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THE EMPLOYMENT EFFECT OF THE MINIMUM WAGE: AN EMPIRICAL ANALYSIS FROM TURKEY*

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This paper examines the relationship between the minimum wage and employment in Turkey for the years 2004 -14. We investigate whether the national minimum wage has affected the employment rates of workers aged 15-29 by taking regional disparities into account. Our results do not suggest any dis-employment effect of the minimum wage. However, a correlation between the minimum wage and the informal employment rate is confirmed.

JEL Codes: J31, J23, J46

Keywords: Minimum Wage, Employment, Informal Employment, Regional Disparities

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1. Introduction

The impact of the minimum wage on employment is a controversial topic within the minimum-wage literature. Although a large body of theoretical and empirical work has been devoted to detecting any such effects, no consensus has emerged on this issue. Various theoretical models predict different outcomes, depending on their underlying market-structure assumptions. As for the empirical evidence, most of which is derived from developed countries, it suggests that the minimum wage causes slight disemployment (Neumark and Wascher, 2006). At the same time, there is a growing body of literature on the influence of the minimum wage over employment in developing countries. However, given certain typical features of these markets, such as low enforcement or informal employment, as pointed out by Lemos (2009), one has to view such empirical assessments as somewhat compromised (Lemos (2009).

Those who oppose minimum-wage legislation state that an enforced lower limit of wages that is fixed above the market-clearing level will lead to employment losses in a competitive labor market. Furthermore, in an era of intense economic globalization like the current one, labor-market regulations like the minimum wage and unemployment insurance should be revamped to allow for more labor-market flexibility (Heckman and Pages, 2000). On the other side, advocates of the minimum wage believe that working conditions are deteriorating in the wake of globalization and the accompanying intense competition, producing *a race to the bottom* (Carr and Chen, 2002). This being the case, a minimum wage is seen as a desirable redistributive tool to achieve social justice. This contentious debate has preoccupied labor economists since the last century. While the related literature at the beginning of the 20^{th} century relied mainly on theoretical predictions, time-series evidence has dominated empirical studies since the 1950s.

In this paper, we aim to investigate the employment effects of the minimum wage in Turkey through the use of regional data. Specifically, we are seeking to establish whether Turkey's national minimum wage adversely affects employment, against the backdrop of the regional disparities in productivity. A national minimum-wage policy that mandates a payment floor is theoretically problematic in a context of regional heterogeneity. It might be argued that such a policy is desirable in order to drive regional convergence, thus helping disadvantaged citizens move out of poverty. However, a higher wage floor in regions with low productivity could hurt employment. Moreover, evaporating job opportunities in poor regions tend to provoke internal

migration[1]. We attempt to examine how the national minimum wage affects the employment level in Turkey, where the goal of regional economic convergence has not been achieved over the last decades (Gezici and Hewings, 2004). We mainly rely on the findings of Calavrezo and Pelek (2011), which indicate that women and the young are overrepresented among minimum-wage workers. Having taken the very low labor-participation rate of Turkish women into consideration, we prefer to focus on youth employment as the population of interest for this research[2].

Although a detailed review of the literature is beyond the scope of this paper, we provide a survey of empirical research that focuses on developing countries. These economies are generally characterized by a low level of compliance with labor-market regulations and a high level of unemployment and informal employment. Moreover, they have suffered from a volatile macroeconomic environment and financial crises (e.g., Brazil 1998-1999, Argentina 2000-2001, Turkey 2000-2001, and the global financial crisis in 2008). As a countermeasure, labor-market reforms toward greater efficiency have been discussed exhaustively by policymakers. The minimum wage has been front and center in these sessions, due to its widespread existence and long history in many developing parts of the world, such as Latin America and Indonesia (Eyraud and Saget, 2005).

