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The differentiated effects of minimum wage reforms on unemployment

Evidence from the Greek labor market

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Abstract

The paper studies the relative effect between two groups, a treatment group of low-wage workers and a control group of high-wage workers, when a minimum wage reform is introduced. The empirical analysis uses a rich dataset from the Greek labor market over the period between 2010 and 2020. The study examines whether the employees' responses and the potential effects of two different minimum wage reforms on unemployment were heterogenous. Our results are straightforward: among the two groups, the relative possibility of job loss is associated with an increase in the minimum wage, while the relative possibility of job search difficulty is strongly affected by a minimum wage cut. The former result is getting worse for employees who engaged in a minimum wage-intensive sector in the previous year and are now inactive. The latter result is reinforced for very young workers.

JEL classification: C31, J08, J21, J23

Keywords: minimum wage; minimum wage reforms; job loss; job search difficulty; labor market

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1. Introduction

The debate among economists regarding the implications of minimum wage reforms has not been arranged so far (see e.g., Manning, 2021). The vast majority of recent literature discusses mainly the employment effects from minimum wage increases; however, decreases may also provide insightful evidence for the labor market.

The employment effects of the minimum wage are analyzed by the economic theory taking into consideration the structure of the labor market. In a perfect competitive market setting a wage above the market clearing level causes employment to decline. This result stems from the hypothesis that firms are price takers, i.e., face a perfectly elastic labor supply curve. By contrast, in a monopolistic market the firms are able to offer wages below the competitive level. If the government introduces a binding minimum wage above the monopolistic level but lower than the competitive level, the employment increases (Boeri and Van Ours, 2008). Regarding the empirical investigation of the impact of minimum wage on employment it seems that by the early 1980s there was a consensus that higher minimum wages decrease employment (Brown et al., 1982). The seminal work of Card and Krueger (1994) followed the work of Card (1992a, 1992b) seemed to have dented the view that higher minimum wages decrease employment by producing evidence that of no or even positive employment effects of minimum wage. Despite this, there have been divergent views on the employment effects of minimum wage (Neumark, 2018). The findings of Card and Krueger (1995) caused an intense controversy on the employment effects of minimum wage (Card and Krueger, 1995 and 2000; Machin and Manning, 1997; Manning, 2003; Neumark et al., 2014; Totty, 2017). Neumark and Shirley (2021) explored what conclusions can be drawn from the literature focusing on the use of subminimum wage and they found that negative estimates of employment elasticities in the literature are predominant. They also found that the negative employment effect is stronger for teens and young adults and more so for the less-educated.

A number of studies of the employment effects of minimum wage is from Europe. The results for Portugal (Pereira, 2003; Portugal and Cardoso, 2006), Hungary (Harasztosi and Lindner, 2019) and for Ireland (O' Neill et al., 2006) seem to converge to the conclusion that large increases in minimum wages in countries where the level of minimum wages is relatively high have no or have small negative employment effects.

As far as the Greek case is concerned, there are few studies investigating the employment effects of minimum wages in the decades of 90s and 2000s. Koutsogeorgopoulou (1994) finds a small negative employment elasticity of male and female industrial workers regarding minimum wages. Kapopoulos et al. (2003) and Karageorgiou (2004) failed to document the negative effects. There are few more recent studies (Yannelis, 2014; Karakitsos, 2015; Kakoulidou et al., 2018; Georgiadis et al., 2018; Kanellopoulos, 2015) investigated the impact of the employment effects of 2012 reform on minimum wages. The data used to analyze the impact of minimum wages on employment are data from the Greek Labour Force Survey (Yannelis, 2014; Karakitsos, 2015; Kakoulidou et al., 2018), data from a random sample of employees in the private sector and the employers drawn from the Unified Social Security

Authority (Georgiadis et al., 2018) and from published IKA statistical data (Kanellopoulos, 2015). There is one more study (Andriopoulou and Karakitsos, 2021) which investigated the determinants of the unemployment dynamics and the impact of the minimum wage on the probability of making a transition into and out of unemployment for the period 2004 – 2019 using data of the Greek Labour Force Survey for the above period. Yannelis (2014) found that the differentiation of minimum wage through the binding of the subminimum wage enhances employment through the substitution channel between workers below and above 25 years old. Kakoulidou et al. (2018) do not find significant changes in employment probability between the age groups below and above 25 years old. They find a significant positive impact on job-finding rate and no on job losses. Karakitsos (2015) shows that the employment rate for 20 -24 year-old employees declined less than the corresponding rate for "older" employees. This could imply a positive impact of the sub-minimum wage on youth employment. Kanellopoulos (2015) also finds that minimum wages reduce employment for both genders. Georgiadis et al. (2020) do not find systematic employment effects of the existence of a minimum wage. Andriopoulou and Karakitsos (2021) do not find any causal relationship between minimum wage changes and transitions out of unemployment seem to be slightly positively affected by increases in minimum wage.

