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MULTIDIMENSIONAL POVERTY OF YOUTH IN TURKEY

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Working Paper No. 1338

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Abstract

Poverty has been ongoing for many years and still continues to exist in almost all countries around the globe. The objective of alleviating poverty in many nations therefore, remains a significant issue. To comprehend the risks posed by the issue of poverty, its dimension and the process by which it can become deeper must be known, identified and recognised. A broad consensus among policy makers, academic and other institutions is that poverty can be a mixture of various monetary and non-monetary components. These components can limit people's ability to achieve their potential and affect their well-being. Therefore, the socio-economic growth of a family and of the general welfare of a country should be defined in the combination of both aspects, monetary and non-monetary. The Multidimensional Poverty Index (MPI) shows how important it is to take into consideration various aspects of poverty. The first aim is to estimate the MPI in Turkey over the period 2006-2015. The second aim is to evaluate the effect of Regional Investment Incentive Scheme implemented in Turkey in 2012. We apply the Differences-in-Differences (DID) framework combined with the Propensity Score Matching (PSM) approach. The results of the study show a significant improvement on wealth, especially in the Eastern part of the country across the period we explore. Furthermore, the findings suggest that the Regional Investment Incentive Scheme had a positive impact on the poverty level in the Eastern part of Turkey, which is the main region of the policy's interest.

Keywords: Alkire-Foster method; Differences-in-Differences; Employment Support Programmes; Regional Investment Incentives Scheme; Multidimensional poverty; Propensity Score Matching.

JEL Classifications: D31, I31, I32.

1. Introduction

Poverty continues to be extremely persistent, especially in developing economies. In 2006, the next generation of the economic, financial and social actors in the developing world, is estimated to be around 1.3 billion young individuals aged 12-24 (World Bank, 2006). Ensuring that the workforce, firms, citizens and community leaders are well ready for their own future, is therefore enormously crucial to the reduction of poverty and increase of development. Because human growth is a cumulative process, missed investment opportunities and preparedness for this generation will be extremely costly to reverse, not only for the youth, but also for the whole society. It is well acknowledged that it is difficult for children to recover from early reverses. However, new conditions mean that governments in many developing, and the recent years in developed countries as well, must address the needs of the older people, with the next generation problems of the growth of human capital among youth, if they want to strengthen and build on the gains made to date. Even in the poorest nations, increasing primary school completion rates have placed tremendous pressure on higher education. While primary education spreads across the developing world, technological change requires from young individuals more than basic skills and fundamental abilities to compete effectively in the labour market. Furthermore, changes in the political and civil society landscape, that the developing world has experienced especially over the last 10 years, have shifted the significance of citizenship and with it what young individuals have to learn to participate in community and society efficiently. Given these facts and the additional pressure that young people and next generations need to support the older generations through the tax and pension system, it is crucial to investigate the multidimensional poverty in the youth population of individuals aged between 15 and 24.

Poverty can be defined narrowly or more broadly, depending on how well-being is understood. According to the narrow definitions, poverty is mainly expressed in monetary terms in relation to consumption and income. The narrow aspect contains definitions which are usually consumption-related, such as whether people or households have sufficient resources to fulfill their demands. Poverty is primarily expressed monetarily in terms of consumption and earnings (Haughton and Khandker, 2009). More broad definitions of poverty, however, include also quality of life dimensions and standards using non-monetary elements, such as life and job satisfaction; physical, psychological and mental health; access to energy, water and clean air; social networks and links with friends, families, peers, and values, social norms among others. The traditional conception of poverty based on income and consumption has been criticised for neglecting the multidimensional nature of poverty and the significance for well-being of public services (Kanbur and Squire, 1999; Hulme and McKay, 2013). The human development approach, based on the theoretical foundations of the work by Sen (1999) and Nussbaum (2000) is an alternative to the narrow monetary definitions of poverty, and the UNDP's Human Development Index is its best known practical implementation. Sen has stated that poverty can be seen as a deprivation of capacity or as an absence of substantial liberties that individuals love to have in order to live the kind of life they consider valuable, such as social functioning, better fundamental education, access to enhanced health care, and longevity (Kanbur and Squire, 1999). However, the broader definitions of poverty

have been also subject to criticism, especially regarding the difficulties entailed in measuring the poverty in a multidimensional aspect (Hulme and McKay, 2013). Nevertheless, the multidimensional definitions of poverty are important because widening the definition of poverty may change in a significant way the design of strategies for poverty reduction (Kanbur and Squire, 1999). To reduce poverty inequalities, government policies and interventions should encourage job creation and formal employment, particularly in the poorer regions, associated with lower salaries and standards of living, and greater levels of financial and social inequality that reduce the general welfare of the society. The Eastern part of Turkey is typically characterised by elevated poverty and material deprivation and low rates of industry and investment. For this reason, the government has implemented the “Regional Investment Incentives Scheme” aiming at increasing jobs and investment.

The first aim of the paper is to measure the non-monetary multidimensional poverty and inequality of youth in Turkey, using the most recent multidimensional poverty measure (Alkire and Foster, 2011). The measurements used to estimate the multidimensional poverty index (MPI) rely on various dimensions, and especially the education, employment skills and health. The second aim is to evaluate the impact of the Regional Investment Incentives Scheme implemented in Turkey in 2012, which includes also major employment support policies, the “Income tax withholding allowance” and “Social security premium support (employee share)” programmes. The treatment group includes individuals located in less developed areas in the Eastern part of Turkey. The motivation of using these “exogenous” shocks created by those policies, lies in the fact it has not been systemically explored and their impact on the MPI remains unknown. Furthermore, the evaluation of the effectiveness of those programmes can be considered for future applications in Turkey and other countries, and it may serve as an example for future policies and reforms that reduce inequalities and poverty. The results show that poverty measured by the MPI, was considerably decreased in Turkey between 2006 and 2015, especially in the Eastern part of the country, which is the main region of interest. Furthermore, the investment and employment subsidy and support programmes implemented in 2012 in Turkey, had a positive and significant effect on poverty by considerably reducing the deprivation levels.

The structure of the paper has as follows: In section 2 we briefly present the main studies on poverty and employment support programmes. In section 3 the methodology and data employed in the empirical analysis are described. Section 4 reports the results, and in section 5 we present the main conclusions of the study.

2. Literature Review

There is an abundance in the literature on poverty and inequalities; however, the majority of the empirical studies has examined poverty from a unidimensional perspective. For example, in Hlasny and Alazzawi (2018), the research utilises the asset ownership to develop a property index for Egypt, Jordan and Tunisia, and its assessment is restricted to a single dimension and more specifically, a monetary dimension. Their results indicate substantial wealth gaps between urban-

rural and educated divisions. Although monetary measures may capture welfare, the narrow definition of poverty limited into a monetary dimension has been criticised, because it captures only one aspect of poverty and thus is insufficient. In addition, monetary measures are alleged to ignore non-monetary elements of living norms, such as free access to schooling, health care and sanitation. Thus, if those measures are not linked to other household aspects, the real poverty could be misrepresented (Blackburn, 1998; Seekings, 2007). Furthermore, income and earnings, due to transitory occurrences and shocks, are prone to changes (Meyer and Sullivan, 2003; Posel and Rogan, 2016). On the other hand, there is criticism on the use of non-monetary methods. One criticism is that the welfare economy does not justify the best possible outcome, expressed either through life satisfaction or happiness (Gibson, 2016). Jansen et al. (2015) further claim that indices of subjective welfare may be less appropriate for policy making. People can be poor because are not satisfied, but in terms of monetary measures, such as income, can be defined as wealthy, making difficult for policymakers to implement reforms for reduction of poverty.

The most similar studies to ours are by Bérenger (2010; 2017) in Egypt and Jordan, by Bibi (2004) on Egypt and Tunisia, and Bibi et al. (2008) on South Africa and Egypt employing multidimensional analysis by a short life indicator, an access measurement and a composite indication of the aspects of material welfare rates. Similarly, the study by Ayadi et al. (2006) focused on three non-monetary measures, exploring the MPI in Tunisia. The first, refers to educational attainment, the second is a material deprivation index measured by the ownership of a telephone, TV, radio, kitchen and fridge in 1998 and 2001. The third measure employed indicates the access to toilet facilities, water supply, housing type and the number of inhabitants.

