

Forthcoming at Feminist Economics (long version)

A Multidimensional Approach to Gender Gap in Poverty: An Application for Turkey

Hasan Tekgüç (Kadir Has University)¹ & Bengi Akbulut (Concordia University)²

Abstract: Conventional poverty measures have long been criticized as poor measures of quality of life. Income or expenditure data at household level used in these measures are silent on intra-household inequalities, and they capture means to an end rather than outcomes and opportunities individuals face. We contend that the multidimensional poverty index (MPI) is suited to attend to these problems. In this study, we calculate multidimensional poverty for Turkey in four equally weighted dimensions: education, health, employment and household living conditions. Our study introduces employment as a distinct dimension of well-being, pertinent especially for gender gap in poverty in Turkish context. We find a significant (30-34 %) gender poverty gap, which is gradually declining over time. However, there is very little convergence between regions. Finally, households with multidimensionally poor women and non-poor men are the most common subgroup and the share of households with no poor members has increased.

JEL Code: D63, I32, J16.

Keywords: Multidimensional poverty, gender poverty gap, intra-household inequality, employment, Survey of Income and Living Conditions, Turkey

Acknowledgements: This research is funded by Kadir Has University Scientific Research Fund (BAP-2017-03). We thank Quentin Stoeffler for his detailed comments on an earlier draft. We also thank to the participants at EALE 2018 Conferences, 2018 IAFFE Conference, 4th Istanbul Meeting on Human Capital, and ITU and Boğaziçi University Economics Department seminar participants for helpful comments.

¹ Corresponding author, Associate Prof. of Economics, hasan.tekguc@khas.edu.tr.

² Assistant Prof. of Geography, Planning and Environment, bengi.akbulut@concordia.ca.

INTRODUCTION

Conventional poverty measures have long been criticized as poor measures of quality of life (see Nussbaum, 2003 among others). Income-based measures such as per capita income cannot adequately capture the conditions of the deprived within a society. Such measures overlook dimensions of deprivation such as poor health, low education levels, environmental risk, substandard living conditions and social exclusion. They are doubly limited due to the gendered nature of their shortcomings. Since these measures overlook the multiple dimensions of human deprivations, they tend to underrepresent the multi-dimensionality of gender disadvantage. Underestimation of gender differences in well-being would be more accentuated if gender disadvantage is more pronounced in non-income dimensions than it is in income (Bradshaw, Chant and Linneker, 2019). Perhaps more importantly, income-based measures capture means rather than outcomes or choices and opportunities faced by individuals. Gender differentials in income are therefore likely to underestimate the different choices and opportunities faced by women and men, i.e. how women and men differ in transforming monetary resources into well-being due to differential control and command (Fukuda-Parr, 1999; Razavi, 1999).

A related yet distinct gendered shortcoming of conventional poverty measures is their focus on households. In using household-level data, such measures hide the inequalities in intra-household distribution of resources and living standards. A long tradition of scholarship in feminist economics demonstrate how access to food, health, education, time, *etc.* differ across household members, as well as their differential capacities to negotiate the distribution of obligations and entitlements. The assumption of equal sharing of household income by members, for instance, has been forcefully debunked and shown to significantly affect inequality and poverty measurements (e.g. Lundberg, Pollak and Wales, 1997; Phipps and Burton, 1995).

This paper takes a step towards addressing the shortcomings of conventional poverty measures in capturing gender disadvantage by constructing a multidimensional poverty index (MPI) for Turkey, using individual (rather than household) level data where possible. Our aim is to provide a more comprehensive view of the multiple dimensions of gendered deprivation and trace how the gender gap in well-being changes over time. We contend that MPI is particularly suited for these purposes as it incorporates multiple dimensions of material and non-material deprivation such as living standards, health, education and social exclusion/disempowerment. It is therefore built on an explicit recognition that there is no necessary overlap between income and non-income dimensions of poverty. Conceptually rooted in the capabilities approach (Alkire and Foster, 2011), the MPI allows for the introduction of choices and freedoms faced by individuals as well as the outcomes. This makes MPI particularly suitable for analyzing gender differences in well-being as it sheds light on the different levels of well-being achieved by women and men who have the same capabilities through the differential choices and opportunities they face.

In addition to the multiple dimensions of poverty, MPI can incorporate a range of indicators within each dimension to capture the complexities of poverty. Yet, unlike the Human Development Index (HDI) or the Millennium Development Targets that similarly build on a multi-dimensional understanding of well-being/poverty, MPI depicts joint deprivation at the individual level rather than reporting group averages. Although most MPI studies deploy household-level data (i.e. impose the same household score to all members of the household), MPI actually allows the incorporation of individual-level data where available. It can thus illuminate intra-household inequalities that might be critical determinants of gender differences in well-being (Vijaya, Lahoti, and Swaminathan, 2014; Klasen and Lahoti, 2016; Espinoza-Delgado and Klasen, 2018), which makes it especially useful for analyzing gender poverty gap.

Moreover, MPI offers the flexibility of selecting indicators that are relevant and adequate for capturing specific dimensions of poverty within a given context (Suppa, 2018). This flexibility is promising for the study of gender poverty gap in particular, since it enables the inclusion of contextual dimensions that are pertinent for gendered experiences of poverty. More broadly, MPI makes the normative aspects of poverty measurement explicit as it reveals the choices of included dimensions and indicators, weights assigned to them, deprivation cut-offs for each dimension, and the overall poverty cut-off.

In this study, we construct a MPI for Turkey by employing the Survey of Income and Living Conditions (SILC) 2006-2015 (TURKSTAT, 2016) and using the *counting-based double cut-off* method. The SILC data set allows us to observe individual education, health status and employment. We thus perform our analysis at the individual level for these dimensions (following Vijaya, Lahoti, and Swaminathan, 2014; Klasen and Lahoti, 2016; Espinoza-Delgado and Klasen, 2018), and at the household level for living conditions (i.e. each household member gets the same living conditions score).

Our choice of poverty dimensions follows established practices in the literature but introduces employment as an additional dimension. The contribution of employment to well-being (independent from material well-being) has been underlined by many; there is now a consensus that it is a core capability beyond being a means to an end (Lugo, 2007; Stiglitz, Sen and Fitoussi, 2009). Both Lugo (2007) and Suppa (2018) propose to include an employment-related dimension due its contribution to the often-ignored functionings such as self-respect and appearing in public without shame, in addition to its role as a source of income. Fukuda-Parr (1999) similarly emphasizes the independent impact of employment through social inclusion. Such well-being impacts of employment are likely to be more pronounced for women. In

addition, employment is likely to increase women's capacity to negotiate entitlements and obligations within the household (Duflo, 2012) and can therefore signal a broadened set of choices and opportunities for them.

There are reasons to include employment in poverty measures especially within the context of Turkey. Employment is a particularly striking aspect of gender inequality in Turkey, making it a context-relevant indicator (see Robeyns, 2003 and Sen, 2004). Since men are much more likely to participate in the labor force, unemployed-to-population ratio is higher for them. As a result, counting only the unemployed as deprived would lead to misleading conclusions in the case of Turkey. With highly limited public care services, typical of patriarchal settings like Turkey, most women are forced to purchase care services privately if they want to return to the labor market (Kim, Ilkcaracan and Kaya, 2019). Coupled with patriarchal attitudes, most of less educated women opt out of the labor market (Ilkcaracan, 2012). Furthermore, female employment in Turkey is a heated issue with contesting positions taken by the government, civil society actors and oppositional parties.

Our interest in this study is to develop a multidimensional poverty measure that focuses on gender gap in poverty. Motivated by the contested nature of female employment in the socio-political arena and the distinct features of the female labor market participation in Turkey, we define employment deprivation as non-employment where our main indicator, *not-employed* (rather than *unemployed*) includes all those above 15 years old who are not employed, retired or a student (i.e. the unemployed, disabled, and "housewives").¹ This choice captures the fact that most women lack the capability to participate in the labor market due to weak or non-existing public care services and prevalence of patriarchal gender norms. It also avoids categorizing men and better-educated women as more deprived than less educated women (see Table A1 in Online

Appendix). We present two additional MPI measures: one uses an alternative employment deprivation indicator (the *discouraged unemployed*, i.e. those not looking for but ready to work in addition to the officially unemployed), and the other presents a three-dimensional poverty index without the employment dimension, following Klasen and Lahoti (2016).²

We have three major findings regarding the gender poverty gap in Turkey. Firstly, while there is a consistent and widespread improvement in living conditions for almost every sub-group (including male-headed, female-headed, poor and non-poor), gender gap in poverty is persistent (roughly a 14 percent) even in the specification without employment. This gap is driven mostly by differences in education and, to some extent, self-reported health status. Including the employment dimension increases the headcount ratio, especially for women, as expected. It also increases the gender gap for headcount ratio, on average, to 32 percent. Gender poverty gap is 18 percent in the *discouraged unemployed* specification. Furthermore, including the employment dimension reveals a faster drop in gender poverty gap. This is driven by the increase in female labor force participation in the study period and the faster rise of educational attainment by young women.

Secondly, we investigate gender poverty gap by age and region. We find that the overall reduction in the gender gap in multidimensional poverty is driven mostly by the faster improvement for young women (15-24 years old). In terms of regional distribution, we find that multidimensional poverty for both men and women in the Western and Central Regions are consistently and significantly lower than other regions, while the Eastern region is by far the poorest. Finally, we investigate intra-household multidimensional poverty and find an increasing share of households with no poor members with a corresponding decrease in that of households with all poor members.

Capabilities Approach and the Multiple Dimensions of Deprivation

The conceptual roots of MPI goes back to the capabilities approach, famously proposed by Amartya Sen and subsequently adopted by the UNDP Human Development Reports. The *capabilities* approach focuses on “what people are actually able to do and to be” (Nussbaum, 2003: 33) and defines human betterment as expanding individuals’ freedom to pursue what they deem desirable rather than attaining a certain level of an accomplishment such as income (Sen, 1993). Sen (1992) further elaborates the concept as having two components, functionings, i.e. states and activities constitutive of a person’s well-being (e.g. being educated, being well-nourished, having shelter) and freedoms to achieve valued functionings, the former of which correspond to different dimensions of poverty in multidimensional poverty analysis. Yet the absence of a strictly defined theoretical background to anchor multidimensional poverty measures led to a debate on which dimensions and indicators to be included and the weighting of the dimensions (Ferreira and Lugo, 2013). Most applications of the MPI (e.g. UNDP country reports) include health, education and living standards, which are corollary to the three dimensions of the Human Development Index, to which we add employment deprivation as explained later.

The weighting of dimensions is a second field of debate. Most MPI studies assign equal weights to each dimension and each indicator within a dimension. Data-driven methods such as Principal Component Analysis are not preferred, since these methods assign lower weights to one dimension when dimensions are highly correlated (e.g. women’s education and employment), curtailing the identification of individuals with joint deprivations. Equal weighting, on the other hand, will inadvertently cause double-counting if one or more of indicators are proxy for similar functionings. The most controversial indicators are thus those related to income/expenditure as they tend to correlate with other deprivation dimensions.

The choice and number of dimensions and the weight attached to them are interdependent issues. Ferreira and Lugo (2013) criticizes studies that are crowded with indicators measuring different aspects of material well-being, especially in contexts where markets are reasonably well-functioning. If markets are reasonably well-functioning, undernourishment and poor dwelling conditions would be different facets of income deprivation and their inclusion would increase the weight of material deprivations at the expense of truly public goods (e.g. health and education) rather than capturing additional dimensions of poverty. Suppa (2018) voices a similar criticism but proposes to exclude income while keeping dwelling conditions, since material deprivations are more closely linked to specific functionings whereas income is a means to an end. Following this line of linking, we include living conditions and exclude income from our multidimensional poverty measure.

Finally, the actual method of determining one's poverty status has been a point of debate. Currently, the most commonly used method is the *counting based double cut-off* method developed by Alkire and Foster (2011) where a person is considered poor if she is deprived in more than a specified weighted average of the included dimensions. This is contrary to earlier studies where poverty was identified based on deprivation in either all or any one of included dimensions. The notable advantage of this method is its identification of people with "joint disadvantages" (Alkire and Santos, 2014: 252).

Although the conceptual framework of MPI makes it especially apt for such an investigation (see also Rubeyns, 2003), there are only a few MPI studies that deal with gender gap in poverty. Vijaya, Lahoti, and Swaminathan (2014) is the first study that highlights gender differences in multi-dimensional poverty by employing both individual and household data and incorporating education, living standards, assets, and empowerment as dimensions. The authors

find that headcount ratio for women is only one percent higher than men at the household level, and female-headed households are less likely to be multi-dimensionally poor. When the unit of analysis is the individual, however, the headcount ratio for women is more than double that for men. Klasen and Lahoti (2016) follow Vijaya, Lahoti, and Swaminathan (2014) and construct an MPI for India with individual data when available. They find considerably higher multidimensional poverty levels for women (especially older women) because adult and older women are less educated than both men of similar age and younger women. Yet they do not employ their data to further investigate intra-household inequalities. Finally, Rogan (2016) calculates a multidimensional poverty index for South Africa by using household data and assuming an equal distribution of household income across members. Given that South Africa has a large number of female-headed households that are substantially different than male-headed households (more rural and more young dependents) his analysis suggests significant gender gaps in poverty, but the multidimensional gender poverty gap is narrower than income poverty gap.

Lack of Employment as a Deprivation

Employment is increasingly recognized as an important dimension of well-being because of its ‘psychological effects’, ‘social participation’, ‘appearing in public without shame’ independent of the loss of income associated with unemployment (e.g. Lugo, 2007).

Employment, or lack thereof, gains additional importance within the context of Turkey where women’s low levels of formal employment has been a long-standing issue. That women’s labor force participation is strikingly low in Turkey (İlkkaracan, 2012) and formal employment central to women’s empowerment is widely recognized among policy-makers and civil society actors alike. Indeed, low levels of female labor force participation have been a policy priority of

governments since late 1990s (Kim, Ilkcaracan and Kaya, 2019), with numerous measures instituted to encourage female labour force participation by various government branches. This focus is anchored within an understanding of female empowerment and well-being that is directly linked to women's full and effective participation in economic life (e.g. Ministry of Family and Social Policy, 2018).

Various women's organizations in Turkey have also been advocating for full participation of women in economic life as an indispensable component of women's well-being, albeit via different means. One of the oldest NGOs dedicated to female employment, the Foundation for Valuing Women's Labor (KEDV after its Turkish acronym), runs programs directed at expanding access to credit and marketing opportunities as well as the provision of childcare services (KEDV 2019). At the other end of NGO spectrum is the Association of Women Entrepreneurs (KAGIDER after its Turkish acronym), whose main goal is to increase the number of women in the business world, provides training on equal opportunity employment practices in large private corporations (KAGIDER, 2019).

Yet the role of women in the labor market is also a contested issue. This is not only due to the government's discourse that relegates women to households and undermines gender equality especially since 2010 (Ilkcaracan 2019), but also the contradictory policies and actions adopted. Measures proposed to increase female labor force participation have often elicited opposition within the government (Kim, Ilkcaracan and Kaya, 2019) and some among those that were implemented have been counteracted by subsequent modifications (Uysal, 2013). The reason for this back and forth is the conservative ideology of the ruling AKP on the one hand, and strong demand from the public for female employment (and consequently cash earnings), on the other. Female labor force participation also started making its way into the agendas of oppositional parties, where concrete policies to ease women's participation in the labor market are put

forward. This is attested most recently by the main oppositional party's proposal to provide childcare in every neighborhood of Istanbul during the most recent municipal election (IBB, 2019). The proposal was explicitly linked to women's desire to work and easing the conditions of women's participation in the formal labor market.

Given that gender gap in employment is unlikely to close soon, due to the slow economic growth and employment creation, coupled with the government's contradictory position on the issue, lack of employment is likely to continue being a major aspect of gender disparity in Turkey. This would make the exclusion of women who are not in the labor force a gross understatement of women's deprivation.

MPI Studies on Turkey

The scope of MPI studies in Turkey are quite limited and neither official poverty estimates nor cut-offs used for social assistance qualification employ a multidimensional approach (see Online Appendix A). Among the existing studies, Limanlı (2017) employs household-level indicators and uses the counting based double cut-off methodology to analyze poverty trends between 2006 and 2012. While the study constructs two separate MPI's based on alternative lists of deprivation dimensions and demonstrates a decline in poverty with both, it finds no difference in multidimensional poverty status by gender. Karadağ and Saraçoğlu (2015) and Uğur (2016), on the other hand, replicate the methodology and indicators used in Alkire, Apablaza and Jung (2014) with individual level SILC data for health and education (and household level data for environment and material deprivation dimensions). Karadağ and Saraçoğlu (2015) find a sustained decline in the multidimensionally poor in the period 2006-2012, yet do not report breakdown by gender; whereas Uğur (2016) reports that women are multidimensionally poorer for the year 2013.