The theoretical background of the literature on developing countries is largely drawn from the Welch-Gramlich-Mincer Two-Sector Models (Mincer, 1976; Welch, 1976; Gramlich, 1976). The empirical studies of such countries usually test whether an increase in the minimum wage has had a negative effect on employment in the covered sector and a positive effect in the uncovered sector, due to displaced workers in the former moving into the latter (Ehrenberg and Smith, 2009). The concepts "uncovered" and "informal" are in-

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[1] Some policymakers suggest regionalizing the minimum wage by taking the high variation of regional productivity into consideration. They claim that a minimum-wage floor could harm employment prospects of workers, particularly those in poor regions. See the recent report by Şeker and Küçükbayrak (2012) for a broad discussion of this issue. In their report prepared for the Turkish Ministry of Development, they identify the potential risks of a regional minimum wage as being "not negligible." Thus, regionalization does not seem to be an appropriate tool to benefit workers in poor regions.

[2] Many empirical studies of the minimum wage focus on specific demographic groups, such as teenagers or young adults, and implicitly assume that not all workers are affected by the minimum wage in the same way. For instance, teenagers generally represent the "low-wage group," whose wage depends directly on the minimum wage (Sen et al., 2011).

terchangeably applied when analyzing the relationship between employment and the minimum wage in developing nations (Saget, 2001).

Fajnzylber (2001) estimated the employment effects of the minimum wage in Brazil and reported negative employment elasticity for low-wage workers, which were around -0.1 and -0.25 for formal and informal salaried workers, respectively. The greater negative result in the informal sector was explained as a reflection of the higher motivation of informal salaried workers to seek a formal job. Alternatively, Fajnzylber proposed that, following a boost in the minimum wage, a number of non-head-of-household individuals may have quit the labor market, thanks to the increased earnings of other family members.

Maloney and Mendez (2004) examined Colombian panel data to evaluate the reference role of the minimum wage in determining other wages as well as its interaction with employment levels. They found a negative employment effect, accompanied by a strong *lighthouse effect* on wage distribution. However, their analysis was not able to cover the informal sector. Montenegro and Pagés (2005) assessed the effects of labor-market regulations like the minimum wage on different sub-groups in Chile, using a time-series of cross-sectional data sets from 1960 to 1998. Their results generally confirmed the standard competitive model, which predicts an adverse effect of the minimum wage on employment. Feliciano (1998) worked with a regional panel data specification for Mexico to estimate a state-variant minimum-wage effect. She found a disemployment effect on female workers, but no significant fallout for the male population. Bell (1997) compared Colombia and Mexico between 1981 and 1987, when the real minimum wage increased in the former and decreased in the latter. She found a significant disemployment effect of up to 12% in Colombia. Conversely, in Mexico, where there had been an eroded minimum age, the evidence did not show any significant effect. Gindling and Terrell (2009) examined the employment effect of the minimum wage in Honduras by studying minimum-wage variations there between 1990 and 2004. Their results showed that a 1% rise in the minimum wage reduced employment by 0.46% in medium and large-scale firms.

More recently, Majchrowska and Zolkiewski (2012) sought to estimate the employment effect of the minimum wage in Poland and confirmed that youth employment in that country was adversely affected by the minimum wage. In the case of Indonesia, where the minimum wage varies across provinces, Pratomo (2011) looked at what it did to employment, based on aggregate provincial panel data from 1989 to 2003. Although the results did not reveal any notable impact on total paid employment, a jump in the minimum wage was found to reduce employment in the covered sector, as predicted by the stand-

ard competitive model. Another study, by Alatas and Cameron (2008), estimated the sectoral employment effect of the sharp uptick in the Indonesian minimum wage between 1990 and 1996 with the help of a national household survey. They did not find a negative employment after-effect for large companies; nevertheless, they suggested that workers in small enterprises may suffer from job losses as a result of minimum-wage increases.