Furthermore, as we have discussed in the previous section, we aim to evaluate the effect of employment support programmes on the MPI. The principal hypothesis and argument is that employment support programs and investment incentives are efficient and have a beneficial effect on job creation. This is particularly important for the more deprived communities and regions. Kramarz and Philippon (2001) and Crepon and Desplatz (2002) are two popular studies exploring a similar policy reform-programme in France. In particular, this policy reduced the rate of payroll tax for French low-wage employees and both studies found a positive impact of the programme. More precisely, almost 470,000 jobs were protected or generated during the period 1994-1997 period, according to the Study by Crepon and Desplatz (2002), while 1 percent decrease in the minimum wage costs, may improve the probability of shift from unemployment to employment by 1.5 percent (Kramarz and Philippon (2001). A comparable programme was carried out in Belgium and the study by Goos and Konings (2007) suggests that the programme increased pre-tax wages by 1-3 percent and the full-time employment by 5-8 percent. The efficacy of a payroll subsidy system was studied at Huttunen et al. (2013) in Finland, which targeted the full-time low-wage employees in the age groups between 45-64. The authors found that the programme had no significant impact.

This study contributes to the previous literature by several ways. First, it aims to measure the non-monetary dimensions of poverty and inequality in Turkey, which has not been explored before. Second, we aim to explore the impact of the employment subsidy programme implemented in Turkey in 2012 to explore its impact on youth poverty. Our study is distinct from previous works, because in their majority are focused mainly on developed economies, and also the particular investment and employment support programme in Turkey has not been examined before. Furthermore, we extend our empirical analysis by estimating the PSM approach within the DID framework to consider for the potential selection bias. Moreover, these studies explore the impact of employment support programmes on wage and employment, while the aim of our study is to evaluate their effect on the MPI. To the best of our knowledge, this is the first study so far estimating the MPI in Turkey and exploring the impact of the “Income tax withholding allowance” and “Social security premium support” programmes, especially on the multidimensional poverty level. Additionally, we aim to explore the multidimensional poverty in the youth population of Turkey.

3. Methodology and Data

3.1. Multidimensional Poverty Index (MPI)

As we have discussed in the previous sections and the motivations of the study, the main population of interest is the youth. Youth is a transitional stage from adolescence to adulthood in which young individuals gradually become recognised and to identify and recognise themselves as adults through a process of intense physiological, psychological, social and economic transition. It is helpful to pin young people more precise for the purposes of research studies and policy. The most appropriate aging perspectives differ in various scientific fields. Nevertheless, following the UN’s World Program of Action for Youth (United Nations, 2010), in our study, we define “youth” as people aged 15-24. Also, the World Health Organization (WHO, 2011) and UNICEF (2011) use the terms “adolescent” for those 10-19, “youth” for those aged between 15-24, and “young people” for those belonging in the age group of 10-24.

In table 1 we present the dimensions and the deprivation indicators employed in the MPI. The MPI consists of six dimensions weighted at 1/6 each one. In the second column we present the variable which is part of each dimension and its associated weight in the third column. The final column shows the binary deprivation cut-off point. The first three dimensions are recorded on household level, while the last three dimensions are based on individual level.

The first dimension is the material deprivation, and it consists of the vehicle and asset-items ownership. More specifically, if a household owns either a vehicle, a motorcycle or a truck, is defined as deprived. In terms of asset ownership indices 1 and 2, if a household does not have three or more of the items in Table 1, we define it as deprived. For example, if a household does not own a TV, radio or mobile telephone, while another household which owns these items (or more than three items) is regarded as non-deprived. A similar definition is given for the asset-ownership indicator 2, while the last indicator defines as poor a household that does not own one of the items

listed, as in the case of the vehicle ownership. The second dimension refers to quality of the environment in the dwelling, neighbourhood and the surrounding area. In particular, a household is deprived whether there is shortage of space in the dwelling; air and noise pollution present in the neighbourhood and whether there is crime and violence in the area. The third dimension relates to the types of sources of energy used for cooking and heating, heating, and whether the household has access to electricity supplied by the public network or other grid types. The last indicator defines a household as deprived on whether the household has no access to toilet facilities or if these facilities are shared.

The fourth dimension includes productive and valued activities. Earlier studies use the employment as a full dimension, while we extend it by including also the labour force participation, which is especially important for young women. Thus, an individual is considered as deprived whether she is unemployed or does not participate in the labour market. The fifth dimension is the health which includes four factors. According to the first two indicators, if a young individual has daily limitations due to mental and physical health problems or whether she has long-term illnesses, then she is defined as deprived. The third indicator refers to those who are defined as deprived if they have answered that their health status is poor or very poor. The fourth indicator refers to difficulties related to needs for treatment and exam medication. While there are various reasons of not meeting these needs, we limit our analysis to those who specify that have unmet needs due to financial and infrastructure constraints. More specifically, this includes those who cannot afford it; long waiting list; too far to travel and lack of proper transportation. Therefore, while the poverty is not limited only to monetary dimensions, as the difficulty of affording financially to meet a doctor, it's also related to a broader set of dimensions, such as infrastructure. Furthermore, the transportation related issues shows also the lack of car or private transportation, measuring indirectly the poverty. The sixth dimension is the education with weight 1/6 and according to the two indicators, the youngster is considered as deprived if she is illiterate and whether the respondent has completed the primary school. While illiteracy and primary school can be used interchangeable, there are cases, where even though a respondent has completed the primary school, still she may present levels of illiteracy status, either on reading or writing or both.

While the first three dimensions refer to the household level, the last three dimensions-employment, health and education- rely on the individual based approach (Vijaya et al., 2014; Klasen et al., 2016; Bérenger, 2017, 2019). It is important to use the individual as the unit level of analysis to identify possible gender differences, because equating the household with the individual is problematic, since young men are often privileged over young women. Largely owing to the absence of sex-disaggregated data, the household continues to be used as a unit of analysis by present multidimensional poverty measures. Thus, while the multidimensional measures assist to unpack the variety of family deprivations, they cannot uncover and identify individual experiences of poverty. Furthermore, gender, as well as, age and social, health and professional status may affect the way commodities are allocated within the households. Nevertheless, in the second and third dimension, respectively the quality of environment and energy and water supply in the

dwelling, we assume that the commodities and characteristics affect the individuals in a very similar way, since access to electricity, water supply and air quality are equally important to all household members. A criticism about the first dimension is that asset ownership may vary by gender, since there could be differences in transaction rights and use of assets. However, asset ownership on kitchen, TV and other housing appliances does not necessarily imply a restriction on their use by gender. Nevertheless, due to current data constraints, we have included the first dimension, because we argue it is an important component for the measurement of the MPI.

The quality of life, such as social exclusion, perception of life fulfillment, and dignity can also be included as additional dimensions in the poverty measurement. This may include also political participation, freedom, gender role attitudes and social norms, but due to data unavailability we do not consider those characteristics in our analysis. Furthermore, as we have discussed earlier, a part of those indicators rely on subjective measurements of well-being, which may be less appropriate to policy making (Jansen et al., 2015). However, it could still be helpful to investigate additional indicators and dimensions to experiment with other aspects on multidimensional poverty.