METHODOLOGY AND DATA

We develop three MPIs. Our first measure includes only the “core” dimensions used in UNDP Country Reports (i.e. education, health and living conditions). The other two measures include employment as an additional dimension, where employment deprivation is alternatively defined as unemployed (including discouraged unemployed) or not-employed. We follow the methodology of Alkire and Foster (2011) but use individual data when available. Accordingly, whether a person is deprived or not is determined for every dimension first. Then a simple counting approach is used where a person must be poor in a minimum number dimensions to be identified as multidimensionally poor. We compute the overall deprivation scores (c_i), adjusted headcount ratios (M_0) and separate inequality measures (V) following Alkire and Seth (2015) and Seth and Alkire (2014). The details of our methodology can be found in Online Appendix B.

We employ Survey of Income and Living Conditions data sets (SILC Turkey) for years 2006-2015, the details of which are given in Online Appendix B. We limit our analysis to the population over 15 years of age, on whom the data set contains detailed information. Consequently, our findings risk understating multidimensional poverty if fertility rate is higher for multidimensionally poor households. While a potential solution would be to impute average deprivation scores for younger household members, we refrain from this strategy as it may overstate deprivation as younger generations are much more likely to complete compulsory education in Turkey.

Dimensions and Indicators

We follow the existing literature and assign equal weights to each dimension and indicator. We use the same cut-off ($k \geq 0.33$) for all three MPI's we develop. We refrain from using a $k \geq 0.25$ cut-off for the four-dimensional measures, since that would falsely identify well-off individuals who are not employed but are neither students nor retired nor have a preference for work as poor. Increasing the cut-off to 0.33 for all three measures, on the other hand, implies that no well-to-do person without an employment preference will be classified as multidimensionally poor unless they are also deprived in health, education or at least two living conditions indicators.

While another way of address the problem of false identification (e.g. of rich women without a preference for employment as poor) is including a social participation or material deprivation dimension (e.g. Suppa, 2018), limitations of our data make this strategy problematic. SILC does not include data on social participation prior to 2013, which rules out the possibility of analyzing trends. We integrate social participation as a fifth dimension in our not-employed measure for 2015, which changed headcount poverty for women by only 0.4 percent (compared to an 11.1 percent increase in multidimensional poverty of men).³ This counterintuitive result points to the need for more precise data on social participation.⁴ Material deprivation, on the other hand, is measured mostly at the household level yet likely to not be equally distributed across household members.

Education and Health: Education and health are core functionings whose central importance in determining well-being is well-established (Sen, 1993). We classify those who have not completed compulsory education for their age group as education deprived (*compulsory education*). Since the level of compulsory education in Turkey has been raised from primary and secondary school in 1997 (affecting those born in September 1986 and after), we use different

cut-offs for age groups born before and after 1987 in defining education deprivation.⁵ An alternative would be using completion of primary school in order to have a consistent threshold for the entire sample. We use *compulsory education* since it is a more stringent threshold.

On health, we use two self-reported measures as indicators. The SILC dataset has three questions that pertain to the respondents' health: self-reported overall health status (on a scale of one to five), the extent to which the respondent's daily activities had been limited within the last six months due to a mental or physical ailment (on a scale of one to three), and the existence of any chronic illnesses. Cross-tabulations reveal that more than half of people with chronic disease report not having their daily activities limited. Thus we use the first two and define *bad health* by having bad or very bad health, and *limited health* as having daily activities limited or limited very much within the last six months due to a mental or physical ailment.⁶

While access to health care could be another possible indicator to include, it does not provide information about an individual's health status *per se*. Moreover, our data indicates that the share of individuals with no access to healthcare is lower than that with bad and limited health and the former has improved much faster with no gender gap. Our estimates are therefore conservative in health access improvement.

Living Conditions: Indicators of living conditions are the only ones for which we use observations at the household level, i.e. we assume they are household public goods. In selecting indicators, we opted for those that are (1) more relevant proxies of living conditions in a middle-income country and (2) more likely to asymmetrically effect the time use by household members. Our motivation for the latter is that certain forms of living conditions might imply a heavier burden of unpaid labor on female household members, e.g. it is most likely women who is responsible for keeping a coal stove on, the absence of a dishwasher would mean that women are

spending disproportionate time in washing the dishes. The six indicators we choose are: i) sub-standard heating (a stove with wood, coal and/or dung, *sub-heating*); ii) sub-standard shelter (leaky roof, insufficient insulation and/or rooms with no sunlight; *sub-shelter*); iii) more than one person per room (*crowded*); iv) self-reported air pollution or frequent crime in the neighborhood (*neighborhood environment*); v) missing shower, toilet or piped water (*no stp*) and vi) missing washer, fridge or dishwasher due to economic hardship (*no wfd*).

Employment: We define employment deprivation by non-employment (rather than unemployment), which includes all those who are neither employed nor retired or a student (*not-employed*).⁷ We treat all non-working elderly without a pension as employment deprived, whereas widows who are collecting pensions of deceased spouses are considered non-deprived.⁸ We define a second indicator that includes those who gave up searching jobs but are ready to work within a two weeks' notice (*discouraged*) in addition to the unemployed who are actively looking for jobs. In both our main employment deprivation indicator and the alternative, we assign half the deprivation score to the informally employed (*no social security*).

We considered other types of employment deprivation as potential indicators, such as long work hours and temporary/part-time employment. However, since employment associated with these characteristics is often informal, including them as extra indicators, through a reduction in the weight of informal employment for a much larger group, would lead to reducing the deprivation score for the entire sample. We have also considered defining unpaid family workers as deprived since female unpaid family workers often lack the power to control the income accruing from their labor. We have, however, decided not to do so since many men classified as unpaid family workers are likely to inherit the family business or farm, which makes identifying them as deprived problematic. In practice, alternative classifications of unpaid family

workers change results by one percent. The overwhelming majority of unpaid family workers are working informally so they are counted as half-deprived in the employment dimension and most (especially women) are already counted as multidimensionally poor due to their deprivation in the other three dimensions (education, health and/or housing).

Most of the *not-employed* men are either unemployed (actively searching for jobs) or indicated that they were ready to start a job in two weeks if an opportunity materialized. The difference between *not-employed* and *discouraged* men is around six percentage points; whereas this difference is strikingly large for women, around 50 percentage points. Most women who are out of the labor force in our dataset have stated being occupied with within-household care duties. This is likely to severely limit their capacity to join the labor force even if they desire to do so.

Table 1 is here

FINDINGS

Individual Indicators

Table 2 presents the share of households or individuals deprived by each indicator. We only present findings for 2006 (first year of SILC Turkey), 2009, 2012 and 2015 (final year of this study) to save space (panel A presents the all sample findings and Panel B presents the findings for individual indicators by gender). As can be seen, women report higher levels of health deprivation despite living longer, a paradoxical yet common finding (e.g. Case and Paxson, 2005). For all indicators except *limited health* there is a decline in the share of individuals or households who are deprived. *Compulsory education*, *limited health* and *bad*

health, on the other hand, have changed similarly for both men and women, making them unlikely to affect the gender poverty gap during the study period. Employment related indicators have also improved over time, yet with varying degrees for men and women. The faster decrease in the *not-employed* indicator for women had a narrowing effect in gender poverty gap, yet the convergence is dampened by the faster decline in *no social security* indicator for men.

We find significant improvement for Living Conditions indicators, except for *sub-standard shelter* indicator. The greatest decline is in *sub-standard heating* deprivation (with a marked increase in houses with central heating) and dishwasher ownership. There is also a sustained decline in the share of houses without an in-house toilet, piped water or shower, mostly driven by the increase in households with an in-house toilet. There is almost no gender gap in indicators of living conditions since around 85 percent of households in Turkey are male-headed, i.e. most women live in male-headed households, and the living conditions of female-headed households are not worse than those of male-headed households on average.

Table 2 is here

Multidimensional Poverty Index

Top and bottom panels in Figure 1 shows the headcount ratio and multidimensional poverty, respectively. We also provide corresponding estimates with alternative cut-offs ($k \geq 0.2 / 0.25 / 0.33 / 0.40 / 0.5$) for all three versions in figures C1-C4 in Online Appendix C. Both the headcount ratio and the M_0 estimates based on the *not-employed* version are consistently higher than the other two alternatives. Not surprisingly, estimates based on the *unemployed* version is more sensitive to economic fluctuations. The bottom panel in Figure 1 shows that the MPI based on the *three-dimension* version is consistently higher than the *unemployed* version. The *three-*

dimensional and *unemployed* MPI measures start diverging after 2012 (there is no such divergence in Panel A for headcount ratio showing the need for inspecting both headcount ratio and M_0). This divergence is driven by the intensity of poverty of the multidimensionally poor (A). While the overall intensity of poverty declined very slightly between 2006 and 2015 for all three versions, living conditions and employment dimensions improved and education and health dimensions worsened for the multidimensionally poor.

Figure 1 is here

For headcount ratio, the use of *not-employed* (vs *discouraged unemployed*) does not make any discernible difference for men, while it proves to be crucial for women headcount ratio as it increases the level of poverty significantly (see Figure 2). The gender poverty gap for headcount ratio is, on average, 14 percent by our most conservative measure, the three-dimensional poverty index; it goes up to between 30 and 34 percent (on average 32 percent) by the *not-employed* MPI. Figure 3 presents the MPI calculated for all three alternative versions by gender. MPI (M_0) for men range between 0.11 and 0.16 over the study period in all three versions whereas for women the MPI for *not-employed* version is significantly higher than others. As a result, in the *not-employed* version the gender gap in MPI is 0.19 instead of 0.10 as in other dimensions.

Figures 2 & 3 are here

Multidimensional versus Income Poverty

Table 3 presents the cross-tabulation of income and multidimensionally poor households. We choose the income poverty threshold as those households whose *per capita income is less than one-third of gross minimum wage*, which is often used for social assistance eligibility in

Turkey (Tekgüç, 2018). Accordingly, 39 percent of income poor households are not multidimensionally poor and almost 32 percent of income non-poor households are actually multidimensionally poor (top panel). In other words, the comparison of MPI with income poverty reveals a significant discrepancy between the two measures, which validates the use of multidimensional poverty. A quick glance reveal that the living standards deprivation of households who are income poor but not multidimensionally poor are much worse than other three dimensions. On the other hand, households who are multidimensionally poor but not income poor are more than twice worse than the average in every dimension except living standards.

Tables 3 is here

We present the headcount ratio (H), intensity of poverty (A) and the multidimensional poverty index (MPI) with the *not-employed* dimension in Table 4.⁹ Our findings are in line with others (Limanlı, 2017; Karadağ and Saraçoğlu, 2015), which suggests that the decline in headcount ratio is robust and not dependent on study specifics. As discussed above, headcount poverty steadily declined both for men and women and the gender gap in poverty narrowed somewhat (from 34 to 30 percent). Nevertheless, this decline is relatively higher for men. The picture for intensity of poverty is different. The size of the gender gap is much smaller compared to headcount poverty and did not change over the years. As a result, both the decline in MPI and the narrowing of gender gap in MPI are less pronounced than they are for the headcount ratio. These findings show that women are much more likely to be multidimensionally poor in Turkey (poverty is feminized) but they do not necessarily live in more intense poverty compared to men.

Table 5 shows the separate inequality measure among all individuals (Panel A) and the multidimensionally poor (Panel B) over time (following Seth and Alkire, 2014). For the entire

population (Panel A), inequality among men declined over time whereas inequality among women have increased. As a result, gender gap in inequality has increased over time. Inequality among the multidimensionally poor (Panel B) shows no trend for men and a small decline for women in the last three years. Inequality among all women and among the multidimensionally poor women are higher than the corresponding measures for men.

Tables 4 and 5 are here

Multidimensional Poverty by Age and Region

We present age and regional gender gap breakdown of multidimensional poverty in three age groups (young: 15-24, adult: 25-64; and old: 65 and above) and five broad regions.¹⁰ Figure 4 presents headcount ratio gender gaps (Panel A) and MPI (Panel B) over time, which shows that gender gaps have either worsened (for headcount ratio) or fluctuated (for MPI) for the elderly. Interestingly, the highest gender gap in headcount ratio is between adult men and women, probably due to highly different levels of employment participation. Gender gap in MPI in adults and the elderly are similar, although the level of multidimensional poverty is higher for both elderly men and women. Young women experienced the fastest drop in headcount ratio and MPI, which lowered the gender gap for this age group.

Figure 5 shows the headcount ratio and MPI gender gaps by region. For headcount ratios, gender gaps are in 0.30-0.35 range in all regions. MPI gender gaps, however, are markedly higher in the East and lower in the West. In addition, gender gaps in headcount ratio are declining in the Central, Southern and Western regions and increasing in the East and North. Gender gaps in MPI are also declining in the Central, South and West regions.

Figures 4 and 5 are here

Intra-Household Composition and Inequality

Figure 6 presents household composition by individual members' multidimensional poverty status. There is a sustained rise in the share of households with no poor members, among which the share of one and two-person households is increasing. One or more multidimensionally poor females (but no poor male) is the most common sub-group during study period with respect to multidimensional poverty within the household whose share is not declining over time.

At a first glance, most of the transition seems to be from all-poor-members to no-poor-members households, which could have resulted from some individuals in all-poor households improving their situation, dissolution of poor households or young and educated individuals forming separate households individually or with each other. A proper investigation of transitioning is beyond the limits of our analysis. More broadly, households with different compositions of multidimensional poverty status can be identified even when the initial analysis is performed at the individual level. Policymakers can thus target households with certain combinations (such as only households with all poor members) if the social assistance budgets are limited.

Figure 6 is here

CONCLUSION

The drawbacks of conventional income-based poverty measures are now well-known, paving the way for increasing use of multidimensional poverty analysis. Yet most analyses focus on household-based multidimensional poverty measures, which hide inequalities in intra-

household distribution of resources and living standards. This is despite the fact that MPI allows the incorporation of individual-level data and can thus better illuminate intra-household inequalities that are critical determinants of gender differences in well-being. MPI also offers the flexibility of including indicators based on their relevance and adequacy for capturing specific aspects of poverty within a given context, making it especially suitable for studying contextual dimensions of gender gap in poverty.

In this paper, we contribute to the literature on gender poverty gap by constructing an MPI for Turkey where we use individual level indicators of multidimensional poverty where available. Our measure of multidimensional poverty introduces employment deprivation as an additional dimension to health, education, and living conditions. We motivate this choice by reviewing the ongoing policy discussions in Turkey and highlighting that employment contributes to well-being in addition to its role as a source of income. We construct two MPIs that capture the employment dimension with *not-employed* and *discouraged unemployed* indicators, the former of which is our main index, as well as a third three-dimensional MPI that does not include employment dimension.

We find that the gender poverty gap in Turkey is, on average, 14 percent by the three-dimensional poverty index, our most conservative measure. Our preferred definition of employment deprivation, *not employed*, is associated with a higher level of overall multidimensional poverty and a much higher gender headcount ratio gap (on average 32 percent, with a gradual reduction over the study period) in comparison to the two alternative indices developed here. We believe that our definition of employment deprivation is the most apt for the context of Turkey given the distinct features of the female labor force participation. Furthermore, it can reorient policy debates on the immensely important and intensely conflictual issue of the

appropriate place of women in the public sphere. The ruling Justice and Development Party regularly stresses the primacy of women's care giving responsibilities and their role first and foremost as mothers. This dominant ideology, combined with the lack of public provision of care services, effectively forces most women to be stay-home mothers. The burden of care responsibilities put most women on a path that cannot easily be altered in terms of employment outside of the household. It is indeed hard to argue that women outside of the labor force have enhanced freedoms to "actually be able to do and to be" what they have reason to value. If, on the other hand, one assumes that staying outside the labor force is a completely voluntary decision and not compelled by patriarchal relations and structures, one arrives, more or less, to our alternative definition of employment deprivation, *discouraged unemployed*. Even with our MPI that operationalizes this particular definition, gender headcount ratio gap is roughly 18 percent and does not decline over the study period, unlike the narrowing poverty gap in the MPI with the *not employed* indicator.

Our analysis also reveals that a substantial part of young women are staying in education longer and joining the labor market in greater numbers than before. Young women experience the fastest drop in multidimensional poverty, which is the main factor driving the convergence between the poverty rates of men and women. A deeper investigation reveals that only the young women in the Western and Southern regions were (partially) able to close the gender multidimensional poverty gap. Moreover, we find that while female-headed households are not substantially poorer than male-headed households, the prevalence of households where poor women residing with non-poor men is the highest, which points to the dominance of intra-household inequalities.

These findings point to specific directions for policy. The largest group of multidimensionally poor women are adult women (ages between 25 and 64) most of whom are not in the labor force. Rapid improvement in education and health for this group is unlikely; an increase in the availability of public care services, however, can substantially increase employment prospects of these women, both by direct employment opportunities and by freeing them of domestic care obligations.

Our findings should be interpreted in light of data limitations. We have been able to only partially individualize our multidimensional poverty measures, since our dataset does not include individual observations on living conditions. Treating living conditions as household public goods is thus an obvious shortcoming as it likely underestimates women's poverty. Not only are household resources/assets likely to be unequally shared by female and male members, but deprivation in certain dimensions of living conditions impacts women disproportionately (Espinoza-Delgado and Klasen, 2018). Although we have tried to address the latter by including dimensions of living conditions whose absence would asymmetrically affect time use by female and male household members, our measures remain limited indicators in capturing gender gap in multidimensional poverty.