This paper aims to evaluate the employment effects of the two reforms on minimum wages in 2012 and in 2019 in the case of Greece. The first reform is characterized by the huge reduction of the minimum wage and the introduction of the subminimum wage and second reform abolishes the subminimum wage and increases the minimum wage. We differ from the other papers concerning the Greek case as we take into account the two opposite reforms on the level of minimum wage and we study the impact of these reforms not on employment / unemployment level but on job search rate and on the job loss rate.

In this respect, the current study focuses on the relative unemployment effects between two groups, a treatment group of females aged 15-44 who attended at most secondary education (a low-wage group) and a control group of males aged 45-64 who completed at least the secondary education (a high-wage group), from a minimum wage reduction and increase in 2012 and 2019, respectively in Greece. Through this study, the following questions are going to be considered: Are the relative unemployment effects on job loss and job search difficulty homogenous when a minimum wage reform has introduced? May be these effects reinforced by specific employment characteristics?

In this paper, by using data from the Hellenic Statistical Authority's Greek Labor Force Survey over the period between 2010 and 2020, we estimate the relative possibility, between the two groups reported before, of the unemployment effects from the imposition of two minimum wage reforms; both reforms have been established in a demanding period for Greece, a country that has experienced a sovereign debt crisis at the early years of the previous decade and led to a fiscal consolidation lasting for more than 7 years. Based on our findings, between the two groups, a minimum wage cut in 2012 is strongly associated with a reduction in the relative possibility of job search difficulty that further drops for very young employees (15-24 years old). Additionally, among these groups, the relative possibility of job loss is negatively affected by a minimum wage increase in 2019; the harmful effects are getting

worse for employees who worked in a minimum wage-intensive sector in the previous year and who decide not to search for a job in the current period.

The contribution of our paper to the labor economics literature is two-fold. First, a natural experiment is used to show that the differentiated impact on unemployment effects has been established when a minimum wage cut and increase, respectively have been introduced. In particular, it seems that a minimum wage reform that either increases or decreases the minimum wage does not have homogenous influence on the relative possibility of job loss and job search difficulty when low-wage and high-wage groups are considered. Second, the paper analyzes employment dynamics by using probit models for job loss and job search difficulty and also a difference-in-difference estimation strategy which uncovers the differentiated impact of minimum wage reforms between the two groups. Finally, the empirical results remain unchanged or reinforced when a number of robustness tests are applied either by focusing on very young workers or putting emphasis on the previous year job status.

The remainder of the paper proceeds as below. Section 2 presents the literature review. Section 3 displays the data and specifies the research questions and the empirical model. Section 4 analyzes the empirical results and Section 5 carries out robustness analysis. Section 6 concludes.

2. Data analysis

The data used in the empirical analysis stem from the Hellenic Statistical Authority's Greek Labor Force Survey (HSAGLFS) that includes more than 30,000 households corresponding to more than 60,000 individuals per quarter. The participation in this quarterly survey is obligatory, lasts for 6 quarters (1/6 of households are replaced in each period) and accounts for more than 90% of households selected. The survey collects data on a wide range of labor characteristics *inter alia* employment, wage, professional status, job distinction, educational level and demographics among them the respondent's age.

Following the standard OECD definition of the working age population, we drop from our dataset all individuals aged 0-14 and 65+ years old; besides, in our dataset, the employment rate of the latter age group is less than 5%, including mainly pensioners. To control for potential seasonality of the number of employed persons, we keep only the 2nd quarter in the final sample.

2.1. Descriptive statistics of the employment rate

As discussed before, the final sample includes the working age population between 15 and 64 years old who are either employed, unemployed or inactive¹ over the period between 2010q2 and 2020q2; employed are 220,419, unemployed are 54,634 and inactive are 137,419. Table 3.1 below provides important information both for demographical and employment level characteristics. As for the demographics, the employment rate, i.e., the ratio of employed divided by the total population per group,

¹ An inactive person is in the working-age group but is not available or looking for work.

is displayed, while regarding the employment features an involvement rate is calculated as the number of employed per group divided by the total number of employed in each period.

[Please insert Table 3.1]

A deep dive into specific aspects of Table 3.1 gives us that the employment rate of the whole sample shows an average value of 53.68 ranging between 48.93% and 58.94% over the sample period. Below we will discuss the employment rate per demographical group. For instance, based on gender, on average, the males' employment rate is much higher than that of females by almost 19%; at the same time, 57.82% of employed persons are males (127,435) and the rest are females (92,984). The most important classification in our analysis is the employment rate per age group. On average, the age group with the highest involvement in the labor market is that of 45-64 (48%), followed by 30-44 (40%) and 15-29 (12%). However, the highest employment rate is shown by 30-44 (70.22%), followed by 45-64 (54.17%) and 15-29 (30.34%). The age group with the highest volatility is that of 15-29 (the standard deviation equals 4.39); perhaps, the establishment of two reforms may change significantly the number of employed persons who get paid with minimum wage within this group and, on average, equals 37% of the employed population in this group. We also divide our dataset according to International Standard Classification of Education (ISCED 97). Based on this classification, it seems that almost 80% of employed population have attended either secondary or tertiary education. An interesting issue is that the employment rate follows a reverse order in relation to the educational level; employed population with post-tertiary education has the highest rate (82.39%), while population with no school attainment has the lowest rate (23.31%). In other words, higher education level may lead to a much higher possibility to get a job. Further, Greek territory has been divided into 13 regions following *Nomenclature d' Unités Territoriales Statistiques* (NUTS 2). As expected, Attica has about 25% of the employed population in Greece; however, Attica is not 1 of the 4 regions with the highest employment rates (close to 60%) among them Ionian Islands, Peloponnese, Southern Aegean and Crete. For the rest of regions, the employment rate lies between 49% and 56%.