The calculation of the MPI will rely on the methodology developed by Alkire and Foster (2011), which is based on the study by Foster et al. (1984). To facilitate the presentation, we adopt the same notation as in Alkire and Foster (2011). Given a fixed population of n individuals $y = [y_{ij}]$ denotes a matrix with dimensions $n \times d$ indicating the non-negative achievements of individuals $i=1, \dots, n$ in dimensions $j=1, \dots, d$. In other words, y_{ij} denotes the achievement of the individual i^{th} in dimensions j^{th} . The “poverty lines” for each dimension or alternatively defined as the dimensional cut-offs are expressed by a deprivation matrix with dimensions $n \times d$ defined as $g_{ij} = [(g_{ij}^0)]$. Then the individual i is deprived in dimension j if:

$$g_{(ij)}^0 = \begin{cases} 1 & \text{if } y_{ij} < z \\ 0 & \text{if } y_{ij} \geq z_j \end{cases} \quad (1)$$

According to (1) each element in g^0 is equal to one if the i^{th} household is deprived in dimension j^{th} and is equal to zero otherwise. The first measure proposed by Alkire and Foster (2011) is the headcount ratio (H), which is defined as the ratio of the number of individuals belonging in the poor set (q) over the total number of households (n). One main limitation of this measure is that it does not respond to variations in poverty intensity and distribution and does not meet the transfer axiom when the transfer from a poorer individual to a wealthier individual is required to boost measured poverty. In addition, it does not meet the properties of monotonicity in a single dimensional context (Sen 1976), where monotonicity requires that the poverty-enhancing ability of a decrease in achievements to be satisfied when that decrease occurs in attained dimensions of the deprived in at least k dimensions. Furthermore, H if a household is recognised as poor, and it also becomes poor in another dimension, which was not before, the H does not alter, and thus, it may mislead policy recommendations and implementation. To overcome the drawbacks of the

multidimensional headcount ratio, Alkire and Foster (2011) propose the Adjusted Headcount Ratio M^0 defined as:

$$M^0 = (g_{ij}^0(k)) = H \times A \quad (2)$$

Where A is the average deprivation share across the poor defined as:

$$A = \frac{|g_{ij}^0(k)|}{q} = \frac{\sum_{i=1}^q c_i(k)}{q} \quad (3)$$

So M^0 is the adjusted headcount ratio found by the product of the percentage of multidimensional poor individuals (H) and the average deprivation share across individuals (A). Using matrix g^0 , we construct an n -dimensional column vector $c = [c_i]$, where each element c_i shows the number of deprivations faced by the i^{th} households and this depends on the dimensions we set-up in table 1 for a household to be considered multi-dimensionally poor. Following this calculation for each household, we can get the column vector c_i with dimension $n \times 1$ and $c_i = (c_1, \dots, c_n)$. At this point a second poverty line is set up, defined as k . In this case, a household is considered as multi-dimensionally poor if $c_i \geq k$, and the value of k depends on the research study. One value could be $k=1$, which requires a household or individual to be considered as multi-dimensionally poor if it's deprived in at least one dimension corresponding to the union approach (Bourguignon and Chakravarty, 2003) and corresponds to $k=\min(w_1, w_2, \dots, w_m)$. However, this approach may lead to overestimated values of poverty as the number of dimension increases, and in our case is set up at five. On the other hand, another special case is the intersection approach, which corresponds to a value $k=1$. Another possible value is to set up $k=d$, which requires for an individual to be classified as multi-dimensionally poor to be deprived in all considered dimensions; however, this value is very restrictive, thus, other intermediate values of k are more appropriate. In our analysis, following earlier studies, we will consider the union approach, and the values of $k=0.33$ and $k=0.5$.

3.2. Regional Investment Incentives Scheme in Turkey

In this section we discuss the methodological framework and the identification strategy of the evaluation of the regional Investment Incentives Scheme in Turkey, and in particular, two specific employment support programmes; the "Income tax withholding allowance" and "Social security premium support", and investment subsidy programmes implemented in Turkey in 2012 (KPMG, 2012). While we argue that the analysis is limited to one country, this policy may act as a reference and example of implementation of similar policies and reforms to other countries, that may benefit from and that it could potentially reduce the poverty levels and inequalities.

In table 2 we observe there are different incentives whether the firm belongs to the Organised Industrial Zone (OIZ), while the contribution to investment and the social security premium support differs between firms and depends whether are located within or out of OIZ. Regarding the land

allocation, we observe that there is no upper limit in the regions 5-6, whereas individuals in region 6 are qualified for the above-mentioned employment support programmes.

As we see in table 2, policy region 6 and selected provinces from policy region 5 is our main area of interest including due to the fact that they are qualified for additional benefits and support, and also for regional classification purposes, which includes provinces located in the East part of Turkey and more specifically in the Central-East; South-East and North-East Anatolia. Consequently, our treated group in the entire analysis includes the East, South-East and North-east Anatolia and more specifically: Erzurum, Erzincan and Bayburt (TRA1); Ağrı, Kars, Ardahan and Iğdır (TRA2); Malatya, Elazığ, Bingöl and Tunceli (TRB1); Bitlis, Van, Muş and Hakkari (TRB2); Gaziantep, Adıyaman and Kilis (TRC1); Şanlıurfa and Diyarbakır (TRC2); Batman, Mardin, Siirt and Şırnak (TRC3), as we report in table 3. As the control group we consider selected provinces in the regions 3-5 sharing similar social and cultural characteristics and also are geographically close. These include the NUTS 1 areas TR7 (Nevşehir, Aksaray, Niğde, Kırıkkale, Kırşehir, Kayseri-Sivas, Yozgat); TR8 (Zonguldak, Karabük, Bartın, Kastamonu, Çankırı, Sinop) and TR9 (Trabzon, Ordu, Giresun, Rize, Artvin, Gümüşhane, Samsun, Tokat, Çorum and Amasya). The classification and identification of the treated and control groups relies not only on geographical characteristics, such as close neighbourhood regions, but also on similar social norm and values these regions share (Bayar, 2016; OECD, 2018).

Additionally, as robustness check we will apply the propensity score matching (PSM) to reduce the possible selection bias, due to income, age, gender and other characteristics (see Rosenbaum and Rubin, 1983 for more details). Furthermore, we will implement the placebo and the leads-lags test for the parallel trend assumption (Angrist and Pischke, 2009). The empirical model will be the estimation of (4) using a difference in differences (DID) framework as:

$$W_{ijt} = b_0 + b_1Treat_{ijt} + b_2Post_{jt} + b_3Treat_{ijt} * Post_{jt} + b'X + l_j + \theta_t + \varepsilon_{ijt} \quad (4)$$

Where W is the MPI scores derived for the first objective and X is a vector of individual and household characteristics, such as age, marital status, household size, welfare and social assistance-benefits, for individual i in area j , which is defined by Nomenclature of Territorial Units for Statistics (NUTS) 1 Level for Turkey - and time-year t . Furthermore, we will include parental characteristics, such as age, education and main activity status. Set l_j denotes the area-fixed effects and θ_t expresses the time-year effects of the survey. $Treat$ is taking value 1 for the treated subject i , in area j and time t . $Post$ takes value 1 for the post-reform period 2012 and the interaction term of $Treat*Post$ is the DID estimator. While these programmes aimed on the creation of new employment, our purpose is not to directly estimate the impact of the programme on labour outcomes, but to investigate the effect on MPI through the potential improvement of those labour factors. We should notice that another option would be to consider synthetic controls (Abadie and Gardeazabal, 2003; Abadie et al., 2010). However, this approach is applied in panel data, and since

our empirical analysis relies on repeated cross-sectional data we follow the DID-PSM as proposed by Heckman et al. (1997) and applied by other studies (Blundell and Costa Dias, 2000; Blundell et al., 2004).

3.3. Data

The empirical work relies on the cross-sectional Income and Living Conditions Survey (ILCS) provided by the Turkish Statistical Institute (TURKSTAT) over the period 2006-2015. The justification of using this survey lies in the fact that it provides information at a higher level of geographical disaggregation, which is the Nomenclature of Territorial Units for Statistics (NUTS) 1 instead of the country level that the panel version of the ILCS offers. This information will be useful to implement our analysis and investigate the poverty including also the geographical dimension, as we have discussed earlier. Additionally, this will allow us to evaluate the effectiveness of the investment and employment support-subsidies programmes on multidimensional poverty, with special focus on the Eastern regions of Turkey and in particular, the Eastern; North-East and South-East Anatolia. The survey contains rich information about the factors considered for the calculation of the MPI as we have shown in table 1, and detailed background of individual and household characteristics that will be included as control variables in the regression analysis. Age, parental employment and marital status, household type, house tenure.

