural areas.²⁹ We assumed that weekly

²⁸ It should be noted that 10 hours per week was approximately 17 hours less than the median value of the time spent on leisure (sum of time spent on social, cultural activities, entertainment, sports, hobbies, games, and mass media). We preferred to set the threshold at a substantially lower level than the observed value for the average person in order to ensure that we do not end up “overestimating” time deficits due to “high” thresholds for minimum leisure.

²⁹ The public-use version of the ZKA 2006 did not have any information on time allocation of 922 individuals who were 15 years or older. By design, the ZKA was supposed to collect time use information from all individuals that

hours of nonsubstitutable household activities were equal to 7 hours per week. The resulting estimates are shown below in Table 7. The line labelled "Total" is our estimate of the required weekly hours of personal maintenance and nonsubstitutable household production and applies uniformly to every adult.

Table 7 Thresholds of Personal Maintenance and Nonsubstitutable Household Activities (Weekly Hours, Persons Aged 18 to 70 Years)

	Urban	Rural
Personal maintenance	89	87
Personal care	79	77
Necessary minimum leisure	10	10
Nonsubstitutable household activities	7	7
Total	96	94

Source: ZKA 2006

The thresholds for household production hours are set at the *household* level; that is, they refer to the total weekly hours of household production to be performed by the members of the household, taken together. In principle, they represent the average amount of household production that is required to subsist at the poverty level of consumption expenditures. The reference group for constructing the thresholds consists of households with at least one nonemployed adult and consumption around the poverty line. Our definition of the reference group is motivated by the need to estimate the amount of household production implicit in the official poverty line. Since poor households in which all adults are employed may not be able to spend the amount of household production implicit in the poverty line, we excluded such households from our definition of the reference group.

Unfortunately, our preferred source of data for estimating the thresholds, the time use survey, did not contain any information regarding consumption or poverty status of households. Therefore, we had to impute membership in the group of households with consumption around the poverty line. We do this by using the predicted probability of being within the poverty band by means of a probit estimation.

were 15 years or older. We excluded these individuals (and the households that they belonged to) from the calculation of the time thresholds.

Since there is no expenditure data in the time use survey, we need to use the household income variable that the time use survey does include (a categorical variable with ten categories). We begin by constructing a household income measure for households in the time use data. For each household, we create a household income variable using the midpoint of the categories of the existing personal income variable, and replacing the top category (over TL 4,000) with TL 6,529. We next create a similar household income variable in the income and expenditure data, based on the actual household income variable in that data set.

We then proceed to run probit estimations on each of the reference group categories for the required household production (12 combinations of the number of adults, one to three or more, and number of children, zero to three or more, in the household). The dependent variable is an indicator of membership in the poverty band and the independent variables are three tenure indicator variables, a rural indicator variable, age, education and labor force category variables for the head of household and spouse, four family type indicator variables, three indicator variables for the age of the youngest child, sex of the household head, number of earners, and the household income variable. The results of the estimation are used to predict the membership of the household in the poverty band for all household records in both the ZKA and the HBA. We estimate the latter in order to assess the quality of the procedure. The results for the procedure are presented in Table 8, below. As we can see, the rate of misprediction is quite low, at 28 percent. This gives us confidence in our estimates, and imputed membership status of households in the poverty band was used to identify the reference group in the time-use survey.

Table 8 Comparison of Membership in the Poverty Band and Predicted Presence in the Poverty Band in HBA 2006

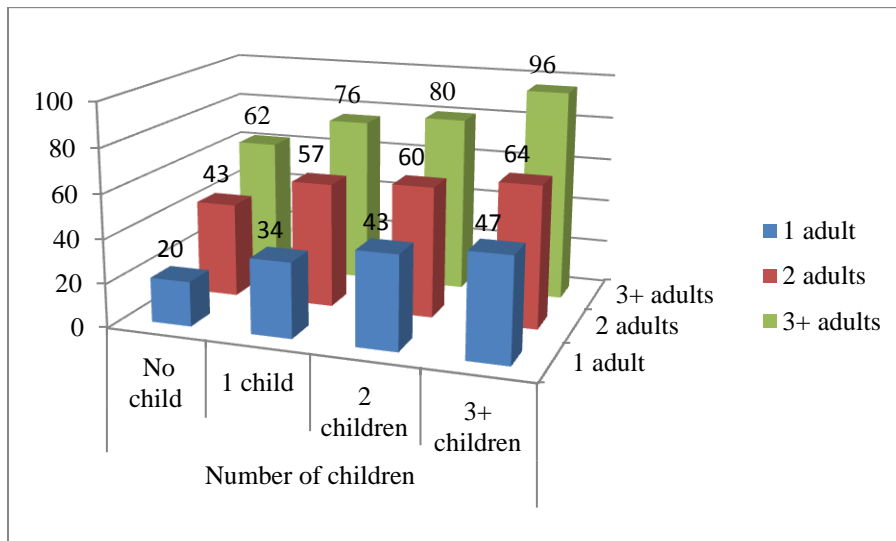
Poverty Band	Predicted Poverty Band		Total
	0	1	
0	51.76	10.93	62.69
1	16.76	20.56	37.31
Total	68.52	31.48	100

Note: "0" indicates non-membership and "1" indicates membership in the poverty band

We divided the reference group into 24 subgroups based on location (urban vs. rural), the number of children (0, 1, 2, and 3 or more) and number of adults (1, 2, and 3 or more) for calculating the thresholds. The thresholds were calculated on the basis of the average values of the time spent on household production by households in each subgroup of the reference group. The estimates obtained are shown below in Figure 7.

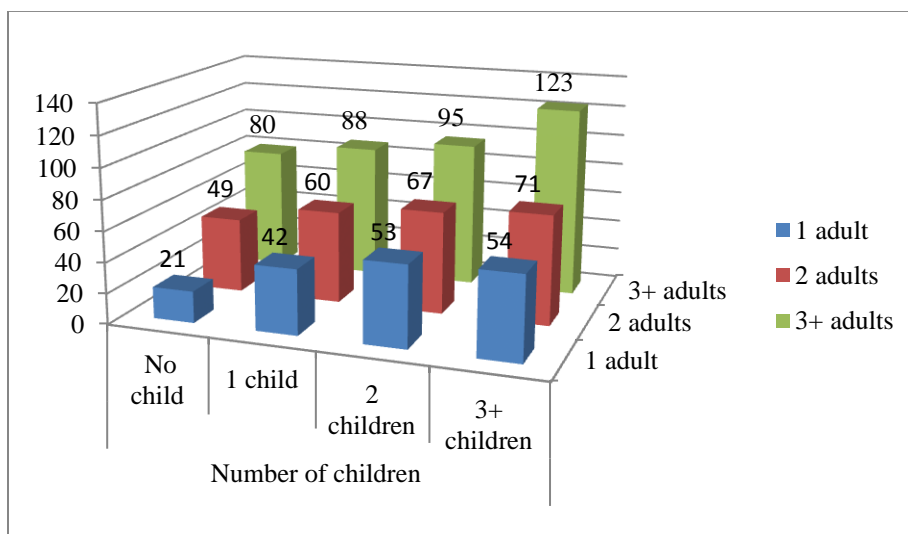
Figure 7 Threshold Hours of Household Production (Weekly Hours per Household)

A. Urban



Source: Authors' calculations using the ZKA 2006

B. Rural



Source: Authors' calculations using the ZKA 2006

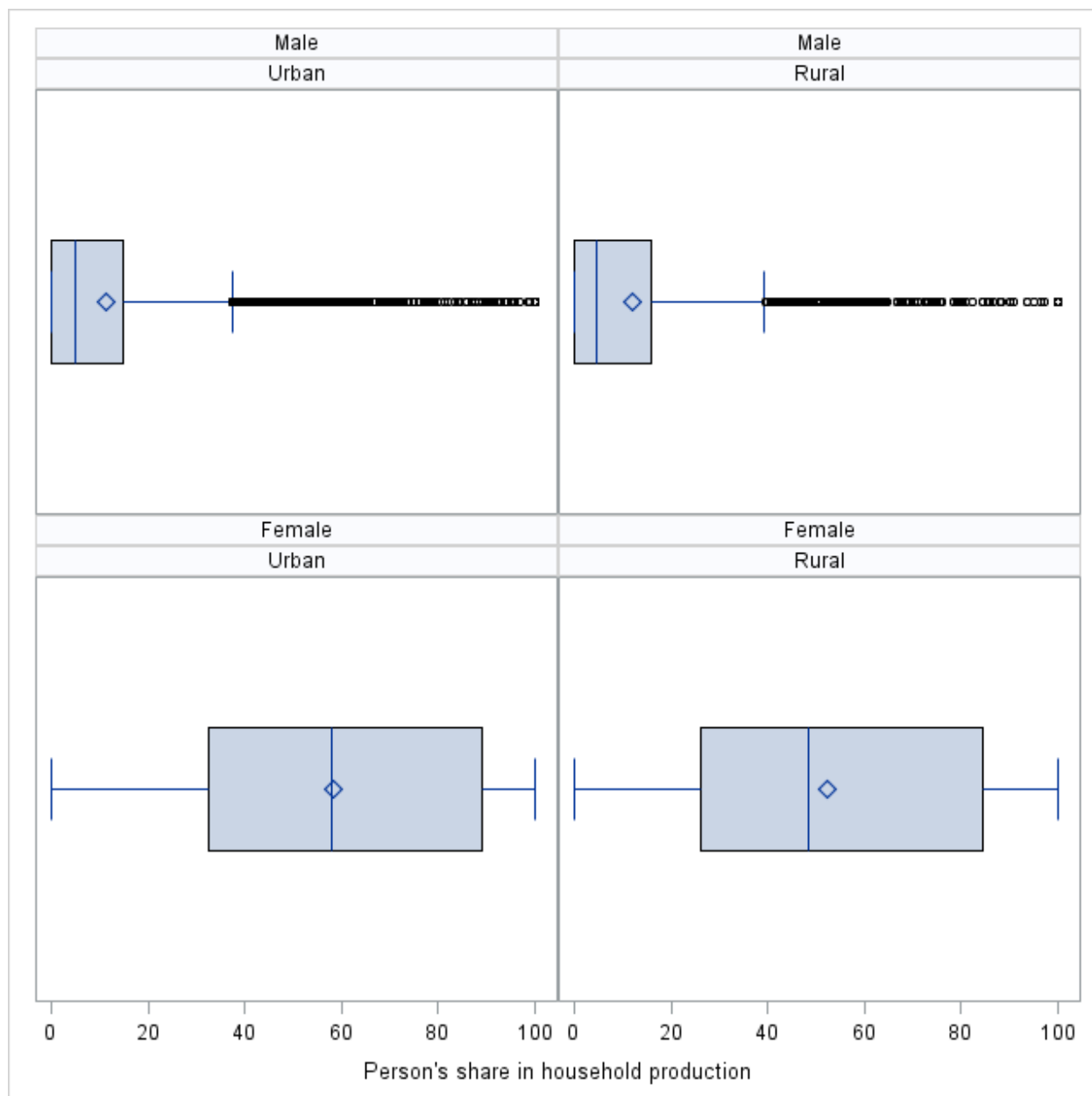
Our assumption is that the required hours should show a positive gradient with respect to adults and a positive gradient with respect to children. That is, the required hours of household production for the household as a whole should increase when there are more adults in the household, and when there are more children in the household. We think that this is a reasonable assumption. Actual hours estimated from the sample data, however, did not satisfy our assumption in a few cases. This could be due to a variety of reasons.³⁰ The estimates shown in Figure 8 were therefore derived on the basis of some adjustments. The first adjustment was regarding single-adult households with children, which constituted only a small fraction of all households (about 3 percent in 2006). In this case, instead of the estimates obtained for the reference group, we used the estimates for the entire sample of single-adult households, differentiated by location and number of children. The second adjustment was made for two-adult households that displayed a rather flat gradient of hours of household production with respect to the number of children in a couple of subgroups. To overcome this problem, we derived estimates based on the gradient observed for the group of 2-adult households with consumption around the poverty line.³¹

After we estimated the threshold hours of household production, we determined the share of each individual in the household in household production. This was done using the matched (HBA-ZKA) data. We assumed that the share of an individual in the threshold hours would be equal to the share of that individual in the observed total hours of household production in their household. Consider the hypothetical example of a household with only two adults in urban Turkey. If the synthetic data showed that the adults spent an equal amount of time in household production, we divided the threshold value of 43 hours equally between them. However, the equal sharing of housework between the sexes is the exception rather than the norm, as indicated in Figure 9.

³⁰ Such as small numbers of observations for some of the subgroups in the reference group.

³¹ In effect, this amounts to a relaxation of the definition of the reference group which requires in addition to having consumption around the poverty line the presence of a nonemployed adult in the household. We chose the solution described above because it would minimize the extent of measured time poverty among the variants considered. In other words, we wanted to avoid overstating the thresholds of household production. Overall, the adjustments described above affected the thresholds of about 30 percent of households in the sample.

Figure 8 Person's Share in the Total Hours of Household Production (Percent) by Sex and Location, Persons 18 to 70 Years

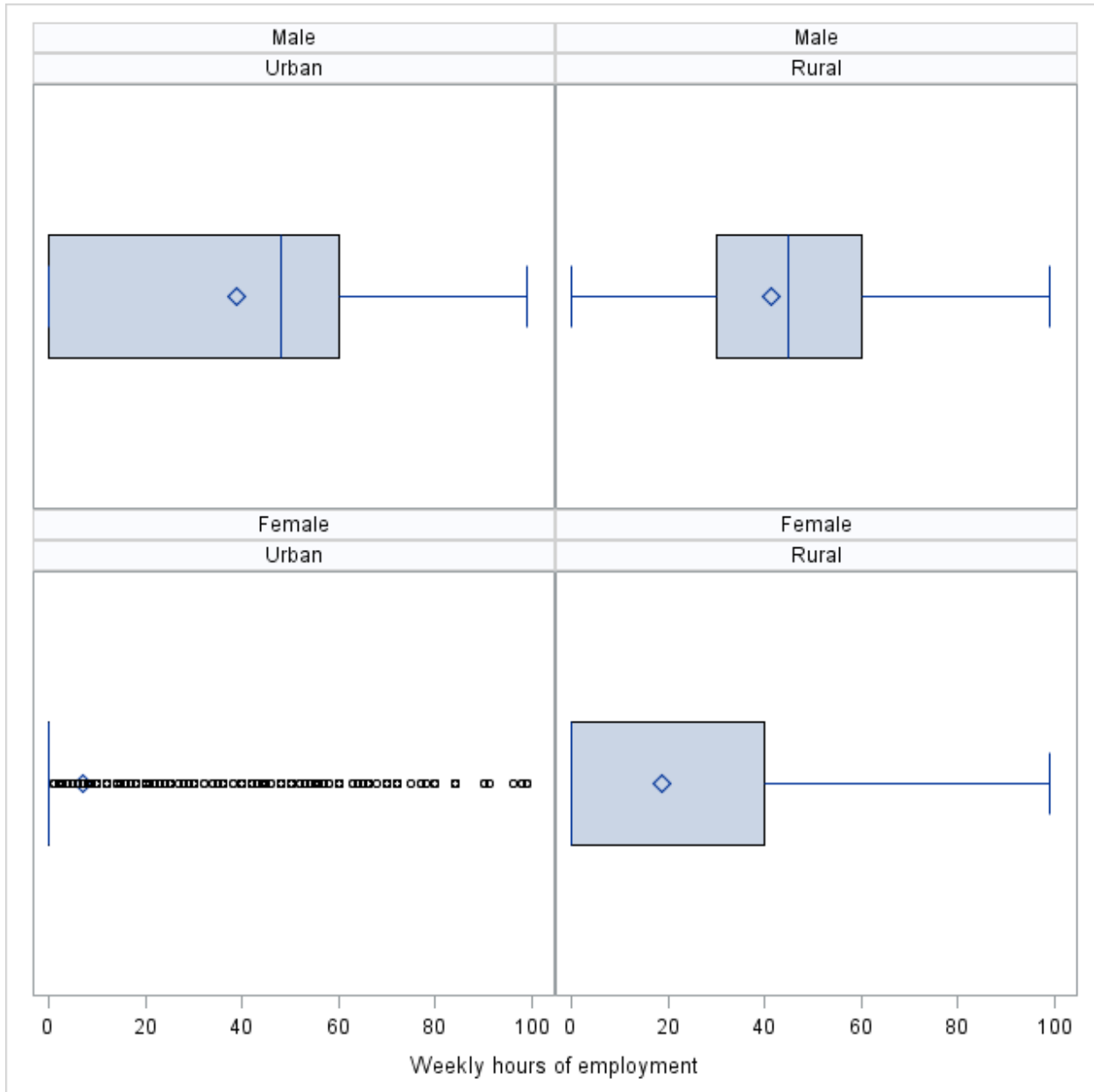


Source: Authors' calculations [matched HBA-ZKA data set]

The left and right edges of the box indicate the intra-quartile range (IQR), i.e., the range of values between the 25th and 75th percentiles. The marker inside the box indicates the mean value. The line inside the box indicates the median value. The picture clearly shows that men's share is much lower, as most of the distribution for men lies to the left of the distribution for women.

The final step in calculating the time deficits for individuals consists of obtaining the actual weekly hours of employment. We used the hours reported by individuals in the HBA.³² As is well-known, women, especially in the urban areas, have much lower levels of labor market activity in Turkey (Figure 10).³³

Figure 9 Distribution of Weekly Hours of Employment by Sex and Location, Persons 18 to 70 years



³² Unfortunately, no information on commuting to work was available from the time-use survey. If such information were available, we could have accounted for it in the measurement of time poverty by adding "threshold" values of commuting to hours of employment.

³³ Only 16 percent of urban women were employed as opposed to 41 percent of rural women.

The steps described above yielded information sufficient to estimate the time deficits for all individuals aged 18 to 70 years. The household-level value of time deficits can then be obtained in a straightforward manner by summing the time deficits of individuals in the household.

3.4 Adjusting Poverty Thresholds

The general procedure behind the construction of national poverty thresholds in Turkey follows a variant of the well-known “cost of basic needs” approach (see Section 2.4 for a discussion). A minimum amount of food expenditures required for survival (food poverty line) is first identified. Next, an appropriate number is chosen regarding the share of food expenditure in total consumption expenditures. Dividing the minimum amount of food expenditures by the chosen budget share of food yields the poverty line. There are two variants here. One variant uses the average caloric norm for all persons (2,100 kcal) as the anchor for food expenditures; the alternative is based on the average caloric norm for all adults (2,450 kcal). In our estimates, we used the latter variant. Table 4 below presents the official and adjusted poverty line by household size. The poverty line specified for the average adult was converted into a household-level measure by multiplying it with the number of equivalent adults in the household.³⁴ We derived the number of equivalent adults by using the official equivalence scale: $S = (A + 0.9C)^{0.6}k$ with k defined as $k = (A^o + C^o)/(A^o + 0.9C^o)^{0.6}$, S representing the number of equivalent adults, A representing the number of adults, C representing the number of children and the superscript ‘ o ’ representing the values of the variables for the reference or “normalizing” household.

³⁴ Adjustment coefficient used to convert average caloric norm into adult caloric form is (1.66=2,450 kcal/2,100 kcal).

Table 9 Thresholds of Complete Poverty Lines According to Household Size, 2006

Household size	Complete poverty line ⁽¹⁾ (TL)	
	2006 ⁽²⁾ (based on 2,100 kcal)	2006 (adjusted line based on 2,450 kcal)
1	244	404
2	368	611
3	466	773
4	549	911
5	627	1040
6	697	1157
7	766	1272
8	831	1380
9	884	1468
10	938	1557

Note: (1) Poverty line includes both food and non-food expenditures. (2) The numbers in this column are from TUIK.

Accounting for time deficits requires the modification of the official threshold. The modification consists of adding the monetized value of household time deficit to the threshold. We assume that the hourly value of time deficit is equal to the average hourly wage of domestic workers, an assumption that is widely made in research on the valuation of household production.

Unfortunately, detailed occupational coding was not available in the Turkish microdata to identify domestic workers directly.³⁵ Therefore, we used the average wage of “similar workers,” calculated from the HBA. To identify similar workers, we first isolated individuals that were identified as employed in the industry “Other social, community and personal services” (industry code 14) and engaged in the occupation of “Sales and services elementary occupations” (two-digit occupation code 91).³⁶ Then, we excluded all self-employed individuals (2 observations), unpaid family workers (1 observation) and regular wage and salary workers that were male (42

³⁵ Ideally, we would have preferred to use the wages of workers classified as “domestic and related helpers, cleaners and launderers” (ISCO code 913). However, three-digit occupational codes are not available in the HBA or the Turkish labor force survey, Hanehalkı İşgücü Anketi (HLFS). However, the HBA provides a more detailed occupational classification (by 14 categories rather than 9 in HLFS). The industrial classification is also more detailed in the HBA than HLFS: Social and personal services sector is coded as a separate category from the social services like educational and health services sector. In addition the information on wage income in the HBA is more detailed (premiums or bonus pay) than the HLFS. For these reasons, we chose the HBA rather than HLFS to construct our replacement cost measure.

³⁶ The public-use version of HBA contained only single-digit occupational codes. We are grateful to TUIK for providing us with the two-digit codes.

observations). The remaining individuals—male casual wage workers (5 observations),³⁷ female regular wage and salary workers (26 observations), and female casual wage workers (67 observations)—were assumed to form the group of “similar workers,” that is, a group of workers that were likely to have hours of employment and wages that would roughly approximate those of domestic workers. Hereafter, we refer to the group of similar workers as “domestic workers.”

The hourly wage of domestic workers was calculated by dividing their monthly earnings³⁸ by their effective monthly hours. We defined earnings as money and in-kind income received as wages (including income from secondary jobs and incentives received for switching jobs³⁹). Effective monthly hours were calculated by multiplying the weekly hours of employment by 4 and then adding 2/7 of the reported hours to sum to 30 days.⁴⁰ Because the number of observations available for domestic workers was too small to produce estimates for rural and urban areas separately, we assumed that the rural-urban wage differential among them was equivalent to that observed in the data for female casual wage workers. The average hourly wage of domestic workers (3.48 liras) was multiplied, respectively, by the urban (1.19) and rural (0.73) differentials to derive the hourly replacement cost of time deficits incurred by persons in the urban and rural areas.

Both the official poverty line and poverty line adjusted by the value of time deficits are compared against a measure of household consumption expenditures to assign poverty status. The consumption measure includes food and non-food expenditures categorized by COICOP-HBS classification (Classification of Individual Consumption by Purpose adapted for the Household Budget Surveys). Households' purchases for their everyday needs (e.g. food, clothing, rents, personal services), household's produced goods for own consumption, estimated imputed rents for services of owner-occupied housing, income in-kind earned by employees, consumption of goods that were produced for sale by own-account workers in their own homes, and goods and services purchased by the household with the purpose of transferring them to other households or

³⁷ We included this group of male workers to allow for the possibility that some males may be employed in domestic service occupations such as gardeners, drivers etc.

³⁸ The HBA did not contain any information on weekly earnings.

³⁹ Incentives received for switching jobs were reported as annual amounts. We converted them into monthly amounts by dividing them by 12.

⁴⁰ Weekly hours of two domestic workers had a value of 99. We replaced it with the average hours for all domestic workers because 99 is unlikely to be weekly hours of employment.

institutions. Consumption expenditures used in the official calculation of poverty line excludes the purchase of durable goods.⁴¹

⁴¹ Purchases of products such as refrigerators, freezers, furniture, automobile and other durable goods are not taken into account in poverty line consumption expenditures.