A connected and second shortcoming of our measures is related to the fact that we cannot account for unequal time use in (unpaid) household work. A substantial body of work within feminist economics demonstrate the centrality of the distribution of unpaid work for women's well-being and autonomy as well as for gender inequality (Galvez-Muñoz, Rodriguez-Modrono, and Dominguez-Serrano, 2011; Gammage, 2010; Zacharias, Masterson and Memiş, 2014). The disproportional burden of household work would not only have implications on women's health and income-generating activities (Bradshaw, Chant and Linneker, 2019); it is also an independent

dimension of well-being as it restricts one's capability to be and do what one deems valuable. Moreover, if and when such responsibilities are combined with women's income generating activities, i.e. double-shift, women's time deprivation is likely to be intensified and/or dampen the positive welfare impacts of income generating activities that potentially reduce income poverty (Bradshaw, Chant and Linneker, 2019). Unfortunately, in the absence of relevant and more defined data it is impossible to address these immensely important dimensions of gender poverty gap. We therefore join others in their call for more comprehensive and detailed individual data (Bradshaw, Chant and Linneker, 2017; Espinoza-Delgado and Klasen, 2018).

¹ There are few studies that incorporate employment dimension. Suppa (2018) defines employment deprivation by unemployment and Alkire and Apablaza (2017) by (quasi-)joblessness (household's adult members are employed less than 20 percent of time).

² Lugo (2007) proposes to collect better data on a shortlist of employment indicators: informal employment, income from employment, occupational hazard, discouraged unemployed, under-over employment and multiple activities. We incorporate informal employment in the first two MPI measures, discouraged unemployed in the second measure. We do not have data on occupational hazard. We have data on under-employment and employment income but we prefer not incorporate them to our measures. We discuss their exclusion in employment subsection.

³ The included data are from questions on i) meeting family/friends at least once during previous month, at home or in public and ii) attending a public event.

⁴ These results including social participation is available from authors upon request. We thank anonymous referees for pointing out potential issues with the phrasing of first question and the need for dis-aggregated data.

⁵ As of September 2012, the compulsory education is raised to 12 years in Turkey, affecting those born September 1997 and after. The students who are potentially affected by this does not show up in our dataset since the latest data in our sample is from 2015 and cohorts born after 1997 have not completed high school by 2015.

⁶ Espinoza-Delgado and Klasen (2018) point to the dearth of health related questions in their data and opt for defining health deprivation by having suffered from a chronic disease or several diseases in the past month.

⁷ For the elderly (over 60 years old), Espinoza-Delgado and Klasen (2018) consider access to social protection instead of employment where an elderly person is considered deprived if she does not have access to retirement pensions or work income. We do not separately calculate social protection deprivation for the elderly and treat all non-working elderly without a pension as employment deprived according to above definition.

⁸ SILC Turkey combines all pension income under a single question, i.e. whether the person is retired from wage-employment, self-employment or from the “voluntary insurance program” administered by the Social Security Administration where individuals start collecting retirement pensions once they complete the minimum number of contributions. Retirees of voluntarily insured program (very likely to be well-to-do) are also considered non-deprived in this definition.

⁹ From this point on we only present further analysis of only *not-employed* measure to save space. The further analysis of other two multidimensional measures are available from the authors.

¹⁰ We provide the level headcount ratio and MPI levels by age and region in Online Appendix Figures C5 and C6. Following Turkish Demographic and Health Surveys, we divide Turkey into five broad regions: West (TR1, TR2, TR3, and TR4), South (TR6), Central (TR5 and TR7), North (TR8 and TR9), and East (TRA, TRB, TRC).

REFERENCES

- Alkire, Sabina, Mauricio Apablaza, and Euijin Jung, E. (2014). "Multidimensional Poverty Measurement for EU-SILC countries." *OPHI Research in Progress*, 3, 66.
- Alkire, Sabina, & Mauricio Apablaza (2017). "Multidimensional poverty in Europe 2006–2012: Illustrating a methodology," in Anthony A. Atkinson, Anne-Catherine Guio and Eric Marlier eds. *Monitoring Social Inclusion in Europe, 2017 Edition*, pp. 225-240. Luxembourg: Eurostat.
- Alkire, Sabina, and James Foster (2011). "Counting and Multidimensional Poverty Measurement." *Journal of Public Economics*, 95(7): 476-487.
- Alkire, Sabina, and Maria E. Santos (2014). "Measuring Acute Poverty in the Developing World: Robustness and Scope of the Multidimensional Poverty Index." *World Development*, 59: 251-274.
- Alkire, Sabina, and Suman Seth (2015) "Multidimensional poverty reduction in India between 1999 and 2006: Where and how?" *World Development*, 72: 93-108.
- Bradshaw, Sarah, Sylvia Chant, and Brian Linneker (2017). "Gender and Poverty: What We Know, don't Know, and Need to Know for Agenda 2030." *Gender, Place & Culture*, 24(12), 1667-1688.
- Bradshaw, Sarah, Sylvia Chant, and Brian Linneker (2019). "Challenges and Changes in Gendered Poverty: the Feminization, De-feminization, and Re-feminization of Poverty in Latin America." *Feminist Economics*, 25(1), 119-144.
- Case, Anne, and Christina Paxson (2005). "Sex Differences in Morbidity and Mortality." *Demography*, 42(2), 189-214.

Duflo, Esther (2012). “Women Empowerment and Economic Development.” *Journal of Economic Literature*, 50(4), 1051-79.

Espinoza-Delgado, Jose, and Stephan Klasen (2018). “Gender and Multidimensional Poverty in Nicaragua: An Individual Based Approach.” *World Development*, 110: 466-491.

Ferreira, F. H., & Lugo, M. A. (2013). “Multidimensional poverty analysis: Looking for a middle ground.” *The World Bank Research Observer*, 28(2), 220-235.

Fukuda-Parr, Sakiko (1999). “What does Feminization of Poverty Mean? It isn't just Lack of Income.” *Feminist Economics*, 5(2), 99-103.

Gálvez-Muñoz, Lina, Paula Rodríguez-Modroño, and Monica Domínguez-Serrano (2011). “Work and Time Use by Gender: A New Clustering of European Welfare Systems.” *Feminist Economics*, 17(4), 125-157.

Gammage, Sarah (2010). “Time Pressed and Time Poor: Unpaid Household Work in Guatemala.” *Feminist Economics*, 16(3), 79-112.

IBB (2019). My most important project is the nursery project. *Istanbul Büyükşehir Belediyesi [Istanbul Metropolitan Municipality] official web-site*. <https://www.ibb.istanbul/News/Detail/35876>

İlkkaracan, İpek (2012). “Why So Few Women in the Labor Market in Turkey?” *Feminist Economics*, 18(1), 1-37.

Ilkkaracan, Ipek (2019). Economic and political gender gaps and the rise of populism. *Journal of International Affairs*, 72(2), 191-208.

Kim, Kijong, İpek İlkkaracan and Tolga Kaya (2019). Public investment in care services in Turkey: Promoting employment & gender inclusive growth. *Journal of Policy Modeling*, 41(6): 1210-1229.

KAGIDER (2019). Türkiye Kadın Girişimciler Derneği [The Women Entrepreneurs Association of Turkey].

https://www.kagider.org/docs/default-source/kagider-raporlar/kagider_sunum_2018.pdf?sfvrsn=4

Karadağ, Mehmet Ali and Bedriye Saraçoğlu (2015). “Çok Boyutlu Yoksulluk Analizi: Türkiye-AB Karşılaştırması. [Multidimensional Poverty Analysis: Turkey – EU Comparison]” *Amme İdaresi Dergisi*, 48(4).

KEDV (2019). Kadın Emegini Değerlendirme Vakfı [Valuing Women’s Labor Foundation] Economic Empowerment Programs: <https://www.kedv.org.tr/ekonomik-guclendirme>

Klasen, Stephan and Rahul Lahoti (2016). How Serious is the Neglect of Intra-Household Inequality in Multi-dimensional Poverty Indices? *Courant Research Centre: Poverty, Equity and Growth- Discussion Papers: 200*.

Limanlı, Ömer (2017). “Multidimensional Poverty in Turkey.” In *Turkish Economic Association International Conference on Economics ICE-TEA 2016*. Türkiye Ekonomi Kurumu.

Lugo, Ana Maria (2007) “Employment: A proposal for internationally comparable indicators.” *Oxford Development Studies* 35(4), 361-378.

Lundberg, Shelly J., Robert A. Pollak, and Terence J. Wales (1997). “Do Husbands and Wives Pool Their Resources? Evidence from the United Kingdom Child Benefit.” *Journal of Human Resources*, 32(3), 463-481.

Ministry of Family and Social Policy (2018). Kadının Güçlenmesi Strateji Belgesi ve Eylem Planı [Strategy Document and Action Plan for Empowering Women]. Ankara.

Nussbaum, Martha (2003). “Capabilities as Fundamental Entitlements: Sen and Social Justice.” *Feminist Economics*, 9(2-3): 33-59.

- Phipps, Shelley A., and Peter S. Burton (1995). "Sharing within Families: Implications for the Measurement of Poverty among Individuals in Canada." *Canadian Journal of Economics*, 177-204.
- Razavi, Shahra (1999). "Gendered Poverty and Well-being: Introduction." *Development and Change*, 30(3), 409-33.
- Robeyns, Ingrid (2003). "Sen's Capability Approach and Gender Inequality: Selecting Relevant Capabilities." *Feminist economics*, 9(2-3), 61-92.
- Rogan, Michael (2016). "Gender and Multidimensional Poverty in South Africa: Applying the Global Multidimensional Poverty Index (MPI)." *Social Indicators Research*, 126(3), 987-1006.
- Sen, Amartya K. (1992). *Inequality Reexamined*. Harvard University Press, Cambridge, MA.
- Sen, Amartya K. (1993). "Capability and Well-Being." in Martha Nussbaum and Amartya Sen (eds.) *The Quality of Life*, pp. 30 – 53. Oxford, UK: Clarendon Press.
- Sen, Amartya K. (2004). "Capabilities, Lists, and Public Reason: Continuing the Conversation." *Feminist Economics*, 10(3): 77-80.
- Seth, Suman and Sabina Alkire (2014). "Measuring and Decomposing Inequality among the Multidimensionally Poor Using Ordinal Data: A Counting Approach." *OPHI Working Papers 68*. Oxford: University of Oxford.
- Stiglitz, Joseph E., Amartya K. Sen, and Jean-Paul Fitoussi (2009). "Report by the Commission on the Measurement of Economic Performance and Social Progress." *Tech. rep., Commission on the Measurement of Economic Performance and Social Progress*.

Suppa, Nicolai (2018). “Towards a Multidimensional Poverty Index for Germany.” *Empirica*, 45(4): 655-683.

Tekgüç, Hasan (2018). “Declining Poverty and Inequality in Turkey: The Effect of Social Assistance and Home Ownership.” *South European Society and Politics*, 23(4), 547-570.

TURKSTAT (2016). *Survey of Living Conditions Cross Section Data Sets, 2006 – 2015*.

http://tuik.gov.tr/MicroVeri/GYKA_2015/english/index.html

Uğur, Mehmet S., (2016). *Yoksulluğun Dinamiklerinin Çok Boyutlu Olarak İncelenmesi [A Multidimensional Investigation of Poverty Dynamics]*. (PhD Thesis, Çukurova University).

Uysal, Gökçe (2013). Incentives increase formal female employment. BETAM Research Brief 13/51.

Vijaya, Ramya M., Rahul Lahoti, and Hema Swaminathan (2014). “Moving from the Household to the Individual: Multidimensional Poverty Analysis.” *World Development*, 59, 70-81.

Zacharias, Ajit, Thomas Masterson and Emel Memiş (2014). “Time Deficits and Poverty: The Levy Institute Measure of Time and Consumption Poverty for Turkey.” *Ekonomik Yaklaşım*, 25(91), 1-28.

Table 1: Dimensions, Indicators and Respective Weights

Dimensions	Indicators	Weights		
		Not Employed	Discouraged unemployed	Three dimensions
Education	Not completed compulsory education	0.250	0.250	0.333
Health	bad health	0.125	0.125	0.167
	limited health	0.125	0.125	0.167
Living standards	Substandard heating (stove using wood or coal or dung)	0.042	0.042	0.056
	Sub-standard shelter (leaky roof or insulation or dark room)	0.042	0.042	0.056
	Neighborhood environment (air pollution or crime)	0.042	0.042	0.056
	Crowded (less than one room per capita)	0.042	0.042	0.056
	No shower or toilet or piped water	0.042	0.042	0.056
	No washer or fridge or dishwasher	0.042	0.042	0.056
Employment	Not employed (unemployed, disabled, housewife, other)	0.125		
	Unemployed + not searching but ready to work		0.125	
	No social security of own name*	0.125	0.125	

*: Not employed category also includes retired persons who are looking for work. Most people are eligible for public health care in Turkey, however only formally employed people are eventually become eligible for public pensions.

Table 2 Panel A: Deprivation Headcount Ratios for Whole Sample

	2006		2009		2012		2015		Diff: 2006 - 2015		
	mean	st error	mean	st error	mean	st error	mean	st error	difference	st error	t-value
Individual indicators											
Not completed compulsory education	0.201	0.002	0.207	0.002	0.186	0.002	0.178	0.002	0.023	0.003	7.455
bad health	0.351	0.003	0.320	0.003	0.283	0.002	0.280	0.002	0.071	0.004	19.236
limited health	0.236	0.003	0.271	0.003	0.244	0.002	0.263	0.002	-0.028	0.003	-8.230
Not employed, in education or retired	0.397	0.003	0.383	0.003	0.342	0.003	0.322	0.002	0.075	0.004	19.496
Discouraged and Unemployed	0.090	0.002	0.107	0.002	0.072	0.001	0.051	0.001	0.039	0.002	18.214
No social security of own name	0.540	0.003	0.508	0.003	0.468	0.003	0.429	0.002	0.111	0.004	27.785
n of individuals	30,186		32,539		47,504		59,662				
Household Indicators											
Substandard heating	0.648	0.005	0.577	0.005	0.532	0.004	0.440	0.004	0.208	0.006	32.551
Substandard shelter	0.578	0.005	0.597	0.005	0.622	0.004	0.552	0.004	0.026	0.007	3.999
Neighborhood environment	0.373	0.005	0.346	0.005	0.279	0.004	0.268	0.003	0.105	0.006	16.650
Over crowded	0.445	0.005	0.401	0.005	0.376	0.004	0.346	0.004	0.099	0.006	15.370
No shower or toilet or piped water	0.132	0.003	0.118	0.003	0.088	0.002	0.066	0.002	0.066	0.004	18.496
No washer or fridge or dishwasher	0.120	0.003	0.067	0.002	0.047	0.002	0.024	0.001	0.096	0.003	29.453
n of households	10,853		11,866		17,559		22,749				

Table 2 Panel B: Deprivation Headcount Ratios by Gender

	2006		2009		2012		2015		Diff: 2006 - 2015		
Men	mean	st error	mean	st error	mean	st error	mean	st error	difference	st error	t-value
Not completed compulsory education	0.106	0.003	0.108	0.003	0.090	0.002	0.089	0.002	0.017	0.003	5.070
bad health	0.341	0.004	0.311	0.004	0.274	0.003	0.273	0.003	0.068	0.005	12.869
limited health	0.192	0.003	0.224	0.004	0.207	0.003	0.219	0.003	-0.028	0.005	-6.187
Not employed, in education or retired	0.161	0.003	0.173	0.004	0.130	0.003	0.120	0.002	0.041	0.004	9.997
Discouraged and Unemployed	0.103	0.003	0.119	0.003	0.078	0.002	0.073	0.002	0.030	0.003	8.810
No social security of own name	0.359	0.004	0.327	0.004	0.266	0.003	0.238	0.003	0.121	0.005	22.748
n of individuals	14,293		15,680		22,932		28,837				
Women											
Not completed compulsory education	0.292	0.004	0.302	0.004	0.278	0.003	0.266	0.003	0.026	0.005	5.398
bad health	0.361	0.004	0.328	0.004	0.291	0.003	0.288	0.003	0.073	0.005	14.294
limited health	0.278	0.004	0.316	0.004	0.281	0.003	0.306	0.003	-0.028	0.005	-5.775
Not employed, in education or retired	0.622	0.004	0.585	0.004	0.547	0.004	0.518	0.003	0.103	0.005	19.137
Discouraged and Unemployed	0.078	0.002	0.095	0.003	0.066	0.002	0.029	0.001	0.049	0.003	18.263
No social security of own name	0.712	0.004	0.682	0.004	0.664	0.004	0.615	0.003	0.097	0.005	18.814
n of individuals	15,893		16,859		24,572		30,825				

Notes: Survey weights applied. Observations are clustered at NUTS1 regions and standard errors calculated with Taylor linearization. The t-values in the last column show change over time is significant for each indicator.