Whereas the research studies cited above reported negative follow-ups in employment figures from the minimum wage (or increases in it), other empirical studies failed to support these findings. Lemos (2009) considered the relationship in Brazil between the minimum wage and employment as well as wages; her source material was a monthly household survey panel from 1982 to 2000. She found no statistically significant contractionary ripples in the employment level caused by the minimum wage. In another study, Lemos (2004) took various minimum-wage variables to define the effect of a constant (national) minimum wage and came up with a measurable impact of the minimum wage on the employment level in Brazilian metropolitan regions between the years 1982 and 2000. This led her to conclude that an increase in the minimum wage does compress the distribution of wages but does not destroy that many jobs.

For their part, Hamidi and Terrell (1998) researched the situation in Costa Rica, in both the formal and informal sectors. Working with micro-data from the 1976-92 period, they concluded that a 1% increase in the minimum wage relative to the average wage led to an expansion in the covered sector's employment of 0.56%. They also emphasized that their findings ran counter to the Two-Sector Models and instead supported the monopsonistic approach.

In a recent study, Bhorat et al. (2013) investigated sectoral minimum wages and employment in South Africa. They estimated the probability of remaining in employment with a difference-in-differences method. Contrary to the predictions of the standard competitive model, their results did not yield any significant negative outcome for employment in various sectors.

The evidence from Turkey has been particularly limited due to insufficient or non-available data. Papps (2012) examined the employment effects of increases in the social-security taxes paid by employers as well as rises in the minimum wage between 2002 and 2005. His results showed that higher social-security taxes had a larger negative effect on the probability of a worker remaining employed in the next quarter than an equal-sized increase in the minimum wage. Using a basic time-series method, Korkmaz and Coban (2006) analyzed the relationships among the minimum wage, unemployment,

and inflation between 1969 and 2006. Their results pointed to no obvious reaction to the minimum wage on the part of the unemployment rate.

With impulse-response functions, Güven et al. (2011) assessed the relationship between employment and the minimum wage in Turkish manufacturing over the 1969-2008 period. They, too, found no proof of employment being affected by a minimum-wage change. However, it should be mentioned that impulse-response functions may not be an appropriate method for measuring the ramifications of the minimum wage, given its dependence on the choice of orthogonalization (Plosser, 1982). More recently, Bakış et al. considered the Turkish minimum-wage increase of 2004 and its effect on school-enrollment rates. They employed a non-linear difference-in-differences estimation and defined low- and high-impact regions in order to specify treatment and control groups. According to their results, the 2004 minimum-wage hike encouraged young people to sign up for continuing education, thereby reducing the labor supply. Similar to their identification strategy, we also rely on the regional variation of wages in Turkey.

The rest of this paper is organized as follows. The next section provides an overview of the data and briefly discusses the regional differences in the minimum wage in Turkey. The third section presents the model used for an empirical analysis of the effects of a national minimum wage on regional employment. The results are reported in the fourth section. Finally, the last section summarizes our main findings and concludes the paper.

2. Data and Summary Statistics

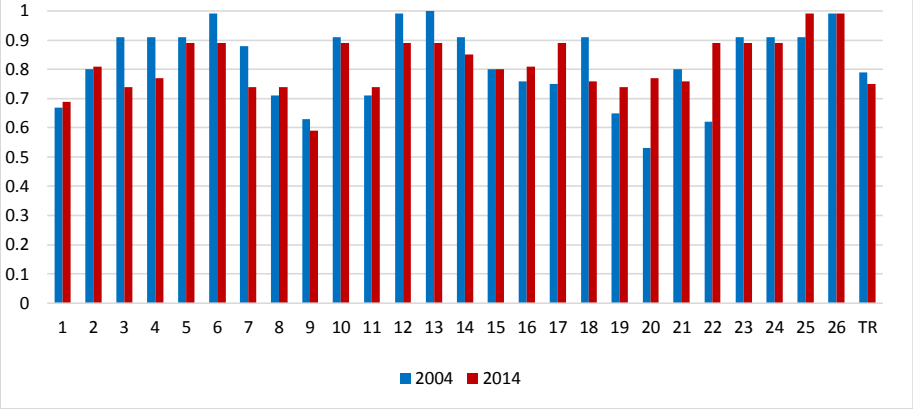
This paper is based on data coming from the Household Labor Force Survey (HLFS). This annual report, provided by TURKSTAT, is an individual and cross-sectional data set, so the interviewed sample changes each year. TURKSTAT has been publishing regional data at the NUTS1 (12 provinces) and NUTS2 (26 provinces) levels since 2004[3]. This is why 2004 is the starting year of our research period. In total, we have 286 observations, each region having been observed for 11 years.