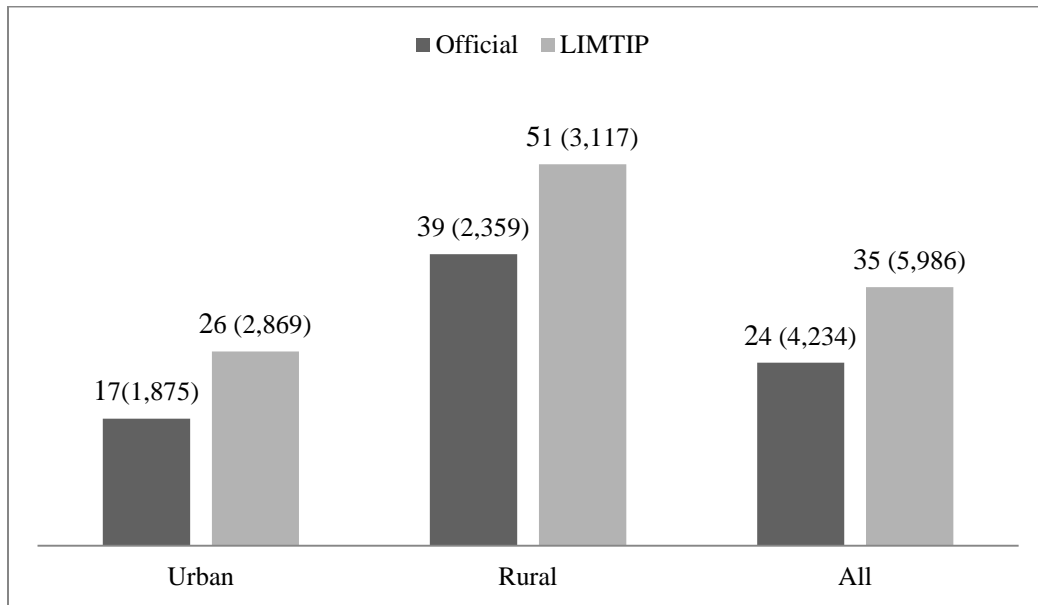
4 TIME AND CONSUMPTION POVERTY, 2006

4.1 The Hidden Poor: Comparing Official and Adjusted Rates of Consumption Poverty

Let us begin by contrasting the incidence of consumption poverty according to the official threshold and our threshold—the official threshold adjusted by the monetized value of the time deficit. As we would expect, the number of poor and poverty rate would be higher with our LIMTCP threshold than the official threshold because the consumption shortfall of the hidden poor remains invisible unless their time deficits are taken into account. The proportion of hidden poor households in the total number of households is referred to below as the hidden poverty rate.

Our estimates of the size of the hidden poor suggest that ignoring time deficits in household production led to a major underestimation of the incidence of consumption poverty in both the urban and rural areas (Figure 11). *In contrast to the official poverty rate of 24 percent, the adjusted poverty rate was 35 percent—a huge difference that represented about 1.8 million households.* For urban areas, the official poverty rate was 17 percent, whereas the LIMTCP poverty rate stood at 26 percent with one million additional households found to be in poverty. In rural areas, an additional 800,000 households turned out to be among the ranks of poor households, representing a poverty rate of 51 percent compared to the official rate of 39 percent. The number of poor households increased by 53 and 31 percent, respectively, in urban and rural areas when time deficits were taken into account; for the nation as a whole, the increase was 41 percent.

Figure 10 Incidence of Consumption Poverty: Official vs. LIMTCP (Percent of all Households and Number of Poor Households in Thousands Shown in Parentheses)



Similar increases can also be observed for individuals, men, women and children (Table 10). The poverty rate of individuals was somewhat higher than that of households because, on average, poor households had more members than nonpoor households. Children had a higher poverty rate compared to adults because families with children had a much higher poverty rate than the overall rate for households (see below). Rural children appear to be the most impoverished group by the official and LIMTCP measure. We found that the gender gap in poverty rate was almost non-existent in the urban areas by either the official or LIMTCP measure. In contrast, in the rural areas, women experienced slightly higher rates than men by both measures. As the proportion of women in the overall population was greater than men, the total number of poor women would be greater than poor men, even if both had the same poverty rate. However, in the rural areas, the demographic effect was compounded by the higher poverty rates (LIMTCP and official) of women. The relatively small gender gap in the hidden poverty rate suggests that, taken as a whole, the impoverishing effects of time deficits were felt by both men and women to a roughly equal degree. The overall composition of the LIMTCP poor population is more urban than the official poor population—a reflection of the higher time poverty rates (as we shall see later) and the greater proportion of near-poor working families in the urban areas.

Table 10 Poverty of Individuals: Official vs. LIMTCP

	Rate (percent)			Number (thousands)		
	Official	LIMTCP	Hidden poor	Official	LIMTCP	Hidden poor
TURKEY	30	40	11	21,406	29,035	7,629
Men	24	35	11	5,342	7,670	2,328
Women	26	36	10	6,243	8,722	2,480
Children	38	49	11	9,822	12,643	2,822
URBAN	20	30	10	9,225	13,546	4,320
Men	16	26	9	2,295	3,582	1,287
Women	17	26	9	2,667	4,030	1,363
Children	27	38	11	4,263	5,934	1,670
RURAL	45	58	12	12,181	15,490	3,309
Men	38	51	13	3,047	4,088	1,041
Women	40	53	13	3,576	4,692	1,116
Children	56	67	12	5,558	6,710	1,152

The hidden poverty rate of households depends on the proportion of households that are officially classified as nonpoor but face some level of time deficits in the total number of households. Obviously, if there are no time-poor households among the officially nonpoor, the official and LIMTCP poverty rates would be identical. The difference between the official and LIMTCP rate is also a function of the proportion of households with consumption below the LIMTCP threshold in the total number of time-poor households that are officially classified as nonpoor. Clearly, if everyone in the latter group (time-poor and officially nonpoor) had high enough consumption to compensate for the monetized value of their time deficits, then the official and LIMTCP poverty rate would be identical.⁴²

The estimates shown in Table 11 indicate that the percentage of households that are time-poor and officially nonpoor in the total number of households was 3 percentage points higher in urban than the rural areas (35 versus 32 percent). However, while in urban areas 25 percent of the households that are officially nonpoor and time-poor did not have consumption above the LIMTCP threshold; this proportion was much higher in rural areas at 39 percent—a reflection of the urban-rural gap in the level of household consumption. Indeed, this appears to be the main reason behind the higher gap between the official and LIMTCP poverty rate in rural Turkey.

⁴² Let N be the total number of households, H the total number of “hidden poor” households and S the total number of officially nonpoor households who are time-poor. Further, let P and P^* represent, respectively, the official and LIMTCP poverty rates. Then: $P^* - P = (S/N)(H/S)$.

Table 11 Factors Affecting the Hidden Poverty Rate (LIMTCP Minus Official Poverty Rate) of All Households (Percent)

	Hidden Poverty	Time-poor and officially non-poor /All	Hidden poor/Time-poor and officially non-poor
All	10	34	30
Urban	9	35	25
Rural	12	32	39

4.2 Hidden Consumption Needs

Taking time deficits into account affects not only the measured rate of consumption poverty (as we saw above in our discussion of the hidden poor) but also the depth and severity of consumption poverty. In other words, a different picture emerges regarding the unmet consumption needs of the poor. For the officially poor households with time deficits, the addition of the monetized value of time deficit to their poverty line increases their consumption deficit (the difference between the poverty line and consumption). This has the effect of increasing the average consumption deficit of all poor households under the LIMTCP definition relative to the official definition. The average deficit is also affected by the addition of the hidden-poor, though its effect on the overall average deficit is hard to predict *a priori*. Needless to say, the officially poor households without time deficits would experience no change in their deficit because their poverty lines are not affected by the monetization of time deficits. The average deficit of all poor households would thus be the weighted average of the average deficits of the three groups, where the weights are their respective shares in the consumption-poor population.

Our estimates showed that the average LIMTCP deficit for the poor households was 1.6 times higher than the official deficit in urban areas, while in rural the gap was 1.8 times higher (Table 12). The difference between the average LIMTCP and official deficits indicates that the official measure grossly understates the unmet consumption needs of the poor population in Turkey. From a practical standpoint, this suggests that taking time deficits into account while formulating poverty alleviation programs will alter the focus of both the coverage (including the "hidden poor" in the target population) and the benefit levels (including the time-adjusted consumption deficits where appropriate). As expected, the sharp increase in the deficits of the

officially poor, time-poor households contributed to the wedge between the LIMTCP and official deficit. The LIMTCP deficit of this group was 2.6 times higher than the official deficit in urban and 2.3 times in rural areas. But the share of time-poor households in the officially poor households was higher in rural than urban areas (61 versus 38 percent) and this is reflected in its higher LIMTCP-to-official deficit ratio that we noted at the start of this paragraph.

Table 12 Average Consumption Deficit (Nominal Monthly Values) and Share (in the Total Number of Consumption-Poor Households) of Consumption-Poor Households by Subgroup

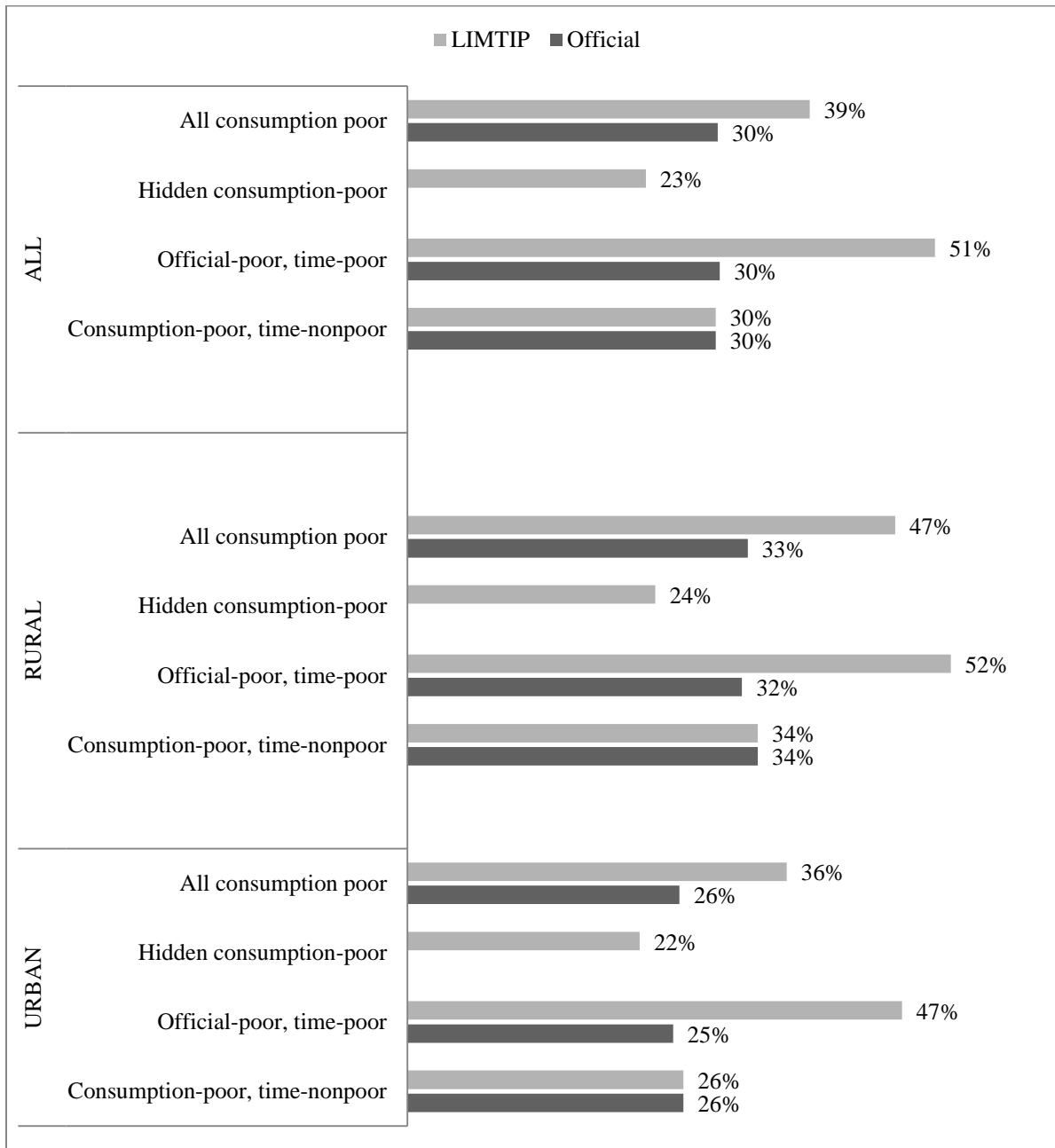
	Official		LIMTCP	
	Share (percent)	Deficit	Share (percent)	Deficit
URBAN				
Consumption-poor, time-nonpoor	62	186	41	186
Official-poor, time-poor	38	185	25	488
Hidden consumption-poor			35	274
All consumption-poor	100	186	100	300
RURAL				
Consumption-poor, time-nonpoor	39	226	30	226
Official-poor, time-poor	61	244	46	561
Hidden consumption-poor			24	263
All consumption-poor	100	237	100	429
TURKEY				
Consumption-poor, time-nonpoor	49	203	35	203
Official-poor, time-poor	51	224	36	537
Hidden consumption-poor			29	269
All consumption-poor	100	214	100	372

Average levels of consumption do vary across the subgroups of the poor shown in Table 12 as a result of various factors such as income differences. It is also the case that poverty lines, official as well as LIMTCP, would differ among subgroups because of differentials in demographic characteristics and time deficits.⁴³ For both these reasons, it is useful to view the consumption shortfall as a percentage of the poverty line (Figure 12), (i.e., the percentage amount by which the poor household's consumption fall short of its minimum needs). Our estimates showed that, for the nation as a whole, the LIMTCP percent shortfall was higher than the official (39 versus

⁴³ The variation due to time deficits apply only to LIMTCP thresholds and render their range wider than that of official thresholds that vary only due to the size and composition of households.

30 percent). The same pattern was also found in urban (36 versus 26 percent) and rural (47 versus 33 percent) areas. Three principal factors account for the variation in the official-LIMTCP discrepancy between the urban and rural areas: Relative size of the subgroups, deficit of the hidden poor and change in the deficit of the officially poor, time-poor households. In both regions, the LIMTCP deficit of the hidden poor, expressed as a percentage of their (LIMTCP) poverty line, was lower than the other two subgroups, reflecting the fact that their consumption levels were above the official poverty line. The officially poor, time-poor households in urban areas (25 percent) fared better than their rural counterparts (32 percent) in terms of their percent deficit as per the official measure. Using the LIMTCP measure, the size of the difference turned out to be smaller (47 versus 52 percent), which reflects the relatively greater impact of the monetization of time deficits on this subgroup in urban areas.

Figure 11 Average Consumption Deficits (Percent of Poverty Line) of Consumption-Poor Households by Subgroup



4.3 The LIMTCP Classification of Households

Turning now to the joint distribution of time and consumption-poverty status among households, we found that the majority of Turkish households faced either consumption or time deficits (Table 13). The percentage of households that faced neither deficit was 41 percent for the whole nation, but only 29 percent in rural and 48 percent in urban Turkey. The urban-rural disparity was also notable in the incidence of the double burden of both time and consumption deficits. While 22 percent of all Turkish households encountered both types of deficit, the proportion in the rural areas was more than twice that in urban areas (36 versus 15 percent). The proportion of groups that faced only one type of deficit (time or consumption) showed relatively less urban-rural disparity.

Table 13 LIMTCP Classification of Households and Incidence of Time Poverty Among Households (Percent)

	LIMTCP classification				Time poverty rate		
	Time and consumption-poor	Time-nonpoor and consumption-poor	Time-poor and consumption-nonpoor	Time-nonpoor and consumption-nonpoor	Consumption-poor	Consumption-nonpoor	All
Urban	15	10	26	48	59	36	42
Rural	36	15	20	29	70	40	56
Turkey	22	12	24	41	65	37	47

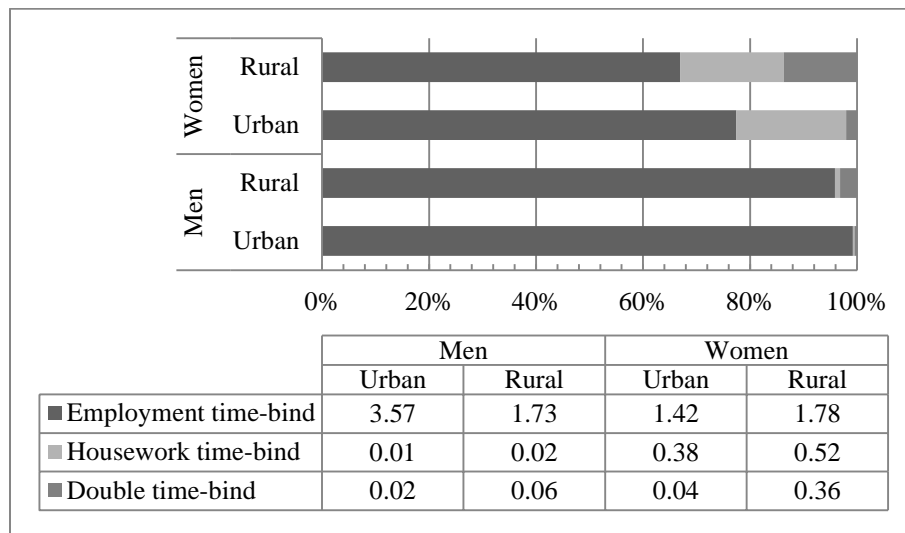
The urban-rural disparity in the incidence of both deficits and incidence of neither deficit is related to the disparity in the rates of consumption poverty--consumption poverty is markedly higher in the rural areas. It is also explained by the urban-rural difference in the incidence of time poverty. For the consumption-poor in the whole nation, we estimated that roughly two out of every three households was time-poor (65 percent). However, the incidence was much higher among the rural than the urban consumption-poor (70 versus 59 percent). Similarly, among the consumption-nonpoor in Turkey, we estimated a time poverty rate of 37 percent with urban households registering a smaller rate than their rural counterparts (36 versus 40 percent). The higher incidence of time deficits among the consumption-poor lays to rest the notion that this type of vulnerability is likely to be encountered more by those with professional occupations

with relatively higher pay (such as doctors and engineers). Since other types of social and economic disadvantages tend to accompany consumption poverty, it is quite likely that the negative effects of time poverty will affect the consumption-poor disproportionately compared to the consumption-nonpoor.

4.4 The Hidden Time-Poor, Rates of Time Poverty and Size of Time Deficits

We distinguished between three types of time poverty (Section 3.1, Table 5).⁴⁴ The most common type of time deficit occurs because hours of employment exceed the time available after setting aside the required hours of personal care and household production (“employment time-bind”). However, in our framework, time deficits can occur even before the hours of employment are taken into account due to excessive burdens of household production (“housework time-bind”). The standard approach to the measurement of time poverty fails to capture this source of time deficits and focuses entirely on the employment time-bind. Housework time-bind can be the result of highly inequitable division of household work or inordinately high demands of household production or a combination of both. Indeed, some individuals might suffer from both types of time poverty (“double time-bind”).

Figure 12 Type of Time Poverty by Sex and Location (Percent Distribution and the Number of Time-Poor Persons in Millions)

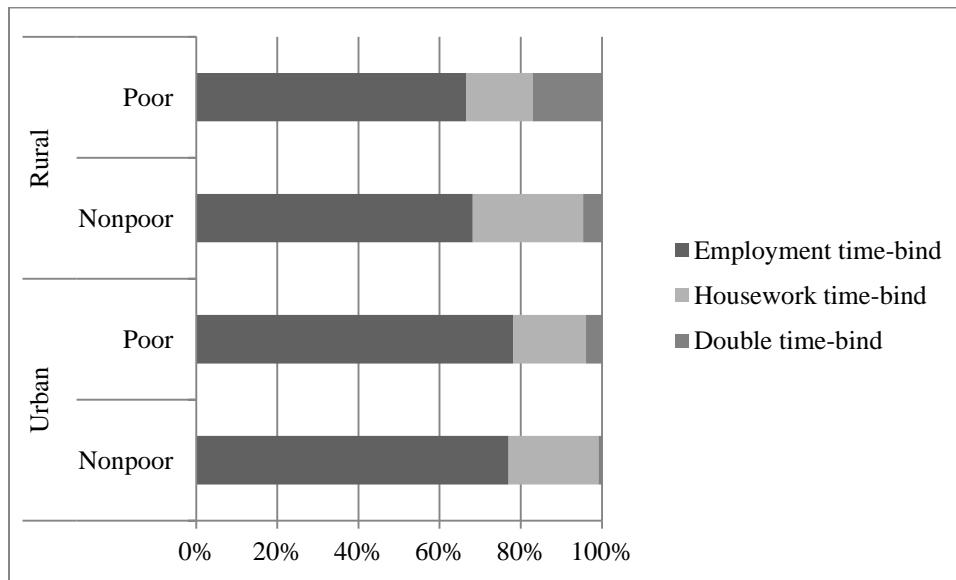


Note: The numbers in the table are in millions.

⁴⁴ An individual suffers from a time deficit if the *required* weekly hours of personal care and household production plus the *actual* weekly hours the individual spends on employment is greater than the number of hours in a week. We designated a household as time-poor if it has at least one time-poor adult (between the ages of 18 to 70 years). Accordingly, time-poor households can include adults with no time deficits.

Our estimates showed that while the employment time-bind is the predominant type of time poverty, the housework time-bind is also a substantial source-- out of the nearly 10 million time-poor persons, nearly one million (920,000) encountered the housework time-bind (Figure 13). That is, conventional measure of time poverty would have missed about one million people from the ranks of the time-poor and classified them as time-nonpoor. The hidden time-poor were almost entirely women, which is not surprising given the gendered division of housework. Rural women in Turkey appear to be far more vulnerable to the double time-bind than any other group of men or women shown in Figure 13. Approximately 14 percent of rural women were engaged in paid work activity even though they were time-poor by our measure as a result of their high required levels of household production. In contrast, only a trivial proportion of urban women (2 percent) faced the risk of double time bind and a similar proportion of rural men (3 percent) also were found to be in the same position. Among women, consumption-poor women appear to be more prone to the double-bind than nonpoor women and the disparity is especially pronounced in the rural areas (Figure 14).

Figure 13 Type of Time Poverty of Women by Location and Poverty Status (Percent Distribution)



Note: Poverty status is designated using the LIMTCP thresholds.

Since the predominant source of time deficits arises in the form of the employment time bind, we would naturally expect the employed population to have higher time poverty rates than the nonemployed. In addition, time poverty rates can be expected to display marked differences by gender, location (urban versus rural) and poverty status of the household. Three salient findings emerge from our estimates for Turkey in this respect (Table 14). First, the highest time poverty rates occur among poor employed women, which, surprisingly, do not show any urban-rural disparity. Second, the gender disparity in time poverty is markedly different according to location and poverty status. On both sides of the consumption poverty line, men have a higher time poverty rate than women in urban areas. On the other hand, in the rural areas, time poverty rates for men and women are similar among the nonpoor; and, the time poverty rate of women was actually higher than men among the poor. Third, we had noted earlier that consumption-poor households had higher rates of time poverty than consumption-nonpoor households. A similar pattern can be seen within each sex. Both in rural and urban areas, poor men and women have markedly higher time poverty rates than their nonpoor counterparts.

Table 14 Time Poverty Rates of Adults by Sex and Poverty Status

				All	Employed
Turkey	Nonpoor	Men	21	29	
		Women	12	48	
	Poor	Men	34	42	
		Women	32	68	
Urban	Nonpoor	Men	21	29	
		Women	11	48	
	Poor	Men	33	42	
		Women	21	68	
Rural	Nonpoor	Men	19	24	
		Women	18	42	
	Poor	Men	29	34	
		Women	44	67	

The extent of time deficits of time-poor adults also presents strong asymmetry with respect to gender and poverty status (Figure 15). Both in urban and rural areas, the level of time deficit faced by men does not show much variation by poverty status of the households they lived in. However, poverty status does appear to matter for women, particularly in the rural areas. The highest time deficit as well as the highest time poverty rate falls upon employed consumption-

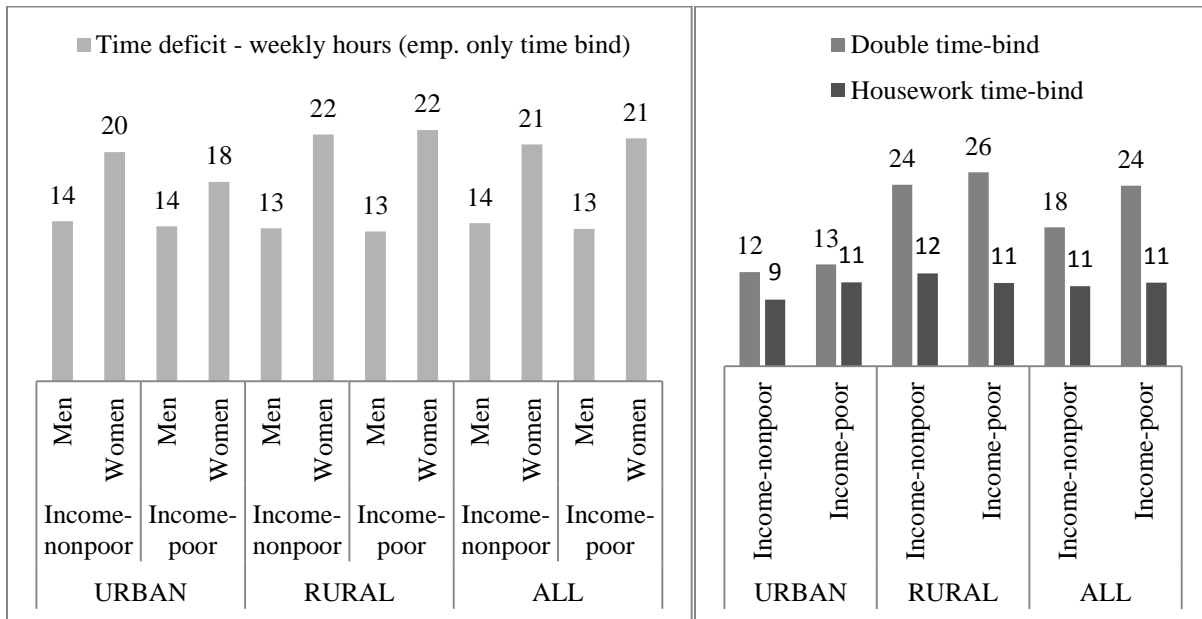
poor women in rural areas. In urban areas too, women face higher time deficits than men, but the gender gap among consumption-poor is lower than consumption-nonpoor adults.