Table 3: Cross-tabulation of Income and Multidimensional Headcount Poverty, 2015

		4D, not-employed		
		non-poor	poor	Total
< 1/3 of MW	non-poor	67.6	32.4	100
	poor	38.5	61.5	100
	Total	61.7	38.3	100

		4D, discouraged		
		non-poor	poor	Total
< 1/3 of MW	non-poor	73.8	26.2	100
	poor	46.3	53.8	100
	Total	68.2	31.8	100

		3D poverty		
		non-poor	poor	Total
< 1/3 of MW	non-poor	72.8	27.2	100
	poor	44.0	56.0	100
	Total	67.0	33.0	100

Notes: Survey weights applied.

Table 4: Multidimensional Poverty Index and Its Components (not-employed)

	Headcount Ratio (H)								
	All		Women		Men		Gender Gap: Women - Men		
	mean	st error	mean	st error	mean	st error	difference	st error	t-value
2006	0.496	0.003	0.661	0.004	0.322	0.004	0.339	0.006	56.834
2007	0.455	0.003	0.620	0.005	0.282	0.004	0.338	0.006	55.184
2008	0.447	0.003	0.611	0.004	0.274	0.004	0.337	0.006	56.927
2009	0.467	0.003	0.622	0.004	0.307	0.004	0.315	0.006	52.928
2010	0.459	0.003	0.618	0.004	0.294	0.004	0.324	0.006	56.523
2011	0.427	0.003	0.589	0.004	0.260	0.003	0.329	0.005	63.027
2012	0.410	0.003	0.569	0.004	0.246	0.003	0.323	0.005	65.641
2013	0.396	0.002	0.551	0.004	0.236	0.003	0.315	0.005	68.020
2014	0.388	0.002	0.537	0.003	0.236	0.003	0.302	0.004	67.760
2015	0.383	0.002	0.532	0.003	0.230	0.003	0.302	0.004	67.390
Change	0.113		0.129		0.092				
	Intensity of Poverty (A)								
	All		Women		Men		Gender Gap: Women - Men		
	mean	st error	mean	st error	mean	st error	difference	st error	t-value
2006	0.528	0.001	0.543	0.002	0.496	0.002	0.048	0.003	16.135
2007	0.526	0.002	0.539	0.002	0.498	0.003	0.041	0.003	12.352
2008	0.528	0.002	0.541	0.002	0.497	0.003	0.044	0.003	13.674
2009	0.534	0.002	0.550	0.002	0.500	0.003	0.050	0.003	15.737
2010	0.531	0.002	0.548	0.002	0.494	0.002	0.053	0.003	17.222
2011	0.530	0.001	0.544	0.002	0.497	0.002	0.046	0.003	15.611
2012	0.528	0.001	0.541	0.002	0.497	0.002	0.044	0.003	15.398
2013	0.524	0.001	0.535	0.002	0.495	0.002	0.040	0.003	14.548
2014	0.526	0.001	0.538	0.002	0.499	0.002	0.039	0.003	14.623
2015	0.522	0.001	0.537	0.002	0.488	0.002	0.049	0.003	18.198
Change	0.006		0.006		0.008				
	MPI (M0 = H*A)								
	All		Women		Men		Gender Gap: Women - Men		
	mean	st error	mean	st error	mean	st error	difference	st error	t-value
2006	0.262	0.002	0.359	0.003	0.160	0.002	0.199	0.003	59.869
2007	0.239	0.002	0.334	0.003	0.140	0.002	0.194	0.003	56.541
2008	0.236	0.002	0.331	0.003	0.136	0.002	0.195	0.003	58.727
2009	0.250	0.002	0.342	0.003	0.154	0.002	0.189	0.003	55.697
2010	0.244	0.002	0.338	0.003	0.145	0.002	0.193	0.003	59.470
2011	0.226	0.002	0.320	0.002	0.129	0.002	0.191	0.003	64.987
2012	0.216	0.001	0.308	0.002	0.122	0.002	0.186	0.003	67.301
2013	0.207	0.001	0.295	0.002	0.117	0.002	0.178	0.003	69.390
2014	0.204	0.001	0.289	0.002	0.118	0.002	0.172	0.002	69.066
2015	0.200	0.001	0.285	0.002	0.112	0.002	0.173	0.002	69.766
Change	0.062		0.074		0.048				

Notes: Survey weights applied. Observations are clustered at NUTS1 regions and standard errors calculated with Taylor linearization. The t-values in the last column show gender gap is significant for each year.

**Table 5: Separate Inequality (Variance measure, not-employed)
Panel A: Inequality among Multidimensionally Poor & Non-poor**

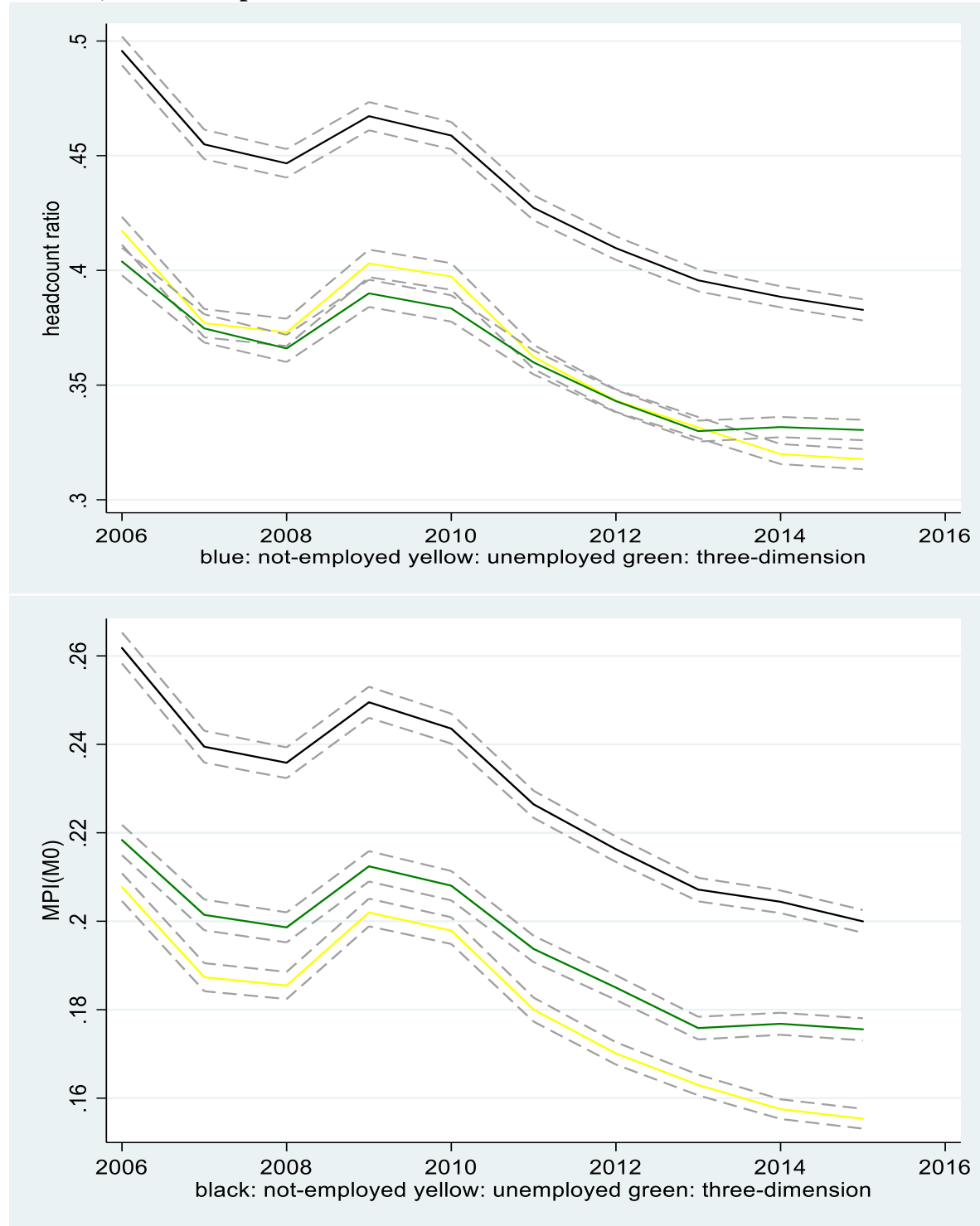
	Inequality among all (V)			Gender Gap (W - M)	Inequality ratio Vw / Vm
	All	Men	Women		
2006	0.211	0.159	0.210	0.051	1.320
2007	0.212	0.157	0.213	0.056	1.358
2008	0.213	0.156	0.215	0.059	1.378
2009	0.220	0.165	0.223	0.058	1.352
2010	0.218	0.159	0.223	0.064	1.405
2011	0.215	0.153	0.222	0.069	1.448
2012	0.212	0.149	0.223	0.075	1.503
2013	0.208	0.148	0.218	0.070	1.477
2014	0.210	0.152	0.220	0.068	1.446
2015	0.205	0.142	0.221	0.079	1.560
Change	0.006	0.017	-0.011		

Panel B: Inequality among Multidimensionally Poor

	Inequality among MD Poor (Vp)			Gender Gap (W - M)	Inequality ratio Vw / Vm
	All	Men	Women		
2006	0.117	0.099	0.123	0.025	1.249
2007	0.119	0.104	0.124	0.019	1.184
2008	0.117	0.103	0.121	0.018	1.172
2009	0.119	0.107	0.122	0.016	1.146
2010	0.120	0.103	0.124	0.020	1.198
2011	0.118	0.104	0.122	0.018	1.173
2012	0.118	0.102	0.122	0.020	1.199
2013	0.114	0.102	0.116	0.014	1.140
2014	0.112	0.103	0.114	0.012	1.115
2015	0.109	0.095	0.113	0.018	1.190
Change	0.008	0.004	0.011		

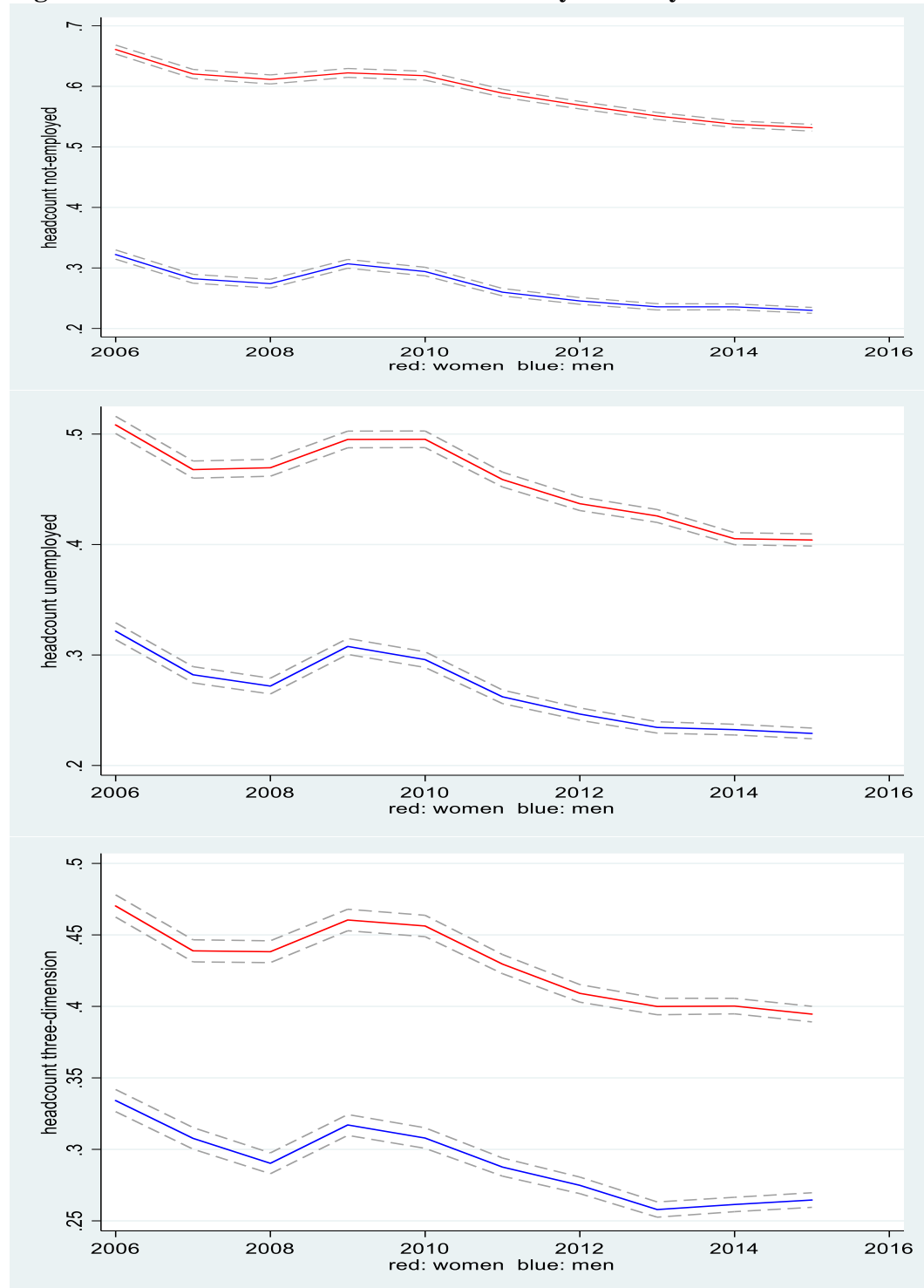
Notes: Survey weights applied. The reported inequality for each gender (columns 2 & 3) is calculated by using gender specific poverty intensity (A). Hence they do not represent decomposition of total inequality (first column) by gender. Inequality ratio simply calculates the ratio of Separate Inequality measure calculated separately for men and women samples. Since Separate Inequality measure itself is a calculated very similarly to variance, their ratio is F-statistic. The critical value for F-test for such a large sample is one. Hence, reported inequality measure for men and women are statistically significantly different.

Figure 1: Multidimensional Headcount Poverty and MPI by Alternative definitions, $k \geq 0.33$, Whole sample



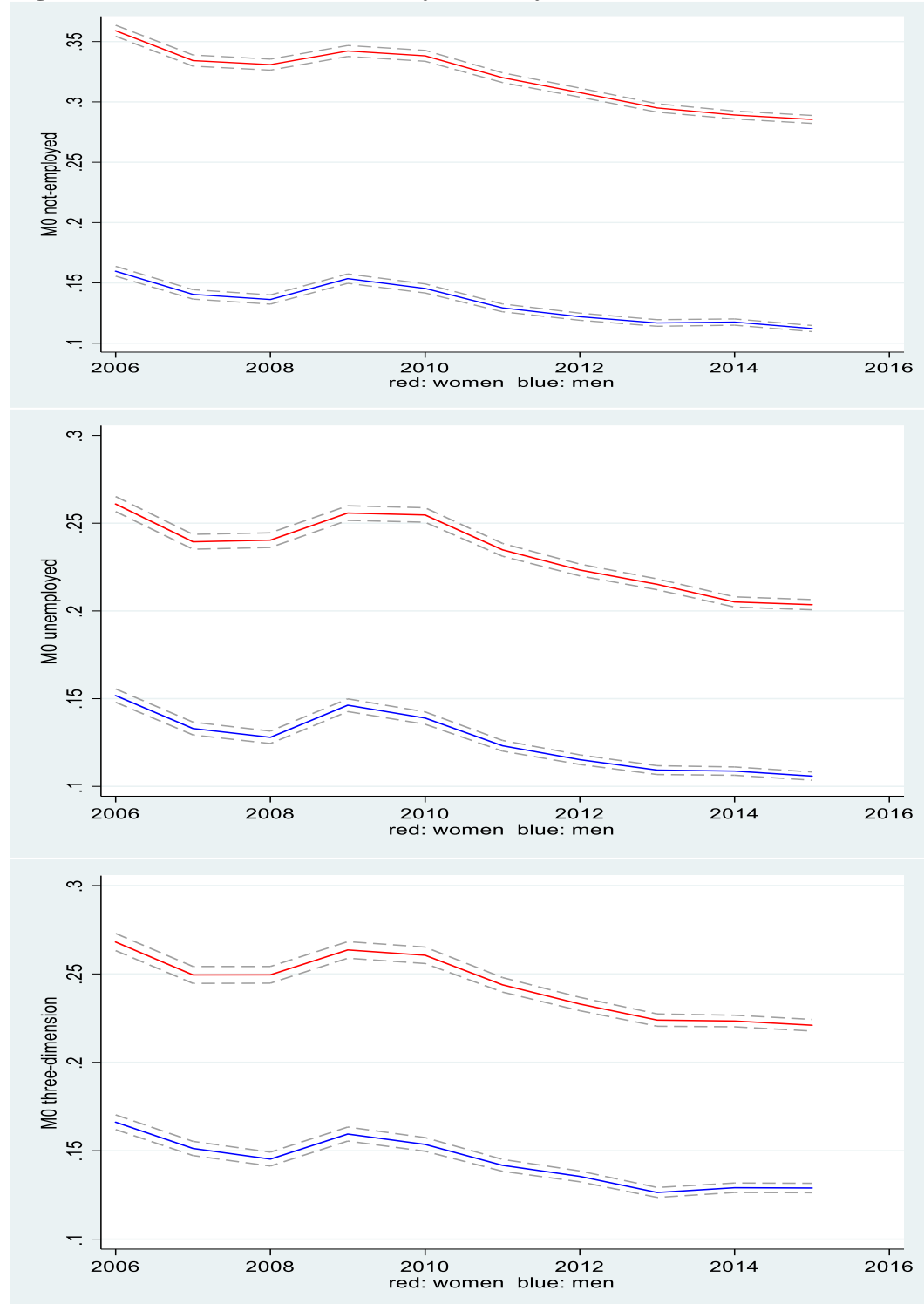
Notes: Survey weights applied. Dashed lines are 95 % confidence intervals (standard errors calculated with Taylor linearization and taking into account the stratification in survey design).