Although the minimum wage is set nationally and is nominally identical throughout Turkey, the ratio of it to other wages varies across regions. In the literature, the commonly used minimum-wage measure, called the *Kaitz index*, is defined as the ratio of the minimum wage to the mean or median wage. This conventional index was first formulated by Kaitz (1970) and provides a

[3] The names of these regions were determined by TURKSTAT in the Nomenclature of Territorial Units for Statistics 2 (NUTS2), presented in Appendix A.1

basis for measuring where the minimum wage "bites." A lower Kaitz index is said to indicate that the minimum wage is relatively weak and probably does not affect a large number of employees, while a higher Kaitz index is generally associated with a higher minimum wage relative to other wages that may harm the labor market (Rycx and Kampelmann, 2012). This was borne out by Blázquez et al., 2009. Figure 1 presents the regional Kaitz indexes, obtained by dividing the nominal minimum wage by median wages in 2004 and in 2014 for 26 regions of Turkey [4].

Figure 1. The Kaitz Index in 2004 and in 2014 at Regional Level



Source: Household Labor Force Surveys, own calculations

It should be noted that the Kaitz index is lower than the national average in industrialized districts, such as 8- Kocaeli or 16-Zonguldak, while it is higher than the national average in non-industrialized areas like 13-Hatay or 26-Mardin. Moreover, movement up or down in the Kaitz index was observed from 2004 to 2014 in each region, decreasing slightly in the aggregate. In the last year of the research period, the minimum wage reached parity with the median wage in two provinces: 25-Diyarbakır and 26- Mardin.

Under these circumstances, one can assume that the national minimum wage does not affect employment across regions uniformly. Although the nominal minimum wage is standard throughout the country, one can investi-

[4] One can use both mean and median wages as denominators. Nevertheless, we keep in mind that using the median wage instead of the mean wage is widespread in developing countries, as it omits very high earnings (Maloney and Mendez, 2004). We also present the minimum wage/mean wage ratio of the NUTS2 regions in 2004 and in 2014 in Appendix A.2. Please note that using mean wages instead of median wages does not significantly alter the ratios.

gate empirically the effect of the minimum wage on employment by studying the minimum-wage/median-wage ratio at the regional level.

We focus on the working-age population below the age of 30. Even though the youth population is usually defined more narrowly ("teen" or 25 and below), we prefer to extend the age group. Among others, Bell (1997) maintains that it is crucial to include a wider age range than teens or youth below the age of 25 in minimum-wage studies of developing countries, since—unlike in the developed world—the teen population is not a plausible proxy for low-wage workers. In Turkey, employees aged 25-29 are overrepresented among workers who are paid exactly or near the minimum wage (Calavrezo and Pelek, 2011). Moreover, this age group has the highest rate of informal employment in Turkey (Bensalem et al., 2011). We seek to estimate the effects of the minimum wage not only on formal employment but also on the informal sector, keeping in mind that the latter is not negligible in the Turkish labor market.