Men’s average time deficit does not change by employment status because almost all of the time-poor men were employed. As noted above, housework time-bind falls almost exclusively on women. But employed women face a higher time deficit than nonemployed women. Among the employed, we found a considerable gender gap in the size of the deficit, ranging from 4 hours (urban consumption-poor subgroup) to 13 hours (rural consumption-poor subgroup). Part of the reason why employed women tend to have greater deficits than employed men was that, among those with an employment-only time-bind, women had higher deficits, on average, than men (Figure 16). Another reason was the incidence of the double time-bind, which is disproportionately borne by women, and the high time deficit associated with it.

Figure 14 Time Deficit of Time-Poor Adults by Sex and Income Poverty Status (Average Weekly Hours)

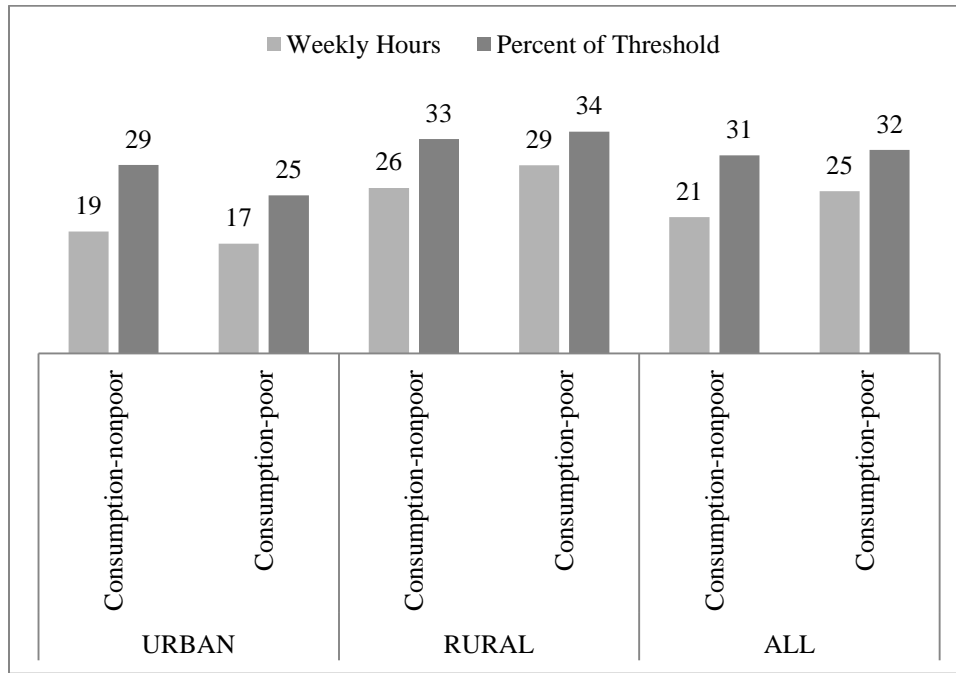


Figure 15 Time Deficit from Employment-Only Time-Bind of Time-Poor, Employed Adults (by Sex) and Time Deficit from Other Time-Binds Faced by Time-Poor Women (Weekly Hours)



Similar to the findings on the incidence of time poverty among households, the average time deficit of consumption-poor households was found to be higher than consumption-nonpoor households in rural areas unlike urban areas (Figure 17). While consumption-poor households had a deficit of 29 hours per week, consumption-nonpoor had a 26-hour deficit on average. In urban areas, the corresponding estimates are 17 hours per week for consumption-poor versus 19 hours per week for consumption-nonpoor. When expressed as a percent of the average threshold value of household production, the time deficits of the consumption-poor and consumption-nonpoor were roughly similar (about 34 percent) in rural areas, while the proportions were smaller in urban areas.

Figure 16 Household Time Deficit of Time-Poor Households by Income Poverty Status



4.5 Hours of Employment, Time Deficits and Earnings

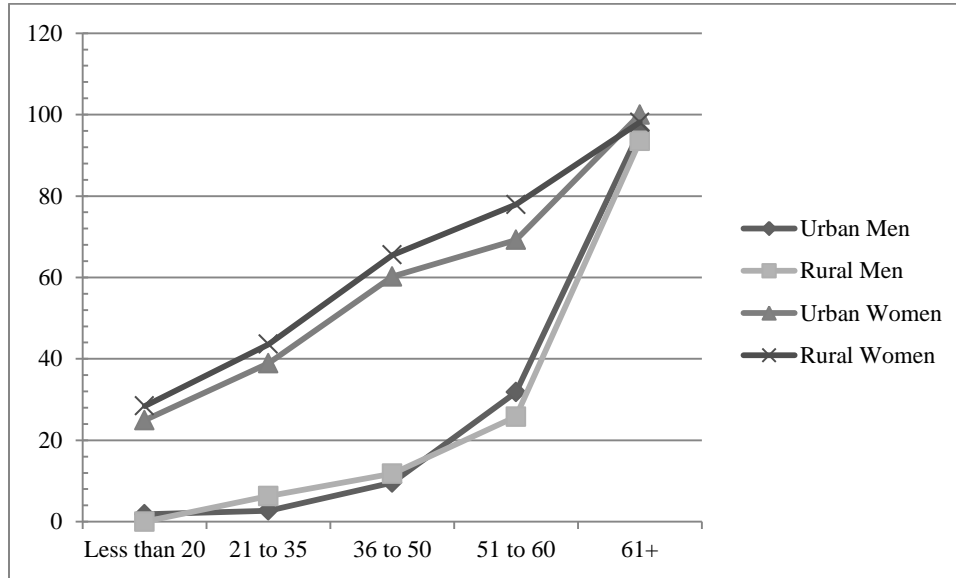
As we described above, the overwhelming bulk (about 90 percent) of time-poor persons is employed. It is well known that there is a notable gender gap in the employment rates of men and women in Turkey: among persons between the ages of 18 and 70 years (our study population), 73 percent of urban and 80 percent of rural men were employed compared to 17 and 43 percent of their female counterparts. In this section, we take a closer look at the time poverty of employed persons.

As we would expect, the rate of time poverty increases as the weekly hours of employment rise for both men and women. But, the gender gap is visible within every interval of hours worked, except at the top (61 hours or more) interval, where time poverty is practically universal (Figure 18). For the nation as a whole, among those who worked part-time (less than 35 hours per week), 4 percent of men were time-poor compared to 37 percent of women; the gap is quite large at 33 percentage points (70 percent of women versus 37 percent of men) among full-time workers, too.⁴⁵ The largest concentration of men and women workers (a little over 40

⁴⁵ Part-time work is much more prevalent among women than men (35 versus 7 percent).

percent) was in the group 36 to 50 hours per week. Here, the rate of time poverty among women was 6.1 times as high as among men.

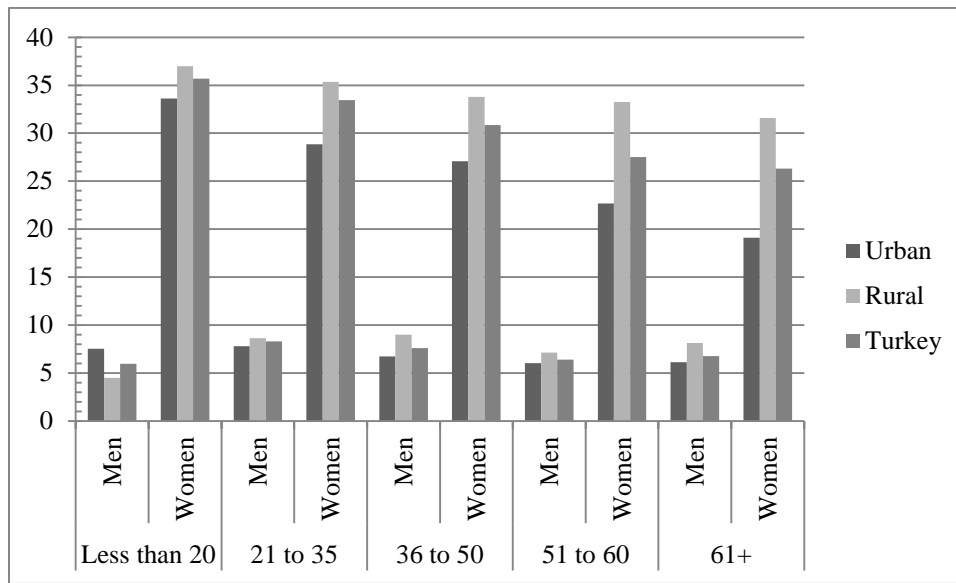
Figure 17 Incidence of Time Poverty by Weekly Hours of Employment and Sex (Percent)



A group of people could have a higher rate of time poverty vis-à-vis another group because of the difference in the hours of required household production (see Equation 2). For example, if people with higher weekly hours of employment also faced higher hours of required household production relative to those with lower hours of employment, then the latter would also move toward a higher incidence of time poverty. However, this does not seem to be the case in Turkey. As shown in Figure 19, the weekly hours of required household production for men lie in the tight range of 6 to 9 hours. For women, the range of variation was larger: from 19 to 37 hours across the intervals of hours of employment. However, both in the urban and rural areas, required hours of household production are somewhat lower for women with longer hours of employment than women with shorter hours. Thus, longer hours at the job, rather than higher housework burdens, appear to lie behind the positive correlation between hours of employment and time poverty rates. On the other hand, the gender disparity in the incidence of time poverty *within* each interval of hours of employment was accompanied by a stark difference in the hours of required household production. Average hours of household production by employed women stood at 31 hours per week compared to 7 hours by employed men. Among women, rural women carry notably higher burdens of household production, which contributes to the higher incidence

of time poverty among them compared to urban women.⁴⁶

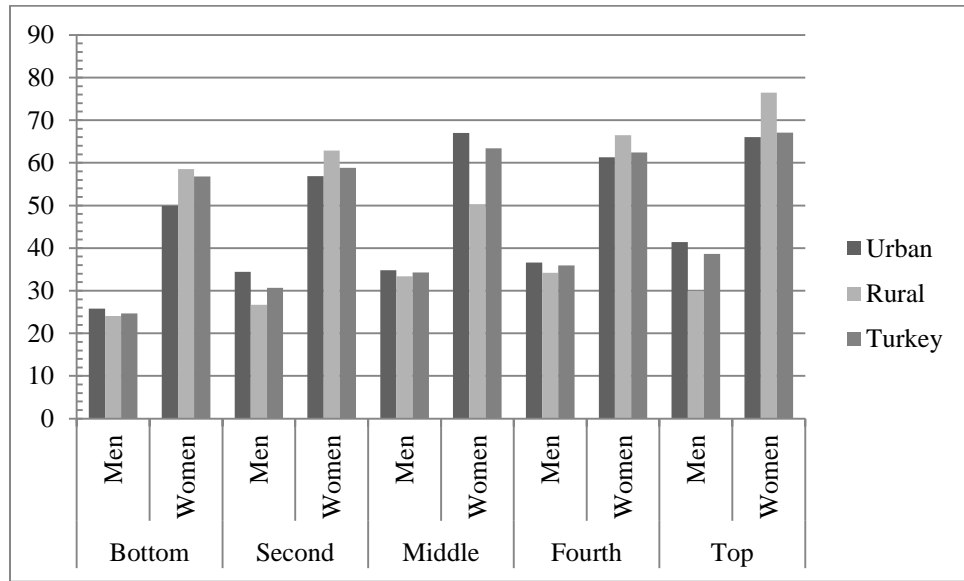
Figure 18 Weekly Hours of Required Household Production, by Weekly Hours of Employment and Sex



Just as there was a marked difference between men and women in time poverty rates within intervals of hours at the job, we also found a large difference *within* quintiles of earnings. Time poverty among women exceeded that of men within each quintile by substantial margins ranging from a difference of 47 percentage points between rural men and women in the top quintile to 17 percentage points between rural men and rural women in the middle quintile (Figure 20). With the exception of the latter quintile, the gender gaps in the time poverty rate are higher among the rural than the urban employed population. In general, the time poverty rate rises between the lowest and highest quintiles.

⁴⁶ It may be recalled that the threshold hours of household production were systematically higher for rural households (see Figure 8).

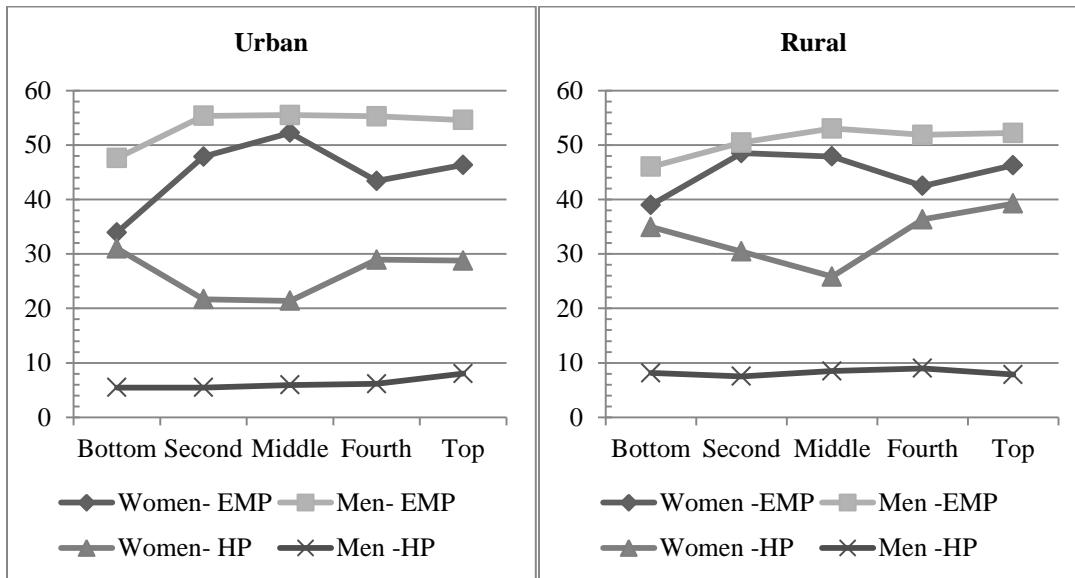
Figure 19 Time Poverty Rate by Earnings Quintile and Sex (Percent)



Note: National earnings quintiles were calculated using the data on all employed persons with positive earnings. However, time poverty rates and composition of quintiles were calculated using the data on all employed persons.

The higher time poverty rate of women was accompanied by higher hours of required household production. Differences in average hours of employment between men and women do not help much in accounting for the sizeable gender difference in the incidence of time poverty within each quintile of the earnings distribution. As shown in Figure 21, the average hours of required household production across quintiles fall between 5 and 9 hours for men and between 21 and 39 hours for women. The average hours of employment were also fairly uniform across the quintiles (except for the relatively low values in the bottom quintile): 50 to 55 hours for men and 42 to 52 hours for women. Clearly, the gap in hours of employment was not sufficient to cover the difference in hours of household production. Hence, employed women carry a greater *total* work burden (household production plus employment) than men in all quintiles, and the extra work hours fell between 9 (urban second quintile) and 25 (rural top quintile) hours per week.

Figure 20 Weekly Hours of Employment and Required Household Production, by Sex and Earnings Quintile



Key: HP=required hours of household production; EMP=hours of employment

Note: National earnings quintiles were calculated using the data on all employed persons with positive earnings. However, hours of employment and household production were calculated using the data on all employed persons.

The potential impact that time deficits may have on the consumption poverty status of low-income earners and their families can be seen by considering the ratio of monetized value of the time deficit to earnings, expressed in percentage terms (Figure 9). Strikingly, we found that the median value of the ratio for rural and urban women, as well as urban men in the bottom, was greater than one. That is, the average worker from any of these groups will not be able to compensate for their time deficit with their earnings and, in order to stave off time poverty, would have to draw on other sources of household income, if available. The largest single group in the bottom quintile was rural self-employed women (25 percent), followed by urban female wage workers (20 percent), rural female wage workers (15 percent) and rural self-employed men (13 percent). Even the average female worker with “middle-class” earnings (i.e., those in the middle quintile) would have to spend almost 45 percent of her earnings on purchasing market substitutes to avoid time poverty. As we would expect from the gender disparity in time deficits, the ratio of time deficits to earnings was consistently higher for women than men.

Table 15 Median Values of the Ratio of Monetized Value of Time Deficit to Earnings, by Sex and Earnings Quintile (Ratio x 100)

	Urban Men	Urban Women	Rural Men	Rural Women
Bottom	116	234	64	195
Second	43	73	26	80
Middle	28	45	16	44
Fourth	21	40	14	31
Top	12	22	5	23

Note: National earnings quintiles were calculated using the data on all employed persons with positive earnings. However, the ratio was calculated using the data on all employed persons.

4.6 Status in Employment, Consumption Poverty and Time Poverty

We have already observed that the labor force participation rate of women in Turkey is far lower than in the OECD countries. Another striking contrast is the high proportion of employed women that falls into the "unpaid family worker" category in Turkey: 42 percent of all employed women were in this category, compared to only 5 percent of all employed men. Over 90 percent of all female unpaid family workers lived in the rural areas—a reflection of the fact that their employment is most likely to be on the family farm or in a small family enterprise. The next largest concentration of employed women was found in the status of regular wage/salary earner: 33 percent of all employed women versus 55 percent of all employed men. In contrast to the situation with female unpaid family workers, most of female wage/salary earners (82 percent) lived in the urban areas. Self-employed women constituted 14 percent of all employed women (as compared to 24 percent of all employed men) and casual wage earners made up about the same proportion of employed men and women (10 percent).

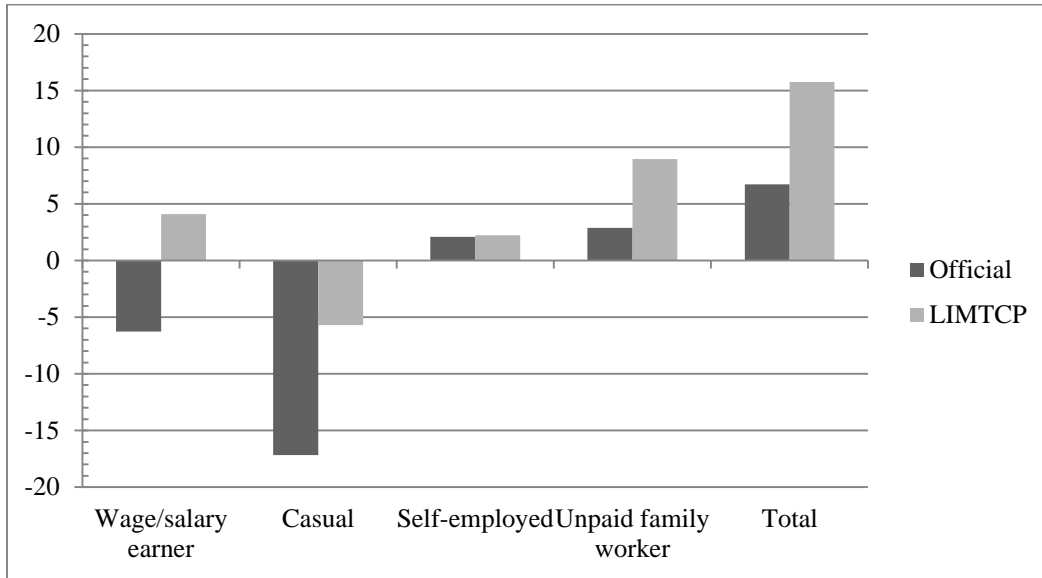
Turning to the consumption poverty rates of all workers by employment status, it appears that the official and LIMTCP measures result in the same ranking: the lowest incidence of poverty is among regular wage/salary earners, followed by the self-employed (Table 16). Interestingly, while the official rates were roughly identical for casual wage earners and unpaid family workers, the LIMTCP reveals a higher poverty rate for unpaid family workers. This difference is found entirely among female workers, as male casual and unpaid family workers have roughly equal rates.

Table 16 Poverty Rate of Employed Persons by Status in Employment (Percent): Official vs. LIMTCP

	Official	LIMTCP	Hidden poor
All			
Wage/salary earner	14	26	12
Casual	45	60	15
Self-employed	36	54	18
Unpaid family worker	46	67	21
All persons	26	41	15
Men			
Wage/salary earner	15	25	10
Casual	50	62	12
Self-employed	35	54	18
Unpaid family worker	44	61	17
All men	25	37	12
Women			
Wage/salary earner	9	29	20
Casual	32	56	23
Self-employed	37	56	18
Unpaid family worker	47	69	23
All women	31	53	21

The accounting of time deficits in poverty measurement produces some interesting changes in the gender disparity in poverty rates. These changes result from the gender difference in the size of the hidden poor: 12 percent of all employed men versus 21 percent of all employed women. The higher incidence of hidden poverty among employed women reflects the fact that a larger proportion of households with employed women are likely to appear as consumption-poor when their time deficits are taken into account, although the official measure categorizes them as consumption-nonpoor. Apart from the category of self-employed workers, the hidden poor constitute a greater proportion of employed women than men. Most striking is the change among regular wage/salary workers: the official measure registers a higher poverty rate for men while the LIMTCP measure reveals a higher poverty rate for women (Figure 22). Similarly, the gender gap in the poverty rate among unpaid family workers is larger by our measure than the official measure, and the gender gap among casual workers is smaller.

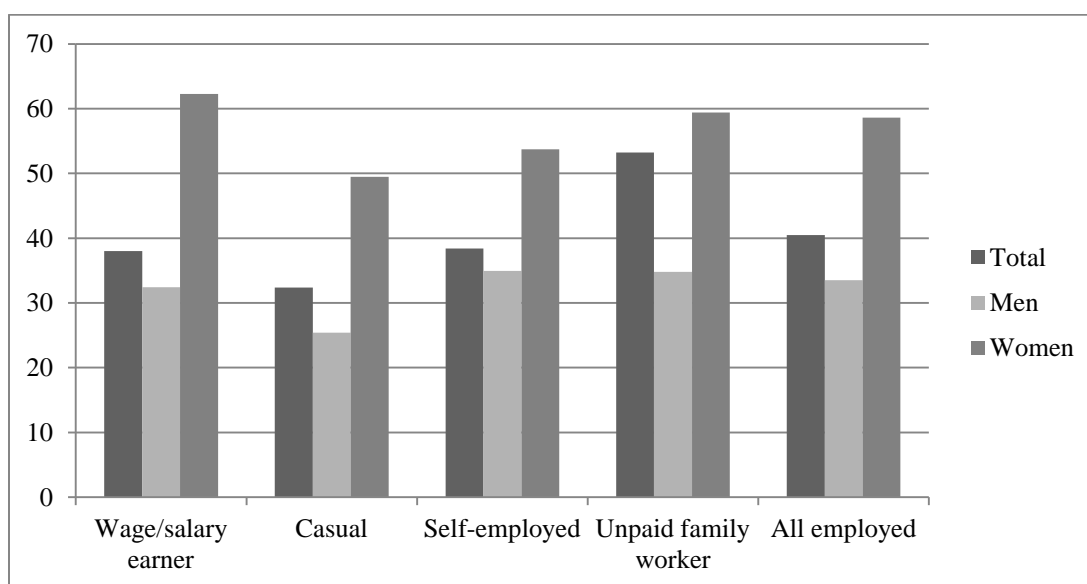
Figure 21 Gender Disparity in Poverty Rate by Status in Employment (Percentage Points): Official vs. LIMTCP



Note: The numbers shown in the vertical axis were obtained by subtracting the poverty rate of men from the poverty rate of women.