Figure 2: Multidimensional Headcount Poverty Rates by Alternative definitions, $k \geq 0.33$



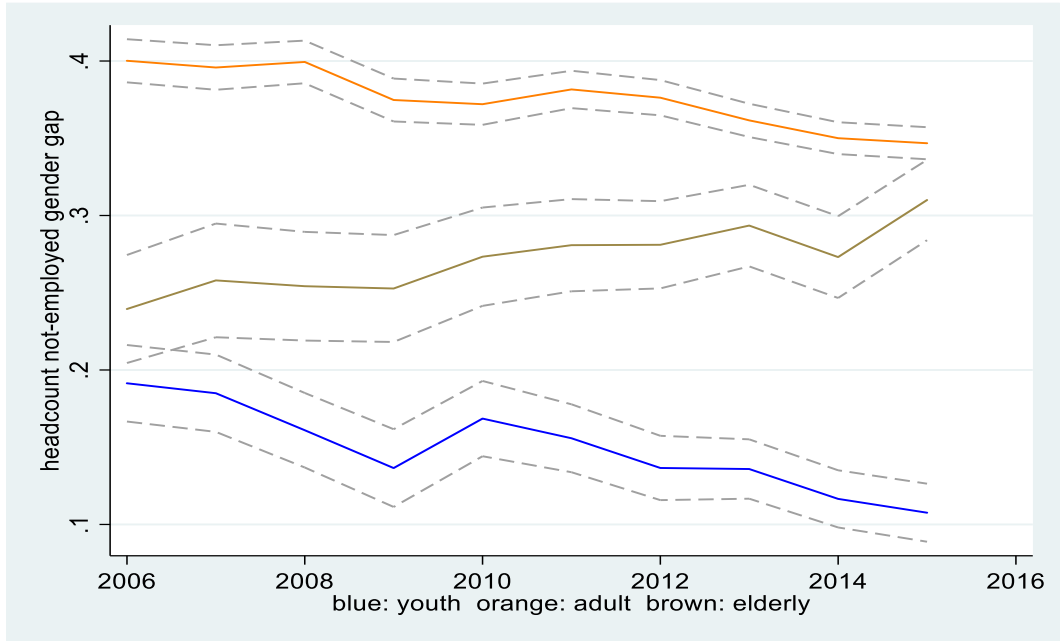
Notes: Survey weights applied. Dashed lines are 95 % confidence intervals (standard errors calculated with Taylor linearization and taking into account the stratification in survey design).

Figure 3: Multidimensional Poverty Index by Alternative definitions, $k \geq 0.33$

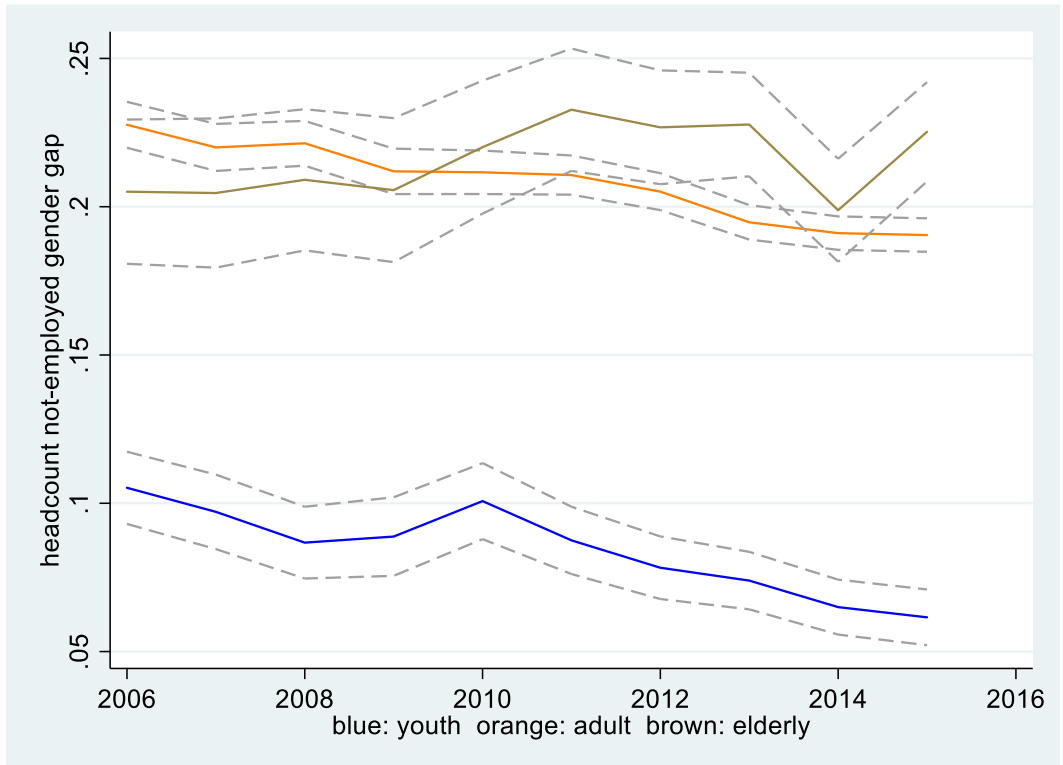


Notes: Survey weights applied. Dashed lines are 95 % confidence intervals (standard errors calculated with Taylor linearization and taking into account the stratification in survey design).

Figure 4: Headcount Ratio and MPI Gender Gaps by Age (not-employed, $k \geq 0.33$)
Panel A: Headcount Ratios



Panel B: MPI

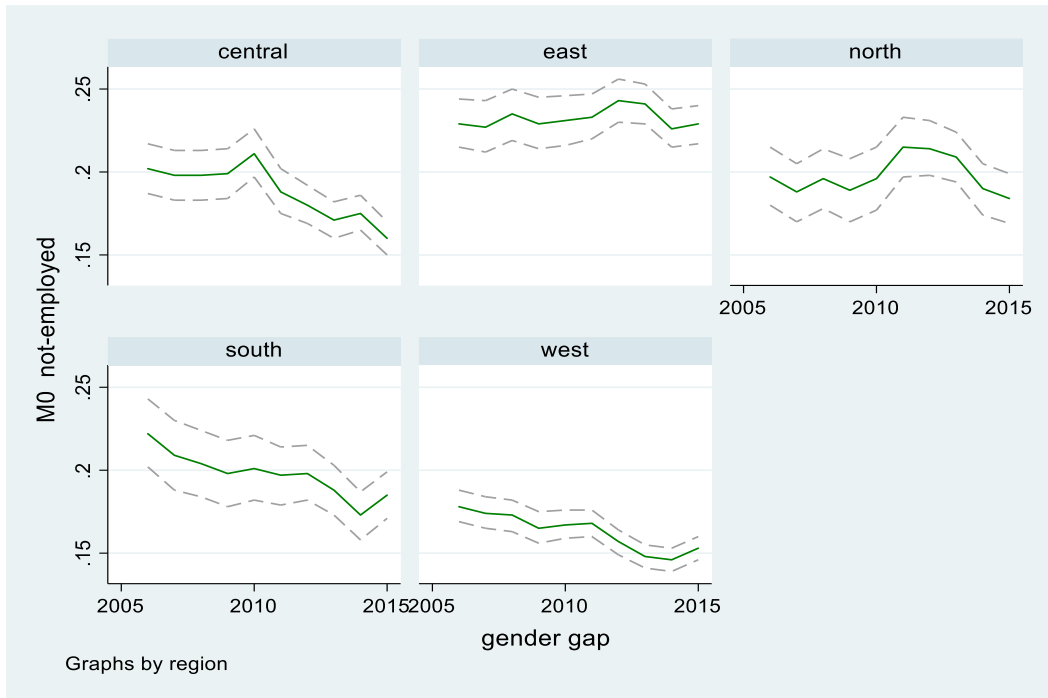


Survey weights applied. Dashed lines are 95 % confidence intervals (standard errors calculated with Taylor linearization and taking into account the stratification in survey design).

Figure 5: Headcount Ratio and MPI Gender Gaps by Regions (not-employed, $k \geq 0.33$)
Panel A: Headcount Ratios

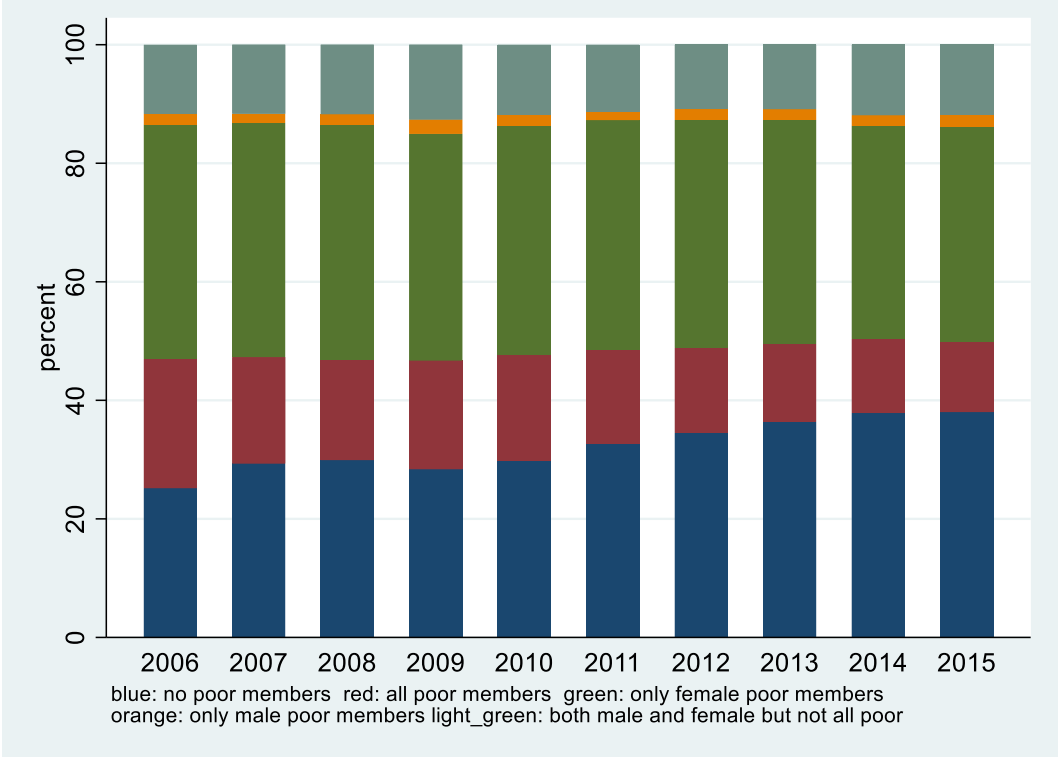


Panel B: MPI



Survey weights applied. Dashed lines are 95 % confidence intervals (standard errors calculated with Taylor linearization and taking into account the stratification in survey design).

Figure 6: Household Composition by Members' Multidimensional Poverty Status



Notes: Survey weights applied.

ONLINE APPENDICES

Online Appendix A: Official Statistics related to Employment and Poverty

Figure A1 provides a summary of six of the official poverty rate estimates provided by TURKSTAT, where the first three measures are absolute poverty thresholds (using World Bank thresholds for middle income countries of PPP \$2.15 and \$4.3 daily consumption) and the last three are relative poverty measures, i.e. relative to median expenditure or income. The absolute poverty estimates have declined substantially since early 2000s, however relative poverty estimates are changing only gradually, which suggests that social and economic policies have been effective in lifting the poorest above a minimum threshold throughout this period but income inequality has stayed relatively stable.

None of these official poverty lines are the basis for social assistance qualification in Turkey. Rather, one-third of gross minimum wage is used as the cut-off for various social programs (i.e. per capita household income compared to one-third of gross minimum wage), such as qualification for free healthcare (see Figure A2). However, Tekgüç (2018) uses this threshold to estimate poverty rates and finds that overall the poverty rate declined from 30 to 25 percent between 2006 and 2014. Notably these estimates are a few percentages below the 70 % of median income poverty estimates presented in Figure A1.

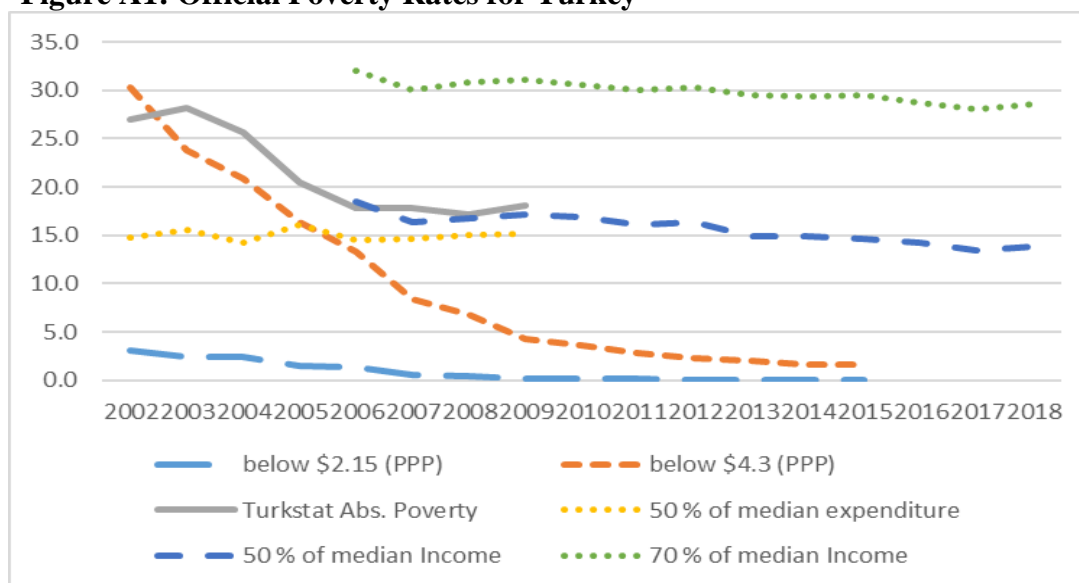
Table A1: Official Labor Force Statistics for 15-64 year olds, 2015 (000)

Panel A Education	Unemployed		Employed		Population	
	men	Women	men	women	men	women
No Diploma	120	60	669	1,059	1,254	4,703
Primary	558	211	5,889	2,443	8,089	8,506
Middle	527	195	3,941	1,043	6,578	4,977
High	383	297	4,054	1,239	5,709	4,156
Tertiary	287	403	3,483	2,071	4,217	3,394
Total	1,875	1,166	18,036	7,855	25,846	25,736

Panel B Education	Unemployment Rate		Employment Rate		Labor Force Part. Rate	
	men	women	men	women	men	women
No Diploma	15%	5%	53%	23%	63%	24%
Primary	9%	8%	73%	29%	80%	31%
Middle	12%	16%	60%	21%	68%	25%
High	9%	19%	71%	30%	78%	37%
Tertiary	8%	16%	83%	61%	89%	73%
Total	10%	15%	70%	30%	77%	35%

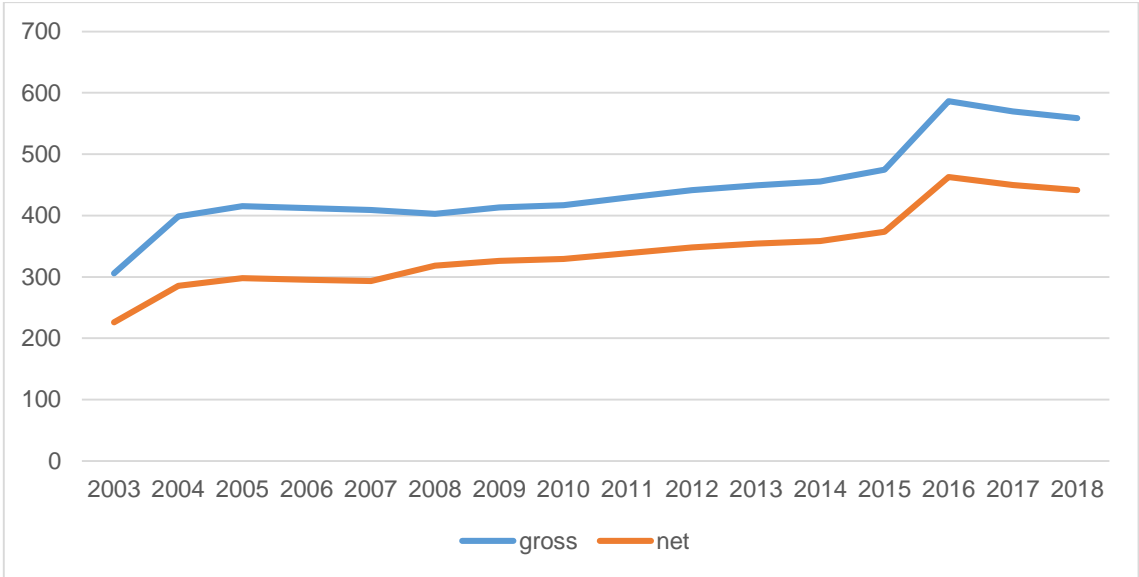
Source: TURKSTAT (2018). TURKSTAT derive these statistics from Household Labor Force Surveys (HLFS) which have much larger sample size (more than 300,000 adults per year).