We further proceed to employment characteristics. As for them, since we have data only for employed population, we present in Table 3.1 the involvement rate per group. Initially, based on job distinction, full-time employees account for 92% of the employed population. Considering the professional status, employees are 61% of the employed population, followed by self-employees with 34%, while the rest is family workers. Finally, the Hellenic economy has been split into 16 different job sectors according to 2008's Statistical Distribution and Economic Activity.² We observe that 5 sectors

² The following sectors are included in our analysis: primary sector, processing, energy, construction, trade, transport, accommodation and food, information, financial and insurance activities, professional-scientific-technical activities, administrative and supporting activities, public administration, education, human health and social support, art and entertainment, and other services.

accumulate more than 60% of the total employment that displayed in order i.e., primary sector, trade, processing, accommodation and food, and public administration. Finally, among the most volatile sectors are accommodation and food, and primary sector in which the employed persons are mostly paid with a minimum wage and as such, these sectors may be affected more by the minimum wage reforms.

Descriptive statistics offer useful information regarding the employment rates per group in the Greek economy; however, they do not unveil the intertemporal fluctuation of these rates. Thus, in the following sub-section, we put emphasis on the evolution of the employment and investigate, to what extent, different aspects of this variable may be affected by formal changes in the minimum wage.

2.2. Identifying the consequences from the minimum wage reforms

Since June 2012, the nominal minimum wage in Greece fell down from 752€ to 586€ (a 22% decrease)³, remaining at this level till the end of 2018, and raised to 650€ (an 11% increase)⁴. Figure 3.1 depicts the evolution of nominal minimum wage (in a 12-month period) in Greece over the period between 2010 and 2020; the two vertical red lines show the minimum wage reforms (June 2012 and January 2019).

[Please insert Figure 3.1]

To shed some light on the effect of the two minimum wage reforms on the Greek labor market, Figure 3.2 below displays the evolution of the employment rate in Greece between 2010 and 2020; it shows the 2nd quarter of each year. The employment rate has been calculated per period by dividing the number of employed with the population 15-64.

[Please insert Figure 3.2]

By getting a closer look at Figure 3.2, the employment rate decreases till 2013 by losing almost 10% from the beginning of our sample period, then increases up to 2019 and finally, drops again. In particular, the first reform stops the intense drop of employment rate that gradually starts to increase after two years from the initial establishment; instead, a direct decline in the employment rate is followed by the official increase of the minimum wage at the beginning of 2019. Perhaps the benefit from the first reform on the employment rate is more than 2% or 6% after one or two years from its imposition, respectively (by considering the pre-2012 downward trend of the employment rate, in 2014, this rate would be less than 45%). Instead, the potential cost of the second reform on the employment rate is more than 2% after one year from this reform (by taking into account the pre-2019 upward trend of the

³ A 32% minimum wage cut was also introduced to employees younger than 25 years old.

⁴ National minimum wage is calculated in a 14-month period. The minimum wage values in a 12-month period are 877€, 684€ and 758€, respectively.

employment rate, in 2020, this rate would be close to 58%).⁵ Therefore, concerning the employment rate, one could say that the potential cost of the second reform might partially crowd out the potential benefits from the first reform.

2.3. *Detecting the minimum wage profile*

Having discussed the effect of minimum wage reforms on the total employment rate in the Greek labor market, we need to delve more into this effect by shedding some light on other aspects of labor market. Before doing that, it is important to get a better sense of the minimum wage profile. As for the income statement reported in HSAGLFS, the percentage of employed persons who has answered this question is around 45%. Their answer is classified into 10 different income groups, *inter alia* up to 400€, 400€-600€ and 600€-800€. Thus, to define the minimum wage profile, we include respondents with monthly payments in the first two groups (the amount does not exceed 600€), except for the pre-2012 and post-2019 minimum wage reform periods, in which we also add the last income group (the amount is up to 800€). Thus, the following Table 3.2 gives us important information concerning the minimum wage profile.

[Please insert Table 3.2]

Based on Table 3.2, we observe that, among the employed persons who answered the question regarding their income, 23.99% are getting paid at or less than the minimum wage. As for the demographical characteristics, it seems that the minimum wage profile refers to a woman, younger than 45 years old who has attended at most secondary education (more than 45% of this group is getting paid with a minimum wage); however, a man, older than 45 years old who has attended at least a secondary education level earns more than the minimum wage (less than 10% of this group is getting paid with a minimum wage). Among regions, we do not observe high variation. Regarding the employment characteristics, self-employees and family workers did not answer this question, while 88.98% of part-time employees are getting paid the minimum wage. Finally, the sectors with the highest ratio of employees paid with the minimum wage (more than 40%) are primary sector, administrative and supporting activities, accommodation and food, and other services.