3. The Empirical Model

In order to estimate the effect of the minimum wage on the employment of workers below 30 years of age, we use the following common specification form:

$$EMP_{it} = \alpha + \beta MW_{it} + \lambda X_{it} + f_i + f_t + \varepsilon_{it} \quad (1)$$

where EMP_{it} is the share of employees who are employed as wage earners in the total youth population in region i and year t. MW_{it} is the variable of interest that is supposed to capture the minimum-wage effect. We use the Kaitz index at the regional level as the minimum wage-variable. This index was the most preferred such variable in previous studies for its advantage of holding key information about the minimum wage within a single variable (Brown et al., 1982; Blázquez et al., 2009). It summarizes the information about both the level of the minimum wage compared with other wages and the degree of coverage. In addition to the variable of interest, we employ a set of control variables, X_{it} , to capture economic cycles, the prime-aged male unemployment rate—i.e., the unemployment rate of men who are aged between 30 and 45—and the regional CPI. We also control the supply side by adding the variable of the youth population rate in region i and year t; f_i and f_t are the region and year fixed effects, respectively. Finally, ε_{it} is the standard error term.

The minimum-wage literature on developing countries emphasizes that one has to pay particular attention to informal employment when researching the employment effect of the minimum wage in this part of the world. (Lemos, 2009). We expand our analysis by examining the influence of the

minimum wage over formal and informal employment separately. Consistent with the literature, we test the predictions of the Welch-Gramlich-Mincer Two-Sector Model. More precisely, we attempt to answer the following question: does the minimum wage contribute to informal employment, i.e., the employment in the uncovered sector, by propelling the displaced workers in the covered sector into the uncovered sector? In order to empirically test this prediction of the Two-Sector Model, once again we employ HLFS. One of the advantages of this data set is that the respondents are interviewed about their affiliation with the social-security system. Thus, we can identify whether the formal and informal employees have been registered in the social-security system by their employers or not. This definition of informal employment is in line with precedents in the literature as well as with the ILO's definition (Kanbur, 2009; Hussmanns, 2005; Bensalem et al., 2011).

We estimate the ratio of formal and informal salaried employees who are aged below 30 to total youth population in region *i* and year *t*. More formally, the estimated equations can be specified as follows:

$$F\_EMP_{it} = \alpha + \beta MW_{it} + \lambda X_{it} + f_i + f_t + \varepsilon_{it} \quad (2)$$

$$I\_EMP_{it} = \alpha + \beta MW_{it} + \lambda X_{it} + f_i + f_t + \varepsilon_{it} \quad (3)$$

where F_EMP_{it} and I_EMP_{it} refer to the ratio of formal and informal salaried employees to total individuals who are aged below 30, respectively. The independent variables remain the same as in Equation 1.

4. Results

4.1. The Effect of the Minimum Wage on Total Wage Employment

Table 1 presents estimated coefficients for Equation 1, where the dependent variable is the employment rate of young people (aged 15-29).

The estimated coefficient of the minimum-wage variable is not statistically significant. This primary result suggests that the minimum wage apparently has no disemployment effects on the employment of those workers comprising the most overrepresented group in the minimum-wage population. Thus, the predictions of the competitive model are not confirmed.

Therefore, we refine our analysis by re-estimating the employment effect of the minimum wage with regard to the productivity of workers. As is customary, we use educational attainment as a proxy for qualification. We re-estimate Equation 1 for the sub-groups specified by educational attainment. In this regard, we define three groups of education:

Table 1. Effects of the MW on Youth Employment

Dependent variable: wage-employment-to-population ratio of young people	
Variables	
The Kaitz Index	0.030 (0.196)
Prime-aged male unemployment rate	-0.183*** (0.068)
Regional CPI	0.001*** (0.000)
Ratio of youth to total population	0.530*** (0.122)
Constant	-0.109** (0.054)
Region FE	Yes
Year FE	Yes
Number of obs.	286
R-squared	0.709

Notes: significance levels; *** p<0.01, ** p<0.05,* p<0.1.
Standard errors in parentheses are corrected by the White (1980) procedure.