Figure A1: Official Poverty Rates for Turkey



Source: TURKSTAT (2020). First four poverty measure is calculated using Household Budget Surveys. The last two (50 and 70 % of median income) is calculated using Survey of Income and Living Conditions.

Figure A2: Real Minimum Wage in Turkey (2003 base year)



Source: Ministry of Family, Labor and Social Security (2020).
<https://www.ailevecalisma.gov.tr/media/35787/yillar-itibariyla-net-ve-brut-asgari-ucret-01-08-1996-31-12-2020.pdf>

Appendix B: Method & Data

Counting-based double cut-off method is easily generalizable to cases where dimensions have different weights, applicable even when the data used is ordinal or categorical and prioritizes persons who have multiple deprivations over those who are deeply deprived in one or two dimensions (Alkire and Foster, 2011a, 2011b).

Another advantage of MPI over classical poverty measures, especially within the context of least developed countries, is that the implicit assumption that household resources are shared equally (or according to need) can be relaxed for many dimensions (Klasen and Lahoti, 2016). While most existing MPI studies do not take this into account and consequently overestimate male multidimensional poverty and underestimate the gender disparity in deprivation, we follow Klasen and Lahoti (2016) and use individual-level data where available.

Accordingly, the overall deprivation score c_i for each person is computed as (Alkire and Seth, 2015):

$$c_i = \sum_{j=1}^d w_j g_{ij}$$

where w_j is the relative weight attached to each indicator (see Table 1) and g_{ij} takes on the value of 1 if person i is deprived in indicator j and equals 0 otherwise.

We employ the adjusted headcount ratio (M_0) proposed in Alkire and Foster (2011a). M_0 can be defined as the product of the *incidence of poverty* (H) (multidimensional headcount ratio) and the *intensity of poverty* (A) (average deprivation score among the poor):

$$H = \frac{\sum_{i=1}^q W_i}{\sum_{i=1}^n W_i}$$

where W_i are sampling weights for each individual, n is the sample size and q denotes the number of poor people. The intensity of poverty, A , is calculated only for the poor as follows:

$$A = \frac{\sum_{i=1}^q W_i c_i}{\sum_{i=1}^q W_i}$$

$$M_0 = H \times A = \frac{\sum_{i=1}^q W_i c_i}{\sum_{i=1}^n W_i} = \frac{\sum_{i=1}^n W_i c_i \mathbb{I}[c_i \geq k]}{\sum_{i=1}^n W_i}$$

where \mathbb{I} is an indicator function such that $\mathbb{I}[c_i \geq k] = 1$ if $c_i \geq k$ and $\mathbb{I}[c_i \geq k] = 0$ otherwise. We calculate the gender poverty gap as the simple discrepancy between the mean values for men and women. Accordingly, gender headcount ratio gap is $H_W - H_M$ and gender multidimensional poverty gap is $M_{0W} - M_{0M}$.

Separate inequality V is calculated in a similar vein to variance of deprivation score across the multidimensionally poor as proposed by Seth and Alkire (2014):

$$V^i(x) = \frac{\alpha}{q} \sum_{i=1}^q [c_i - A]^2$$

where q is the number of multidimensionally poor. The variance measure is multiplied by a constant to rescale it where maximum potential variance is equal to one. Seth and Alkire (2014) and Espinoza-Delgado & Klasen (2018) choose α as four, and we follow this convention.

In a recent working paper, Alkire and Foster (2019) introduce M -gamma measures which are defined as $M_0^\gamma = \text{mean of } c_i^\gamma$ for all population. In practice these M -gamma measures are $M_0^0 = H$; $M_0^1 = M_0 = H * A$ or MPI and M_0^2 which is the novel measure introduced in their paper. M_0^2 is called *squared count* measure and emphasize the severity of deprivation by squaring each person's deprivation (non-poor's deprivation is censored), it also satisfies the Dimensional

Transfer principle. Practically, $M_0^2 = H(A^2 + V_p)$ where V_p is variance measure calculated for the multidimensionally poor. H, A and V_p are provided in Tables 4 and 5. For Turkey, A and V_p are changing very slowly over the years and change in M_0^2 is well approximated by change in H. Hence we do not discuss squared count measure any further.

It is worth noting the shortcomings of the method we adopt here, as summarized by Datt (2019). Namely, this method violates the transfer principle, i.e. a regressive transfer from very poor to less poor can reduce the multidimensional poverty; ignores the deprivations of the non-poor; and treats multiple deprivations as sum of their parts, ignoring the potentially mutually reinforcing mechanisms between multiple deprivations. While we continue to employ counting based double cut-off method, we present additional analyses towards addressing the concerns Datt (2019) raises.

We present the overall distribution of deprivation scores (c_i) in figures B1 and B2 (zero deprivation score corresponds to non-poor in the union approach). We also present the ‘separate inequality measure’ in Table 5, calculated similarly to variance of deprivation scores both for whole population and multidimensionally poor and satisfies the transfer principle.

Data

SILC Turkey has been conducted since 2006 and is available both as an annual cross-section data set and a four-year panel. Four-year panel sample size is smaller and do not contain information on region of residence. Hence we conduct our analysis by combining annual cross-section data sets.

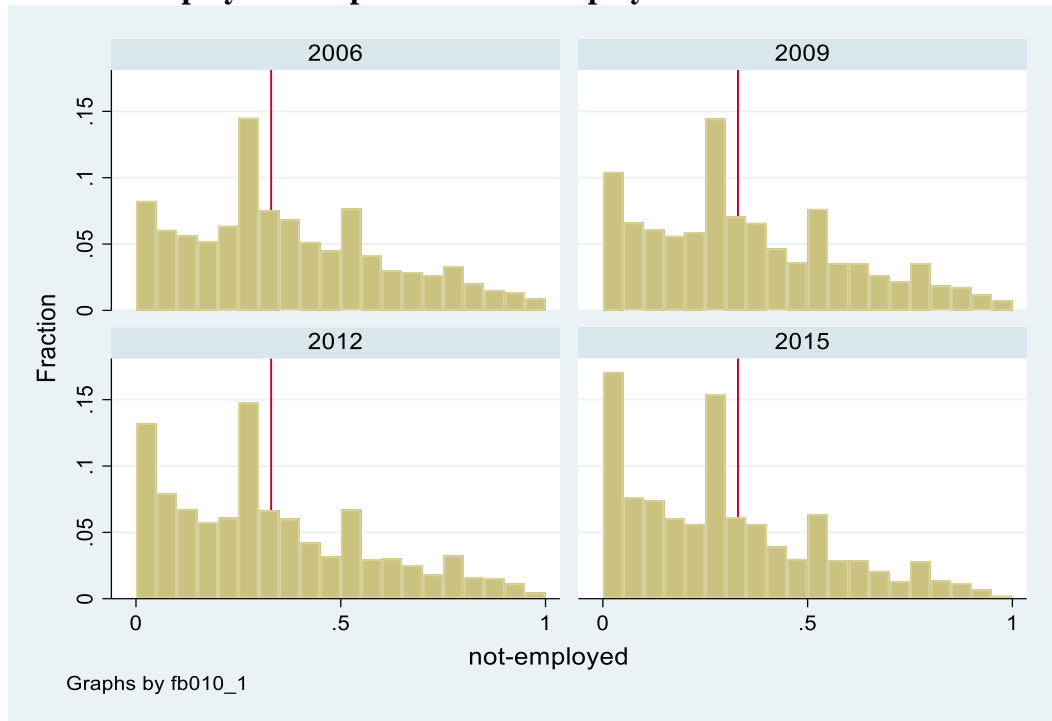
SILC Turkey is collected following a stratified-cluster sampling methodology and representative at NUTS1 level in the study period. Households to be surveyed for SILC is determined by grouping households into clusters of an average of 100 units (but varying between

80 and 120) based on geographical proximity. The probability with which a cluster is sampled is proportional to the number of households it contains, i.e. a 120-household cluster has more chance to be chosen than an 80-household cluster. Once a cluster is sampled, 10 households are selected in each cluster irrespective of cluster size. If a household does not respond, no substitute is chosen. TURKSTAT provides sample weights in the datasets (separately for households and individuals) which incorporate both non-response and population projections (TURKSTAT, 2016). We use these sample weights throughout our analysis (mostly individual weights, except when within-household multidimensional poverty composition is reported) and also cluster data at NUTS1 level (12 statistical regions) for standard error calculation. Annual samples comprise of approximately 30 thousand individuals (roughly 11 thousand households) between 2006 and 2010, which have gradually increased to approximately 60 thousand (roughly 23 thousand households) by 2015 (TURKSTAT, 2016). Since responding to TURKSTAT surveys are compulsory by law and non-response is punishable with a fee the response rates are quite high (e.g. 93 percent in 2014, TURKSTAT, 2016).

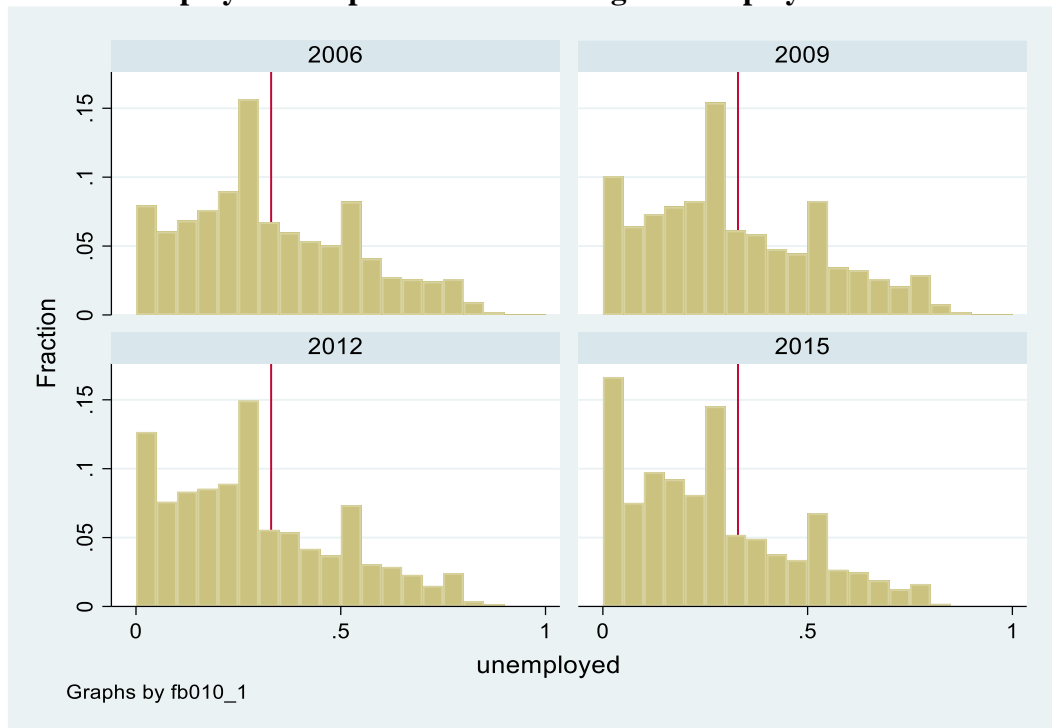
Distribution of Individual Deprivation Scores

Figure B1.A presents the distribution of deprivation for selected years for our preferred MDP Index (*not-employed*) and figure B1.B presents the distribution of deprivation for *discouraged unemployed*. Both graph shows three spikes at around 0-0.05, 0.25-0.30 and 0.50-0.55 deprivation scores. Any person who is not deprived in any indicator or only one of living conditions indicators will fall into 0-0.05 bin. Any person who is deprived of education and any one of housing indicators will fall into 0.25-0.30 bin; and any person who is deprived of education, and one of employment or health indicators plus one of housing indicators will fall into 0.5-0.55 bin. Figure B2 presents the gender breakdown of deprivation distribution for 2015 which shows that 0-0.05 spike is mostly populated by men and 0.25-0.30 and 0.50-0.55 spikes are mostly populated by women. The vertical line at $k=0.33$ represents the poverty cut-off. Individuals with deprivation scores below the line are deemed non-poor and individuals on the line and above are deemed poor. Headcount ratio is the percentage of household at or above the red line. A close inspection of Figure B2 reveal that the distribution below the line gradually become more skewed towards zero.

Figure B1: Histogram of Deprivation Scores (Employment) for Selected Years
Panel A: Employment deprivation: not employed