4. Empirical Results

4.1. MPI Estimates

In the first part of this section we report the main MPI estimates in Turkey and the decompositions by gender, urban-rural area and NUTS-1 level. In table 4 we report the MPI estimates following the AF method and using different values of k : the union approach, $k=33\%$ as suggested and chosen by UNDP's report (2010) and $k=50\%$ to include households affected by severe poverty. More specifically, we present the estimates for the headcount ratio (H) and the share of deprivations of poor individuals (A), which are used to derive the adjusted headcount ratio (M^0). When we make use of the union approach and a value of $k=0.33$, we observe that the reduction of youth poverty is almost doubled compared to the total population.

We should notice that the total population in this study refers to those who are older than 24 years old, but belong to the working age group, by excluding the retired people. This is because we aim to compare the poverty with two groups sharing a common characteristic, which is the employment and labour force participation, limiting the analysis to a certain working age and excluding the old and retired people. In table 4 thus, we conclude that the reduction of poverty ranges between 1 to 5 percent for the total population and 3 to 8 percent for the youth population. However, it is important to identify the gender differences, as well as, the differences across areas, which is also the main theme of the employment support programme investigated in the next section.

In total, the values of the poverty incidence H , are expected to decrease along with the dimensional cut-off value of k , indicating that the higher levels thresholds are associated with lower levels of poverty and that the H values are higher, since poor individuals are significantly less likely to become deprived in all dimensions. For instance, considering the union approach, the value of H in the youth population during the period 2006-2015 is 0.8, indicating that almost the 80 percent of the youth population is deprived, while the value of M^0 , suggests that around the 20 percent is multidimensionally poor. The value is considerably decreased when the threshold value of $k=33\%$ is chosen, at roughly 20 and 8 percent respectively for H and M^0 . We therefore notice that with an increase of k values is associated with lower values of H and M^0 and also the differences between those two measures become lower. Therefore, this means that a large proportion of the youth population can be deprived in one dimension, for instance in the employment dimensions, but it is very unlikely the whole youth population to be deprived in all dimensions.

In table 5 we present the MPI decompositions by gender, urban-rural area and NUTS-1 level. In panel A we confirm the estimates found in table 4 where the poverty is reduced between the period 2006-2015, but is important to highlight that the poverty in young women by almost 9.7 percent compared to the reduction presented for young men at roughly 8.2 percent. This is a remarkable finding as we observe that both measures H and M^0 , where higher for women in 2006 and become lower in 2015. However, this reduction was not evenly distributed across the country, as gender differences may still present in certain areas. Nevertheless, we do not explore this possibility in this study, but we propose it for future empirical investigation. Similarly, in panel B we conclude that the poverty was reduced in both rural and urban areas, however, the reduction is stronger in the urban areas by 9.5 percent per year versus 6.7 percent in rural areas. In panel C we report the poverty estimates per NUTS-1 level. The results show a significant reduction of youth poverty is noted across the country, ranging between 3.7 percent per year in West Black Sea region and over 10 percent per annum in West Anatolia. Furthermore, we observe that the reduction is especially higher in the areas of the Eastern part of the country, which probably shows a preliminary evidence of a partial impact of the Investment and employment regional programmes implemented in 2012.

Tables 6-7 show the poverty estimates expressed by the Adjusted Headcount Ratio of M^0 , by gender, urban-rural area and NUTS-1 rates, in each dimension. The decomposition analysis enables us to determine in which proportions poverty may persist, although we have shown a reduction in total poverty. In particular, while we find a reduction in the dimensions of material deprivation, education and dwelling characteristics, an increase is noted in the dimensions of health, employment and quality of environment. This is confirmed by the fact that large infrastructure projects took place in Turkey, giving universal access to electricity and water supply, and substituting coal as the main source of energy, with alternative resources, such as natural gas. Furthermore, the improvement in income has shifted the youth population and their families out of poverty, by increasing their financial position and asset ownership (World Bank, 2014).

However, the results do not reveal the gender differences and potential discrepancies in rural and urban areas. Regarding the decomposition by gender, we observe that in 2006 the poverty levels in the material deprivation are very close to both young women and men, while men report slightly higher levels of poverty in the dimension of the dwelling characteristics. Concerning the quality of environment dimension young men report higher levels of poverty, but both sexes present an increase of poverty from 2006 to 2015. Young men report slightly higher levels of poverty in the health dimension, while significant gender differences are reported in the dimensions of employment and education in 2006, where young men have more employment and educational opportunities. However, these differences are significantly reduced in 2015. Regarding the urban-rural area poverty decomposition, we observe that young people located in urban areas were less deprived in the dimensions of material deprivation, dwelling characteristics, employment and education, while they report higher levels of poverty in the dimensions of quality of environment and health. This can be supported by the fact that the large increasing trend of urbanisation has created various problems associated with this phenomenon, such as noise and air pollution. Furthermore, health seems to be deteriorated in urban areas, even though young people have access to better health services, hospital and centres, due to higher levels of air pollution concentrations and stress and anxiety in the labour market (WHO, 2006; Büke and Köne, 2016). On the other hand, the poverty in the employment dimensions is significantly reduced between 2006 and 2015 in the urban areas, while an increase is observed in the rural areas.

The concluding remarks are similar when we consider the poverty decomposed at NUTS-1 levels, where a remarkable decrease of poverty is observed in all areas and especially in the dimensions of material deprivation; dwelling characteristics; employment and education. However, we observe in the majority of the regions a large and significant increase of poverty in the quality of environment, followed by health especially in the regions where typical metropolitan areas are located, such as Istanbul, Izmir, Ankara and Bursa. This is in line with the earlier studies, where high noise and air pollution concentrations are increased in these areas due to urbanisations, associated with traffic, increased population and immigration, intensive industrial activities and crime. On the other hand, a significant decrease is observed in the East Anatolia, regarding the quality of the environment and more in-depth analysis is required to identify the causes. Furthermore, the health in those regions, except for TRB, is improved, while youth population located in other regions present higher poverty levels in this dimension. The policy recommendations and implications are further discussed in the next section.

4.2. Regional Investment Incentives Scheme

In this section we discuss the main findings of the impact of the regional incentives programmes implemented in Turkey and assigning different incentives for investment and employment support in 6 regions. As we have described in the methodology section, the treated group consists of provinces located in the region 6 and selected provinces in region 5 for the reasons we have discussed earlier. Based on the estimates of table 8 and figure 3, the MPI was reduced more in the treated group using both DID or the unmatched sample and DID-PSM or the matched sample. The

positive sign of the dummy variable *Treat* is positive indicating the treated subjects are more deprived across the period examined, 2006-2015.

This confirms also the findings in tables 5 and 7, where the poverty in treated groups, expressed by the NUTS-1 levels of TRA, TRB and TRC, is reduced by 5-8 percent, while the poverty is reduced by 4-8 percent in the control group. Hence, even though, the poverty is reduced more in the treated groups due to the policy implementation, still the inequalities are persistently higher in the treated group. Also, according to the Logit model, the positive sign implies that the treated young individuals have a higher probability of being classified as multidimensional poor. The coefficient of the variable *Post* is negative and significant, indicating a decrease in the MPI across all regions after the policy implementation in 2012, which confirms also the findings in tables 4-7. Nevertheless, our main coefficient of interest is the interaction term *Treat*post*, the DID estimator, which is found negative and significant. In figure 3 we illustrate the DID and DID-PSM graphs to illustrate the test for the parallel trend assumption, which it seems that both models satisfy it. However, in table 8 we see that the parallel trend assumption is met in all four estimates, except for the DID and the Logit model where the outcome is the multidimensionally deprived binary variable. More specifically, the DID in 2011 taken as “fake”-placebo year of the policy implementation is statistically significant at 5% level. Similarly, based on the Leads and Lags test and its associated p-values, we accept the parallel trend assumption, except from the same Logit model in column (2), accepting the null hypothesis only at 10% significance level. Furthermore, according to the placebo test in the OLS regression in the first column, we reject the null hypothesis. Even though, we may accept this assumption in both DID and DID-PSM when we examine the MPI scores in columns (1) and (3), we find a significant increase of the policy impact from 0.0069 to 0.0049. On the other hand, the effect of the policy on the probability of being classified as multidimensional poor is very close between the DID and DID-PSM at -0.0338 and -0.0372. Overall, based on the placebo and the leads-lags of the treatment test, our favoured estimates are the ones derived from the DID-PSM. We should notice that the DID presents a negative sign, because the reduction of the MPI was larger in the treatment group compared to the control. We should notice that as a robustness check we have estimated the DID model using a Generalised Linear Model (GLM), when the dependent variable is the MPI deprivation scores. It is argued that the range of the dependent variable is bounded and may not follow a normal distribution, so, in this case the GLM has been proposed (Foster et al., 2015). However, the estimates remain identical with those derived by the OLS, and therefore, we do not report them in table 8.