The higher incidence of hidden poverty among employed women than men is directly related to the greater time poverty of the former (Figure 23). We estimated that the majority—59 percent—of employed women were time-poor while the incidence was far lower at 34 percent among men. The gender gap in time poverty is the largest among regular wage/salary earners (62 versus 32 percent)—precisely the group within which we observed the reversal of the gender gap in consumption poverty rates. Time poverty among the largest group of female workers (i.e., unpaid family workers) was 59 percent—almost the same as for all employed women. Compared to the gender gap in time poverty rates among regular wage/salary earners, the gaps were somewhat smaller among workers in other groups.

Figure 22 Time Poverty Rates by Status in Employment (Percent)



The joint distribution of time and consumption poverty status among employed persons is shown in Table 17. In Turkey as a whole, 21 percent of the employed persons encountered both consumption and time deficits, while 39 percent faced neither. A pronounced gender disparity was evident. Only 15 percent of men had both time and consumption deficits while 36 percent of women had both deficits. On the other hand, only 25 percent of women were free of both deficits compared to as much as 45 percent of men. Within each group of workers, the incidence of time and consumption poverty was higher for women than men. In particular, among female unpaid family workers—the largest single group of women workers—nearly half (47 percent) were both time and consumption-poor.

Table 17 LIMTCP Classification of Employed Persons by Status in Employment (Percent)

	Consumption-poor and time-poor	Consumption-poor and time-nonpoor	Consumption-nonpoor and time-poor	Consumption-nonpoor and time-nonpoor
All				
Wage/salary earner	14	12	24	50
Casual	23	37	9	31
Self-employed	23	31	15	31
Unpaid family worker	42	25	11	21
All persons	21	20	19	39
Men				
Wage/salary earner	12	13	20	54
Casual	18	43	7	31
Self-employed	20	33	14	32
Unpaid family worker	26	34	8	31
All men	15	22	18	45
Women				
Wage/salary earner	23	7	40	31
Casual	34	22	15	29
Self-employed	36	20	18	27
Unpaid family worker	47	22	12	18
All women	36	17	23	25

4.7 Household Structure, Consumption Poverty and Time Poverty of Employed Households

We consider a household to be an employed household if either the head or spouse or both are employed. Employed households made up about 73 percent of all households in our study.⁴⁷

Certainly, employed individuals do live in households where neither the head of the household nor their spouse is employed, but such individuals constitute a relatively small proportion of the total number of employed persons. Thus, omitting them and their households will not affect our results in a notable fashion. Focusing on this group of households is useful because the overwhelming bulk of time-poor households (88 percent) were employed households. Given the

⁴⁷It may be recalled that our study population consists of individuals between the ages of 18 and 70 years of age and their households. Our definition of employed households is based on applying the same age restriction to heads and spouses.

evidence we have already presented regarding the employment time-bind as the main source of time deficits, it should hardly be surprising that time-poor households consist mostly of employed households.

Table 18 Household Structure and Rates of Time and Consumption Poverty (Percent)

	Share	Time poverty	Consumption poverty		
			Official	LIMTCP	Hidden
Married-couple households					
Married male head with nonemployed spouse	66.8	44	22	30	8
Employed head and spouse	26.1	85	32	56	24
Nonemployed male head with employed spouse	2.6	69	35	50	15
Single-headed households					
Unmarried employed male head	1.6	51	20	28	8
Unmarried employed female head	2.9	67	34	51	17
All	100	56	25	38	13

Our initial typology of household structure is based on the employment status of the head of the household and his/her spouse as well as the marital status of the head.⁴⁸ As can be seen from Table 18 (column labelled “Share”), the type of household headed by a married male with a nonemployed spouse (male breadwinner household) constituted a clear majority (67 percent) of all employed households. The second predominant type (26 percent) is the household in which both the head and spouse are employed (dual-earner household). Unlike in many other OECD countries, employed households headed by a single person are a tiny minority in Turkey.

In light of our findings reported earlier regarding the higher incidence of time poverty among employed women compared to employed men, it should not come as a surprise that dual-earner households register a much higher time poverty rate than male breadwinner households (85 versus 44 percent). Households headed by single females and single males had a lower incidence of time poverty than dual-earner households, but, a higher incidence than male breadwinner households. Intuitively, this pattern is comprehensible because a single head is likely to carry a greater burden of household production than the male breadwinner on the average. On the other hand, dual-earner households are more prone to time poverty because the

⁴⁸ We have omitted from our table households headed by an employed female with nonemployed spouse because such households made up a very small number (less than 0.5 percent of all employed households).

employed wife will also have to shoulder the greater proportion of household production tasks and the employed husband may be spending long hours at the job.

The higher incidence of time poverty among dual-earner households contributes to their higher rate of hidden poverty. As a result, the gap between the official and LIMTCP poverty rate was the largest for this group of households (32 versus 56 percent, a difference of 24 percentage points). On the other hand, the rate of hidden poverty among male breadwinner households was the lowest (8 percent), a reflection of their low risk of time poverty. They, along with households headed by a single male, had the lowest rate of official (about 20 percent) and LIMTCP poverty (about 30 percent). Households headed by a single female and households with a nonemployed head and employed spouse had similar rates of official poverty (roughly 34 percent) and similar rates of LIMTCP poverty (about 50 percent).

Table 19 LIMTCP Classification of Male Breadwinner and Dual-Earner Households by Type of Family

	Share	LIMTCP Classification (percentage distribution of households)			
		Consumption-poor and time-poor	Consumption-n-poor and time-nonpoor	Consumption-nonpoor and time-poor	Consumption-nonpoor and time-nonpoor
Married male head with nonemployed spouse	100	17	12	27	44
Married couple only	8	6	7	20	67
Nuclear family	79	18	12	27	43
Three-generation	10	20	15	30	35
Employed head and spouse	100	52	5	34	10
Married couple only	13	39	6	41	14
Nuclear family	66	54	3	36	7
Three-generation	20	54	10	21	15

Note: The numbers shown in each row under the columns of LIMTCP classification sum up to 100. For example, 18, 12, 27 and 43 represent, respectively, the percentage of male breadwinner nuclear families that belonged to the LIMTCP categories.

The male breadwinner households and dual-earner households display considerable internal heterogeneity with respect to family structure. As shown in Table 19 (under the column labeled "Share"), nuclear families constitute the clear majority within each group, with a much larger majority among the male breadwinner households. The proportion of the other two types of families—households with only a married couple ("married couple only") and households with three generations related to the head ("three generation")—constituted a higher share of dual earner households.

The contrast between the male breadwinner households and dual-earner households is very sharp in terms of the joint distribution of time and consumption poverty status (the numbers shown in each row under the columns of LIMTCP classification sum up to 100). More than half of the dual-earners were in the grip of both consumption and time poverty compared to only 17 percent of male breadwinner households. In contrast, 44 percent of male breadwinner households faced neither time nor consumption deficits compared to only 10 percent of dual-earner households. Recent policy initiatives to promote women's employment should take into account the time and income deficits that dual-earner households are likely to encounter. Of course, the alternative is not to *not* promote women's employment, but to implement policies that would minimize the prospects of women and their families falling into time and income poverty as a result of women's increased labor force participation.

5 LABOR FORCE SIMULATION

In order to estimate the likely effect of increased employment for households with at least one eligible adult not working on time and consumption poverty, we simulate the impact of an unspecified employment promotion policy on consumption-poor households. This work draws on the framework we have developed in prior projects on fiscal policy impacts as well as the impact of employment generation policies on time and income poverty on previous LIMTIP estimates in Latin America. In those prior cases we assigned jobs (and so, earnings) to those who were either not employed or working only part time. This required us to subsequently re-assign household production hours for all individuals in households with job recipients, as the total amount as well as the intrahousehold allocation of household production would certainly be affected by the change in employment status of some of the members of those households. In the case of Turkey, we also need to translate the estimated change in household income as a result of the added earnings into the expected change in household consumption expenditures. In order to reduce the risk of understating the poverty alleviating impact of employment on households, we simply assumed that the increase in earnings resulted in an equivalent increase in consumption expenditures. The results of this simulation should not be understood as an estimate of the effect of a comprehensive set of full-employment policies, but rather as an *aggregation* of the impact on individual consumption-poor households of all the non-employed adults in those households receiving the paid jobs they are most likely to receive given actual labor market conditions prevailing in Turkey in 2006. A more detailed description of the methodology employed in the simulation, as well as the quality of the results, can be found in the appendix.

Changes in employment status will affect the time and consumption poverty of individuals and households in a number of ways. The first and most obvious way is the additional earnings brought in by the job recipient(s), which will reduce the consumption poverty of a household, all else equal. This increase in income may or may not reduce means-tested transfers being received by the household (although this impact is one that we cannot estimate in this simulation, as the transfers in the household budget survey are not detailed enough, meaning the results are biased towards poverty-reduction). Of course individuals' time deficits (surpluses) in the household, including those who are not job recipients in the simulation, may increase

(decrease) as the required household production tasks are re-allocated. A given household's time deficit is therefore likely to increase as well.

By definition, the composition of the donor and recipient pools for both stages of the labor force simulation will be very different (refer to the appendix on simulations for details of the recipient and donor pools for each stage). The most obvious difference in the first stage, in which the non-employed are assigned jobs and earnings, is of course the fact the donors are employed and the recipients are not. Secondly, because we limit the recipient pool to those eligible adults without jobs who are in households below our adjusted consumption poverty line, there are less than half as many recipients as donors, who are all of the employed (see Table 20, below). But some underlying characteristics that are related to differing employment status are also systematically very different. The greatest difference between pools is by sex. Among recipients in the employment simulation, 86 percent in the urban areas and 84 percent in the rural areas are female, while of the donor pool only 21 percent in the urban areas and 18 percent in the rural areas are female. Among males in both rural and urban areas, the distribution by age is quite different in the recipient and donor pools, with donors tending to be younger than recipients. Among females, the opposite is true, with the difference being more striking in the rural areas. The simulation is done by assigning jobs and earnings in a hot-decking process within cells constructed from sex, age, and educational achievement categories. Thus, although the pools are dissimilar along these axes, the matches we find for our recipients are not dissimilar in these characteristics. Because the recipient pool is entirely drawn from the households that are consumption poor, and the donor pool is not restricted in this way, earnings and income are the greatest differences between the recipient and donor pools.

Table 20 Recipient and Donor Pools by Rural/Urban Area and Sex

		Jobs and Earnings Assignment		Time Use Assignment	
		Recipients	Donors	Recipients	Donors
Urban	Male	472,000	7,492,246	3,007,954	1,762,512
	Female	2,927,802	2,043,513	3,410,110	1,951,771
	Total	3,399,802	9,535,759	6,418,064	3,714,283
	Male	13.9%	78.6%	46.9%	47.5%
	Female	86.1%	21.4%	53.1%	52.5%
Rural	Male	353,293	2,858,237	2,210,749	2,808,441
	Female	1,928,797	613,641	2,553,947	3,016,254
	Total	2,282,090	3,471,877	4,764,696	5,824,695
	Male	15.5%	82.3%	46.4%	48.2%
	Female	84.5%	17.7%	53.6%	51.8%

In the second stage of the simulation, we re-assign weekly hours of household production, and child care for young children for all adult members of households that contain job recipients in the first stage. Again, the pools are very dissimilar. Most obviously, those in the donor pool are all adults in households in which all eligible adults are currently employed. The difference by sex between the recipient and donor pools is less stark in this round: less than two percent difference between recipient and donor pools for each area. Again, the matches are done in cells constructed from age, sex and educational achievement categories, so the matches we make will be similar in these characteristics.

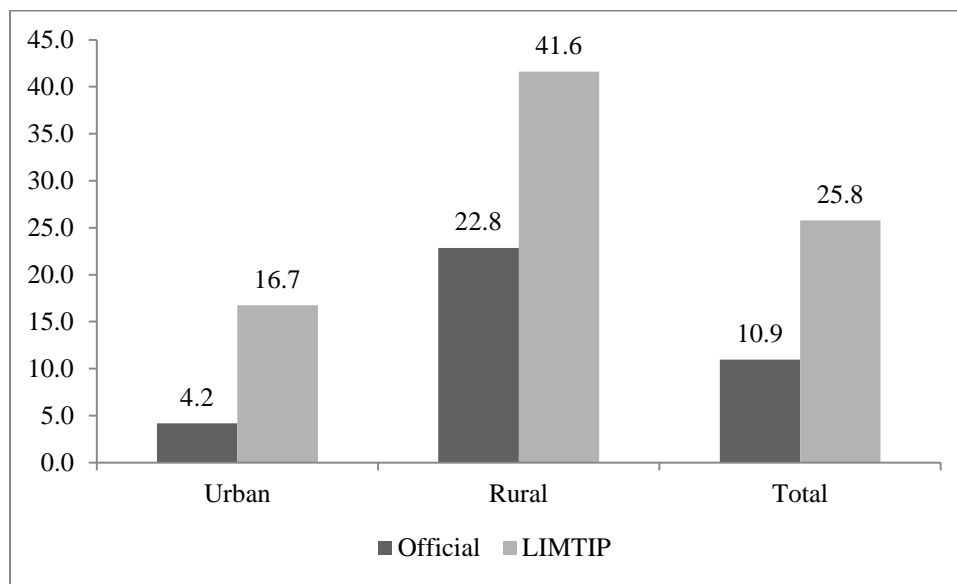
Once the simulation is complete, we can compare the results to the actual situation. While we have no true counterfactual distribution of time and consumption to compare the results to, we can, however, compare the situation of the time and consumption poor before and after the simulation to assess the first order impacts of non-employed adults receiving a job they are likely to get in the labor market conditions in Turkey in 2006.

5.1 Individuals

Overall official consumption poverty rates will naturally be reduced by the simulation since it adds earnings to many currently consumption poor households. The differences between the official consumption poverty rate and the time-adjusted poverty rates after simulation are, however, still stark (see Figure 24, below). The official consumption poverty rate for adults in Turkey as a whole was reduced to 10.9 percent from 25.6 percent, while the time-adjusted

consumption poverty rate fell to 25.8 percent from 35.8 percent. These are both substantial reductions, but note that the time-adjusted consumption poverty rate is still slightly above the actual official rate for 2006. Substantial reductions are also seen in both the rural and urban areas. Only in the rural area is the post-simulation adjusted consumption poverty rate higher than the actual official rate. The urban adjusted poverty rate of 16.7 percent is slightly lower than the actual official rate in urban areas (17.4 percent). In both rural and urban Turkey, and in Turkey as a whole, the relative decrease in the official poverty rate was twice as large as for the adjusted rate. For example, the official rate fell by 76 percent (13.2 percentage points) in urban areas, while the time-adjusted rate fell by 37 percent (9.7 percentage points). As we shall see, this is due to the fact that the increased employment also increased time deficits, thereby attenuating the impact on poverty.

Figure 23 Individual Official and Adjusted Consumption Poverty Rates After Simulation (Percent)



First we examine the impact of the simulation on rates of time and consumption poverty for rural and urban individuals (see tables 21 and 22 below). The portion of rural individuals who are consumption poor by our measure has dropped from 52 percent to 42 percent. This is a substantial decrease, but the majority (79.4 percent) of rural consumption poor individuals remains consumption poor despite the employment simulation. Of the 17.8 percent of rural individuals who suffered from both time and consumption poverty, 84.3 percent remained in this position as a result of the simulation (15 percent of all rural individuals). The majority of those

escaping this situation in rural areas escaped consumption poverty but not time poverty (1.2 percent). Smaller portions (1.1 percent and 0.5 percent, respectively) escaped time poverty only or both time and consumption poverty. Escaping consumption poverty is no doubt the result of the increased earnings as a result of receiving jobs. The removal of individuals' time deficits is perhaps not an intuitive result, but the reallocation of time within households as a result of the change in employment status may provide relief to those with time deficits, as others in the household take up more of the burden of required household production. Of the 34.6 percent of rural individuals in consumption but not time poverty, before the simulation, more than half (20.7 percentage points or 60 percent of the total) remained in that situation. A smaller portion (4.8 percentage points or 13.8 percent of the total) dropped into time poverty without relief from consumption poverty, so 25.5 percent of the original 34.6 percent remained consumption poor. Another small portion (2.7 percentage points or 7.7 percent) escaped consumption poverty but fell into time poverty as a result. Finally, the largest portion of rural individuals with changed time or consumption poverty status (6.4 percentage points or 18.5 percent of the total) escaped consumption poverty without falling into time poverty. So of the rural consumption poor in 2006, 20.6 percent escaped consumption poverty as a result of the employment assignment, although 7.4 percent of those fell into time poverty as well.

Table 21 Time and Consumption Poverty Status of Rural Individuals Before and After Simulation

LIMTCP classification of persons (18 to 70 years)	LIMTCP classification of persons (18 to 70 years), simulation				
	Time-poor and consumption-poor	Time-nonpoor and consumption-poor	Time-poor and consumption-nonpoor	Time-nonpoor and consumption-nonpoor	Total
Time-poor and consumption-poor	15.0%	1.1%	1.2%	0.5%	17.8%
Time-nonpoor and consumption-poor	4.8%	20.7%	2.7%	6.4%	34.6%
Time-poor and consumption-nonpoor			8.1%		8.1%
Time-nonpoor and consumption-nonpoor				39.5%	39.5%
Total	19.8%	21.8%	12.0%	46.4%	100.0%

Turning to the results in urban areas, the portion of urban individuals who are consumption poor by our measure dropped from 26.5 percent to 16.7 percent. This is an even greater decrease than in the rural areas but the majority (though smaller at 63.3 percent) of urban consumption poor individuals remains so despite the employment simulation. Of the 6.9 percent of urban individuals who suffered from both time and consumption poverty, 70 percent remained time and consumption poor (4.8 percent of all urban individuals). The majority of those escaping this situation in urban areas escaped consumption poverty but not time poverty (1.3 percent). Smaller portions (0.4 percent each) escaped time poverty only, or both time and consumption poverty. Of the 19.6 percent of urban individuals in consumption but not time poverty before the simulation more than one third (7.1 percentage points or 36 percent of the total) remained in that situation. A smaller portion (4.4 percentage points or 23 percent of the total) dropped into time poverty without relief from consumption poverty, so 16.7 percent of the original 26.5 percent remained consumption poor. Another small portion (2.5 percentage points or 12.9 percent) escaped consumption poverty but fell into time poverty. Finally, the largest portion of urban individuals with changed time or consumption poverty status (5.5 percentage points or 28.2 percent of the total) escaped consumption poverty without falling into time poverty. So 36.7 percent of the urban consumption poor in 2006 escaped consumption poverty as a result of the employment assignment, although 14.4 percent of those fell into time poverty as well.

Table 22 Time and Consumption Poverty Status of Urban Individuals Before and After Simulation

LIMTCP classification of persons (18 to 70 years)	LIMTCP classification of persons (18 to 70 years), simulation				
	Time-poor and consumption-poor	Time-nonpoor and consumption-poor	Time-poor and consumption-nonpoor	Time-nonpoor and consumption-nonpoor	Total
Time-poor and consumption-poor	4.8%	0.4%	1.3%	0.4%	6.9%
Time-nonpoor and consumption-poor	4.4%	7.1%	2.5%	5.5%	19.6%
Time-poor and consumption-nonpoor			10.8%		10.8%
Time-nonpoor and consumption-nonpoor				62.7%	62.7%
Total	9.2%	7.5%	14.6%	68.6%	100.0%

Although there is a substantial reduction in both rural and urban consumption poverty as a result of non-employed persons receiving employment, 25.8 percent of individuals remain in consumption poverty after the simulation, substantially more than the actual official consumption poverty rate of 18.7 percent of those aged 18 to 70, though roughly equal to our adjusted baseline consumption poverty rate of 25.6 percent. The results were somewhat better in urban than rural areas, due to better-paying job opportunities, presumably. Also, a greater number of individuals in both rural and urban areas were in both time and income poverty after the simulation than before. We move on to consider the impact of the employment simulation on individuals' time poverty.

Looking at the changes in the time poverty status of rural and urban individuals receiving jobs in the labor force simulation, we note that the addition of paid work increases their rate of time poverty to more than 50 percent from its actual rate of just under 14 percent in rural areas (Table 23, below), while in urban areas, the rate of time poverty goes from just 3.6 percent (substantially lower than in rural areas) to over 60 percent (higher than in rural areas). The cost for non-working people in consumption poor households of moving into paid employment is a dramatic increase in the incidence of time poverty, especially in urban centers. Although some of the time poor (34 percent or 4.7 percent of the rural time-poor individuals and 28 percent or 1 percent of urban individuals) moved out of time poverty (as discussed above, this transition is due to the realignment of household production responsibilities concomitant with the employment changes in the recipients' households) implying that the majority (66 percent in rural areas and 72 percent in urban areas) remained time poor. The greater shift was among those who were consumption poor and not time poor into time poverty. Of those individuals, 55 percent (51.2 percent of the total) became time poor as a result of the simulation, an intuitive result of adding paid employment to household production requirements. Also not unsurprisingly, of the 2.9 million individuals who fell into this category, 91 percent were female (87 percent in rural and 92 percent in urban areas). The fact that this represents an even greater percentage than women's share in the recipient pool implies that the increase in time poverty as a result of employment falls disproportionately on women, consistent with our findings on time poverty of employed persons as discussed above.

Table 23 Rates of Time Poverty Among Rural and Urban Individuals Receiving Jobs, Before and After Simulation

Time Poverty Status	Time Poverty Status, Simulation					
	Rural			Urban		
	Not time poor	Time poor	Total	Not time poor	Time poor	Total
Not time poor	44.6%	41.6%	86.1%	38.7%	57.7%	96.4%
Time poor	4.7%	9.2%	13.9%	1.0%	2.6%	3.6%
Total	49.3%	50.7%	100.0%	39.7%	60.3%	100.0%

Individuals who received jobs in the simulation had larger time deficits, on average, than time-poor individuals in general, both before and after the simulation (see Table 24, below). In rural areas, time and consumption poor individuals (those who were in the recipient pool of the labor force simulation) had an additional 2.9 hours per week time deficit compared to time-poor individuals on average, or 14 percent greater time deficit, while in urban areas, the difference was greater: 4.6 hours more per week or 29 percent. The median time deficit was 21 percent greater in rural areas and 47 percent greater in urban areas for time and consumption poor individuals. As a result of the simulation, the average time deficit for all time-poor individuals increased by 3.5 hours per week in rural areas (an increase of 22 percent), while the median increased by just a little more (a 25 percent increase). In urban areas the increases were smaller, only about 2.5 hours per week for the mean and median (15 and 21 percent increases, respectively). The average time deficit for those who received jobs in the simulation was 71 percent (14.2 hours per week) greater than that of all the time-poor in the rural areas, and 59 percent (9.3 hours per week) greater in urban areas. Their own time deficits as a group increased by 11.3 hours per week (a 50 percent increase) in rural areas and 4.7 hours per week (23 percent) in urban areas, while the respective medians for these groups increased by similar absolute amounts (13 hours in rural areas and 4.6 hours in urban, or 72 and 27 percent, respectively).

Table 24 Time Deficits of Time-Poor Rural and Urban Individuals Before and After Simulation

	Time Deficit			
	Rural		Urban	
	Mean Weekly Hours	Median Weekly Hours	Mean Weekly Hours	Median Weekly Hours
All time-poor individuals	-19.8	-14.8	-15.6	-11.6
All time and income-poor individuals	-22.7	-18.0	-20.2	-17.0
All time-poor individuals, simulation	-24.3	-18.6	-18.0	-14.0
All time-poor individual simulation job recipients	-34.0	-31.0	-24.9	-21.7

Turning to the changes in poverty status by gender (see Table 25 below), the most striking difference is in the change of status among men and women in households that remained consumption poor after the simulation. There was not a large difference in the change in overall rates of consumption poverty: male consumption poverty rates went from 35.1 percent to 25.4 percent while the rates for women dropped from 36.6 percent to 26.1 percent. The overall rate for women actually dropped a little more than for men. However, when we break down the consumption poor between time poor and time nonpoor, we see a much bigger difference. While before the simulation, the rate of time poverty was roughly the same between men and women (around 30 percent), afterwards the rates for men and women are quite different, with 39.4 percent of consumption poor men suffering from time deficits, and 60.7 percent of consumption poor women doing so. Fully 10.9 percent of all adult women in Turkey fell into time poverty as a result of the simulation, with most of them remaining consumption poor as well. We noted above that the number of individuals in both time and consumption poverty increased as a result of the simulation, but now we can see that this is true only for women.