Figure 3.3 below displays the evolution of the employment rate of the minimum wage profile (treatment group) and the non-minimum wage profile (control group).

[Please insert Figure 3.3]

⁵ Perhaps, it is difficult to completely compare the effects of these two reforms due to the following reasons. The first reason is that the change of the minimum wage is not the same (22% drop in the first and 11% rise in the second reform). The second reason is associated with the different data availability (after 2019, we have only one year).

With the blue solid line, we display the treatment group, while the red dashed line depicts the control group. We clearly observe that in the pre-reform period both lines are mainly synchronized (run in parallel); however, after one year from the imposition of the first reform, the employment rate of the treatment group starts to increase, while that of the control group seems to remain unchanged for almost three years. As for the post-2019 period, a significant drop of the employment rate of the treatment group takes place; instead, it seems that the employment rate of the control group again remains unchanged.

2.4. Specifying the research questions and the empirical model

The previous statistical and graphical analysis of the cross-sectional dataset helped us to understand how the employment rates of the treatment and the control groups have been affected by the minimum wage reforms in 2012 and 2019, respectively. In this respect, it is quite important to specify to what extent each reform may influence the relative change of the employment, in Greek labor market, between the treatment and the control groups. Thus, empirical applications will be presented below in an attempt to enlighten how the minimum wage reforms may be associated with two worst-case scenarios in the labor market: the job loss and the job search difficulty; both scenarios shed some light on the dynamic impact of reforms on the labor market.

Before proceeding to research questions, it is quite important to understand how to construct these two variables from our dataset. Since the current dataset cannot match the information of a specific agent of two separate periods, we use answers regarding the current and the previous year employment status. Thus, we could assume a job loss when people who worked in the previous year, they do not work in the current period; this variable is an indicator that takes the value 1 when a change in the employment status from employed to non-employed is reported, and the value 0 when the employment status remains unchanged (employed in both periods). As for the second variable, we consider a job search difficulty when individuals do not work in the current period and still seek for a job; this variable is an indicator that takes the value 1 when the job searching period lasts for more than 1 year (long-term unemployment) and the value 0 when this period is shorter than 1 year (short-term unemployment).⁶ Table 3.3 below reports the descriptive statistics of both variables.

[Please insert Table 3.3]

In order to estimate the impact of both reforms on the relative possibility of job loss and the job search difficulty between the treatment and the control groups, we use a difference-in-differences (DiD)

⁶ See an official definition from Eurostat in the following link: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Glossary:Long-term_unemployment

estimation strategy. Through this strategy, our aim is to look at the effect of the policy intervention (the minimum wage reform) by taking into consideration how the mean of a treatment group, in our case females, aged 15-44 who attended at most secondary education (minimum wage group), changes after the reform establishment and compare this change with a mean of a control group, in our case males, aged 45-64 who attended at least secondary education (non-minimum wage group). Figure 3.3 depicted that before the reform imposition, the employment rate of both groups was moving in an almost absolute parallel direction; instead, after the reform establishment, the employment rate of the treatment group changes a lot, while that of control group seems to be unchanged.

Having discussed the empirical strategy, the likelihood of an individual i reporting a change in his/her employment status or a difficulty to find a new job can be described as below:

$$Prob(Y_{it} = c|X_{it}) = F(X_{it}\beta) \quad (1)$$

where variable Y takes the value 1 when a job loss is reported, i.e., when the previous period's status was employed and changes to either unemployed or inactive in the current period and the value 0 when the previous period's status was employed and does not change,

or

$$Prob(Y'_{it} = c|X'_{it}) = F'(X'_{it}\beta') \quad (2)$$

where variable Y' takes the value 1 when job search difficulty is reported, i.e., the job searching period lasts for more than 1 year and the value 0 when this period is shorter than 1 year, for those individuals that are non-employed in the current period and still seek for a job.

F and F' are the standard logistic cumulative distribution functions, and X is a set of predictors reported below and refers to the 2012 reform:

$$X_{it}\beta = \beta_0 + \beta_1\mathbb{1}_{[t>2012]_t} + \beta_2\mathbb{1}_{[treatment]_{it}} + \beta_3\mathbb{1}_{[t>2012]_t} * \mathbb{1}_{[treatment]_{it}} + \beta_4Z_{it} + \varepsilon_i \quad (3)$$

where $\mathbb{1}_{[t>2012]_t}$ is an indicator taking the value 1 if the year is 2013 or 2014 (one or two years after the reform) and 0 if the year is 2010 or 2011 (one or two years before the reform), $\mathbb{1}_{[treatment]_{it}}$ is an indicator that takes the value 1 when an individual is included in the treatment group (female, younger than 45 years old who attended at most secondary education) and 0 when an individual is included in the control group (male, older than 45 years old who attended at least secondary education) in period t , Z is a vector of demographical characteristics (gender, educational level, region of residence).⁷ β_1 coefficient refers to the control group and expresses the expected mean change in outcome from before to after the policy intervention, β_2 coefficient refers to the period before the intervention and captures the estimated mean difference in outcome between the treatment and control groups and β_3 is the

⁷ In this analysis, we cannot include any employment-level characteristics (sector, job distinction or professional status) since we are interested both for employment and non-employment status.

coefficient of our interest that informs us whether the expected mean change in Y (outcome variable) from before to after the policy reform was different between the two groups.