5. Conclusions

In this study we attempted to estimate the multidimensional poverty in Turkey using the AF method. The findings suggest an improvement in the living standards of the youth population, and the reduction of poverty inequalities is significantly reduced. Furthermore, the Regional incentives programme in Turkey, implemented in 2012 giving additional subsidies and more incentives for investments and employment support in the Eastern part of Turkey, has led to a significant decrease

in multidimensional poverty levels, compared to the selected provinces and areas in the policy regions 3-5 sharing similar characteristics.

The findings reveal useful information to policy makers. As we have presented in the previous section the multidimensional poverty has shown a large decrease in both total and youth populations, ranging between 2-8 percent per annum. Furthermore, poverty levels were reduced more in the case of the young women compared to men, while poverty remains persistent in the rural areas. Additionally, the poverty reduced more in the Eastern part of Turkey compared to the neighbour regions of Central Anatolia and East-West Black sea.

However, we have seen that the six dimensions of poverty we have studied here have not been homogeneous in reducing poverty. Even more, the poverty noted an increase in the dimensions of the quality of environment and health, especially in the urban areas and regions dominated from metropolitan centres, such as Istanbul and Izmir, indicating the rising problems on air and noise quality, crime and violence and their adverse effects on health, along with the competition in the labour market, which is much more intensive and rigid for the youth population. However, we have seen that the poverty reduction has not been homogeneous across the six dimensions of poverty we explored here. In addition, the poverty has shown an increase in the dimensions of the quality of environment and health, notably in the urban areas and regions dominated from metropolitan centres, such as Istanbul and Izmir, indicating the rising problems on air and noise quality, crime and violence and their adverse effects on health, along with the competition on the labour market, which is much more intensive and rigid for the young people.

It is remarkable that the gender differences have shown a large reduction, especially in the employment and education dimensions; however, gender inequalities still persist, especially in the Eastern regions of Turkey. While our study has not investigated the gender discrepancies by NUTS-1 level, it would be very important to analyse those differences to identify and map the poverty across the dimensions we defined in this study. Nevertheless, our aim was mainly to provide an overall poverty decomposition by gender and area and to evaluate the employment support programmes in the Eastern regions of the country. Even though the programmes have a positive impact by reducing the poverty differences between the treated and control regions, the poverty still persists in the treated areas.

Therefore, more investments and also more focus on potential social norms, cultural characteristic and gender role attitudes and their role on multidimensional poverty could be investigated. On the other hand, regions, mainly located in the Centre and West part of Turkey, have experienced a large drop in poverty, especially in the dimensions of material deprivation, dwelling characteristics, employment and education, but at the same period a significant increase in health, and especially in the quality of environment, is reported. This highlights the issues of the potential negative impacts of urbanisation, internal and international migration, and economic activities on the

environment and safety of the neighbourhoods and the urgency of implementing proper policies that could reduce those adverse effects.

In particular, policies related to the regional development and focusing on the rural areas, may simultaneously reduce the issues observed in the urban areas. More specifically, reducing the gender discrepancies by providing equal opportunities to both young women and men and investing on sectors that could reduce the urbanisation and internal migration, will at the same time reduce the poverty in the employment and material deprivation dimensions. Furthermore, the potential reduction of the urbanisation phenomenon will improve the air quality, reduce crime and violence and provide better opportunities for young people in the labour market in both rural and urban area. Societies around the globe, including also Turkey, have witnessed changes in the social, cultural economics and administrative-spatial restructuring processes affecting also rural areas. The problems in the agricultural sector, which has been considered as a significant element of rural policy for many years, have accelerated the disintegration of rural regions. In addition, to these problems, increasing poverty and deprivation in rural regions, the persistent rural-urban growth discrepancies and the fast natural resource depletion in rural regions have been essential to the development of rural and regional sustainable development policies. Rural areas should be addressed by policies and strategies that aim at viable and sustainable economic, social, spatial and environmental development, requiring the participation of a multi-sectoral and multi-actor government and that problems should be resolved by means of sectoral and spatial approaches. Regarding urban areas, waste management and recycling programmes, noise pollution control, environmental impact studies, including also touristic areas, promotion of greater energy conservation and efficiency, reduction of resource misallocation of labour and capital from high productive firms to low productive ones, should be the priority in policy agendas.

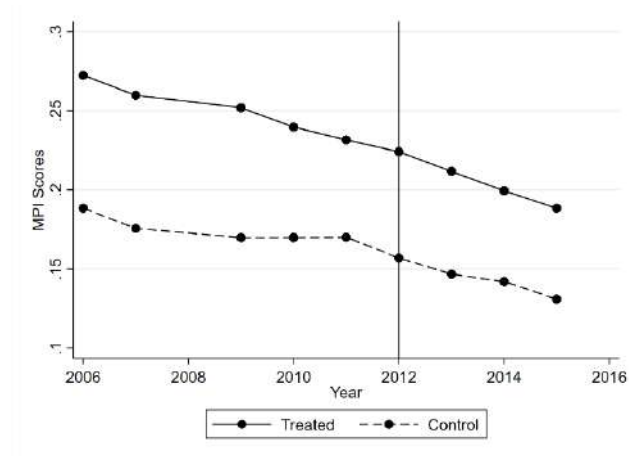
References

- Abadie, A. and Gardeazabal, J. (2003). The Economic Costs of Conflict: A Case Study of the Basque Country. *American Economic Review*, 93(1), 112-132.
- Abadie, A., Diamond, A. and Hainmueller, J. (2010). Synthetic Control Methods for Comparative Case Studies: Estimating the Effect of California's Tobacco Control Program. *Journal of the American Statistical Association*, 105, 493-505.
- Alkire, S. and Foster, J. (2011). Counting and multidimensional poverty measurement. *Journal of Public Economics*, 95(7), 476-487.
- Angrist, J.D. and Pischke, J.S. (2009). *Mostly Harmless Econometrics: An Empiricist's Companion*. Princeton: Princeton University Press.
- Ayadi, M., El Lahga, A. and Chtioui, N. (2006). Analyse de la pauvreté et des inégalités en Tunisie entre 1988 et 2001: une approche non monétaire. PMMA, Network Session Paper
- Bayar, A. A. (2016). The Decomposition of Regional Income Inequalities of Turkey. Unpublished Manuscript.
- Bérenger, V. (2010). Multidimensional Fuzzy Poverty and Pro-Poor Growth Measures in non-monetary Dimensions in Egypt between 1995 and 2005. *Middle East Development Journal*, 2(1), 15-38.
- Bérenger, V. (2017). Using Ordinal Variables to Measure Multidimensional Poverty in Egypt and Jordan. *Journal of Economic Inequality*, 15(2), 143-173.
- Bérenger, V. (2019). The counting approach to multidimensional poverty. The case of four African countries. *The South African Journal of Economics*. <https://doi.org/10.1111/saje.12217>
- Bibi, S. (2004). Comparing Multidimensional Poverty between Egypt and Tunisia. Cahier de recherche, Working Paper 04-16.
- Bibi, S. and El Lagha, A. (2008). Comparaisons ordinales robustes de la pauvreté multidimensionnelle: Afrique du Sud et Egypte, *Revue d'économie du développement*, 22(1), 5-36.
- Blackburn, M. (1998). The sensitivity of international poverty comparisons. *Review of Income and Wealth*, 44(4), 449-472.
- Blundell, R. and Costa Dias, M. (2000). Evaluation Methods for Non-Experimental Data. *Fiscal Studies*, 21(4), 427-468.
- Blundell, R., Costa Dias, M., Meghir, C. and van Reenen, J. (2004). Evaluating the Employment Impact of a Mandatory Job Search Program. *Journal of the European Economic Association*, 2, 569-606.
- Bourguignon, F. and Chakravarty, S.R. (2003). The measurement of multidimensional poverty. *Journal of Economic Inequality*, 1(1), 25-49.
- Büke, T. and Köne, A.C. (2016). Assessing Air Quality in Turkey: A Proposed, Air Quality Index. *Sustainability*, 8(1), 73.
- Crepon, B. and Desplatz, R. (2002). Evaluation of the Effects of Payroll Tax Subsidies for Low Wage Workers. Unpublished Manuscript, CREST-INSEE.
- Foster, J., Greer, J. and Thorbecke, E. (1984). A Class of Decomposable Poverty Measures. *Econometrica*, 52(3), 761-766.