i. Low-educated workers: Primary and secondary-school graduates

ii. Medium-educated workers: General and vocational high-school graduates

iii. High-educated workers: University graduates

Table 2 reports the results obtained by estimating Equation 1 for the three groups of educational attainment specified above. The results are highly variable from one group to another. Firstly, the estimated coefficient of the minimum-wage variable is significantly positive for low-educated workers, while for the more educated groups no correlation is revealed. In other words, the minimum wage evidently does not decrease the wage employment/population ratio; conversely, a positive relationship between the wage employment rate and the Kaitz index emerges for low-educated workers. For the rest of workers, who are more educated, the relevance of testing the relationship between the wage employment and the minimum wage is not obvious. This is not surprising, since the minimum-wage workers in Turkey are mostly low-educated, as in other countries. The signs of the coefficients estimated for the control variables are more or less consistent with *a priori* expectations. However, these results should be viewed with caution, as the estimated equation in-

volves all wage employment and does not distinguish between formal and informal employment. In the next part of this section, we discuss the results from the model for formal and informal wage employment separately (Equations 2 and 3.

Table 2. Effects of the MW on Youth Employment by Educational Attainment

Variables	Low-educated workers	Medium-educated workers	High-educated workers
The Kaitz Index	0.103***	0.042	0.987
	(0.023)	(0.037)	(3.175)
Prime-aged male unemployment rate	-0.124*	-0.036	-0.238
	(0.072)	(0.136)	(0.260)
Regional CPI	0.001	0.001	0.530
	(0.001)	(0.001)	(0.529)
Ratio of youth to total population	0.591***	0.009	-0.767
	(0.171)	(0.233)	(0.798)
Constant	-0.328**	0.160*	0.377
	(0.131)	(0.093)	(0.365)
Region FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Number of obs.	286	286	286
R-squared	0.602	0.548	0.04

Notes: significance levels;*** p<0.01, ** p<0.05,* p<0.1.
Standard errors in parentheses are corrected by the White (1980) procedure

4.2. The Effect of the Minimum Wage on Formal Wage Employment

We report the results obtained by estimating Equation 2. The dependent variable is the formal wage employment rate among the working-age population below 30 years of age. Table 3 reports the estimated coefficients.

The estimated coefficient of the Kaitz Index is negative but insignificant. Once again, the estimated coefficients of the control variables have the expected signs. Similar to the previous section, we re-estimate the model for the three sub-samples specified by educational attainment separately in order to refine the analysis. The coefficients and standard errors are presented in Table 4. The results do not indicate any disemployment effects for the three subgroups by educational attainment. The estimation results of the minimum-

Table 3. Effect of the MW on Formal Youth Employment

Dependent variable: formal-wage employment-to-population ratio of young people	
Variables	
The Kaitz Index	-0.009 (0.218)
Prime-aged male unemployment rate	-0.181*** (0.037)
Regional CPI	0.0002 (0.0004)
Ratio of youth to total population	0.077 (0.119)
Constant	0.089 (0.076)
Region FE	Yes
Year FE	Yes
Number of obs.	286
R-squared	0.707

Notes: significance levels;*** p<0.01, ** p<0.05,* p<0.1.
Standard errors in parentheses are corrected by the White (1980) procedure.

wage variable are not statistically significant, while they are negative for low-educated workers and positive for the rest.

4.3. The Effect of the Minimum Wage on Informal Wage Employment

The estimated results of Equation 3 are presented in Table 5. The dependent variable is re-specified as the informal wage employment rate among the youth population. The estimated coefficient of the Kaitz Index is positive and significant at the 1% level, indicating that a relatively higher minimum wage increases informal-wage employment.

We re-estimate Equation 3 for the two sub-samples specified by educational attainment: low-educated and medium-educated workers. The estimated coefficients and standard errors are reported in Table 6. We do not repeat the analysis for high-educated workers, since the informality rate among university graduates is negligible, even zero in some regions (Ben Salem et al., 2011). The limited number of observations of this sub-sample does not allow for statistically testing the relationship between the minimum wage and informal-wage employment in a reliable way.