As to the second reform, the only variable that changes now is the indicator $\mathbb{1}_{[t>2019]_t}$ that takes the value 1 if the year is 2020 (one year after the reform) and 0 if the year is 2017 or 2018 (one or two years before the reform). The relation is presented below:

$$X'_{it}\beta' = \beta'_0 + \beta'_1\mathbb{1}_{[t>2019]_t} + \beta'_2\mathbb{1}_{[treatment]_{it}} + \beta'_3\mathbb{1}_{[t>2019]_t} * \mathbb{1}_{[treatment]_{it}} + \beta'_4Z_{it} + u_i \quad (4)$$

3. Empirical results

This section presents the main results of this study. In particular, an official minimum wage reduction (2012 minimum wage reform) and an increase (2019 minimum wage reform), respectively, will be tested in order to find to what extent these changes in the minimum wage may affect or not the relative possibilities of job loss and job search difficulty between the treatment and the control groups.

3.1. The relative possibility of job loss

Table 4.1 below presents the difference-in-difference estimation results of eqs. (1) and (3) and displays the odds ratio of the impact of both reforms on the possibility of job loss⁸. The dependent variable is an indicator which takes the value 1 if the individual reports that in the current period is either unemployed or inactive and in the previous period was employed, and the value 0 when the individual does not lose his/her job in the current period.

[Please insert Table 4.1]

Columns (1) – (4) refer to 2012 minimum wage reform and columns (5) – (8) display the estimation results concerning 2019 reform. Briefly, it seems that only an increase in the minimum wage changes the relative possibility of job loss between the treatment and the control group, after the policy intervention.

Column (1) presents the estimates of the impact of the first reform without including any control variables. In this case, we observe that the relative possibility of job loss is strongly insignificant between the treatment group and the control group, after one or two years from the imposition of the minimum wage reduction. In this case, the possibility of job loss is increased by 17% for the control group when a minimum wage reform is established. Finally, the relative possibility of job loss, before the establishment of this reform, is increased by 54% for the treatment group in relation to the control group. We further proceed to column (2) in which the estimation results do not differ significantly even though 2 demographical characteristics (control variables) are included, i.e., the educational level and the region

⁸ Odds ratio is a ratio of likelihoods (an event to be occurred in terms of an event not to be occurred). Thus, when the odds ratio is higher than 1 increases the possibility an outcome to be happened, given an initial assumption; when the odds ratio is less than 1, this possibility decreases. To calculate the possibility, we simply subtract a given odds ratio from one.

of residence^{9, 10}. Regarding the odds ratios of the control variables, the possibility of job loss is lower than 32% and 86% for individuals with primary or tertiary, and post-tertiary education, respectively compared to those with secondary education. Finally, decreased possibility (either significant or not) is reported, in almost all cases except for Macedonia, for individuals who live out of Attica compared to those live in Attica. To get a better insight of the results in column (2), columns (3) and (4) assume that the dependent variable takes now the value 0 when the current employment status is unemployed and inactive, respectively. The estimation results in column (3) do not change significantly compared to those of column (2); similarly, in column (4), the main result does not change, i.e., the difference-in-difference estimator is completely insignificant.

With a similar way, we present the estimation results that are associated with the effect of 2019 minimum wage increase in columns (5) – (8). Column (5), without including any control variables, shows that the relative possibility of job loss is increased by 27% after one year from this reform establishment between the treatment and the control groups. The possibility is increased by 39% for the control group when a minimum wage reform is established and the relative possibility of job loss is increased by 128% between the treatment group and the control group before the reform. Likewise, column (6) reports similar coefficients to those presented in column (5). In the same way with columns (3) and (4), we report estimates for the 2019 reform in columns (7) and (8), respectively. In this regard, we find an insignificant relative possibility of job loss for unemployed and a strongly significant one for inactive population; we find that this possibility is increased by 77%, after one year from the reform introduction, when the treatment group is considered. The rest of coefficients keep the same sign with those in column (6).

To test the robustness of our results, Table A1 in the Appendix replicates all columns of Table 4.1 by including time and age fixed effects. Results remain almost unchanged, especially those of the difference-in-difference estimator.

In conclusion, a rise in the statutory minimum wage matters causing an increase in the relative possibility of job loss between the treatment and the control groups. This possibility is getting much higher when an individual is inactive in the current period. Regarding the decrease of the minimum wage, it seems that not to be an issue. Finally, the possibility of job loss drops for individuals with tertiary or post-tertiary education compared to those with secondary education level.

3.2. *The relative possibility of job search difficulty*

To answer this question, we estimate eqs. (2) and (4) by putting emphasis on the odds ratios of the impact of both reforms on the possibility of job search difficulty. The dependent variable is an indicator,

⁹ We also include the gender; however, it is omitted because of the collinearity with the dependent variable.