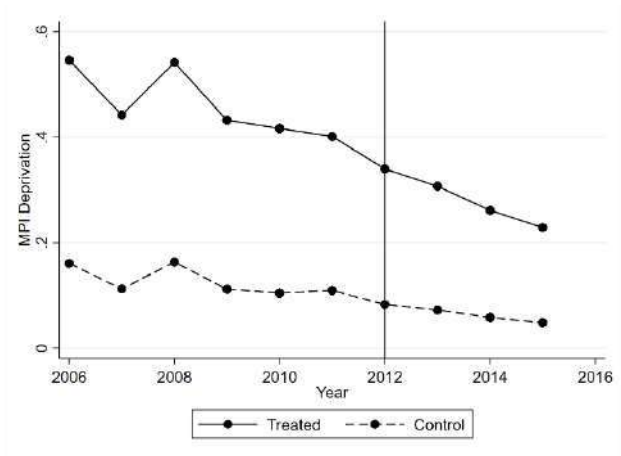
- Foster, J., Roche, J.M., Santos, M.E., Ballon, P., Alkire, A. and Seth, S. (2015). *Multidimensional Poverty Measurement and Analysis*. Oxford University Press, Oxford, UK.
- Gibson, J. (2016). Poverty measurement: we know less than policy makers realize. *Asia and the Pacific Policy Studies*, 3(3), 430-442.
- Goos, M. and Konings, J. (2007). The Impact of Payroll Tax Reductions on Employment and Wages: A Natural Experiment Using Firm Level Data. LICOS Discussion Papers 178, LICOS Centre for Institutions and Economic Performance, KU Leuven.
- Haughton, J. and Khandker, S. R. (2009). *Handbook on poverty and inequality*. Washington, DC: World Bank.
- Heckman, J.J., Ichimura, H., and Todd, P.E. (1997). Matching as an Econometric Evaluation Estimator: Evidence from Evaluating a Job Training Programme. *Review of Economic Studies*, 64, 605-654.
- Hlasny, V. and AlAzzawi, S. (2018). Asset inequality in the MENA: The missing dimension? *The Quarterly Review of Economics and Finance*, <https://doi.org/10.1016/j.qref.2018.07.010>.
- Hulme, D. and A. McKay (2013). Identifying and Understanding Chronic Poverty: Beyond Monetary Measures? In: Kakwani N., Silber J. (eds) *The Many Dimensions of Poverty*. Palgrave Macmillan, London, pp. 187-214.
- Huttunen, K., Pirtilla, J. and Uusitalo, R. (2013). The Employment Effects of Low-Wage Subsidies. *Journal of Public Economics*, 97, 49-60.
- Jansen, A., Moses, M., Mujuta, S. and Yu, D. (2015). Measurements and determinants of multifaceted poverty in South Africa. *Development Southern Africa*, 32(2), 151-169.
- Kanbur, R. and L. Squire (1999) The evolution of thinking about poverty: Exploring the interactions, Mimeo, The World Development Report Office, Washington: World Bank. <http://siteresources.worldbank.org/INTPOVERTY/Resources/WDR/evolut.pdf>.
- Klasen, S. and Lahoti, R. (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, Courant Research Centre PEG.
- KPMG (2012). The New Investment Incentives in Turkey. <https://www.kpmgvergi.com/PDF/Yayinlar/KPMG-Global-Yayinlar/The-New-Investment-Incentives-in-Turkey.pdf>.
- Kramarz, F. and Philippon, T. (2001). The Impact of Differential Payroll Tax Subsidies On Minimum Wage Employment. *Journal of Public Economics*, 82(1), 115-146.
- Meyer, B. D. and Sullivan, J.X. (2003). Measuring The Well-Being of the Poor Using Income and Consumption, *Journal of Human Resources*, v38(Supplement), 1180-1220.
- Nussbaum, M. (2000). *Women and Human Development. The Capabilities Approach*. Cambridge: Cambridge University Press.
- OECD (2018). OECD Regions and Cities at a Glance 2018. OECD Publishing, Paris. doi:https://doi.org/10.1787/reg_cit_glance-2018-en
- Posel, D. and Rogan, M. (2016). Measured as Poor versus Feeling Poor: Comparing Money-metric and Subjective Poverty Rates in South Africa. *Journal of Human Development and Capabilities*, 17(1), 55-73.

- Rosenbaum, P. R. and Rubin, D. B. (1983). The central role of the propensity score in observational studies for causal effects. *Biometrika*, 70(1), 41-55.
- Seekings, J. (2007). Poverty and inequality after apartheid. CSSR Working Paper No. 200, Centre for Social Science Research, University of Cape Town
- Sen, A. (1999). *Development as Freedom*. New York: Knopf.
- UNDP (2010). *Human Development Report 2010*. The Real Wealth of Nations: Pathways to Human Development. United National Development Programme (UNDP), Palgrave Macmillan, New York, USA.
- UNICEF (2011). Adolescence An Age of Opportunity https://www.unicef.org/adolescence/files/SOWC_2011_Main_Report_EN_02092011.pdf.
- United Nations (2010). World Programme of Action for Youth. Economic and Social Affairs. <https://www.un.org/esa/socdev/unyin/documents/wpay2010.pdf>.
- Vijaya, R. M., Lahoti, R. and Swaminathan, H. (2014). Moving from the household to the individual: Multidimensional poverty analysis. *World Development*, 59(C), 70-81.
- WHO (2006). Air Quality Guidelines Global Update 2005 Particulate matter, Ozone, Nitrogen Dioxide and Sulfur Dioxide. Report No: WHO/SDE/PHE/OEH/06.02; World Health Organization: Geneva, Switzerland.
- WHO (2011). Youth and health risks: Report by the Secretariat. Sixty-Fourth World Health Assembly A64/25 Provisional agenda item 13.16. https://apps.who.int/gb/ebwha/pdf_files/WHA64/A64_25-en.pdf.
- World Bank (2006). World Development Report 2007: Development and the Next Generation. <http://documents.worldbank.org/curated/en/556251468128407787/pdf/359990WDR0complete.pdf>
- World Bank (2014). Turkey's transitions: integration, inclusion, institutions: Main report. Report No. 90509. International Bank for Reconstruction and Development / The World Bank. <http://documents.worldbank.org/curated/en/507871468306558336/pdf/90509-v2-REVISED-P133570-PUBLIC-Box393190B.pdf>