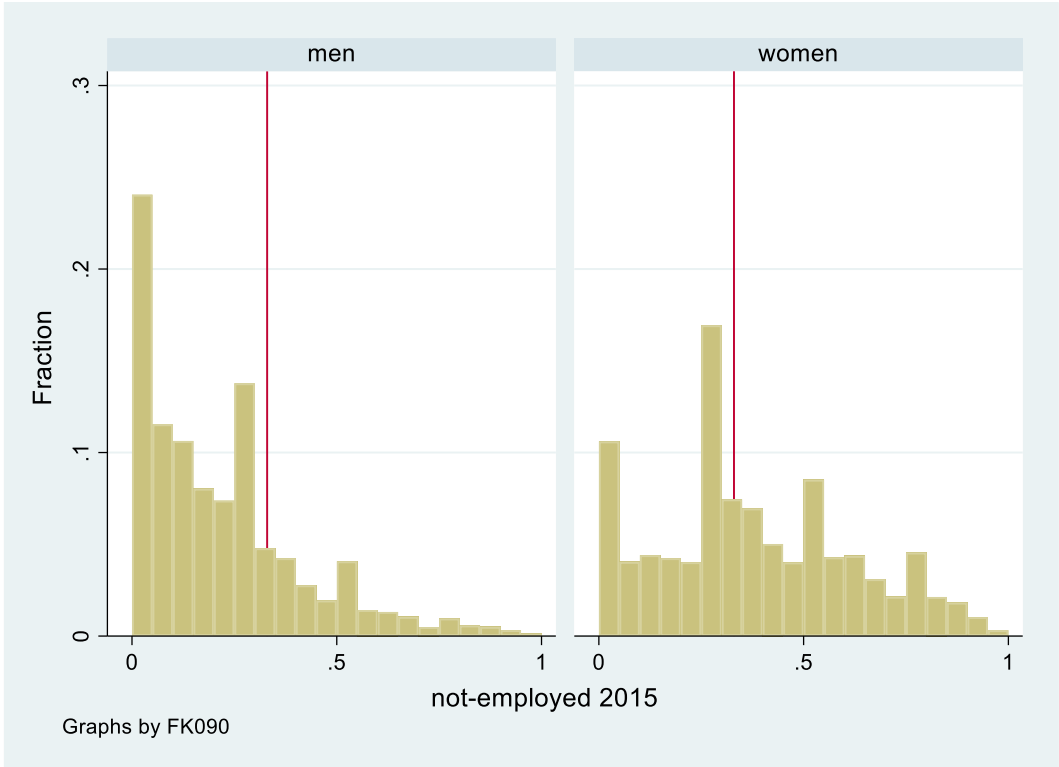


Panel B: Employment deprivation: discouraged unemployed



Vertical red line: Poverty cut-offs: $k \geq 0.33$

Figure B2: Histogram of Deprivation Scores (not-employed) for 2015 by Gender



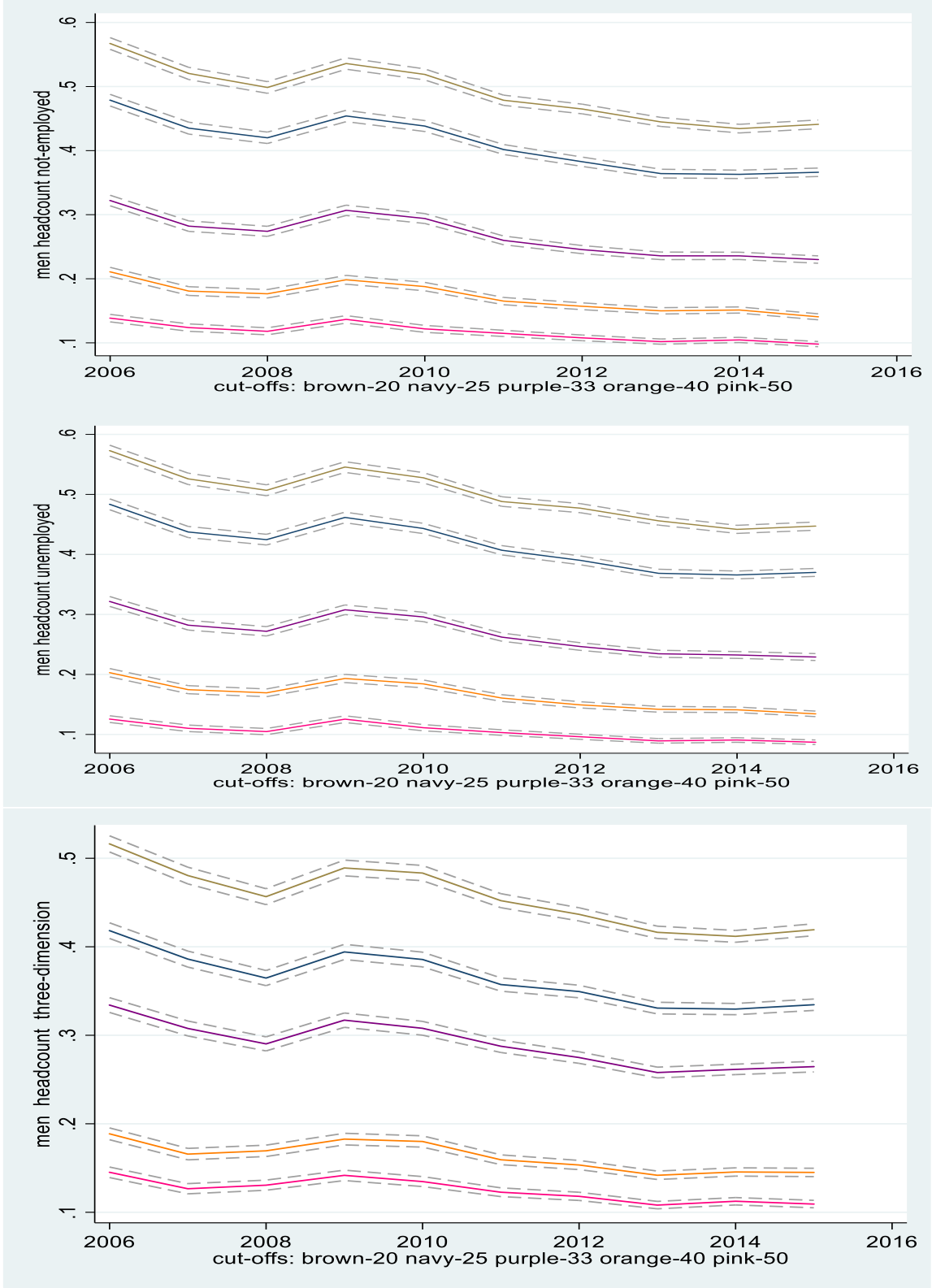
Vertical red lines: Poverty cut-offs: $k \geq 0.233$

Appendix C: Alternative Cut-offs (k) and Multidimensional Poverty Definitions

Figure C1-C4 provides the headcount ratio and M0 for alternative cut-off values ($k= 0.2 / 0.25 / 0.33 / 0.4 / 0.5$) for 2006, 2009, 2012 and 2015. Both for men and women alternative cut-offs provide distinct estimates where the confidence intervals of each estimate corresponding to each cut-off do not intersect. Moreover, there is a marked decline in estimated headcount ratio and MPI by 2012 at every cut-off level. In the case of three alternative MPI, for men, the estimated headcount ratio or M0 are either overlap or three dimensional poverty definition yields higher headcount ratio estimates compare to other two definitions including employment dimensions. For women (Figures C2 and C4), *not-employed* definition results in the highest headcount ratio, followed by *unemployed* followed by *three-dimensional* version.

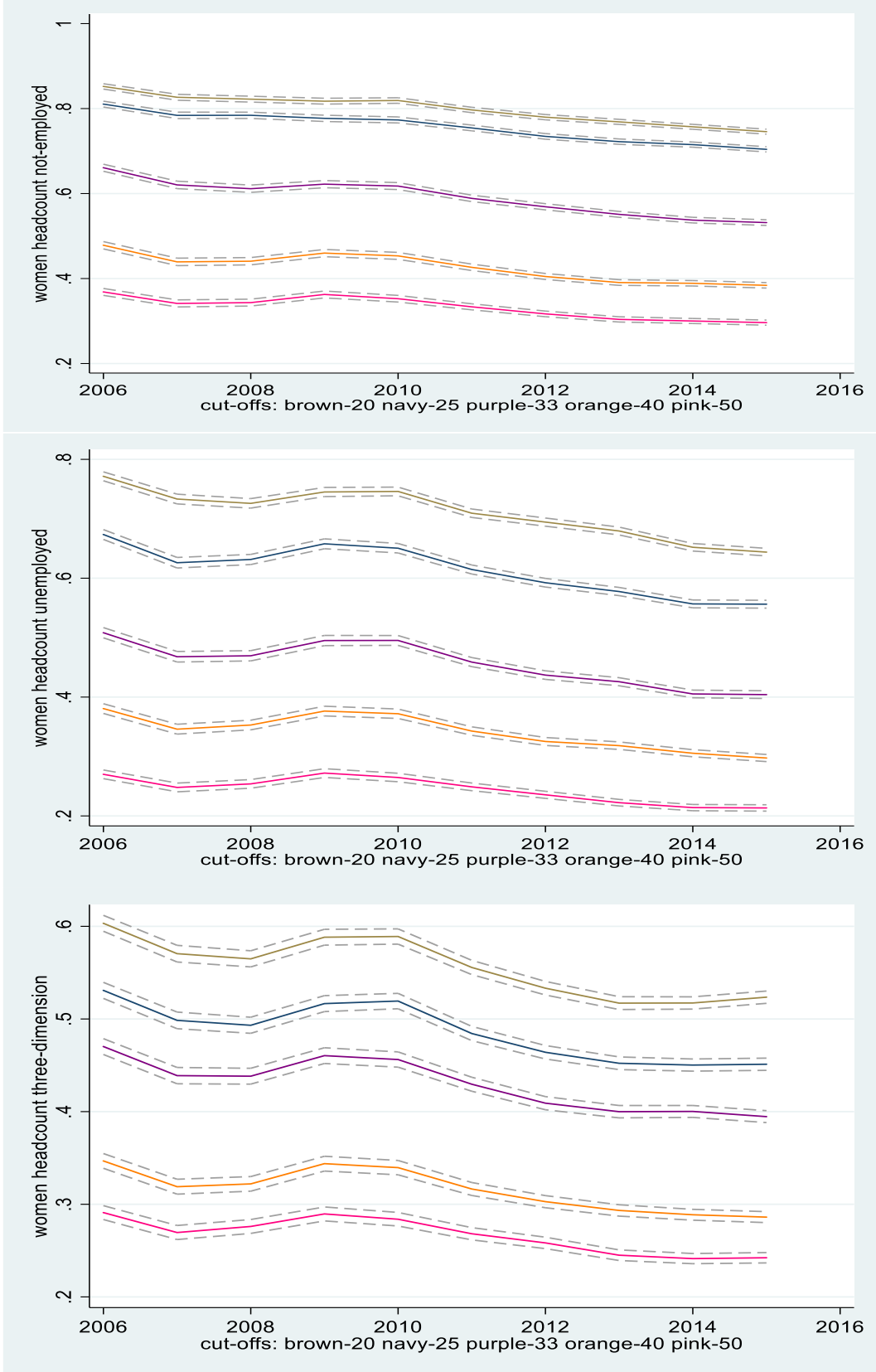
We separately present age and regional breakdown of multidimensional poverty in three age groups (young: 15-24, adult: 25-64; and old: 65 and above) and five broad regions. Figure C5 presents headcount ratios (Panel A) and MPI (Panel B) over time. Elderly women did not enjoy any improvement in headcount ratio over the study period, and both young and adult men have much lower multidimensional poverty levels than young women. On the positive side, young women experienced the fastest drop in headcount ratio and MPI which lowered the gender gaps for this age group. Figure C6 shows the headcount ratio and MPI levels by regions. The headcount ratios and MPI for men and women in the Eastern region are markedly higher than other regions in Turkey. Both the headcount ratios and the MPI are lowest for the Western and Central regions both for men and women. Headcount ratio gaps between regions (such as West versus East) are roughly equal for men and women as shown in panels A and B, whereas MPI gaps between regions are narrower for men suggesting that the intensity of poverty is higher for women in Eastern regions. Indeed, the decomposition analysis suggest that this higher intensity in Eastern regions is driven by the higher deprivation in education and housing.

Figure C1: Comparison of Headcount Poverty by Alternative Cut-offs (k), Men



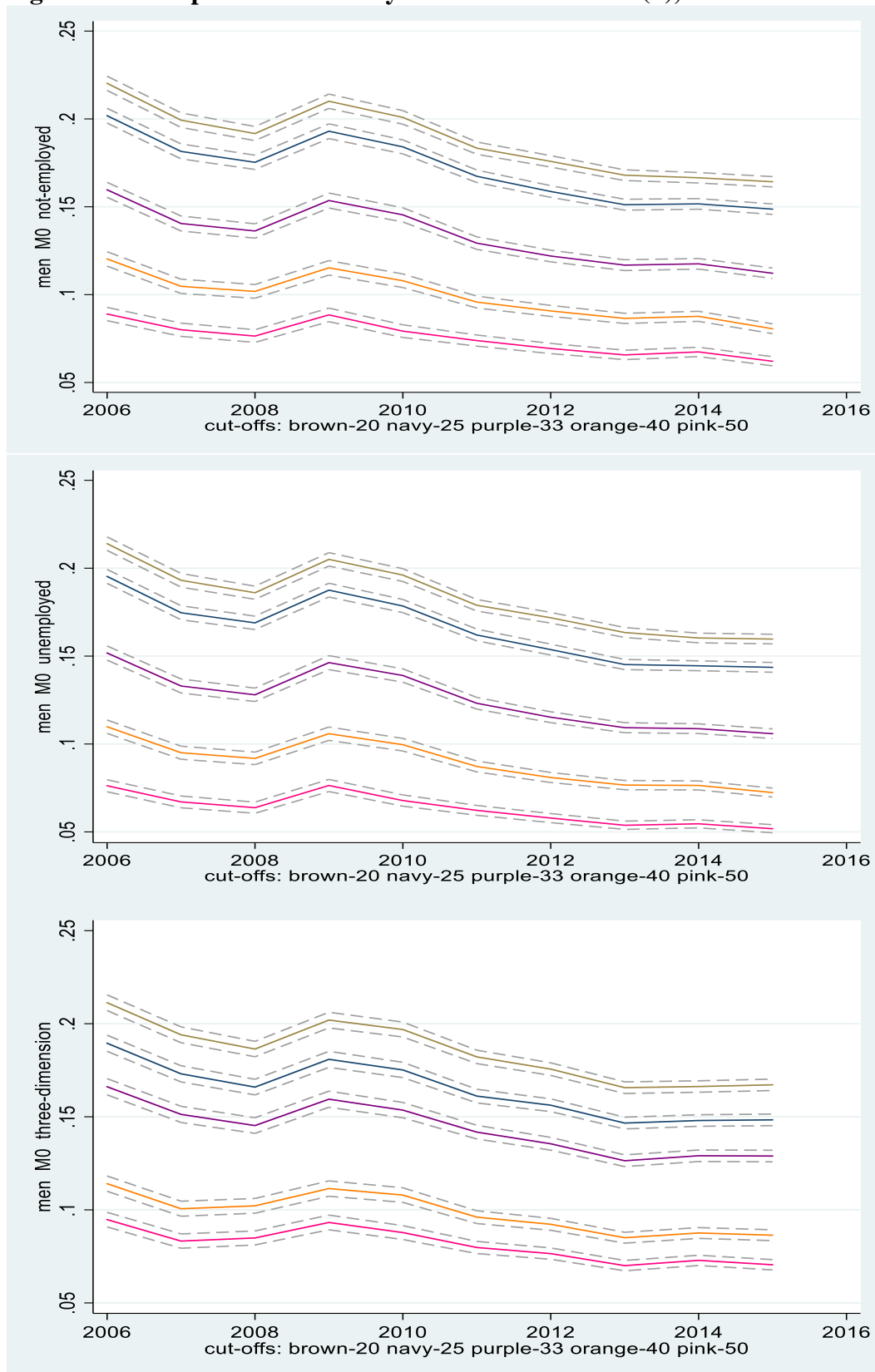
Notes: Survey weights applied. Dashed lines are 95 % confidence intervals (standard errors calculated with Taylor linearization and taking into account the stratification in survey design).

Figure C2: Comparison of Headcount Poverty by Alternative Cut-offs (k), Women



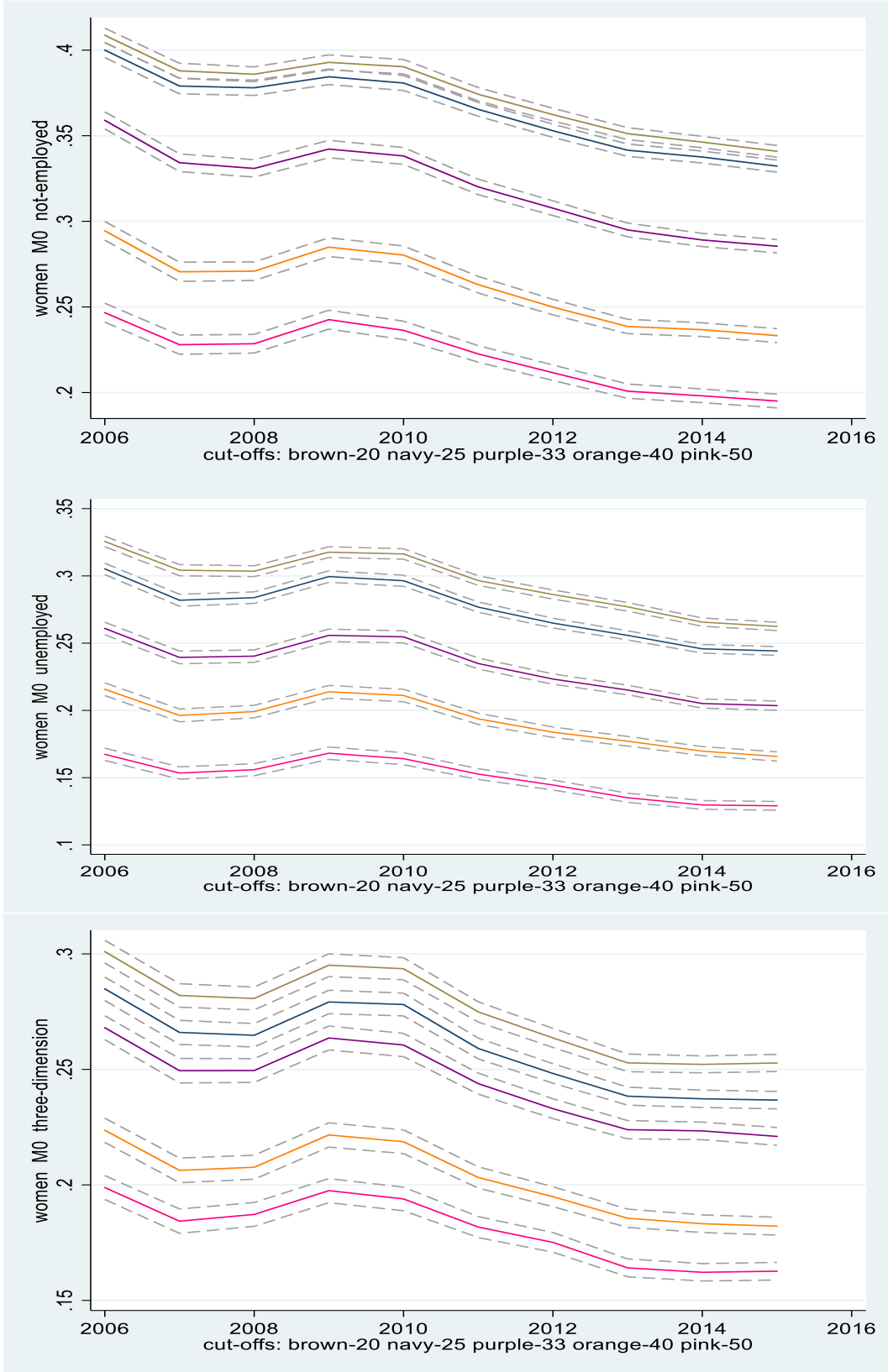
Notes: See notes for Figure C1.

Figure C3: Comparison of MPI by Alternative Cut-offs (k), Men



Notes: See notes for Figure C1.