Table 4. Effects of the MW on Formal Youth Employment by Educational Attainment

Variables	Low-educated workers	Medium-educated workers	High-educated workers
The Kaitz Index	-0.003 (0.023)	0.008 (0.044)	0.024 (0.081)
Prime-aged male unemployment rate	-0.129** (0.051)	-0.074 (0.001)	-0.188 (0.238)
Regional CPI	0.0007 (0.0005)	0.001 (0.001)	-0.0006 (0.002)
Ratio of youth to total population	0.065 (0.144)	-0.288 (0.172)	-0.114 (0.383)
Constant	-0.029** (0.094)	0.231* (0.117)	0.556** (0.263)
Region FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Number of obs.	286	286	286
R-squared	0.411	0.583	0.202

Notes: significance levels;*** p<0.01, ** p<0.05,* p<0.1.
Standard errors in parentheses are corrected by the White (1980) procedure.

The estimated coefficients indicate that the minimum-wage-to-median-wage ratio increases the informal paid employment of the youth population with low and medium educational levels. This result is in line with the predictions of the Two-Sector Model. We find evidence of a positive relationship between the relatively higher minimum wage and the informal employment rate. However, it should be noted that the magnitudes of estimated coefficients appear to be weak. The coefficients of the control variables are more or less significant, and their signs are consistent with the theoretical predictions.

To conclude, the obtained results demonstrate that the minimum wage does not appear to have a negative impact on employment for the specific young age group of 15-29. However, the informal-employment-to-population ratio of this age group is affected significantly by the minimum wage. The results become clearer when we re-estimate the employment to population ratios separately for the sub-samples identified by educational attainment. In this specification, the estimated coefficients of the minimum-wage variables are statistically insignificant when the dependent variable captures formal employment. In addition, the informal employment rate tends to be boosted by the minimum wage. All in all, econometric results do not indicate any

Table 5. Effect of the MW on Informal Youth Employment

Dependent variable: informal-wage-employment-to-population ratio of young people	
Variables	
The Kaitz Index	0.077*** (0.015)
Prime-aged male unemployment rate	0.065 (0.056)
Regional CPI	0.001 (0.001)
Ratio of youth to total population	0.417*** (0.140)
Constant	-0.288*** (0.101)
Region FE	Yes
Year FE	Yes
Number of obs.	286
R-squared	0.420

Notes: significance levels;*** p<0.01, ** p<0.05,* p<0.1.
Standard errors in parentheses are corrected by the White (1980) procedure.

disemployment effect of the minimum wage on total employment. The evidence only suggests that the low informal employment rate of low- and medium-educated Turkish workers who are aged between 15 and 29 is correlated with the minimum wage over the period 2004-14 period.

5. Concluding Remarks

Using regional data, this paper examines the employment effects of the minimum wage in Turkey. We investigate whether the national minimum wage has affected the employment rates of workers aged 15-29 by taking regional disparities into account. We prefer to focus on this age group, since they are overrepresented among minimum-wage earners. The study covers the period from 2004 to 2014. We use the Kaitz Index at the regional level as the minimum-wage variable in order to capture the regional differences in the minimum wage compared to other wages. According to the results, the minimum wage is apparently not a factor that worsens employment. We repeat the analysis for three sub-samples defined by educational attainment. Once again, the results indicate that the minimum wage and the employment level do not exhibit any negative correlations. These results are in line with the *new mini*

Table 6. Effects of the MW on Informal Youth Employment by Educational Attainment

Variables	Low-educated workers	Medium-educated workers
The Kaitz Index	0.089*** (0.021)	0.055** (0.022)
Prime-aged male unemployment rate	0.057 (0.065)	0.050 (0.051)
Regional CPI	0.0008 (0.010)	0.0009 (0.0006)
Ratio of youth to total population	0.428** (0.163)	0.206* (0.111)
Constant	-0.263** (0.099)	-0.166*** (0.055)
Region FE	Yes	Yes
Year FE	Yes	Yes
Number of obs.	286	286
R-squared	0.285	0.470

Notes: significance levels;*** p<0.01, ** p<0.05,* p<0.1.
Standard errors in parentheses are corrected by the White (1980) procedure.

mum-wage research, which questions the conventional wisdom of rises in the minimum wage causing without exception a shrinkage in total employment.