Table 25 Time and Consumption Poverty Status of Adults by Sex, Before and After Simulation

Four-way classification of persons (18 to 70 years) according to LIMTCP	Four-way classification of persons according to LIMTCP (simulation)				
	Time-poor and consumption-poor	Time-nonpoor and consumption-poor	Time-poor and consumption-nonpoor	Time-nonpoor and consumption-nonpoor	Total
Men					
Time-poor and consumption-poor	8.1%	0.7%	1.7%	0.4%	10.9%
Time-nonpoor and consumption-poor	1.9%	14.7%	1.1%	6.4%	24.2%
Time-poor and consumption-nonpoor			12.7%		12.7%
Time-nonpoor and consumption-nonpoor				52.2%	52.2%
Total	10.0%	15.4%	15.6%	59.0%	100.0%
Women					
Time-poor and consumption-poor	8.9%	0.6%	0.8%	0.4%	10.8%
Time-nonpoor and consumption-poor	7.0%	9.6%	3.9%	5.3%	25.8%
Time-poor and consumption-nonpoor			7.2%		7.2%
Time-nonpoor and consumption-nonpoor				56.2%	56.2%
Total	15.9%	10.2%	12.0%	61.9%	100.0%

Of course, both the incidence and the depth of time poverty for the job recipients in the simulation are quite different by sex (see Table 26, below). Recipients as a group actually suffered almost no time deficits (an average of less than one hour per week, though those who were time poor, almost exclusively women, had an average of 27 hours per week time deficit) before the simulation. The impact of the simulation on time deficits is skewed towards women. The average for all female job recipients was 17.7 hours per week with a median of just under 9 hours per week. Males fared much better with an average of only 5 hours per week, and more than half of the male job recipients not suffering any time deficit. So, the time deficits faced by women drive the large time deficits for all recipients of just under 16 hours per week on average.

Table 26 Time Deficits of Job Recipients after Simulation, by Sex

	Number	Average Time Deficit	Median Time Deficit
Male	825,283	-5.0	0.0
Female	4,856,517	-17.7	-8.8
All Recipients	5,681,800	-15.9	-5.0

This discrepancy and the lower earnings that women receive help to explain why women were relatively unable to escape consumption poverty and more likely to fall into time poverty if they were not already time poor. Table 27, below makes the point more clearly. As we can see, the bulk of the female job recipients in the simulation have only primary or middle school educations. While the increase in time deficit as a result of getting a job in the simulation is not obviously related to the level of education of the recipient, the increase in earnings most certainly is. Thus, for most women in the simulation the increase in earnings was between TL 40 and 60 per month, or only 18 to 20 percent of the nominal increase in their earnings. Not many of the households in consumption poverty were likely to escape poverty as a result of such a small net increase in earnings. So the combination of low earnings potential for women with less education and the lack of education of most women not working for pay in consumption poor Turkish households determines the relatively lackluster impact of employment on consumption poverty.

Table 27 Number of Female Job Recipients, Average Increase in Earnings, Time Deficits and Value of Time Deficits, by Education Level

	N	Average Increase in Earnings	Change in Time Deficit	Change in monetized value of time deficit
Less than primary	1,976,914	235.96	14.28	189.32
Primary school	2,260,684	352.98	18.57	290.58
Middle school	222,128	343.94	15.70	241.78
High school	368,116	474.09	18.77	314.72
College	28,758	1,211.03	10.92	193.84
Total	4,856,599	319.19	16.66	248.39

To sum up, because there were relatively few men who received jobs in the simulation, the impact of the simulation on time and consumption poverty was mostly limited to women. This was true in both rural and urban settings. However, those individuals who received jobs were likely not only to not escape consumption poverty but to become time poor, with a greater depth of time poverty than the norm. This was especially true for women, and women in the simulation were mostly less educated with relatively low earning potential given actual labor market conditions in Turkey. So although there was a reduction in consumption poverty, there was a much larger increase in time poverty among the target group of the simulation. We now examine the impact of the simulation at the level of the household.

5.2 Households

We first examine the transition of rural households in the time-adjusted consumption poor categories (the target population of the simulation). We first note that of the 51.1 percent of rural households classified as consumption poor according to our consumption poverty line in 2006, 40.8 percent (or 80 percent of rural consumption-poor households) remain consumption poor despite the simulation (see Table 28, Panel A, below). This is an outgrowth of the fact noted above, that many of the eligible adults in consumption poor households are already employed, so their status and that of all of the households without non-employed eligible adults will not be changed by the simulation. In fact, 1.5 million (48 percent) of the 3.1 million rural households classified as consumption poor under our adjusted measure before the simulation had no members in the simulation. 990,000 (31 percent) of all consumption-poor rural households did have a member in the simulation and yet, did not escape consumption poverty. This is due to the limited earning potential of the non-employed members of consumption-poor households in the actual labor market conditions in rural Turkey, combined with the impact of increased time deficits as a result of increased labor market participation in the affected households. This is emphasized by the fact that the percentage of rural households that are time and consumption poor actually *rose* as a result of the simulation from 35.9 percent to 37.5 percent. The percentage of rural households that were consumption poor but not time poor was greatly reduced, from 15.2 percent to 3.3 percent. So overall, most of the movement was from this group, either out of consumption poverty or not, but mostly into time poverty. Of those households who are consumption and time poor according to our measure 20 percent (10 percent of rural households) escaped consumption poverty, but only 4 percent (2.1 percent of all rural households) also

escaped time poverty. Very few rural households that were time and consumption poor escaped time poverty but not consumption poverty. Of those rural households that were consumption poor but not time poor, 41 percent (6.2 percent of rural households) escaped consumption poverty. Of those, 30 percent (4.6 percent of all rural households) fell into time poverty. The largest group, 39 percent (5.9 percent of rural households) fell into time poverty without escaping consumption poverty.

Looking next at the simulated experience of urban households (see Table 28, Panel B), we see patterns that are generally similar to those of rural households. The overall rate of time-adjusted consumption poverty among urban households fell from 25.6 percent to 16.8 percent. Nevertheless, the percentage of urban households in both time and consumption poverty increased slightly from 15.2 percent to 15.8 percent. Of the 15.2 percent of urban households originally time and consumption poor, 11.1 percent remained so after the simulation. Most of the households from this group escaping consumption poverty (3.9 percent of all urban households or 25 percent of all time and consumption poor urban households) did not escape time poverty. Only two percent of urban time and consumption-poor households escaped both time and income poverty in the simulation. Of the 10 percent of urban households that were consumption but not time poor in 2006, the largest share, 4.7 percent (45 percent of the total), fell into time poverty without escaping time poverty. The next largest group, 3.3 percent (31 percent of urban consumption-poor, time-nonpoor households) escaped consumption poverty only to fall into time poverty. Of the rest, 1 percent became both time and consumption poor and 1.5 percent escaped both time and consumption poverty.

Table 28 Household Time and Consumption Poverty Rates, Before and After Simulation

A. Rural Households

Four-way classification of households according to LIMTCP	Four-way classification of households according to LIMTCP after simulation				
	Time-poor and consumption n-poor	Time-nonpoor and consumption n-poor	Time-poor and consumption n-nonpoor	Time-nonpoor and consumption n-nonpoor	Total
Time-poor and consumption-poor	31.6%	0.2%	3.7%	0.5%	35.9%
Time-nonpoor and consumption-poor	5.9%	3.1%	4.6%	1.6%	15.2%
Time-poor and consumption-nonpoor			19.7%		19.7%
Time-nonpoor and consumption-nonpoor				29.2%	29.2%
Total	37.5%	3.3%	28.0%	31.2%	100.0%

B. Urban Households

Four-way classification of households according to LIMTCP	Four-way classification of households according to LIMTCP after simulation				
	Time-poor and consumption n-poor	Time-nonpoor and consumption n-poor	Time-poor and consumption n-nonpoor	Time-nonpoor and consumption n-nonpoor	Total
Time-poor and consumption-poor	11.1%	0.0%	3.9%	0.3%	15.2%
Time-nonpoor and consumption-poor	4.7%	1.0%	3.3%	1.5%	10.4%
Time-poor and consumption-nonpoor			26.4%		26.4%
Time-nonpoor and consumption-nonpoor				47.9%	47.9%
Total	15.8%	1.0%	33.6%	49.7%	100.0%

The *depth* of time and consumption poverty for households is also affected by the simulated employment and household production shifts (see Table 29, Panels A and B, below). Following households that were consumption poor before the simulation, we see that rural households that were also time poor had a 13-percent reduction in their consumption deficit, but also an 11-hour (33 percent) increase in the household total time deficit, while for urban time and consumption-poor households the reduction in the consumption deficit was much greater (42 percent), while the increase in time deficit was only slightly larger at 14 hours (54 percent). Consumption-poor households without time deficits before the simulation did better in both time and consumption deficits than those who did suffer time poverty. Their consumption deficits were almost entirely erased in the urban areas and completely erased in the rural areas, and while their time deficits naturally increased (by 24 and 21 hours, respectively), and in absolute terms the increases were larger than those for already time-poor households, their post-simulation average time deficit was still substantially lower than that of the latter group, pre-simulation in both rural and urban areas. Of those households that were not consumption poor and thus, not in the simulation, we can simply note that the consumption surplus is virtually identical in rural areas, but in urban areas it is greater among time-poor households than among the consumption nonpoor, time nonpoor, although time deficits are obviously larger. In addition, in both rural and urban areas, the time deficits for the consumption nonpoor time-poor groups are smaller than either of the two corresponding consumption-poor groups post-simulation and also smaller (a little more than half as large) than the time-poor consumption-poor households pre-simulation.

Table 29 Household Time and Consumption Deficits, Before and After Simulation

Four-way classification of households according to LIMTCP	Actual		Simulation	
	Consumption	Time	Consumption	Time
A. Rural				
Time-poor and consumption-poor	457.9	33.2	396.7	44.0
Time-nonpoor and consumption-poor	225.8	0.0	-13.2	24.2
Time-poor and consumption-nonpoor	-516.9	16.5	-516.9	16.5
Time-nonpoor and consumption-nonpoor	-521.2	0.0	-521.2	0.0
B. Urban				
Time-poor and consumption-poor	363.8	25.7	210.9	39.5
Time-nonpoor and consumption-poor	185.4	0.0	20.9	21.3
Time-poor and consumption-nonpoor	-744.5	14.6	-744.5	14.6
Time-nonpoor and consumption-nonpoor	-652.9	0.0	-652.9	0.0

To summarize, we assigned jobs to 5.7 million individuals (mostly women) in 3.9 million time-adjusted consumption-poor households in our simulation. We then reassigned household production hours in those households. One might expect that procuring employment would improve the lot of most individuals and households in consumption poverty, but our results demonstrate that this is not necessarily the case and that bringing time into the analysis greatly enriches our understanding of the possible impacts of such a shift. Indeed, 5 million individuals and 1.6 million households escaped consumption poverty, but 1.9 million individuals and 1.3 million households fell into or remained in time poverty. And the number of households and individuals in both time and consumption poverty actually increased. Indeed, time poverty rates increased dramatically among individuals in the simulation, and the depth of time deficits increased substantially (24 percent overall among time-poor individuals and 61 percent for time-poor job recipients in the simulation). We find similar changes in time and consumption poverty rates at the level of the household as a result of the simulation. The effectiveness of employment as a means of escaping consumption poverty was not great in either the rural or urban areas, but

was substantially better in urban areas. Perhaps the most striking impact is in the gendered nature of the incidence and depth of these time deficits, with women in the simulation receiving an increase in time deficits that was over three times as great as for men. Thus, for the majority of people in consumption-poor households in Turkey, employment alone is not sufficient to alleviate deprivation.

6 CONCLUDING REMARKS: POLICY (RE) CONSIDERATIONS

Our estimates show that over 7.6 million people in Turkey that should have been classified as poor were not; although their consumption expenditures were above the official poverty line, they fell below the poverty line adjusted with time deficits. Their addition represents an increase of 10 percentage points in the poverty rate (40 versus 30 percent) and augments the ranks of the poor from 21.4 to 29.0 million. Our LIMTCP measure takes into account a required minimum amount of household production in addition to a minimal amount of consumption expenditures. The official measure in Turkey (and other countries) implicitly assumes that households do have the amount of time required for household production. However, many poor and near-poor households lack the time for household production and this results in a serious underestimation of poverty. The LIMTCP framework avoids this underestimation bias in existing poverty measures and reveals the hidden poverty this is a result of time deficits.

The methodology developed here and the findings obtained suggest implications for current poverty reduction policies in Turkey. The results emphasize the need to address the issue in multiple domains: (a) promoting employment opportunities, enabling economic empowerment and participation in decision making; (b) standardization of decent work conditions reflected in hours of employment and earnings; (c) achieving equal access to social and legal rights (i.e. access to social security and job security); (d) demographic structures and household composition as they influence the amount of time needed to fulfill household production requirements; (e) active social assistance linked to employment that help to transform the conditions determining the economic well-being of households; (f) provisioning of social services that help to meet household production requirements; and, (g) transformation of the gender norms which are embedded in all of the above mentioned domains.

Inequalities in the domains listed above shape the (time-adjusted) poverty status of individuals and households. The absence of decent work conditions, inequalities in employment opportunities, and the lack of or weak public provisioning of social services not only limit the earnings gained from employment, but also increase the required time for household production as well as employment hours, which in turn results in impoverishing time deficits. On the other hand, poverty status may be the underlying reason behind these inequalities; it may lead to persistence and deepening of existing inequalities. Poverty status may restrict access to

substitutes for household production and social care work provided by household members (e.g., hiring outside help, or buying time saving appliances). Combating poverty requires designing effective policies that target the combined effect of the inequalities in multiple domains. In order to eliminate the root causes and conditions of poverty, transformation should be sought in different structures to address its multiple aspects.

Consumption-poor individuals and households encountered higher rates of time poverty than the consumption-nonpoor. Given the other types of social and economic disadvantages that tend to accompany consumption poverty, it is quite likely that the negative effects of time poverty will affect the consumption-poor disproportionately compared to the consumption-nonpoor. The interlocking of time and consumption deficits reinforces our arguments for an integrated approach addressing multiple domains.

Our findings suggest that long hours of work at the job is the main cause of time deficits, a finding supported by the latest well-being survey conducted among the 35 OECD countries: Turkey is by far the country with the highest proportion of employees working very long hours, with almost half regularly working over 50 hours per week and nearly a fifth of employees working what are described as “long hours” (OECD, 2013). In our sample, 42 percent of employed adults worked over 50 hours per week and 19 percent worked 61 hours or more in 2006. Time poverty was almost universal among the latter group, and as high as 74 percent among women working 50 to 60 hours per week. This suggests that compliance with the legal maximum limit of 45 hours is very important and lowering this limit may not only enable workers achieve their required minimum household production but also may help increase the employment rate in Turkey that is currently the lowest (48%) among the OECD countries (66% on average).

Lowering hours spent at the job could have a particular influence on women’s participation in the labor market in Turkey. The adoption of flexible work schedules may improve women’s employment opportunities, especially during the years immediately following childbirth. However, our results show that even part-time work arrangements will not rescue all women from time poverty, since 37 percent of women working fewer than 35 hours per week were time-poor, compared to only 4 percent of part-time male workers. In fact, the incidence of time poverty is higher among employed women than men even after we control for their hours of employment (Figure 18), which reflects the higher responsibility that women face regarding

meeting household production needs (Figure 19). Women carry the greater responsibility for household production because of the severely unequal division of housework and care work within the household. Unfortunately, even nonemployed women, especially in the rural areas, also face the risk of time poverty due to the high demands of household production (Figure 13). Major differences exist in the incidence of poverty between urban and rural Turkey (Figure 11). Official measures at the household level present a much lower prevalence of poverty in urban areas (17 percent) than in rural areas (39 percent). However, using the LIMTCP poverty line, we estimate that a little over a quarter of all urban households (26 percent) were poor while in the rural areas, every other household (51 percent) was poor. These estimates suggest that the poor were seriously undercounted in both urban and rural areas. They also reflect significant rural-urban differences in terms of demographic structure as well as employment opportunities, employment type, working conditions and earnings. Working in agriculture and working without payment often characterize the rural poor, especially women. As we saw, consumption-poor urban and rural women have the highest rates of time poverty (Table 14). Since the majority of the rural time-poor employed women work without pay, the impoverishing effects of time deficits may be harder on them than on wage workers. Making work pay and providing the required income to meet at least minimum consumption needs is vital for the rural population. Rural development investment programs may play a critical role in this only if they provide solutions to the long hours of household production women carry in addition to unpaid work in the market.

Low wage rates, particularly for women, despite long working hours, is one of the underlying causes of consumption and time poverty in Turkey. We find in our employment simulation that a substantial number of currently nonemployed women are likely to procure only low-wage employment with long working hours. Increasing the employment of women given current market conditions does not guarantee an adequate rise in household income for all. Increasing minimum wage rates to account for the cost of market substitutes these workers would need to purchase to meet the long hours at work is a necessary first step towards reducing the impoverishing effect of time-poverty on workers. Our findings indicate that current policies to promote women's employment may help reduce official poverty rates but would not rescue women from time poverty unless supported by additional policies such as introducing public provisioning of social care services and policies to eliminate occupational and sectoral job

segregation. In fact, without such policies, many women would fall into time poverty while not escaping consumption poverty. Additionally, raising the opportunity costs of the household production work of women through an equitable wage policy and increasing decent employment opportunities may trigger a transformation in the division of household labor, motivating household members to adopt more equal sharing of household production that could reduce time poverty and, hence, help improve quality of life in general.

In the following sections, we outline the policy implications of our findings in the areas of providing employment opportunities, achieving decent work conditions, widespread public provisioning of social care services and implementing social assistance policies to reduce both consumption and time poverty.

6.1 Equal Employment Opportunities for Women and Men

In recent years, promoting women's employment in Turkey has become a key priority for policymakers. The draft National Employment Strategy (2012-2023) document determined the target rate for women's labor force participation rate in 2023 at 35 percent, which was revised and increased to 38 percent later.⁴⁹ The main motivating factor for the government, repeated frequently, is the potential for higher economic growth. Nonemployed women are considered an untapped resource to be mobilized for economic growth.⁵⁰ To this end, several action plans and programs have been prepared. They focus mainly on increasing the education level of women, upgrading their skills through training, flexibilization of labor markets, and promoting entrepreneurship.⁵¹ However, these programs are designed without establishing links with poverty reduction policies. In fact, over recent years, there has been a great deal of research that has highlighted the significance of employment-centered poverty policies to achieve inclusive economic growth. Employment policies should take into account poverty status and the

⁴⁹ Several pieces of legislation and action plans have been introduced in order to undertake this mission. See KEIG (2013) for legislation introduced by the General Directorate of Women Status and Issues (KSGM) that prepared Gender Equality National Action Plan (2008-2010). The Prime Ministerial Circular no. 2010/14 on "Increasing Women's Employment and Achieving Equal Opportunity" was issued on the 25th of May in 2010, an important step undertaken to implement this action plan. Forming a National Monitoring and Coordination Committee on Employment of Women, provisioning of vocational training for women in particular sectors; issue of "equality of opportunity for women and men" into in-service training programs; monitoring and enforcing child care and day care center obligations; prioritizing projects on improvement of women's social involvement who are subject to violence, single women whose husband were died or divorced were the main items in the ministerial circular.

⁵⁰ This was openly put forward by the Ministry of Family and Social Policies when it adopted "Women's Employment, the New Dynamics of Turkish Economy" as a motto.

⁵¹ For a comprehensive discussion on what is there in National Employment Strategy draft for women and the young and what is missing, see Toksöz (2012).

conditions of poverty in order to eliminate obstacles due to consumption and time poverty in accessing new employment opportunities.

The employment simulation highlights the poverty-reduction potential of employment, particularly for consumption-poor and time-nonpoor households. Such an exercise enables an assessment of whether targeted employment rates are feasible and helps answer some questions of interest for the current policy agenda: what if the poverty reduction policies in Turkey were designed with employment at its center? How would the picture of poverty in Turkey change if there were jobs for all the poor individuals eligible for work? What are the likely occupations and industries that provide the new jobs? Do these results vary by gender and do they differ between urban and rural areas?

The results of our simulation show that women are likely to hold the key in terms of increased earnings and poverty reduction. Most of the recipients in the employment simulation are female: 86 percent in the urban areas and 84 percent in the rural areas. Our simulation results indicate that typical employment opportunities for non-working individuals offer a reduction in consumption poverty for many households (Table 25). However, this reduction comes at the cost of an increase in time poverty: those individuals who received jobs were likely to become time poor, with greater time deficits than the average in the actual situation. This is due to the limited earning potential of the non-employed members of consumption-poor households in the actual labor market conditions in Turkey, combined with the impact of increased time deficits as a result of increased labor market participation in the affected households. The occupations and industries assigned as part of the simulation exercise in both urban and rural areas are those providing the lowest earnings, particularly for women. Agriculture in rural areas and services in urban areas were the main sectors for women's employment with far lower-than-average earnings.

The implementation of training programs could play a crucial role in eliminating sectoral and occupational segregation, but they should be designed to specifically address the issue. A recent report by Initiative For Women's Labor and Employment (KEİG) (2012) indicates that vocational training programs implemented by the Employment Agency (ISKUR) have a rather unsatisfactory record of performance on this front. Even though the majority of the attendees in

the trainings were women,⁵² their placement ratios and likelihood to take permanent jobs were very low.⁵³ Thus far, the implementation of these training programs targeting women's employment only perpetuates the segregated structure of the market divided into "men's work" and "women's work" (KEİG, 2012). Women are primarily directed towards vocational training in hairdressing, needlework, and caring for the sick and elderly.⁵⁴ The current public works program is, by design, not providing permanent jobs and does not include any specific items to transform gender biased structures (KEİG, 2012). The report also highlights that similar trends are observed on the outcomes of other programs aimed at promoting women's employment. Such vocational training or public works projects could be tracked through ISKUR and tied to the sectors and occupations identified with vacant job opportunities. This would be especially critical for rural Turkey.

The existing gap between women and men in terms of education level that has been highlighted by many researchers reveals itself in our analysis as well. Inequalities in access to education are one of the main factors behind low potential earnings for women and so several measures for women's education are given priority in the policy documents. Given the positive relation between the education level and labour force participation and access to better working conditions, more attention and effective policies are needed on this issue. However, the low labor force participation of women in Turkey cannot be explained solely by the gender gap in education level.⁵⁵ Even though more educated women are more likely to enter the labor market,

⁵² Women beneficiaries attended the courses provided by the Public Training Centers since 2010 adds up to 61% of 3,588,355 attendants; in case of vocational training courses this figure is 18% out of 284,543 beneficiaries; 90 percent of 52,549 attendants in courses offered in Girls Technical and Vocational schools are women.

⁵³ Based on 2011 ISKUR data KEİG (2012) finds major variations across regions in women's and men's work placements. For example, in Marmara region among the applicants 23% of women vis-a-vis 35% of men were placed. In Southeast Anatolia only 8% of women and 20% percent of men were placed by ISKUR.

⁵⁴ Among the training programs provided by İŞKUR where women participants constitute 75 percent to 100 percent are training on cosmetics, care, textiles and clothing and clerical work. In courses like office work, accounting, cooking, pastry, cleaning, marketing that are so-called "women-type" jobs the share of women corresponds to 50-74 percent. Women are almost absent in training courses on manufacturing, machinery and mechanical work (Yücel, 2013). As another example Skill's 10 Project introduced with a coordination between employers and Specialized Vocational Training Centers (UMEM) the training courses are opened more on male dominated fields like machine operating, car repairing. Unlike ISKUR's vocational training classes, 7,856 women vis-a-vis 19,453 men attended these courses.

⁵⁵ Ilkcaracan (2010) analyzes women's labor force participation using 2008 Household Labour Survey data by education level and marital status and finds that labor force participation rates for single women are 2-3 times higher when compared with married women at all education levels. Corresponding

they also face a higher unemployment rate. Any education policy that is not complemented with an employment policy would not meet the expected employment outcomes. As we saw in Table 24 above, the average increase in earnings from the jobs received in the simulation by women with less than a high school education was lower than the monetized value of their increased time deficits as a result of their paid work hours. While the increase in time deficits is fairly stable across education levels, earnings increase with education, especially at the post-secondary level. At lower levels of schooling, the earnings potential of women either does not or only just covers the value of their time deficits. Thus, expanded education will be helpful, but expanded opportunities for educated women are also necessary.