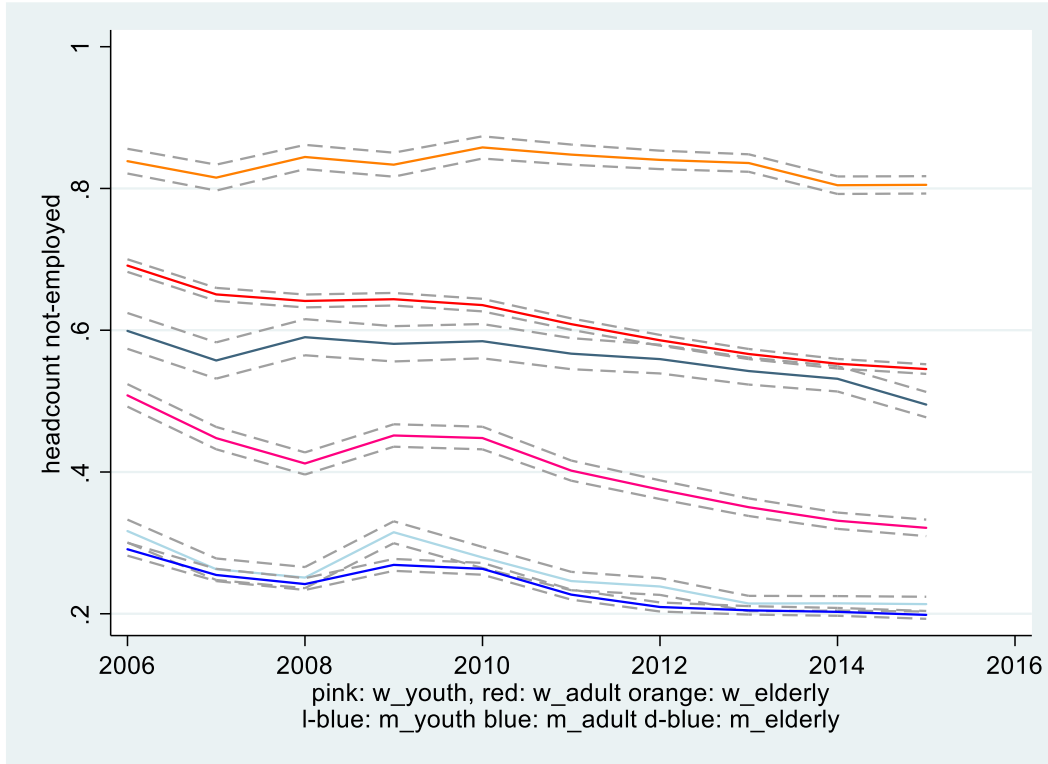
Figure C4: Comparison of MPI by Alternative Cut-offs (k), Women



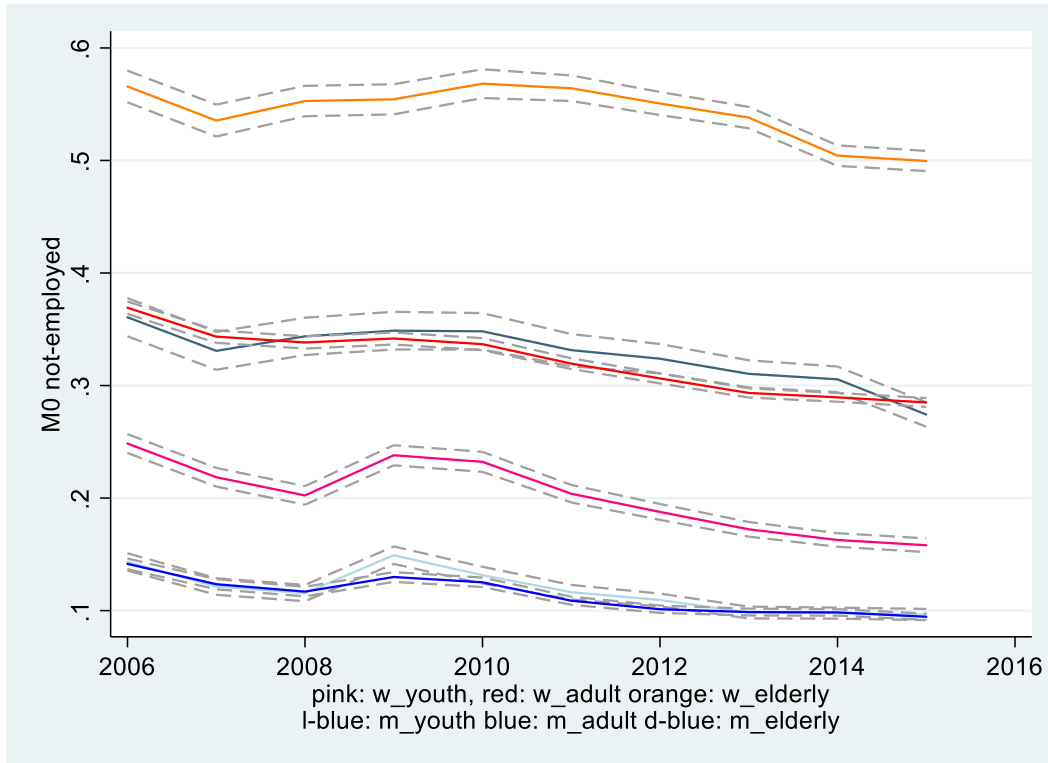
Notes: See notes for Figure C1.

Figure C5: Headcount Ratio and MPI by Gender and Age Cohorts (not-employed, $k \geq 0.33$)

Panel A: Headcount Ratios

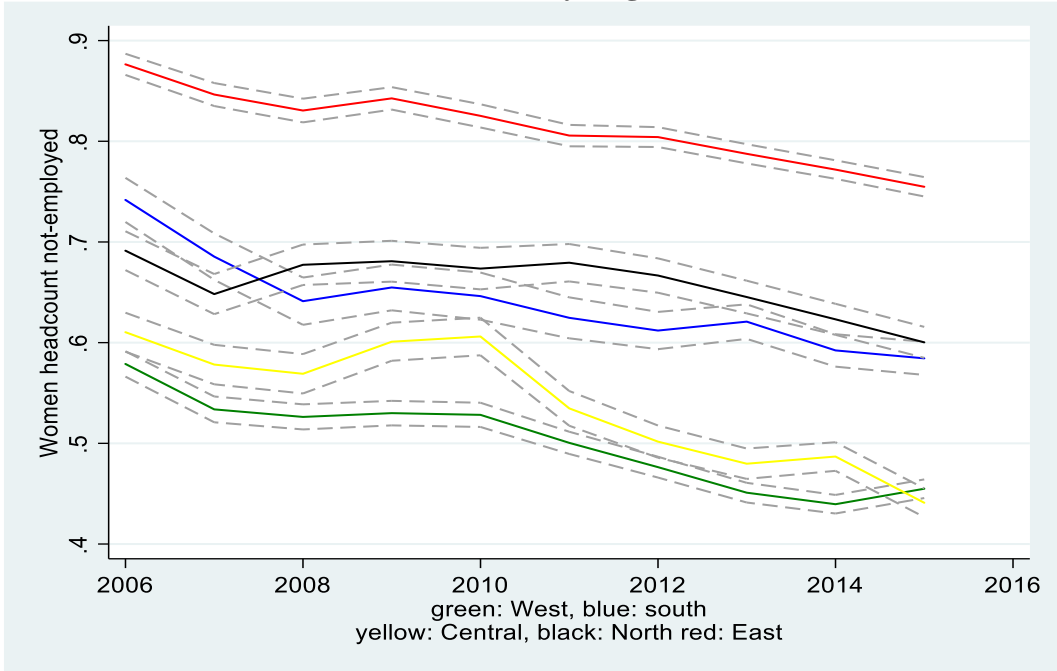


Panel B: MPI

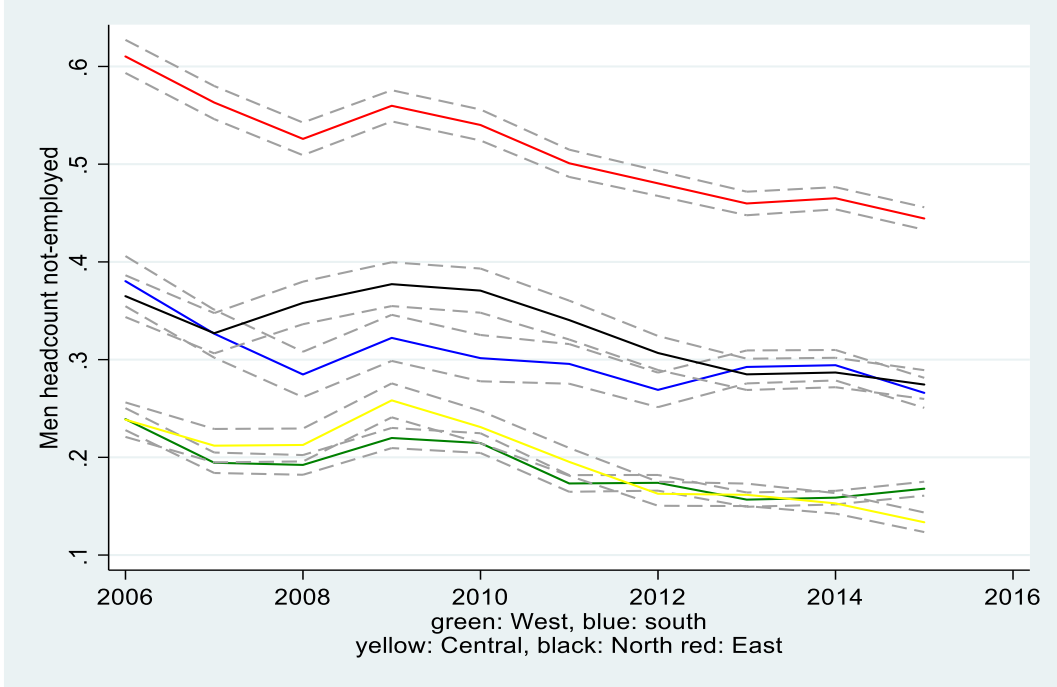


Notes: Survey weights applied. Dashed lines are 95 % confidence intervals.

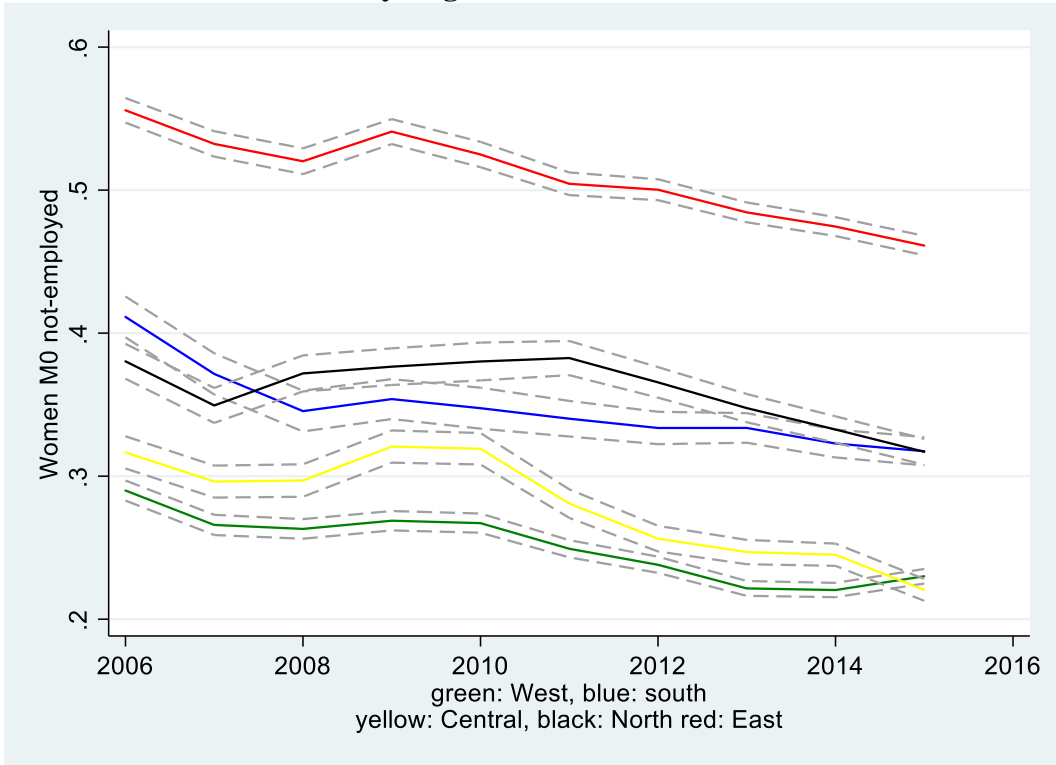
Figure C6: Headcount Ratio and MPI by Gender and Regions (not-employed, $k \geq 0.33$)
Panel A: Headcount Ratios for Women by Regions



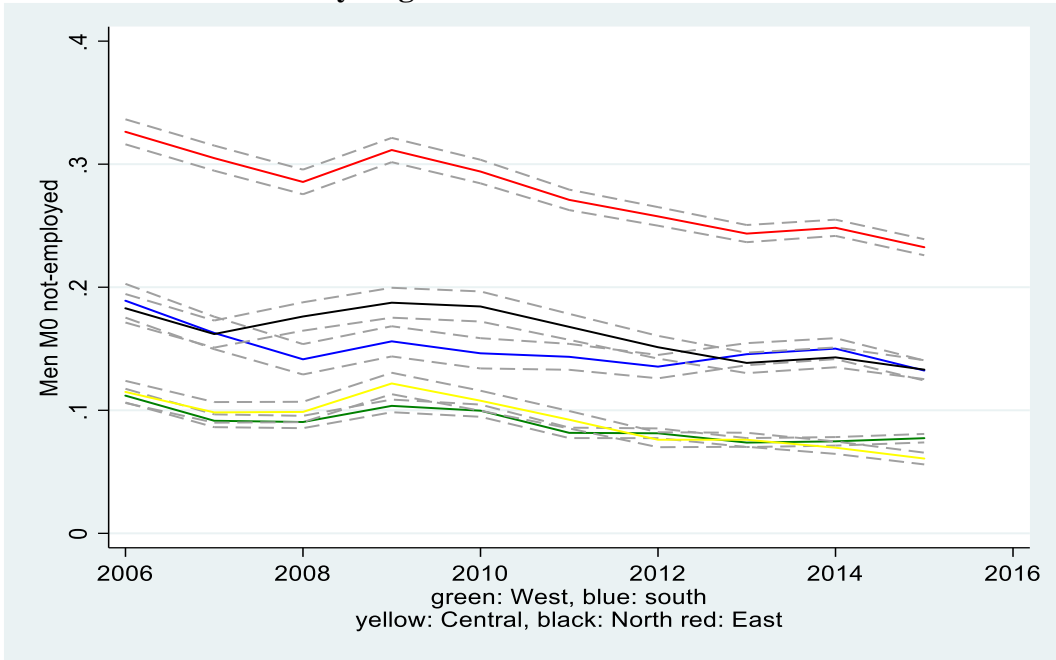
Panel B: Headcount Ratios for Men by Regions



Panel C: MPI for Women by Regions



Panel D: MPI for Men by Regions



Notes: Survey weights applied. Dashed lines are 95 % confidence intervals.

References to Online Appendix

- Alkire, Sabina, and James Foster (2011a). “Counting and Multidimensional Poverty Measurement.” *Journal of Public Economics*, 95(7): 476-487.
- Alkire, Sabina, and James Foster (2011b). “Understandings and Misunderstandings of Multidimensional Poverty Measurement.” *Journal of Economic Inequality*, 9: 289-314.
- Alkire, Sabina, and James Foster (2019). “The Role of Poverty in Inequality Measurement.” *OPHI Working Paper No. 126*.
- Alkire, Sabina, and Suman Seth (2015) “Multidimensional poverty reduction in India between 1999 and 2006: Where and how?” *World Development*, 72: 93-108.
- Datt, Gaurav (2019). “Distribution-sensitive Multidimensional Poverty Measures.” *The World Bank Economic Review*, 33(3), 551-572.
- Espinoza-Delgado, Jose, and Stephan Klasen (2018). “Gender and Multidimensional Poverty in Nicaragua: An Individual Based Approach.” *World Development*, 110: 466-491.
- Klasen, Stephan and Rahul Lahoti (2016). How Serious is the Neglect of Intra-Household Inequality in Multi-dimensional Poverty Indices? *Courant Research Centre: Poverty, Equity and Growth- Discussion Papers: 200*.
- Ministry of Family, Labor and Social Security (2020). *Gross and Net Minimum Wage by Years*. <https://www.ailevecalisma.gov.tr/media/35787/yillar-itibariyla-net-ve-brut-asgari-ucret-01-08-1996-31-12-2020.pdf>
- Seth, Suman and Sabina Alkire (2014). “Measuring and Decomposing Inequality among the Multidimensionally Poor Using Ordinal Data: A Counting Approach.” *OPHI Working Papers 68*. Oxford: University of Oxford.
- Tekgüç, Hasan (2018). “Declining Poverty and Inequality in Turkey: The Effect of Social Assistance and Home Ownership.” *South European Society and Politics*, 23(4), 547-570.
- TURKSTAT (2016). *Survey of Living Conditions Cross Section Data Sets, 2006 – 2015*. http://tuik.gov.tr/MicroVeri/GYKA_2015/english/index.html
- TURKSTAT (2018). *Labor Force Statistics*. http://tuik.gov.tr/PreTablo.do?alt_id=1007
- TURKSTAT (2020). *Income and Poverty Statistics*. http://tuik.gov.tr/PreTablo.do?alt_id=1013