¹⁰ For each one of these groups, the most populous value is used for reference; in education, the secondary education is used and in region of residence, Attica is used, respectively.

for non-employed individuals in the current period, which takes the value 1 if the individual seeks for a job for more than 12 months and the value 0 when the searching period lasts for less than 12 months.

[Please insert Table 4.2]

Columns (1) and (2) present the impact of 2012 minimum wage reform and columns (3) and (4) the relevant impact of 2019 reform on the possibility of job search difficulty. In brief, it seems that only the official minimum wage reduction differentiates the possibility of job search difficulty between the treatment and the control groups.

Column (1) displays the effect, after the introduction of the first reform, without including any control variables, on the relative possibility of job search difficulty; this possibility is found to be decreased by 36%. In this respect, the possibility of job search difficulty is more than doubled for the control group when a minimum wage reform is established; additionally, the relative possibility of job search difficulty, before the establishment of this reform, is increased by 28% for the treatment group in relation to the control group. Proceeding to column (2), we observe that the main results remain almost unchanged; in this case, we include a number of control variables. We found that the possibility of job search difficulty increases for individuals with no school attainment or primary education compared to those individuals with secondary education. Finally, it seems that the impact on this possibility is increased for individuals living in the mainland and is reduced for those living in islands compared to Attica's inhabitants. We continue with the identification of the impact of the last reform on the relative possibility of job search difficulty. In columns (3) and (4), the coefficient of our interest (difference-in-difference estimator) is shown a completely statistically insignificant impact.

4. Robustness analysis

In the current section, we will test the robustness of the estimation results of Section 4 by using sub-groups of the treatment and the control groups.

4.1. A closer look to very young workers

In Section 3.2, we have discussed that the 2012 minimum wage reform reduced differentially the minimum wage for workers below and above 25 years old. Thus, our aim is to test to what extent a higher cut of the minimum wage for the age group 15-24 years old may affect differently the baseline results of Tables 4.1 and 4.2. Table 5.1 below provides the empirical results.

[Please insert Table 5.1]

In Table 5.1, we replicate the empirical results of column (2) in Tables 4.1 and 4.2. Columns (1) and (2) present the relative possibility of job loss and columns (3) and (4) display the relative possibility

of job search difficulty. Additionally, columns (1) and (3) assume that the treatment group is a female, aged 15-24 years old who attended at most secondary education; columns (2) and (4) consider that the treatment group is a female, aged 25-44 years old who completed at most the secondary education. For all cases, the control group remains the same with that of Tables 4.1 and 4.2 (male aged 45-64 who completed at least the secondary education level).

The empirical results show that the relative possibility of job loss, among the treatment and the control group for both cases, is not affected by the establishment of the 2012 reform, as in Table 4.1. However, we observe that after the increase of the minimum wage (2019 reform), the relative possibility of job search difficulty is reduced by 52% and 30%, i.e., more when we include in the treatment group only 15-24 years old workers; this possibility had been reduced by 35% in the baseline results (see Table 4.1) that lies between 30% and 52%. The rest of coefficients are quite similar to those in Tables 4.1 and 4.2, respectively.

4.2. The initial job status

The database gives us important information regarding the previous year job status and sector for each respondent. In this section, we replicate the estimation results of column (6) of Table 4.1 (the estimation results after the imposition of 2019 reform) and delve more into these effects by adding an additional feature (employment characteristic) in the existing treatment group (female, aged 15-44 who attended at most secondary education). Table 5.2 below presents the estimation results of the relative possibility of job loss between the treatment and control groups after the establishment of 2019 minimum wage reform.

[Please insert Table 5.2]

For all cases of Table 5.2, the dependent variable is the relative possibility of job loss between the treatment and the control groups after the establishment of 2019 reform. Columns (1) and (2) assume that the treatment group is a female, aged 15-44 who completed at most the secondary education and the previous year job status is either self-employed or employee, respectively; the control group is now a male, aged 45-64 who attended at least the secondary education and the previous year job status is not self-employed (column (1)) or not employee (column (2)). Column (3) uses an extra feature in the treatment group the previous year involvement in one of the four minimum wage-intensive sectors (accommodation and food, primary sector administrative and supporting activities and other services); the control group refers to a male, aged 45-64 who attended at least the secondary education and the previous year job sector is not one of the minimum wage-intensive sectors.

The empirical results indicate that the relative possibility of job loss, among the treatment and the control group, is increased by more than 100% by the establishment of 2019 reform when we include an extra feature in the treatment group either the previous year job status to be employee or the previous

year job sector to be one of the four minimum wage-intensive sectors; this possibility is much higher compared to that displayed in column (6) of Table 4.1. The rest of coefficients carry the expected sign.