Flexible work arrangements are often considered and legitimized as a means to support women's employment. The National Employment Strategy document also emphasizes this point and proposes replacing the existing job security limited to regular workers with flexible work and employment security. Flexible work is often defined to encompass a variety of work arrangements, such as part-time work, temporary work through private employment bureaus, on-call work, working from home, etc. However, our findings cast doubt on the desirability of such an employment expansion strategy. The majority of casual workers (60 percent) are consumption poor by the LIMTCP measure—reflecting the earnings disadvantage faced by this group of workers (Table 16). Only unpaid family workers face a higher rate of consumption poverty than casual wage workers. Flexibilization may increase the pool of workers in this group and may not serve to alleviate consumption poverty.

Our results have some implications for the other main item in the National Employment Strategy—supporting women's entrepreneurship. Microcredit schemes and training programs have been introduced, particularly for people in poverty who are identified as lacking access to financial credit. The National Gender Equality Action Plan (2008-2013) emphasizes microcredit schemes to address women's poverty. Supporting women's entrepreneurship is also mentioned as a target by the National Action Plan (2012-2016) prepared by the Ministry of Food, Agriculture and Livestock, which aims to support women's empowerment in rural Turkey. In order to combat rural poverty, the Turkish government prepared the National Strategy for Rural

differences for men are quite low. Limiting the sample to primary work age urban population, İlkkaracan finds that labor force participation of single women with primary education is 40 percent, this rate decreases to 15 percent for married women with the same level of education. The figures for high school graduates are 60 percent to 25 percent, university graduates are 85 percent to 70 percent.

Development that comprises three main programs: rural development investments program, the social support program, and the support to agricultural cooperatives program (UNDP, 2011). Employment strategies highlighted in these documents, including the national action plan for women's empowerment in rural areas, need to be designed considering the long hours women tend to spend sustaining their homes. Our results reveal that there is a sizeable gap between the official and LIMTCP poverty rate for this group: The official rate among self-employed women is “only” 37 percent, while once time deficits are taken into account, it emerges that the poverty rate is actually as high as 56 percent (Table 16). Self-employment for women may not substantially alleviate consumption poverty and may carry a considerable penalty from the impoverishing effects of time poverty.

6.2 Lower Hours of Employment and Higher Earnings

Time deficits and their associated challenges can be felt differently by individuals with different levels of earnings. For employment to serve as a route to escape poverty, earnings should be at least as large as the monetized value of the additional time deficit associated with employment. Otherwise, employment of the individual can impose a drain on family resources, (i.e., on other sources of family income or generate cutbacks on the purchases of essential consumption goods). The ratio of the monetized value of time deficit to earnings is a simple metric to judge whether time deficits can be impoverishing for time-poor individuals and their households. We found that the average time-poor worker in the bottom quintile of the earnings distribution did not earn enough to offset their time deficit. In fact, the median value of the ratio (multiplied by 100) was 160 percent for Turkey as a whole (Table 15). Women fared especially poorly in terms of this metric. Even the average female worker with “middle-class” earnings (i.e., those in the middle quintile) would have to spend almost 45 percent of her earnings on purchasing market substitutes to avoid time poverty. Women in the top quintile also had a typical value exceeding one fifth of their earnings—a rather substantial cut that would have to be incurred to avoid time poverty. Thus, public service provisioning to alleviate the time deficits of low income earners can be an effective means to combat poverty. In addition, raising the wage rates at the low end of the distribution needs to be considered. Higher wage rates would enable individuals to either lower their hours of employment or to increase their purchases of market substitutes to make up for their time deficits. The recently announced minimum wage level for 2014 is 846 TL, which is only 70 percent of the level proposed by TUIK. This minimum wage level is even lower than the

complete poverty line calculated for four years ago for the year 2010 (896 TL) set for a household with two adults and two children. Increasing the minimum wage would also influence the amount of social assistance as these items are usually set below the minimum wage level.

6.3 Public Provisioning of Social Care Services as a Support for Employment

The hidden poor and the time-poor but consumption-nonpoor represent the groups for which social service support would be effective to relieve their time deficit and, hence, improve their quality of life. Employment is closely related to time poverty, as the overwhelming majority (91 percent) of the time poor hold paid work (99 percent for men and 80 percent for women). Public provisioning of services that substitute for household production can reduce the time poverty of the employed. Weak provisioning of social care services has also been identified as one of the binding constraints on equal employment opportunities for women in Turkey. Academic research and the policy documents of women's organizations have repeatedly highlighted that the lack in public provisioning is the main factor behind low labor force participation of women (İlkkaracan, 2010). Turkey has the lowest enrollment rates of children under six years of age in childcare and early education services of all the OECD countries. There are almost no services available for children between 0 and 3 years of age while average enrollment in the OECD is close to 30 percent. For children over 3 years of age, preschool services are provided by the Ministry of National Education through both public and privately owned daycare centers. However, overall enrollment of 3-5 year olds in Turkey is only 24 percent compared to the OECD average of 70 percent. Most children of pre-school age are looked after at home, usually by their mothers (for 89.6 percent of children). Other caregivers include the mother's mother-in-law (4.8 percent), mother's mother (3.5 percent) and father (1.5 percent). Only 2.4 percent of the pre-school-age children are in kindergarten and only 1.2 percent is cared for by a babysitter (Ministry of Family and Social Policy, 2011). Mothers or spouses take care of elderly or other dependents at home at a rate over than 50 percent.

Universal public provisioning of social services would play a critical role in promoting equal access and equal opportunity. It is especially important for the people living in poverty who typically cannot afford to buy care services of acceptable quality. A recent proposal by the government considers childcare subsidies only for the children of working women, which, by design, excludes the poor who are out of the labor force or unemployed. Provisioning of social care services would not only influence the employment status of women but would also alleviate

poverty. Alternative models under discussion are more focused on urban areas, such as plans for setting up day care centers in industrial zones. However, our results regarding higher time poverty (as well as consumption poverty) in the rural areas suggest that an urban bias should be avoided. Access to these services should be accepted as a right—a social right of all children, elderly and dependent citizens. Services need to be diversified in order to address different needs by region, different household types, and employment conditions.⁵⁶

6.4 Social Assistance

Our findings suggest that employment alone is not able to lift all households out of poverty. For those households who are in the hardcore poor group, in-kind or cash transfers are needed. The level of assistance could be set to reach the monetized value of time and consumption deficit for each household. However, in Turkey, Uçar (2011) has reported that the recipients find direct assistance amounts to be inadequate. The majority of them complain about the irregularity of the payments as well. Recipients also perceive these services as charity rather than a right.

Recent debates on social assistance emphasize its links to employment. Active social assistance proposals suggest coordination between employment agencies and social assistance departments and increase employment opportunities with specific services for the recipients or other eligible people in their household. Active social assistance not only helps reduce poverty but also contributes to eliminating social exclusion.

In conclusion, our study reveals that addressing poverty in Turkey is, if anything, even more complex a task than one would be lead to believe by using the official consumption poverty line as a guide. While employment can make an important contribution to alleviating conventionally measured consumption poverty, incorporating time into our understanding of poverty makes it clear that employment alone will be largely insufficient to address the issue. Employment opportunities need to be more flexible and rewarding in terms of earnings. Those not currently working for pay need additional education and training in order to be able to secure employment that pays well enough to make a real difference in their quality of life. And social provisioning of care services that can alleviate time deficits need to be in place in order for people to take advantage of employment opportunities.

⁵⁶ KEIG (2013) has put forward a number of proposals that needs to be seriously considered by policymakers. They pertain, inter alia, to provisioning of care for children and dependent adults as well as the training of care professionals.

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Appendix A. Quality of Statistical Match and Simulations

Introduction

This appendix describes the construction of synthetic datasets created for use in estimation of the Levy Institute Measure of Time and Consumption Poverty (LIMTCP) for Turkey in 2006. This work was carried out for a project supported by the United Nations Development Programme.⁵⁷ Construction of LIMTCP estimates requires a variety of information for households. In addition to basic demographics, the estimation process requires information about income and time use. No single data set has all the required data for Turkey. Thus, in order to produce LIMTCP estimates, a synthetic data file is created by statistically matching two source data sets.⁵⁸ We use the Hanehalki Bütçe Anketi (HBA 2006, the household income and expenditure survey) carried out by the Türkiye İstatistik Kurumu (TÜİK, the Turkish statistical institute) as the base data set, since it contains good information on demographics, income, transfers and taxes for a representative sample of households in Turkey. Time use data comes from TÜİK's time use survey Zaman Kullanım Anketi (ZKA 2006), which is also nationally representative. With the resulting file we estimate time and consumption poverty.

In order to assess the possible impact of consumption-poverty reduction strategies founded upon expanding employment on time and consumption poverty, it is necessary to impute the impact of those strategies on the income, time allocation, and consumption expenditures of households. We draw on and extend our work simulating the results of the American Recovery and Reinvestment Act (Zacharias, Masterson and Kim 2009) and previous LIMTCP employment simulations (Masterson 2012). In this case, we assume that some unspecified way is found to employ those adults in households underneath our adjusted consumption poverty line who are not employed. We then assess the impact this change has on time and consumption poverty. Finally, we perform some sensitivity analysis of the resulting time-adjusted consumption poverty rates to two sets of assumptions made in arriving at consumption expenditures.

⁵⁷ The project, titled "Why Time Deficits Matter: Implications for Understanding and Combatting Poverty", is directed by Ajit Zacharias and Rania Antonopoulos.

⁵⁸ See Kum and Masterson (2010) for details of the statistical matching procedure that we use.

This appendix is organized as follows. The source datasets are described and their demographic characteristics are compared. Then the quality of the match is reviewed including diagnostics about the match itself. Next we describe the methodology involved in the imputation of occupation and industry, hours of employment and earnings, household income, household production hours, and consumption expenditures. Finally, we assess the results of the simulation.

Statistical Matching

Data and Alignment

The source data sets for the time use match for the LIMTCP estimates for Turkey are the 2006 HBA and the 2006 ZKA. We use individual records from the 2006 HBA file, excluding those living in group quarters or in the Armed Forces. Since the ZKA covers individuals aged 15 to 99 years old, we discard younger and older individuals from the HBA file. This leaves 24,867 records, which represents 51,674,609 individuals when weighted. In the ZKA, we have 10,893 individual records, representing 47,443,177 individuals when weighted.

In order to create the estimates of the time-income poverty measure, we had to construct thresholds for the time spent on household production. The thresholds are defined for the household. The reference group in constructing the thresholds consists of households with at least one nonemployed adult and income around the official income-poverty line. We divided the reference group into 12 subgroups based on the number of children (0, 1, 2 and 3 or more) and number of adults (1, 2 and 3 or more) for calculating the thresholds. The thresholds are simply the average values of the time spent on household production by households, differentiated by the number of adults and children. In principle, they represent the average amount of household production that is required to subsist at the poverty-level of income.

For practical purposes, we defined the reference group as households with household incomes between 75% and 150% of the poverty line (this range is referred to as the poverty band hereafter), and with at least one non-employed adult. In order to transfer the hours spent by individuals on household production in the reference group as closely as possible, we used the following strata variables in the match: indicators for being within the poverty band, for having one or more non-employed adults in the household, the number of children, the number of adults, sex, employment status, and household income category. Table A.1 compares the distribution of individuals by these variables in the two data sets. Since both surveys were carried out over

roughly the same time period, we can expect them to be well aligned. We see that there are 3% fewer individuals in households without children in the HBA than in the ZKA, while individuals in two and three-or-more children households make up a greater share of those in the income and expenditure survey. Individuals in one-adult and two-adult households are more common in the ZKA and those in three-or-more-adult households are more common in the HBA. The ratio of individuals in households with at least one non-employed adult differs by less than half of one percent between the two surveys, while the ratio of individuals in households within the poverty band is 2% higher in the ZKA. The distribution by household income is noticeably skewed to the lower end of the distribution in the ZKA compared to the HBA. This is due to the poor quality of the household income question and data in the time use survey. The nonemployed are slightly under-represented in the ZKA relative to the HBA (1.4%). The distribution of individuals by sex is close in the two surveys, with females slightly less common (1.5%) in the ZKA than in the HBA. So, as expected, we have a very close alignment between the two surveys along six of the seven strata variables.

Quality Assessment

Turning to the results of the match, we first look to the distribution of matched records by matching round in Table A.2. The bulk of the matches, 65.2%, occur in the first round. This is lower than in other time use matches (see, for example, Masterson 2010), due to the higher than usual number of strata variables used in this match.⁵⁹ The rest of the records are matched over an additional 51 rounds, with 0.5% receiving no match at all. Table A.3 provides a comparison of the distribution of weekly hours of household production in the ZKA and the matched file. The tenth percentile is zero, so those ratios are undefined. The remaining percentile ratios are all relatively close, with the ratio of the median to the 25th percentile being exactly equivalent. The Gini coefficient is extremely close, 0.5519 in the matched file, compared to 0.5521 in the ZKA. Table A.4 breaks down the mean and median of the three categories of household production and the total in the matched file and the ZKA.⁶⁰ We can see that for all four variables the difference in the matched and the source file's mean is very small, with the largest proportional difference

⁵⁹ In a typical time use match (as in Masterson 2010), five variables are used, yielding a total of 32 matching cells. In this match, using seven strata variables, the number of matching cells in the first round was 781.

⁶⁰ The three categories are care (child care, elder care, etc.), procurement (shopping, etc.), and core (cooking, cleaning, laundry, etc.).

in procurement, which is 0.6% (or 36 seconds) higher in the matched file than in the ZKA. Median core and total household production is exactly equal in the matched file.

Examination of the quality of the match within population sub-groups shows generally good results. Figure A.1 displays ratios of mean weekly hours of household production between the matched file and the ZKA for the seven strata variables. For almost all the categories, the average weekly hours in the matched file are within 5% of the ZKA. The exceptions are for females, who have 6.2% higher weekly hours in the matched file, while males have 3.3% lower weekly hours. The largest differences are for the top two household income categories, at 8.1% and 8.7%. This is not surprising, given the relationship between household income and household production weekly hours (more on that below), and the misalignment of the two surveys along this axis.

Table A.5 has the actual numbers, and we can see that these large percentage differences represent relatively small differences in hours per week. For the largest percentage gap, in the highest income category, we see that the actual amount of time difference is one and a half hours per week. In the case of sex, males have 25 more minutes per week on average in the matched file, while females have 72 minutes more. Notice that the ratios by category are well reproduced in the matched file. The largest deviation is by sex, as we would expect given the differences in the averages for females and males. The extent to which the match file reproduces the distribution of weekly hours of household production within reference groups is demonstrated in Figure A.2 and Table A.6.⁶¹ We can see very little difference between the matched file and the ZKA in the distributions in Figure A.2, although the average values of weekly household production hours in the matched file range from one percent lower to almost sixteen percent higher than in the ZKA. Thus the distribution of household production is well preserved in the matching process, even at this level of detail.

Overall, the quality of the match is very good. It has its limitations, especially in terms of household income. But the overall distribution is transferred with reasonable accuracy, and the distributions within even small sub-groups, such as one adult with two children, is transferred with good precision.

⁶¹ For the sake of clarity of the plot, only the number of children and number of adults is used.

Labor Market Simulation

Data and Methods

The purpose of the simulation is to assess the first order impacts of policies aimed at alleviating consumption poverty in Turkey via jobs policies, for example an employer of last resort (ELR) policy. As such, the simulation is a three-step procedure. The first step is imputing the earnings and the hours of employment of those to be assigned jobs, and adjusting the household income of households with members who have been assigned jobs. The second step is to impute the new hours of household production of individuals in households affected by job assignments. The third step is to impute the new level of consumption for the households with job recipients. With these three steps completed, we can estimate the impact of a given policy on time and consumption poverty, both overall and on individual households. We first discuss the policy scenario, then the steps involved in constructing the estimated outcome of the policy.

Policy Scenario

A very simplified job assignment scenario is envisioned in the LIMTCP Turkey project: that all eligible adults⁶² in households below the adjusted consumption poverty line that are not working receive paid (either formal or informal) employment.⁶³ The donor pool contains all those currently working for pay. After eligible adults are assigned a job, with hours and earnings, the household income of households with eligible adult(s) is recalculated by adding the imputed amount of household earnings to the previous amount of household income. We assume that none of the other components (i.e. other than earnings) of household income undergo any change, i.e., we incorporate the maximum income effect of additional employment in our simulation. This assumption is, obviously, unrealistic for households that receive means-tested income transfers or receive income transfers that depend on employment status. However the HBA 2006 does not provide detailed data on transfers, just the total amounts received in cash or in kind. Thus the effect of this assumption is to bias the results of our simulation in the direction

⁶² Eligible adults are defined as all individuals between the ages of 18 and 70 who are not disabled, retired, or in school.

⁶³ An exception will be noted in the discussion of the labor force simulation.

of greater consumption poverty alleviation, since we are adding earnings but not subtracting transfers that might be lost as a result.⁶⁴

Once the employment and income simulation is complete, the hours of household production of individuals needs to be estimated in all households that contain job recipients. The recipient pool contains all adults living in households that contain at least one job recipient. The donor pool contains all adults living in households in which all eligible adults are engaged in employment. The final step is imputing new consumption expenditures for the households that included job recipients. Once all these steps have taken place, we can recalculate LIMTCP using the imputed values for time use and consumption expenditures. We now describe the method for each step in detail.

Labor Force Simulation

This simulation follows the method developed in prior research on time and income poverty, which built on research done at the Levy Institute to estimate the impact of the American Recovery and Reinvestment Act of 2009 on U.S. income inequality. The problem here is to assign hours and earnings to individuals receiving paid employment. The method for assigning hours and earnings is a hot-decking procedure (for a review of hot-decking see Andridge and Little 2010). We use a nearest-neighbor method called affinity scoring to get a pool of records from which to match each record within matching cells determined by age, sex, and education. Before the hot-decking, we assign an industry and occupation to each job recipient. We also generate imputed wages and hours of work using a three-stage Heckit procedure. These four variables are used in the hot-decking assignment of hours and earnings. In addition to hours and earnings we assign industry, occupation and employment type (formal or informal).

Industry and Occupation Assignment

The first step in assigning jobs to recipients is to determine what are the likeliest industry and occupation for each of the recipients. This is done using a multinomial logit procedure. Both industry and occupation are regressed on age, sex, marital status, education and relationship to household head in the donor pool. The likelihood for each industry and occupation is then

⁶⁴ The average total transfers for individuals in adjusted consumption poor households receiving transfers is 260 Turkish Lira per month, compared to the average adjusted poverty line for such individuals of 926 Turkish Lira per month.

predicted in the recipient pool, using the results of the multinomial logit. Then each recipient is assigned the likeliest industry and occupation using those predicted likelihoods.

Imputed Hours and Earnings

The imputations for the earnings and usual weekly hours of paid work were performed using a three-stage Heckit procedure (Berndt 1991, p. 627). The model, described below, was run separately for each combination of six age categories and sex. The first stage is a probit estimation of labor force participation:

$$lf_i = \alpha_1 + \beta X + \varepsilon_i \quad (0)$$

The vector of explanatory variables, X , includes indicators for the presence of male and female children aged less than one, one to two, three to five, six to twelve, and thirteen to seventeen in the household, number of children in the household, education, marital status, and spouse's age and education. The regression is run on the universe of all eligible adults. The Mills ratio is calculated using the results of the first stage regression:

$$\lambda = f\left(\frac{-\hat{lf}}{\hat{\sigma}_{lf}}\right) \bigg/ \left(1 - F\left(\frac{-\hat{lf}}{\hat{\sigma}_{lf}}\right)\right) \quad (0)$$

Where f is the normal density function, F is the normal distribution function, \hat{lf} is the estimated probability of labor force participation, and $\hat{\sigma}_{lf}$ is the standard deviation of \hat{lf} .

The second stage is an OLS estimate of the log of hourly wage:

$$\ln w_i = \alpha_2 + \gamma_2 Z + \theta_2 \lambda + \mu_i \quad (0)$$

The regression is run only on those that are actually employed for pay. The vector of explanatory variables, Z , in this stage includes the individual's education, age, marital status, industry and occupation, and finally, λ , the Mills Ratio calculated in the first stage. Inclusion of the Mills Ratio corrects for the selection bias induced by limiting the regression to those in paid employment. The imputed log of wage is predicted for donors and recipients from the results of the regression, with industry and occupation replaced for the latter by the assigned industries and occupations from each scenario.

The third stage is a regression of hours per week:

$$h_i = \alpha_3 + \gamma_3 Z + \omega \ln w_i + \theta_3 \lambda + \eta_i \quad (0)$$

The regression is once again run only on those in paid employment. The vector of explanatory variables, Z , in this stage is the same as the previous stage, with the addition of indicators for the presence of male and female children aged less than one, one to two, three to five, six to twelve, and thirteen to seventeen in the household, and the number of children in the household. Finally, the imputed wage predicted in the second stage and the Mills Ratio calculated in the first stage are included. Imputed hours per week are predicted for donors and recipients using the results of the regression, replacing the industry and occupation of the latter with their assigned values. The results of the last two stages give us the remaining variables with which we perform the hot-decking procedure to assign earnings, hours, industry, occupation and employment type.

Jobs Assignment

We can now assign earnings, usual hours of work, industry, occupation and employment type to those individuals in the recipient pool. The assignment method is statistical matching with hot-decking. The matches are performed within cells formed from combinations of age, sex and educational attainment. In some cases, in which there were no donors in a cell, cells were combined. The variables used to assess nearness of match are rural/urban status, family type, marital status, spouse's labor force status, assigned industry and occupation, indicators for the presence of male and female children aged less than one, one to two, three to five, six to twelve, and thirteen to seventeen in the household, number of children and the two imputed variables, log of wage and hours worked. Rural/urban status was assigned a weight in the matching procedure large enough to assure that no rural-urban matches occurred. Industry and occupation are the next most heavily weighted variables. Next are imputed hours and wage, followed by family type type and then the variables relating to presence of children in the household. The selection of matches is done using affinity scoring.

Once the hot-decking is finished, we compare new earnings to previous earnings. In this employment simulation, there were a small number of individuals who actually reported earnings and who ended up with simulated earnings that were lower than their actually reported earnings. We removed these records from the pool of recipients and left their employment-related data unchanged. For the remaining recipients, we revised their household income by adding the total

of the difference between the imputed amount of earnings and the actually reported earnings in the household (the sum of earnings differences of all recipients in the household) to the pre-simulation amount of household income.

Time Use Reallocation

We assume that as a result of the job assignment, the time use pattern of each eligible individual in the households that contain one or more job recipients (as adjusted) from the first stage will change. All adults in the recipient households are considered “eligible” for time-use reallocation. We use a second round of hot-decking to assign new weekly hours of household production to each of the “eligible” individuals, based on updated labor force participation variables for the recipients of jobs in the first stage. The method is the same as the first stage, with the exception of the matching variables used and their relative weighting in the procedure. In this stage, the variables used to assess nearness of match are rural/urban status, family type, marital status, labor force status, spouse’s labor force status, indicators for the presence of male and female children aged less than one, one to two, three to five, six to twelve, and thirteen to seventeen in the household, number of children in the household, number of adults in the household, household income, the income share of each individual,⁶⁵ and the two imputed variables from the first stage: earnings and usual weekly hours of employment. Household income and labor force status are updated to reflect the increased earnings and the new job assignments received in the previous stage. Again, rural/urban status is weighted to ensure no intra-regional matches occur. The number of children and number of adults in the household, household income, and income share are the next most heavily weighted variables. After that, the five employment-related variables assigned in the previous hot-decking step, marital status and spouse’s labor force status, then the variables relating to children in the household. For each match, the weekly hours of household production are transferred. We now have the time use variables necessary to recalculate time and consumption poverty, but we still need to adjust household consumption expenditures to reflect the new, higher household incomes of recipient households.

⁶⁵ Income share is included to reflect changes in bargaining power within the household and its impact on the distribution of household production work.

Consumption Expenditures Adjustment

In order to estimate the change in consumption expenditures for recipient households we do a third hot-decking procedure. We first estimate household consumption expenditures using a tobit regression (with a zero lower bound) on the natural log of actual consumption expenditures reported in the HBA 2006. As explanatory variables we use the natural log of equivalence-scale adjusted household income, the number of children, the number of adults, the class of worker for head and spouse, the age, sex, and labor force status of household head. We run the regression separately for rural and urban households and predict log of consumption expenditures for all households.

We then do hot-decking, this time at the household level. The matching variables are rural/urban status, family type, marital status of the household head, assigned or actual employment type, industry, and occupation of the household head, the spouse of the household head's assigned or actual employment type, the imputed log of consumption expenditures, the log of equivalence-scale adjusted household income, the number of kids, and the number of adults. Again, the rural/urban status variable was appropriately weighted to prevent rural-urban matches. The next most heavily weighted variable was the imputed consumption expenditures, followed by household income. The next most heavily weighted variables were the number of children and the number of adults, followed by marital status and family type.