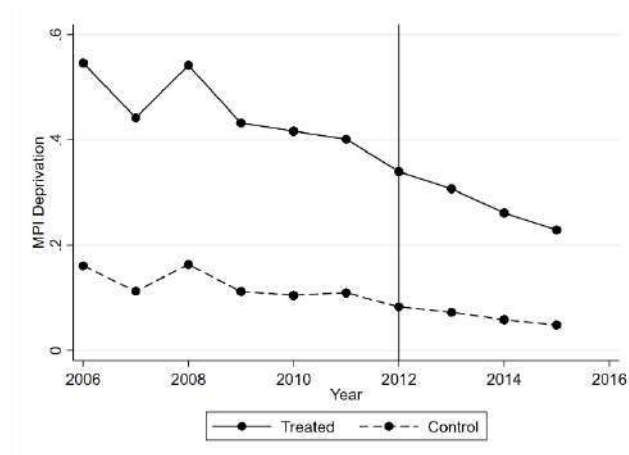
Figure 3. DID and DID-PSM for Investment-Employment Support Programme of 2012 and MPI



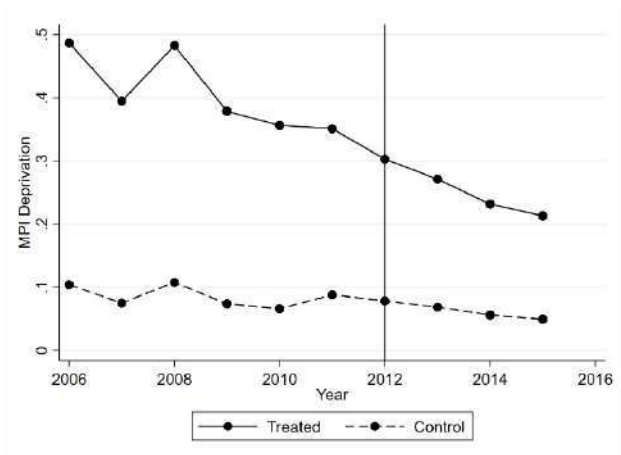
(a) MPI Score and DID



(b) MPI Score and DID-PSM



(c) MPI Deprivation Dummy and DID



(d) MPI Deprivation Dummy and DID-PSM

Table 1. List of MPI parameters for MPI specifications

Dimension	Indicators	Relative Weight	Cut-off Threshold
Material deprivation (1/6)	V1: Vehicle Ownership: Motor cycle or car	1/24	Deprived if the household does not own a motor cycle or car or truck
	V2: Asset Ownership 1: Electronic Devices	1/24	Deprived if the household does not own more than three of the following: radio, TV, mobile and telephone
	V3: Asset Ownership 2: Major Housing Appliances	1/24	Deprived if the household does not own more than three of the following: refrigerator, cooker, washing machine and iron
	V4: Asset Ownership 3: Other Housing Appliances	1/24	Deprived if the household does not own one of the following: computer, heater and water heater.
Quality of Environment (1/6)	V1: Noise in the neighbourhood	1/24	Deprived if there is noise from the neighbourhood or the street
	V2: Shortage in dwelling	1/24	Deprived if there is shortage of space in the dwelling
	V3: Air Pollution	1/24	Deprived if there is air pollution, grime or other environmental problems in the area
	V4: Crime	1/24	Deprived if there is crime, violence or vandalism in the area
Dwelling Characteristics, Energy, Water and Sanitation (1/6)	V1: Source of energy for lightening and cooking	1/24	Deprived if the household uses coal, dung, or kerosene as energy source
	V2: Electricity Supply	1/24	Deprived if the household does not use electricity for lighting from the Grid
	V3: Water Supply	1/24	Deprived if the household does not have access to the water supply of the public network
	V4: Toilet Facility	1/24	Deprived if the household does not have toilet facility or has access only to shared toilet
Productive and valued activities (1/6)	V1: Labour Force Participation of the Young	1/12	Deprived if the youngster does not participate in the labour market
	V2: Employment status of the Young	1/12	Deprived if the youngster is unemployed (except for students)
Health (1/6)	V1: Daily Limitations	1/24	Deprived if the youngster has daily limitations due to physical and mental health problems
	V2: Long-Standing Illness	1/24	Deprived if the youngster has long-standing illnesses
	V3: Health Status	1/24	Deprived if the youngster has poor overall health status
	V4: Unmet need for medical examination	1/24	Deprived if the youngster was unable to attend medical examination or treatment during the last 12 months
Education (1/6)	V1: Literacy Status of the Young	1/12	Deprived if the youngster is illiterate
	V2: Educational Attainment of the Young	1/12	Deprived if the youngster has completed up to primary school education

Table 2. Regional Incentive Instruments Scheme Instruments

		Region						
		I	II	III	IV	V	VI	
VAT Exemption		YES						
Customs Duty Exemption		YES						
Tax Reduction	Tax Reduction Rate (%)	50	55	60	70	80	90	
	Reduced Tax Rate (%)	10	9	8	6	4	2	
Rate of Contribution to Investment (%)	Out of OIZ*	15	20	25	30	40	50	
	Within OIZ*	20	25	30	40	50	55	
Social Security Premium Support (Employer's Share)	Support Period	Out of OIZ*	2 years	3 years	5 years	6 years	7 years	10 years
		Within OIZ*	3 years	5 years	6 years	7 years	10 years	12 years
	Upper Limit for Support (%)	Out of OIZ*	10	15	20	25	35	No limit
		Within OIZ*	15	20	25	35	No limit	No limit
Land Allocation		YES						
Interest Rate Support	TRY Denominated Loans (points)	N/A	N/A	3 points	4 points	5 points	7 points	
	FX Loans (points)			1 point	1 point	2 points	2 points	
Social Security Premium Support (Employee's Share)		N/A	N/A	N/A	N/A	N/A	10 years	
Income Tax Withholding Allowance		N/A	N/A	N/A	N/A	N/A	10 years	

1.OIZ: Organized Industrial Zones.

2. TRY: indicates Loans based on Turkish Liras, while FX indicates foreign exchange.

Source: Council of Ministers Decree on State Aids in Investments, 2012/3305 (19 June 2012). Official Magazine, 28328. <http://www.invest.gov.tr/>

Table 3. District Classification of the 2012 New Incentive System

Region 1	Region 2	Region 3	Region 4	Region 5	Region 6
Ankara	Adana	Balıkesir	Afyonkarahisar	Adıyaman	Ağrı
Antalya	Aydın	Bilecik	Amasya	Aksaray	Ardahan
Bursa	Bolu	Burdur	Artvin	Bayburt	Batman
Eskişehir	Çanakkale	Gaziantep	Bartın	Çankırı	Bingöl
Istanbul	Denizli	Karabük	Çorum	Erzurum	Bitlis
Izmir	Edirne	Karaman	Düzce	Giresun	Diyarbakır
Kocaeli	Isparta	Manisa	Elazığ	Gümüşhane	Hakkari
Muğla	Kayseri	Mersin	Erzincan	Kahramanmaraş	Iğdır
	Kırklareli	Samsun	Hatay	Kilis	Kars
	Konya	Trabzon	Kastamonu	Niğde	Mardin
	Sakarya	Uşak	Kırıkkale	Ordu	Muş
	Tekirdağ	Zonguldak	Kırşehir	Osmaniye	Siirt
	Yalova		Kütahya	Sinop	Şanlıurfa
			Malatya	Tokat	Şırnak
			Nevşehir	Tunceli	Van
			Rize	Yozgat	
			Sivas		

Source: Council of Ministers Decree on State Aids in Investments, 2012/3305 (19 June 2012). Official Magazine, 28328. <http://www.invest.gov.tr/>