5. Conclusion

Are the relative effects between low-wage and high-wage employees on unemployment heterogenous when two different minimum wage reforms are introduced? To answer this question, we used survey data from the Greek labor market over the period between 2010 and 2020 for all respondents aged between 15 and 64 years old and a dynamic analysis with probit models by implementing a difference-in-difference estimation strategy which uncovers the differentiated impact of minimum wage reforms between the two groups. We thus showed that, among the two groups, a minimum wage increase is followed by a drop in the relative possibility of job loss, while the relative possibility of job search difficulty is negatively affected by a minimum wage cut. The former impact is getting worse for employees who engaged in a minimum wage-intensive sector in the previous year and are now inactive, while the latter effect is reinforced for very young workers.

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Tables

Table 3.1: Descriptive statistics of the employment

Variables	Obs.	Mean	Std. Dev.	Min	Max
Whole sample	220,419	53.68	3.32	48.93	58.94
Gender					
<i>Male</i>	127,435	63.25	4.24	57.56	70.85
<i>Female</i>	92,984	44.48	2.69	40.33	48.29
Age groups					
<i>15-29</i>	27,381	30.34	4.39	25.00	38.78
<i>30-44</i>	88,118	70.22	3.58	65.11	76.20
<i>45-64</i>	104,920	54.17	3.32	48.94	58.53
Educational level					
<i>No school</i>	563	23.31	4.44	15.07	29.52
<i>Primary</i>	37,013	46.50	3.40	42.29	52.57
<i>Secondary</i>	117,940	49.59	3.41	44.59	55.44
<i>Tertiary</i>	57,308	70.50	3.80	65.94	77.83
<i>Post-tertiary</i>	7,595	82.39	2.36	77.87	88.73
Region (NUTS 2)					
<i>Eastern Macedonia-Thrace</i>	17,601	53.51	2.96	47.65	57.28
<i>Central Macedonia</i>	32,740	50.25	3.27	44.61	54.96
<i>Western Macedonia</i>	6,621	49.36	3.43	43.71	56.09
<i>Epirus</i>	13,276	52.38	4.28	46.56	60.33
<i>Thessaly</i>	13,823	55.44	3.03	51.13	61.25
<i>Ionian Islands</i>	6,416	60.60	3.54	53.16	65.88
<i>Western Greece</i>	14,293	50.73	3.66	44.70	57.58
<i>Stereia Hellas</i>	13,892	52.93	3.78	46.66	59.02
<i>Attica</i>	54,459	53.62	3.66	48.13	58.68
<i>Peloponnese</i>	16,653	58.62	3.31	54.63	63.85
<i>Northern Aegean</i>	5,602	55.07	4.42	47.65	60.69
<i>Southern Aegean</i>	6,589	58.13	5.31	45.86	65.72
<i>Crete</i>	18,454	57.60	4.39	51.69	63.54
Job distinction					
<i>Full-time</i>	202,744	92.00	0.96	90.85	93.53
<i>Part-time</i>	17,675	8.00	0.92	6.47	9.15

Professional status

<i>Employees</i>	134,383	60.99	1.26	58.70	63.46
<i>Self-employees</i>	74,513	34.00	0.99	32.27	35.54
<i>Family workers</i>	11,523	5.01	0.73	3.91	6.10

Sectors

<i>Primary sector</i>	37,090	16.89	1.00	15.27	18.23
<i>Processing</i>	20,712	9.45	0.75	8.70	10.92
<i>Energy</i>	3,191	1.45	0.10	1.30	1.58
<i>Construction</i>	11,287	5.51	1.54	3.84	7.94
<i>Trade</i>	37,937	17.22	0.32	16.50	17.76
<i>Transport</i>	9,837	4.47	0.21	4.27	4.98
<i>Accommodation</i>	19,550	9.04	1.23	7.36	10.83
<i>Information</i>	3,573	1.64	0.17	1.39	1.91
<i>Financial</i>	4,548	2.09	0.25	1.64	2.49
<i>Prof-Tech</i>	10,379	4.72	0.19	4.45	5.13
<i>Support</i>	4,231	1.95	0.25	1.50	2.24
<i>Public admin.</i>	18,871	8.57	0.29	8.11	9.17
<i>Education</i>	17,354	7.89	0.33	7.47	8.61
<i>Human health</i>	12,386	5.63	0.23	5.24	6.15
<i>Entertainment</i>	2,506	1.14	0.08	1.02	1.28
<i>Other</i>	6,967	3.22	0.44	2.56	3.80

Notes: For all demographical characteristics, the employment rate has been computed as the ratio of number of employed to population of each group. However, for job distinction, professional status and sector, we display the involvement rate that equals the number of employed to total number of employed.