For each match we transferred household monthly consumption expenditures. We compared the transferred expenditures to the actually-reported expenditures and in those cases in which the latter were higher we replaced the matched value with the actually reported consumption expenditures plus the increase in household income as a result of the increased earnings.⁶⁶ We move now to an assessment of the quality of the simulation results.

Quality Assessment

Assessing the quality of this type of simulation is difficult since we are producing a counterfactual distribution of earnings, time use and consumption expenditures. The assessment is therefore limited to comparing the latter qualities among sub-groups of donor and recipient records.

⁶⁶ We estimated the average propensity to consume for households below the adjusted consumption poverty line and found it to be above unity, on average.

First we compare the recipient and donor pools for the first stage in the simulation. Figure A.3 presents the breakdown of the recipients and donors by matching cell (based on sex, age and education). We can see that among women, the members of both donor and recipient pools tend to be on the younger side, while this trend is less pronounced among men. There are much fewer elderly women in either pool than men, and very few of the donors in the oldest category for either men or women. In all age and sex categories, the donors tend to be more highly-educated than the recipients. To a certain extent, the unbalance in the donor and recipient pools will tilt the results of the simulation, especially in the cases where there are significantly fewer donors than recipients.

We can compare the industry and occupation assigned in the employment simulation to the likeliest industry and occupation calculated in the first step of our procedure. This comparison is presented in Tables A.7 and A.8. As we can see, the assignment matched the likely industry in 92% of cases, while for occupation the match rate was over 95%. Assessing the earnings imputation is less straightforward, although we can compare the assigned earnings to actual earnings by matching cell for some indication. Figure A.4 displays the ratio of mean and median assigned monthly earnings to actual monthly earnings for each combination of sex, age and education. The shaded area represents a band of plus or minus 20% from equivalence, a sweet spot. Many cells were empty of either donors or recipients and so have no ratios. The worst ratio is that for women aged 45 to 54 with a middle school education. Fortunately, this group represents only 14,000 of the 5.6 million recipients in the simulation. Generally, the more populated a cell with donors and recipients, the better the results of the simulation. Figure A.5 displays the same ratios for usual weekly hours of work. The results here are clearly superior. It is intuitively obvious that it should be so since there is much lower variation in weekly hours of paid work than in earnings.

Turning to the estimation of weekly hours of household production, we again first compare the recipient and donor pools. Figure A.6 shows the comparison by matching cell. We again see that many of the recipients and, to a lesser degree, the donors are younger (in the first two age categories) and less educated. This is again more pronounced for women in terms of education. Figure A.7 presents a comparison based on sex, number of children in the household and number of adults. Here we see that more of the recipients are in households with two or three and more children, while most of the donors are from households with one or no children.

This reflects somewhat the nature of the simulation and the social structure in Turkey, in that more of the eligible adults that are not working are to be found in households with more children, working, in fact, as household production workers. This will tend to have some impact on the assignment of weekly hours of household production.

Figures A.8 and A.9 contain ratios of recipients' mean and median assigned weekly hours of household production to donors actual mean and median hours, again by matching cells and by sex, number of children and number of adults, respectively. The results show that the distribution of assigned weekly hours by matching cell resembles the actual distribution of the donor pool. The cases that are the furthest from equivalence are among elderly men and women, and these cells were, again, lightly populated. For example, the worst case was for males aged 55 to 64 with college educations. This cell contained 1,300 recipients (compared to 11.2 million in the entire simulation). The comparison by sex and household composition is even better-looking.

The final assessment we do is of the imputation of consumption expenditures. Table A.9 contains the actual and simulated mean and median consumption expenditures for rural and urban. As we would expect the mean and median for the simulation is higher than for the actual reported consumption expenditures, since we are adding income to many of the adjusted consumption poor households.

To the best of our ability to judge, the simulation looks like a reasonable approximation of the impact on individual adjusted consumption-poor households of all eligible adults acquiring paid employment. The results of the simulation will tend to give an optimistic view of the impact of such employment transitions, since we cannot account for loss of transfers. Nevertheless, the results should shed an interesting light on the effectiveness of employment generation as a consumption-poverty alleviation policy in Turkey.

Sensitivity Analysis

The simulation exercise that we carried out assigns probable hours of employment to poor, employable adults. We also ascertain, via the simulation, the earnings that the newly employed adults are likely to receive from their new jobs. This allows us to revise the household income of the households of new job recipients by the amount of their additional, simulated earnings. As described earlier, we used the revised household income, along with other demographic

characteristics, to determine the amount of consumption expenditures on the poverty basket⁶⁷ that the households of new job recipients are likely to incur. Our expectation is that the additional income would result in higher or, at least, unchanged level of expenditures on the poverty basket.

The expectation was not fulfilled for a minority (14 percent) of recipient households; that is, the simulated expenditures turned out to be lower than the actual, pre-simulation expenditures. For these households, we assumed that the simulated expenditures were the sum of actual expenditures and additional income from the newly assigned jobs. In effect, we are assuming that the entire increase in household income is spent on the poverty basket. We believe that this assumption helps us to avoid understating the poverty-alleviating impact of job creation.

We compared the sensitivity of our estimates to two alternative scenarios. The first scenario was to simply use the simulated consumption expenditures that emerged from the model for all recipient households, including for those who turned out to have simulated expenditures that were lower than actual expenditures (“Scenario 1”). The second scenario was to assume that the simulated expenditures for *all* recipient households (rather than just those whose simulated expenditures were lower than actual expenditures) were the sum of actual expenditures and additional income from the newly assigned jobs (“Scenario 2”). We calculated household consumption poverty rates under the two alternative scenarios and compared it to the rates that would obtain under the assumption we chose for the final estimates (“Simulation”). Our estimates showed that the official and adjusted (i.e., adjusted for time deficits) poverty rates among households as a whole were quite similar in all three cases (Table A.10). As we would expect, the discrepancies across the three cases are more pronounced for recipient households.

Another decision we had to make was what to do about transfers. Since transfer income is not available in detail (other than the breakdown into cash and in-kind transfer income), we were left with three choices. The first and most onerous was to create a transfer simulation model that would accurately predict all the different types of transfers that Turkish households and

⁶⁷ The measure of consumption expenditure used in defining the poverty status includes the following items: Households' purchases for their everyday needs (e.g. food, clothing, rents, personal services), household's produced goods for own consumption, estimated imputed rents for services of owner-occupied housing, income in kind earned by employees, consumption of goods that were produced for sale by own-account workers in their own homes, and goods and services purchased by the household with the purpose of transferring them to other households or institutions. Consumption expenditures used in official calculation of poverty line excludes the purchase of durable goods.

individuals might receive and then estimate the impact of the job assignments we made in the simulation on transfers using that model. The second possibility was to deduct transfer income from all individuals receiving a job in the simulation. The third possibility was to retain the transfer income as is. The choice we made was to use the third option. That option gives us, if anything, an overly optimistic estimate of the impact on consumption poverty in Turkey of paid employment becoming available to non-working individuals in consumption poor households.

We assessed the sensitivity of our consumption poverty estimates to this assumption by comparing the poverty rates obtained using the second option (deducting transfers) with the third option (the one we used). As with the case of the households with estimated consumption expenditures below the actually reported amount, we deduct the amount of the transfers from consumption expenditures directly and recalculate the consumption poverty rate. The results are also reported in Table 10. The columns labeled “Scenario 3” report the consumption poverty rates (official and time-adjusted) for households with transfers deducted for all simulation job recipients. Again we see that the estimates of consumption poverty change very little and if anything, the estimates we report are probably biased downwards by our assumptions.

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TABLES

Table A.1 Alignment of Strata Variables, Turkey

	HBA2006	ZKA2006	Difference
Number of children in household			
0	32.7%	35.9%	-3.2%
1	23.7%	23.9%	-0.3%
2	25.3%	22.8%	2.4%
3+	18.4%	17.4%	1.0%
Number of adults in household			
1	5.2%	8.3%	-3.1%
2	54.8%	58.3%	-3.5%
3+	40.0%	33.4%	6.6%
Non-employed adult in household (y/n)?			
No	16.2%	15.9%	0.3%
Yes	83.8%	84.1%	-0.3%
Within 75 and 150% of poverty line (y/n)?			
No	62.7%	60.7%	2.0%
Yes	37.3%	39.4%	-2.0%
Household income categories (ZKA)			
300 YTL or less	4.6%	11.0%	-6.3%
301-450 YTL	7.5%	16.3%	-8.8%
451-600 YTL	13.2%	18.6%	-5.4%
601-750 YTL	10.3%	11.1%	-0.8%
751-1000 YTL	17.5%	17.9%	-0.3%
1001-1250 YTL	13.1%	7.0%	6.1%
1251-1750 YTL	16.0%	8.3%	7.7%
1751-2500 YTL	10.7%	6.0%	4.7%
2501-4000 YTL	5.1%	2.8%	2.3%
4001 YTL or more	2.0%	1.0%	1.0%
Employed (y/n)?			
No	55.0%	53.6%	1.4%
Yes	45.0%	46.4%	-1.4%
Sex			
Male	47.6%	49.2%	-1.5%
Female	52.4%	50.9%	1.5%

Table A.2 Distribution of Matched Records by Matching Round, Turkey

Round	Matched Individuals	Percent of Total	Cumulative Percentage
1	33,690,418	65.2%	65.2%
2	2,243,594	4.3%	69.5%
3	328,500	0.6%	70.2%
4	157,563	0.3%	70.5%
5	8,062,717	15.6%	86.1%
6	35,379	0.1%	86.2%
7	42,674	0.1%	86.2%
8	1,478,360	2.9%	89.1%
9	8,462	0.0%	89.1%
10	158,738	0.3%	89.4%
11	90,872	0.2%	89.6%
12	107,388	0.2%	89.8%
13	121,944	0.2%	90.0%
14	41,812	0.1%	90.1%
15	286,887	0.6%	90.7%
16	158,004	0.3%	91.0%
17	183,466	0.4%	91.3%
18	1,162,931	2.3%	93.6%
19	17,685	0.0%	93.6%
20	13,955	0.0%	93.6%
21	194,706	0.4%	94.0%
22	52,653	0.1%	94.1%
23	30,121	0.1%	94.2%
24	19,441	0.0%	94.2%
25	188,819	0.4%	94.6%
26	55,853	0.1%	94.7%
27	214,124	0.4%	95.1%
28	42,682	0.1%	95.2%
29	66,140	0.1%	95.3%
30	117,826	0.2%	95.5%
31	105,853	0.2%	95.8%
32	26,632	0.1%	95.8%
33	119,141	0.2%	96.0%
34	88,038	0.2%	96.2%
35	77,711	0.2%	96.4%
36	30,456	0.1%	96.4%
37	16,080	0.0%	96.4%
38	3,749	0.0%	96.5%
39	8,951	0.0%	96.5%
40	338,532	0.7%	97.1%
41	54,740	0.1%	97.2%
42	144,229	0.3%	97.5%
43	20,314	0.0%	97.5%
44	22,487	0.0%	97.6%
45	21,455	0.0%	97.6%
46	652,585	1.3%	98.9%
47	142,935	0.3%	99.2%
48	42,560	0.1%	99.3%
49	55,552	0.1%	99.4%
50	37,905	0.1%	99.4%
51	7,870	0.0%	99.5%
52	283,195	0.5%	100.0%
Total	51,674,685		

Table A.3 Distribution of Weekly Hours of Household Production in ZKA 2006 and Matched File

	p90/p10	p90/p50	p50/p10	p75/p25	p75/p50	p50/p25	Gini
ZKA 2006	.	3.96	.	16.50	2.75	6.00	0.5521
Matched File	.	3.92	.	16.75	2.79	6.00	0.5519

Table A.4 Comparison of Mean and Median Time Use Variables in Matched File to ZKA 2006

Average	Core	Procurement	Care	Household Production
MATCH	16.76	1.64	3.54	21.95
ZKA2006	16.68	1.65	3.58	21.92
Ratio	100.48%	99.39%	98.88%	100.14%
Median	Core	Procurement	Care	Household Production
MATCH	7.58	0.00	0.00	14.00
ZKA2006	7.58	0.00	0.00	14.00
Ratio	100.00%			100.00%

Table A.5 Mean and Median Weekly Hours of Household Production by Strata Variable, ZKA 2006 and Matched File

Mean Weekly Hours of Household Production

	MATCH	ZKA2006	Ratio		MATCH	ZKA2006
Core	16.76	16.68	100.5%			
Procurement	1.64	1.65	99.4%			
Care	3.54	3.58	98.9%			
Household Production	21.95	21.92	100.1%			
Number of Children						
0 children	19.58	19.06	102.7%			
1 child	21.17	21.33	99.2%	1/0	1.08	1.12
2 children	23.43	24.10	97.2%	2/0	1.20	1.26
3 or more children	24.47	24.91	98.2%	3+/0	1.25	1.31
Number of Adults						
1 adult	24.85	24.02	103.5%			
2 adults	25.10	24.74	101.5%	2/1	1.01	1.03
3 or more adults	19.50	19.33	100.9%	3+/1	0.78	0.80
Non-employed adult in household (y/n)						
No	18.09	18.87	95.9%	yes/no	1.25	1.19
Yes	22.60	22.39	100.9%			
Within Poverty Band (y/n)						
No	21.29	21.31	99.9%	yes/no	1.08	1.07
Yes	23.00	22.82	100.8%			
Household Income Category						
450 YTL or less	25.32	24.58	103.0%			
451-750 YTL	23.22	22.74	102.1%	2nd/1st	0.92	0.93
751-1250 YTL	22.07	21.00	105.1%	3rd/1st	0.87	0.85
1251-2500 YTL	20.73	19.17	108.1%	4th/1st	0.82	0.78
2501 YTL or more	18.59	17.10	108.7%	Top/1st	0.73	0.70
Employed (y/n)						
No	30.95	31.30	98.9%	yes/no	0.35	0.35
Yes	10.95	11.08	98.8%			
Sex						
Male	6.49	6.11	106.2%	Fem/Male	5.55	6.09
Female	35.99	37.20	96.7%			
Rural/Urban						
Urban	21.90	21.17	103.4%	Rur/Urb	1.01	1.09
Rural	22.03	23.18	95.0%			

Median Weekly Hours of Household Production

	MATCH	ZKA2006	Ratio		MATCH	ZKA2006
Core	7.58	7.58	100.0%			
Procurement	0.00	0.00				
Care	0.00	0.00				
Household Production	14.00	14.00	100.0%			
Number of Children						
0 children	13.42	13.42	100.0%			
1 child	12.25	11.67	105.0%	1/0	0.63	0.61
2 children	14.58	14.58	100.0%	2/0	0.74	0.76
3 or more children	15.75	15.75	100.0%	3+/0	0.80	0.83
Number of Adults						
1 adult	22.75	21.58	105.4%			
2 adults	18.08	16.92	106.9%	2/1	0.73	0.70
3 or more adults	10.50	10.50	100.0%	3+/1	0.42	0.44
Non-employed adult in household (y/n)						
No	11.67	12.83	91.0%	yes/no	1.25	1.09
Yes	14.58	14.00	104.1%			
Within Poverty Band (y/n)						
No	13.42	13.42	100.0%	yes/no	1.09	1.04
Yes	14.58	14.00	104.1%			
Household Income Category						
450 YTL or less	20.42	18.08	112.9%			
451-750 YTL	15.75	15.17	103.8%	2nd/1st	0.62	0.62
751-1250 YTL	13.42	12.25	109.6%	3rd/1st	0.53	0.50
1251-2500 YTL	12.25	10.50	116.7%	4th/1st	0.48	0.43
2501 YTL or more	10.50	9.33	112.5%	Top/1st	0.41	0.38
Employed (y/n)						
No	31.50	31.50	100.0%	yes/no	0.15	0.15
Yes	4.67	4.67	100.0%			
Sex						
Male	2.92	2.92	100.0%	Fem/Male	12.59	12.78
Female	36.75	37.33	98.4%			
Rural/Urban						
Urban	14.00	12.83	109.1%	Rur/Urb	0.96	1.18
Rural	13.42	15.17	88.5%			

Table A.6 Ratio of Matched to ZKA 2006 Average Hours of Household Production for the Reference Groups

Number of Children	Number of Adults		
	1	2	3+
0	101.8%	111.3%	99.0%
1	104.1%	114.5%	109.3%
2	111.3%	107.5%	106.7%
3+	115.6%	112.9%	100.8%

Table A.7 Likely and Assigned Industries for Labor Market Simulation Recipients

Assigned Industry	Likely Industry						
	Agriculture, hunting, forestry, fishing	Manufacturing	Construction and public works	Wholesale and retail trade, hotels and restaurants	Financial intermediation, real estate, renting and business activities	Community, social and personal service activities	Total
Agriculture, hunting, forestry, fishing	331,353	23,843	11,067	-	-	179,450	545,713
Manufacturing	-	1,924,960	1,069	-	-	56,254	1,982,283
Construction and public works	-	3,005	61,320	-	-	20,771	85,096
Wholesale and retail trade, hotels and restaurants	35,554	20,733	2,732	178,774	3,679	14,519	255,991
Financial intermediation, real estate, renting and business activities	-	7,920	-	-	-	-	7,920
Community, social and personal service activities	14,388	62,908	5,323	-	-	2,722,178	2,804,797
Total	381,295	2,043,369	81,511	178,774	3,679	2,993,172	5,681,800
Percent Match	86.9%	94.2%	75.2%	100.0%	0.0%	90.9%	91.8%

Table A.8 Likely and Assigned Occupations for Labor Market Simulation Recipients

Assigned Occupation	Likely Occupation								
	Legislators, senior officials and managers	Professionals	Associate professionals	Office and customer support workers	Service and sales workers	Craft and related trades workers	Plant and machine operators and assemblers	Laborers	Total
Legislators, senior officials and managers	-	-	-	-	1,069	-	2,395	-	3,464
Professionals	-	44,912	-	1,364	-	-	-	8,662	54,938
Associate professionals	-	-	4,988	-	2,078	-	-	-	7,066
Office and customer support workers	-	-	-	122,182	3,637	-	-	-	125,819
Service and sales workers	2,179	-	-	6,090	410,416	13,836	-	20,718	453,239
Craft and related trades workers	-	-	-	2,691	56,898	847,729	-	75,942	983,260
Plant and machine operators and assemblers	-	-	-	-	-	643	46,892	29,816	77,351
Laborers	-	-	-	-	10,167	24,417	-	3,942,079	3,976,663
Total	2,179	44,912	4,988	132,327	484,265	886,625	49,287	4,077,217	5,681,800
Percent Match	0.0%	100.0%	100.0%	92.3%	84.8%	95.6%	95.1%	96.7%	95.4%

Table A.9 Actual and Simulated Mean and Median Household Consumption Expenditures by Rural/Urban Status (Turkish Lira)

		Actual	Simulated
Urban	Mean	1,208	1,325
	Median	1,053	1,174
Rural	Mean	885	1,025
	Median	756	901

Table A.10 Poverty rates among households by poverty line and scenario (percent)

	Official				Adjusted			
	Simulation	Scenario 1	Scenario 2	Scenario 3	Simulation	Scenario 1	Scenario 2	Scenario 3
Recipient households	17	25	19	22	59	63	65	62
All households	11	12	11	12	25	26	27	26

FIGURES

Figure A.1 Ratio of Mean HH Production by Category (Match/ZKA 2006)

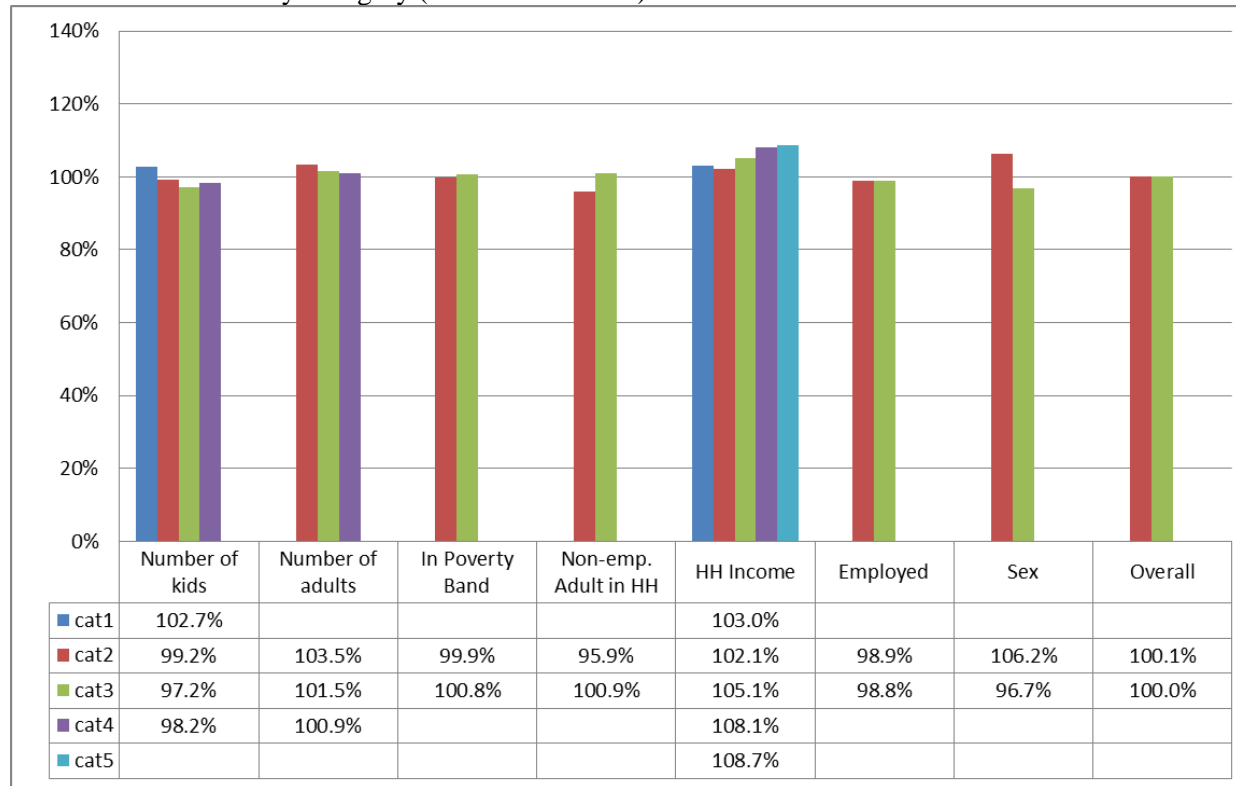


Figure A.2 Household Production by Reference Groups, ZKA 2006 and Matched File

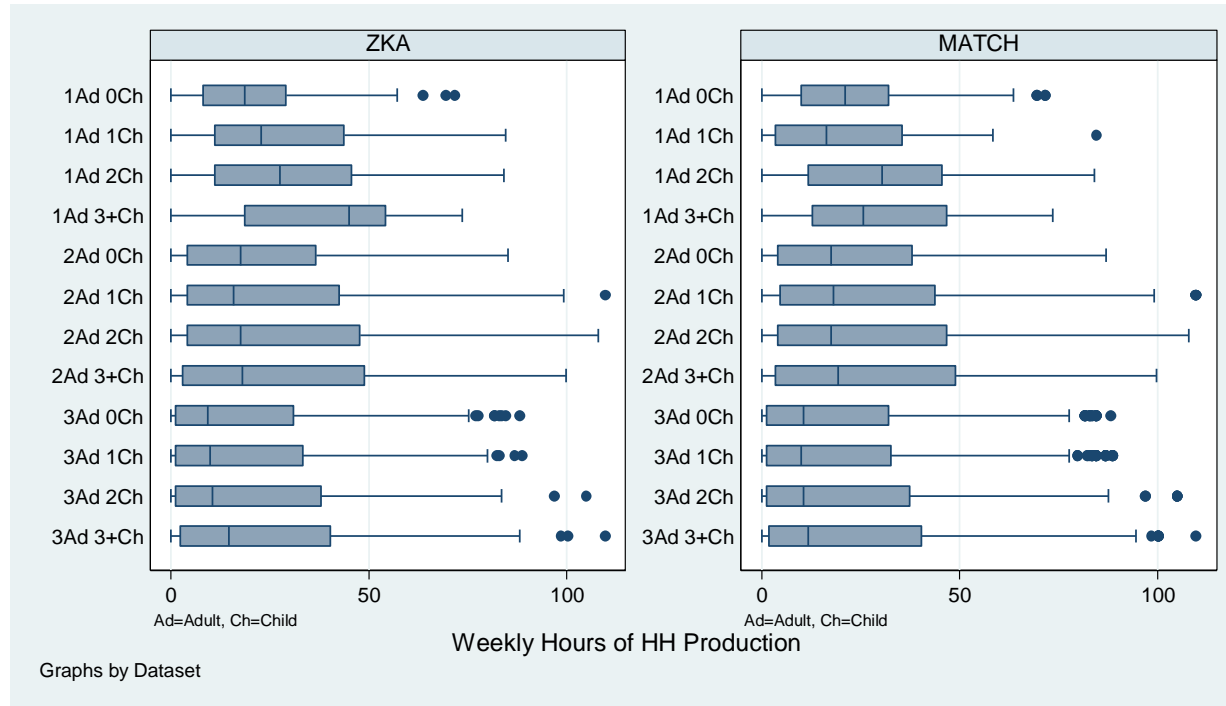


Figure A.3 Donor and Recipient Pools for Labor Force Simulation by Sex, Age and Education