In order to clarify the empirical analysis, we also distinguish the employment type according to the social-security coverage of employees. We estimate the effect of the minimum wage on regional formal and informal wage employment rates, respectively.

The results do not justify blaming the minimum wage for reductions in formal employment. Nevertheless, a positive correlation between the minimum wage and informal wage employment is confirmed. Thus, one can suggest that the predictions of the standard Two-Sector Model are partially valid for explaining the effects of the minimum wage on the Turkish labor market. Indeed, informal wage employment grows significantly in response to changes in the minimum wage, not only among low-educated workers but also for medium-educated ones. However, the evidence from Turkey should be strengthened by different data sets, such as individual panels or corporate-level data. Furthermore, new theoretical approaches modeling the correlation between the minimum wage and informal employment will also be welcome,

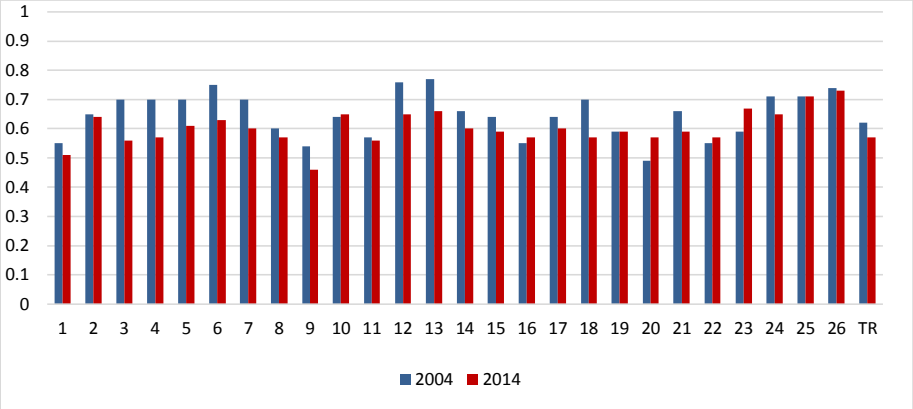
given that the Two-Sector Model only gives a partial explanation of the effects of the minimum wage on employment in Turkey, a developing economy.

Appendix

A. 1. NUTS 2 Regions in Turkey

1	TR10	İstanbul
2	TR21	Tekirdağ, Edirne, Kırklareli
3	TR22	Balıkesir, Çanakkale
4	TR31	İzmir
5	TR32	Aydın, Denizli, Muğla
6	TR33	Manisa, Afyon, Kütahya, Uşak
7	TR41	Bursa, Eskişehir, Bilecik
8	TR42	Kocaeli, Sakarya, Düzce, Bolu, Yalova
9	TR51	Ankara
10	TR52	Konya, Karaman
11	TR61	Antalya, Isparta, Burdur
12	TR62	Adana, Mersin
13	TR63	Hatay, Kahramanmaraş, Osmaniye
14	TR71	Kırıkkale, Aksaray, Niğde, Nevşehir, Kırşehir
15	TR72	Kayseri, Sivas, Yozgat
16	TR81	Zonguldak, Karabük, Bartın
17	TR82	Kastamonu, Çankırı,Sinop
18	TR83	Samsun, Tokat, Çorum, Amasya
19	TR90	Trabzon, Ordu, Giresun, Rize, Artvin, Gümüşhane
20	TRA1	Erzurum, Erzincan, Bayburt
21	TRA2	Ağrı, Kars, Iğdır, Ardahan
22	TRB1	Malatya, Elazığ, Bingöl, Tunceli
23	TRB2	Van, Muş, Bitlis, Hakkari
24	TRC1	Gaziantep, Adıyaman, Kilis
25	TRC2	Şanlıurfa, Diyarbakır
26	TRC3	Mardin, Batman, Şırnak, Siirt

A. 2. Minimum Wage/Mean Wage Ratio in 2004 and in 2014



Source: Household Labor Force Surveys, own calculations.

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