Table 4. MPI in Turkey by different values of k

TURKEY	Headcount Ratio H			Average Deprivation Share A			Adjusted Headcount Ratio M^p		
	2006	2015	Annualised Change % 2006-2015	2006	2015	Annualised Change % 2006-2015	2006	2015	Annualised Change % 2006-2015
k=Union									
Total	0.891 (0.003)	0.747 (0.003)	-1.796	0.262 (0.001)	0.236 (0.001)	-1.103	0.234 (0.001)	0.177 (0.001)	-2.707
Youth	0.897 (0.006)	0.629 (0.008)	-3.320	0.232 (0.002)	0.189 (0.002)	-2.059	0.204 (0.002)	0.119 (0.002)	-4.630
T-statistic test for differences			-104.691 [0.000]			-53.203 [0.000]			-84.933 [0.000]
k=33%									
Total	0.255 (0.004)	0.153 (0.002)	-4.444	0.396 (0.001)	0.389 (0.001)	-5.051	0.101 (0.001)	0.060 (0.001)	-4.510
Youth	0.163 (0.007)	0.003 (0.001)	-8.453	0.383 (0.003)	0.382 (0.006)	-0.029	0.063 (0.003)	0.002 (0.001)	-8.466
T-statistic test for differences			-186.392 [0.000]			39.900 [0.000]			-176.552 [0.000]
k=50%									
Total	0.031 (0.001)	0.015 (0.001)	-5.735	0.533 (0.002)	0.527 (0.002)	-0.125	0.016 (0.001)	0.008 (0.001)	-5.556
Youth	0.012 (0.002)	0.009 (0.001)	-2.778	0.543 (0.009)	0.541 (0.011)	-0.041	0.007 (0.001)	0.004 (0.001)	-4.762
T-statistic test for differences			105.465 [0.000]			56.603 [0.000]			63.254 [0.000]

Standard errors within parentheses, p-values within brackets

Table 5. Youth MPI in Turkey for Youth by Gender, Area and NUTS-1 using $k=33\%$

	Headcount Ratio H			Average Deprivation Share A			Adjusted Headcount Ratio M^0		
	2006	2015	Annualised Change % 2006-2015	2006	2015	Annualise d Change % 2006- 2015	2006	2015	Annualised Change % 2006-2015
Panel A: Gender									
Male	0.120	0.032	-8.148	0.383	0.375	-0.232	0.046	0.012	-8.213
Female	0.142	0.019	-9.624	0.387	0.368	-0.546	0.055	0.007	-9.697
Panel B: Area									
Urban	0.095	0.013	-9.591	0.389	0.385	-0.114	0.037	0.005	-9.610
Rural	0.163	0.078	-5.794	0.387	0.321	-1.895	0.063	0.025	-6.702
Panel C: NUTS 1									
TR1- Istanbul	0.052	0.012	-8.547	0.346	0.333	-0.417	0.018	0.004	-8.642
TR2- West Marmara	0.087	0.023	-8.174	0.437	0.435	-0.051	0.038	0.010	-8.187
TR3- Aegean	0.062	0.015	-8.423	0.403	0.400	-0.083	0.025	0.006	-8.444
TR4- East Marmara	0.032	0.009	-7.986	0.375	0.333	-1.244	0.012	0.003	-8.333
TR5- West Anatolia	0.062	0.006	-10.036	0.355	0.333	-0.689	0.022	0.002	-10.101
TR6- Mediterranean	0.099	0.016	-9.315	0.384	0.313	-2.054	0.038	0.005	-9.649
TR7- Central Anatolia	0.088	0.018	-8.838	0.364	0.389	0.763	0.032	0.007	-8.681
TR8- West Black Sea	0.060	0.040	-3.704	0.350	0.250	-3.175	0.021	0.012	-4.762
TR9- East Black Sea	0.037	0.020	-5.105	0.405	0.350	-1.509	0.015	0.007	-5.926
TRA- North East Anatolia	0.256	0.137	-5.165	0.379	0.372	-0.205	0.097	0.051	-5.269
TRB- Central-East Anatolia	0.256	0.100	-6.771	0.391	0.390	-0.028	0.100	0.039	-6.778
TRC- South-East Anatolia	0.356	0.097	-8.084	0.390	0.392	0.057	0.139	0.038	-8.074

Table 6. M^0 in the Deprivation Domains for Youth Population by Gender and Urban-Rural Area

Dimensions	Adjusted Headcount Ratio M^0			Male		Female		Urban		Rural	
	2006	2015	Annualised Change % 2006-2015	2006	2015	2006	2015	2006	2015	2006	2015
Material Deprivation	0.204	0.186	-1.103	0.202	0.184	0.207	0.187	0.205	0.19	0.219	0.194
Quality of Environment	0.142	0.178	3.169	0.148	0.184	0.117	0.163	0.215	0.244	0.076	0.101
Dwelling Characteristics	0.251	0.234	-0.847	0.257	0.233	0.235	0.233	0.167	0.157	0.306	0.286
Employment	0.08	0.074	-0.938	0.075	0.068	0.101	0.091	0.091	0.079	0.075	0.083
Health	0.099	0.119	2.525	0.097	0.128	0.083	0.114	0.111	0.189	0.092	0.112
Education	0.224	0.209	-0.837	0.221	0.203	0.257	0.212	0.211	0.141	0.232	0.224

Table 7. M^0 in the Deprivation Domains for Youth Population by Governorate

	TR1	TR2	TR3	TR4	TR5	TR6	TR7	TR8	TR9	TRA	TRB	TRC
2006												
Dimensions												
Material Deprivation	0.127	0.221	0.199	0.201	0.192	0.191	0.175	0.205	0.187	0.221	0.221	0.203
Quality of Environment	0.078	0.229	0.245	0.291	0.192	0.243	0.274	0.176	0.241	0.354	0.319	0.240
Dwelling Characteristics	0.078	0.079	0.083	0.060	0.103	0.068	0.041	0.052	0.143	0.025	0.052	0.064
Employment	0.108	0.103	0.143	0.045	0.103	0.096	0.137	0.205	0.161	0.074	0.099	0.083
Health	0.276	0.206	0.171	0.179	0.205	0.23	0.213	0.215	0.214	0.257	0.223	0.265
Education	0.333	0.162	0.159	0.224	0.205	0.172	0.16	0.147	0.054	0.069	0.086	0.145
2015												
Material Deprivation	0.071	0.125	0.119	0.125	0.199	0.169	0.187	0.197	0.176	0.195	0.211	0.205
Quality of Environment	0.462	0.258	0.284	0.342	0.208	0.205	0.312	0.189	0.215	0.145	0.176	0.168
Dwelling Characteristics	0.048	0.175	0.164	0.157	0.194	0.208	0.195	0.115	0.235	0.301	0.212	0.192
Employment	0.095	0.073	0.119	0.056	0.074	0.106	0.022	0.186	0.118	0.092	0.086	0.088
Health	0.133	0.242	0.284	0.168	0.129	0.173	0.172	0.182	0.138	0.053	0.103	0.098
Education	0.191	0.127	0.03	0.152	0.196	0.139	0.112	0.131	0.118	0.214	0.212	0.249

Table 8. Differences-in-Differences (DID) and Propensity Score Matching (PSM) for the Investment-Employment Support Programme of 2012 and MPI in Turkey

	DID Full-Unmatched Sample		DID-PSM Unmatched Sample	
	DV: Multidimensional deprivation score OLS	DV: Multidimensionally Deprived Logit	DV: Multidimensional deprivation score OLS	DV: Multidimensionally Deprived Logit
Treat	0.0778*** (0.0031)	2.4203*** (0.2026)	0.0883*** (0.0072)	3.6609*** (0.9879)
Post	-0.0404*** (0.0034)	-1.6239*** (0.2006)	-0.0717*** (0.0075)	-1.4547*** (0.4594)
Treat Post	-0.0069*** (0.0028)	-0.0338** (0.0127)	-0.0049** (0.0023)	-0.0372** (0.0186)
No. observations	32,814	32,814	18,503	18,503
R square	0.6969	0.7001	0.6224	
Wald statistic		1,921.76 [0.000]		1,750.84 [0.000]
Placebo test	-0.0079* (0.0041)	-0.0603** (0.0295)	-0.0110 (0.0111)	-0.0153 (0.0332)
Leads and Lags Test	4.414 [0.4010]	10.455 [0.0732]	2.897 [0.7159]	5.233 [0.3145]

Robust standard errors within parentheses, p-values within brackets. ***, ** and * indicate significance at 1%, 5% and 10% level respectively.