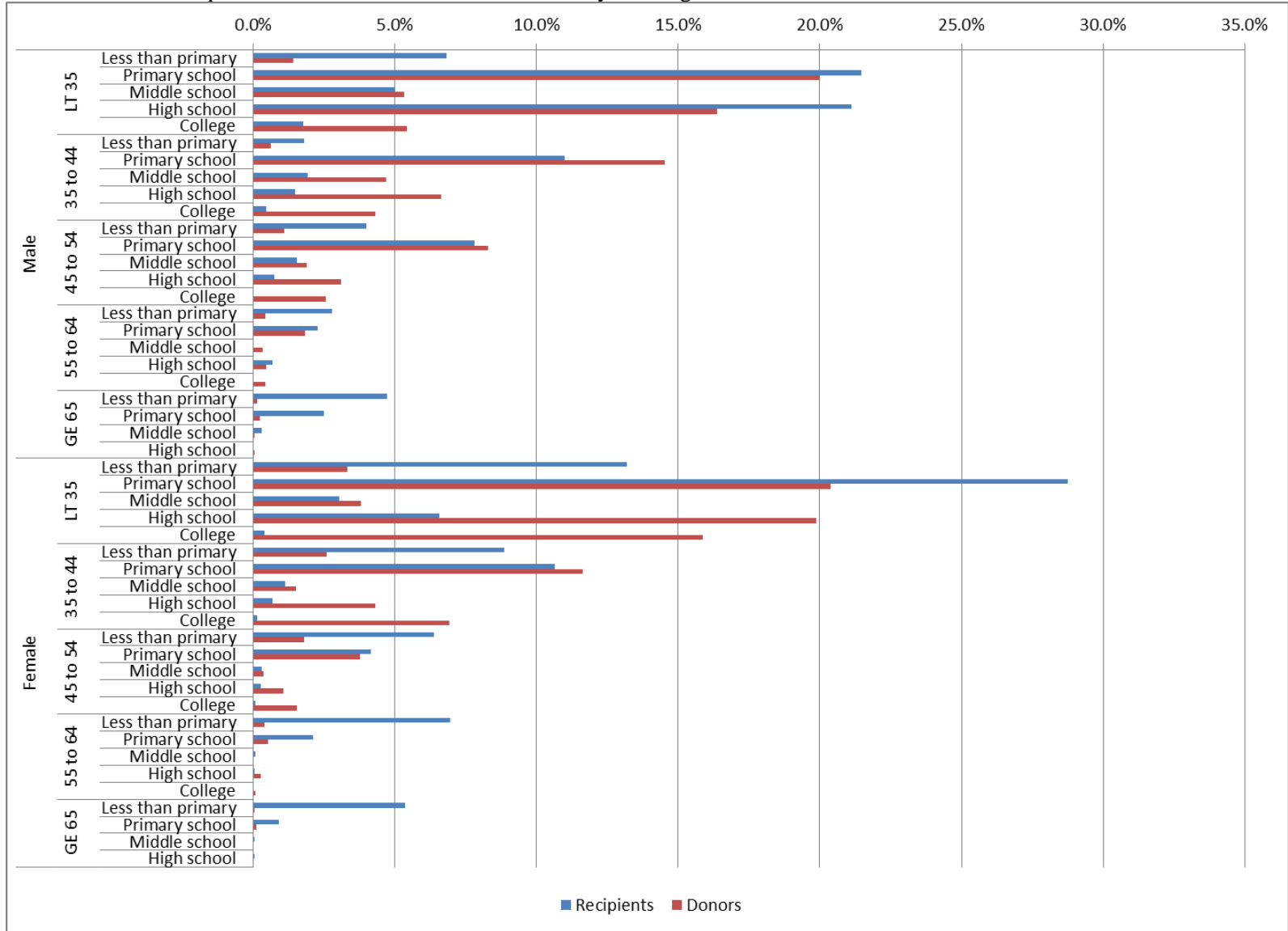


Figure A.4 Mean and Median Earned Income for Donors and Recipients for Labor Market Simulation by Sex, Age and Education

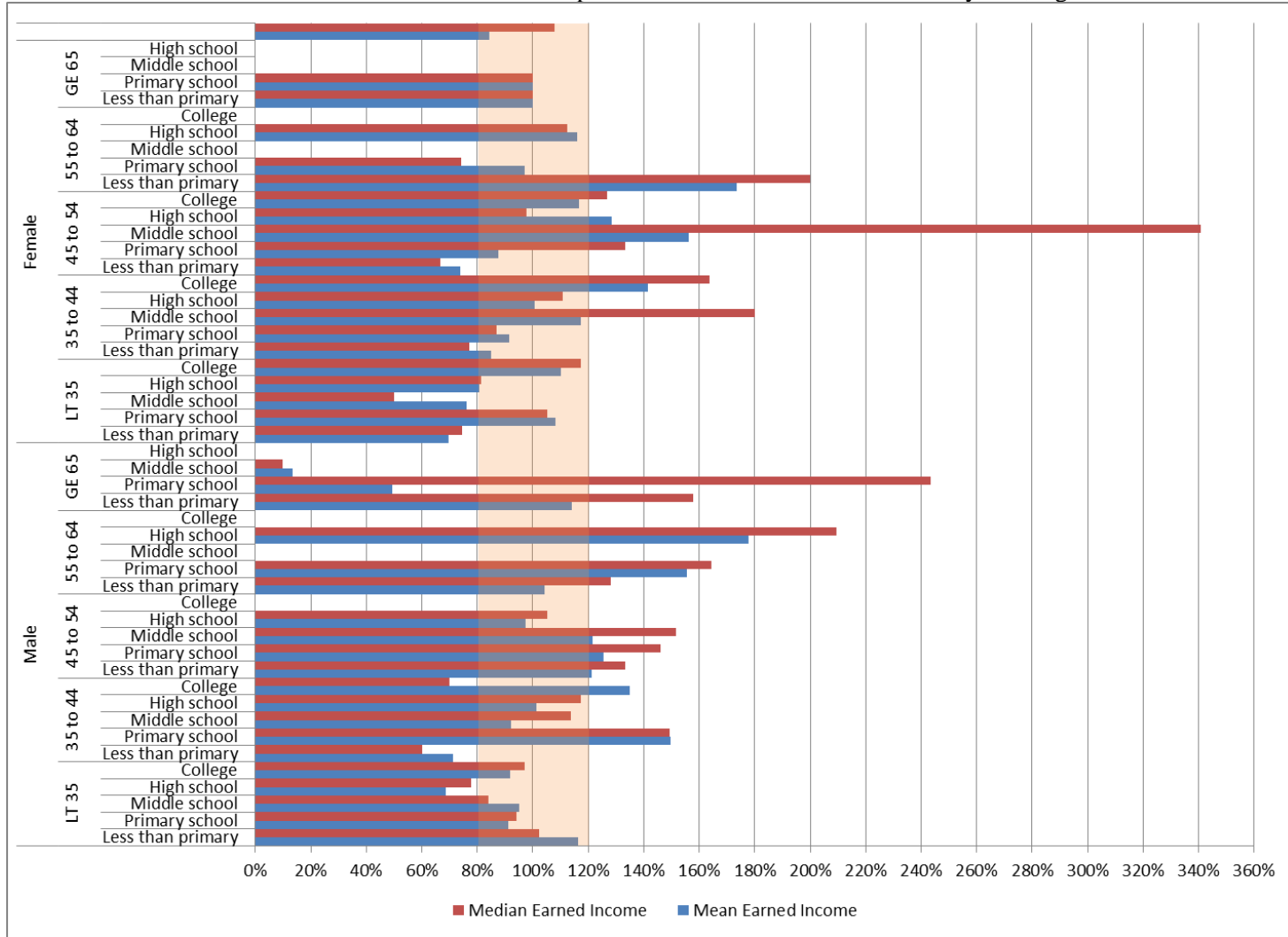


Figure A.5 Mean and Median Usual Hours of Work for Donors and Recipients for Labor Market Simulation by Sex, Age and Education

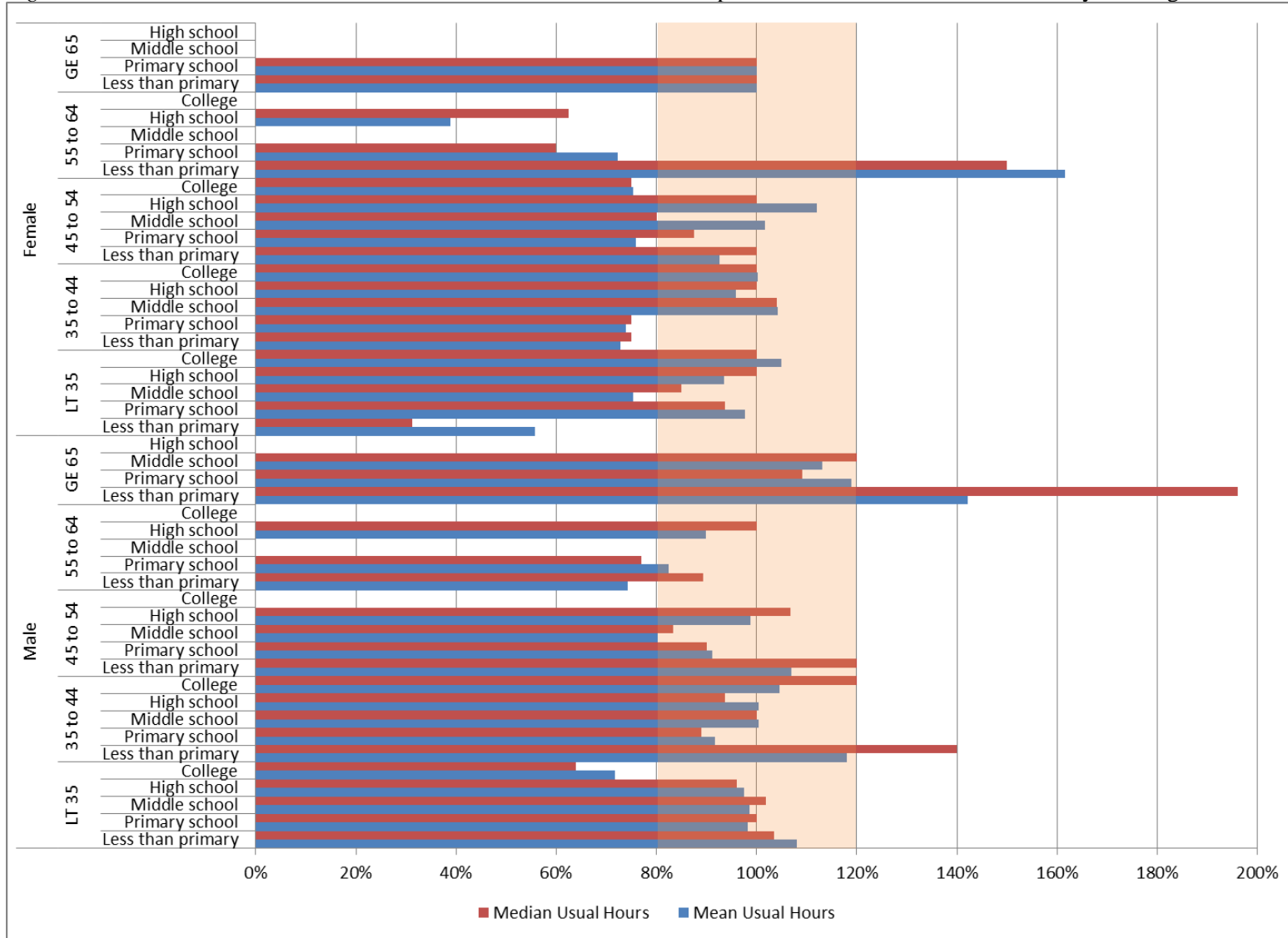


Figure A.6 Donor and Recipient Pools for Time Use Simulation by Sex, Age and Education

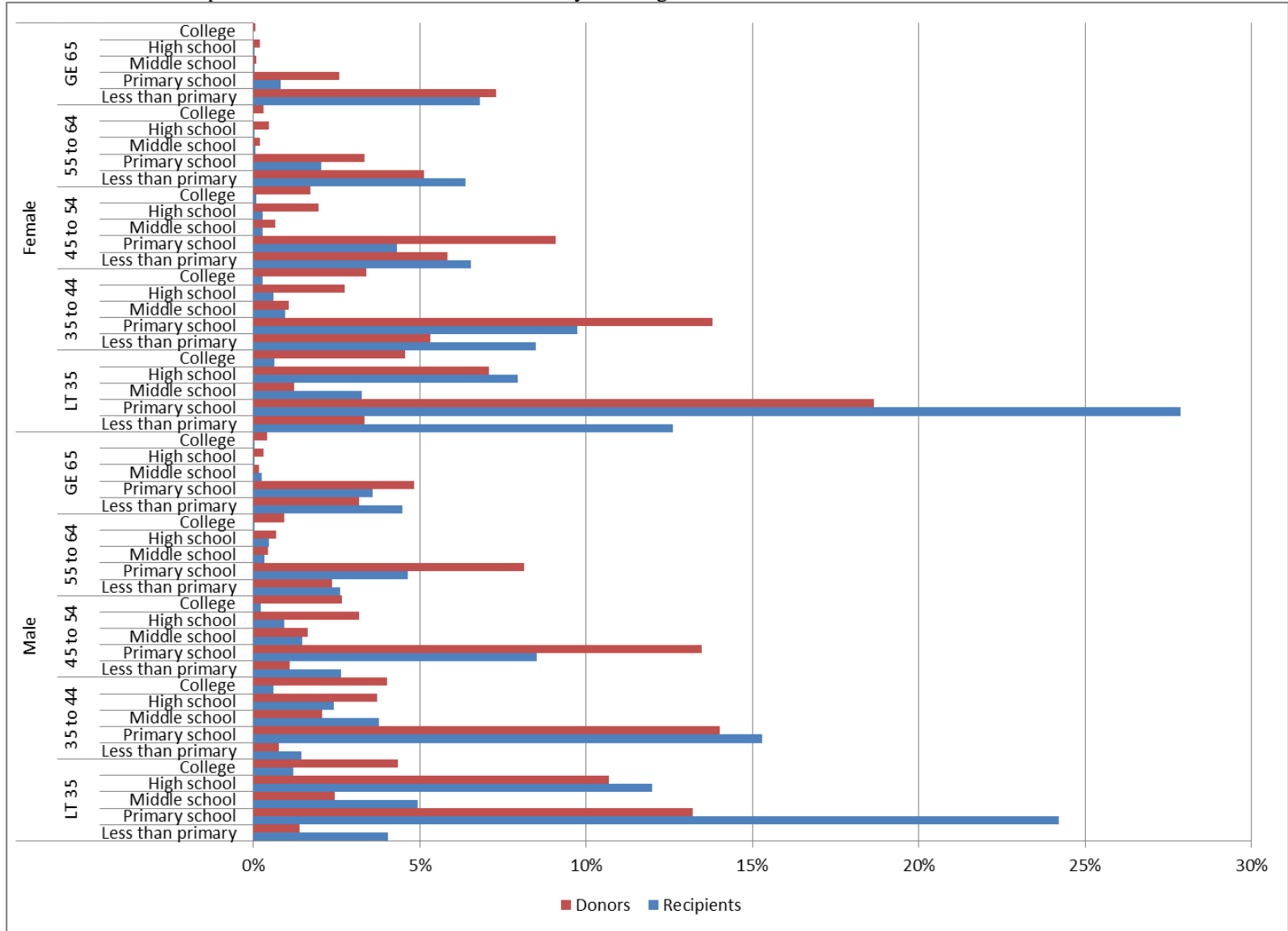


Figure A.7 Donor and Recipient Pools for Time Use Simulation by Sex, Number of Adults and Number of Children

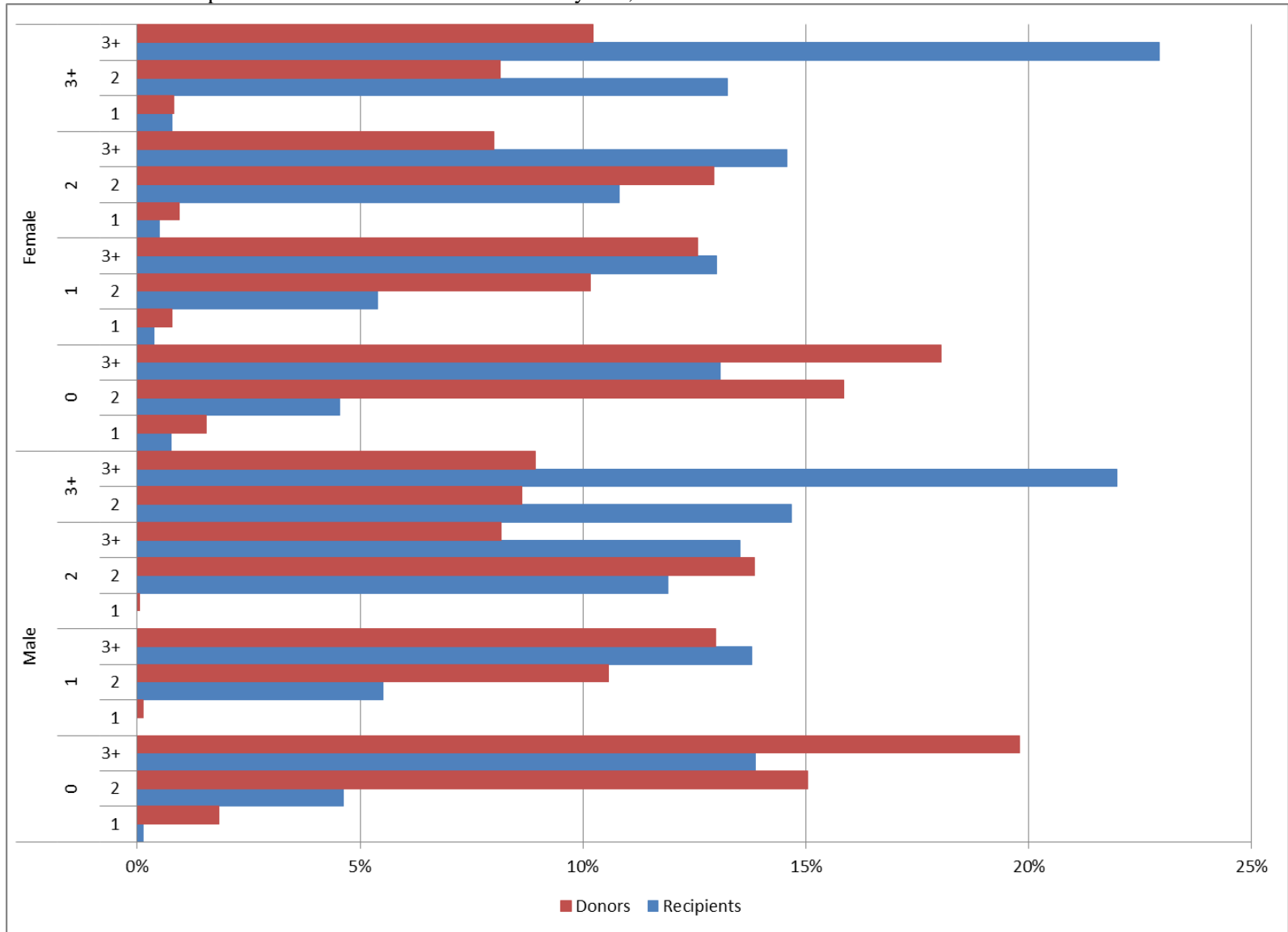


Figure A.8 Mean and Median Weekly Hours of Household Production for Donors and Recipients for Time Use Simulation by Sex, Age and Education

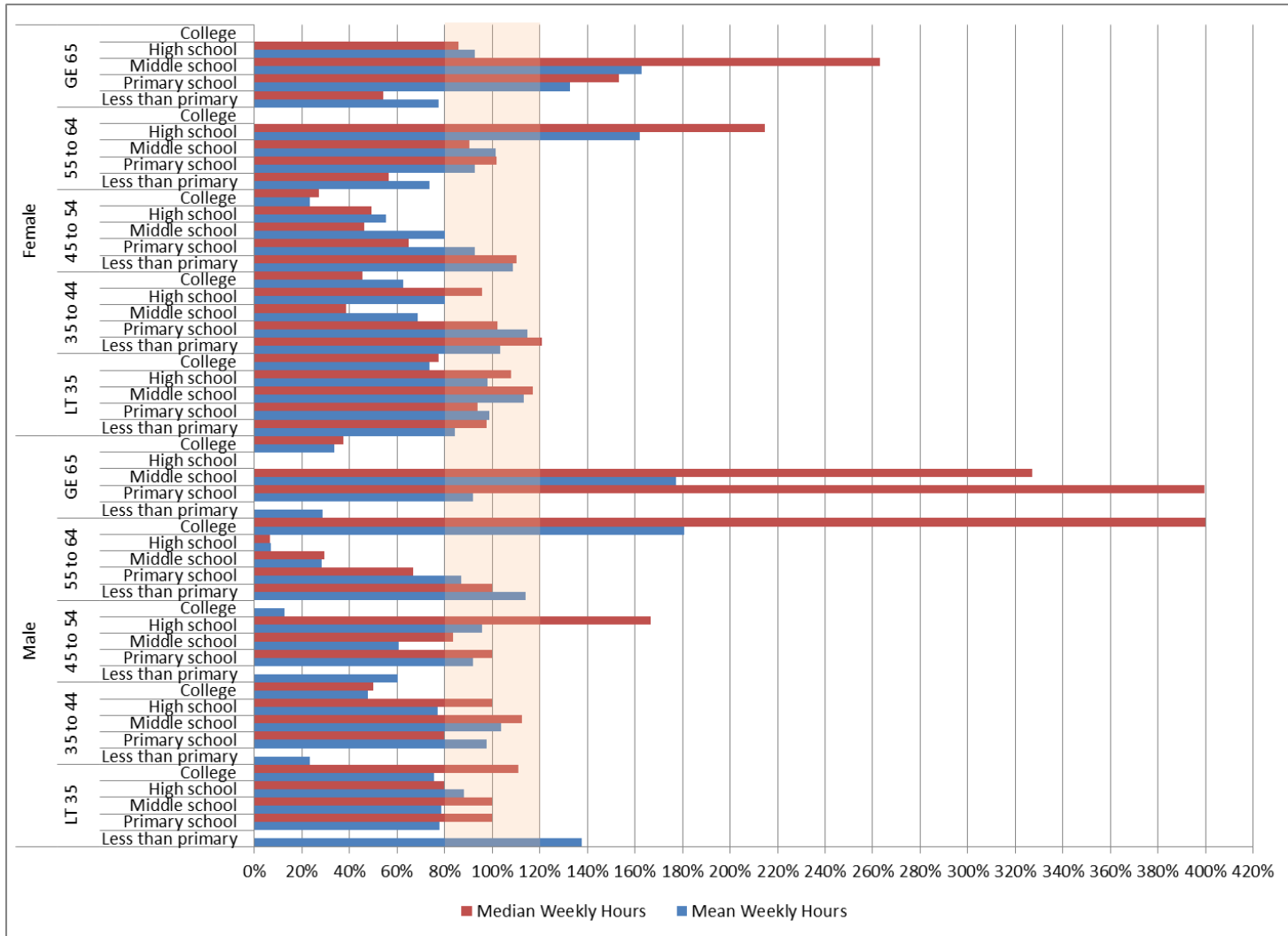


Figure A.9 Mean and Median Weekly Hours of Household Production for Donors and Recipients for Time Use Simulation by Sex, Number of Adults and Number of Children