Table 3.2: Descriptive statistics of the minimum wage profile

Variables	Obs.	Mean	Std. Dev.	Min	Max
Whole sample	23,459	23.99	3.87	19.06	34.70
Gender					
<i>Male</i>	9,834	18.59	3.81	13.98	29.69
<i>Female</i>	13,625	30.69	4.49	25.16	41.01
Age groups					
<i>15-29</i>	7,420	48.30	6.28	37.13	67.97
<i>30-44</i>	9,981	22.91	4.84	17.57	37.01
<i>45-64</i>	6,058	15.82	2.80	12.04	23.51
Educational level					
<i>No school</i>	106	64.54	10.33	37.50	77.78
<i>Primary</i>	4,029	40.58	6.70	32.19	56.89
<i>Secondary</i>	15,006	28.79	4.91	22.55	41.58
<i>Tertiary</i>	4,061	12.88	2.37	9.21	19.77
<i>Post-tertiary</i>	257	8.22	3.66	2.94	15.94
Region (NUTS 2)					
<i>Eastern Macedonia-Thrace</i>	1,653	25.14	5.70	18.15	39.74
<i>Central Macedonia</i>	3,830	24.78	5.76	18.13	44.84
<i>Western Macedonia</i>	678	23.70	4.61	19.42	39.51
<i>Epirus</i>	1,220	23.81	7.57	16.21	46.71
<i>Thessaly</i>	1,515	26.78	4.67	20.29	42.86
<i>Ionian Islands</i>	530	23.21	7.29	8.49	39.56
<i>Western Greece</i>	1,217	24.97	7.41	14.66	55.56
<i>Stereia Hellas</i>	1,391	23.41	3.69	14.58	31.68
<i>Attica</i>	7,064	23.80	3.16	18.44	28.57
<i>Peloponnese</i>	1,523	29.56	9.27	19.22	55.19
<i>Northern Aegean</i>	434	22.45	8.51	10.97	36.59
<i>Southern Aegean</i>	513	21.03	6.95	8.50	32.41
<i>Crete</i>	1,891	23.76	4.32	17.76	33.22
Job distinction					
<i>Full-time</i>	15,618	18.33	4.71	11.51	29.01
<i>Part-time</i>	7,841	88.98	2.28	83.65	93.28

Professional status

<i>Employees</i>	23,459	23.99	3.87	19.06	34.70
<i>Self-employees</i>	-	-	-	-	-
<i>Family workers</i>	-	-	-	-	-

Sectors

<i>Primary sector</i>	1,503	46.53	8.56	29.84	63.87
<i>Processing</i>	2,399	22.27	5.54	15.57	41.28
<i>Energy</i>	262	13.32	5.33	5.06	25.00
<i>Construction</i>	1,569	33.88	8.10	23.87	50.00
<i>Trade</i>	5,237	35.20	6.84	25.79	51.48
<i>Transport</i>	560	12.58	2.60	7.06	17.74
<i>Accommodation</i>	3,451	41.66	7.97	30.61	67.42
<i>Information</i>	340	15.50	2.18	9.94	20.00
<i>Financial</i>	182	7.16	3.53	4.18	18.18
<i>Prof-Tech</i>	744	25.75	4.84	18.99	42.68
<i>Support</i>	1,110	45.54	5.47	38.15	55.84
<i>Public admin.</i>	805	6.44	2.17	2.88	12.07
<i>Education</i>	1,679	14.06	2.05	11.62	20.65
<i>Human health</i>	1,132	15.29	3.22	10.71	23.44
<i>Entertainment</i>	390	32.10	4.98	21.70	40.91
<i>Other</i>	2,096	58.91	9.03	40.21	67.11

Notes: The minimum wage profile refers to all respondents who answered the question regarding the monthly payment; among them, those who get paid at or less than the minimum wage are included in this table.

Table 3.3: Descriptive statistics of job loss and job search difficulty

Variables	Obs.	Mean	Std. Dev.	Min	Max
Job loss	76,592	0.05	0.22	0	1
<i>Yes</i>	4,170	-	-	-	-
<i>No</i>	72,422	-	-	-	-
Job search difficulty	20,206	0.69	0.47	0	1
<i>Yes</i>	13,812	-	-	-	-
<i>No</i>	6,394	-	-	-	-

Note: For **job loss**, “*Yes*” is displayed when an individual was employed in the previous period and non-employed in the current period; “*No*” presents the cases when the previous period’s status was employed and does not change in the current period. For **job search difficulty**, “*Yes*” refers to those observations that the searching period lasts for more than 1 year, while “*No*” indicates that this period is shorter than 1 year.

Table 4.1: The job loss

	2012 reform				2019 reform			
	Non-employed		Unemployed	Inactive	Non-employed		Unemployed	Inactive
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
After reform	1.17** (2.31)	1.18** (2.46)	1.36*** (3.00)	1.05 (0.57)	1.39*** (3.26)	1.38*** (3.19)	1.22 (1.41)	1.57*** (3.13)
Treatment group	1.54*** (6.82)	1.42*** (5.18)	2.48*** (9.94)	0.54*** (-5.31)	2.28*** (9.20)	1.97*** (7.05)	2.49*** (7.55)	1.24 (1.35)
After reform * Treatment group	0.92 (-0.87)	0.91 (-1.01)	0.81 (-1.64)	0.93 (-0.45)	1.27* (1.67)	1.27* (1.67)	1.13 (0.64)	1.77*** (2.59)
No school attainment		0.80 (-0.29)	1.05 (0.07)			3.04* (1.76)	4.89** (2.49)	
Primary education		0.68*** (-3.34)	0.67*** (-3.06)	0.78 (-1.08)		1.05 (0.26)	0.87 (-0.59)	1.44 (1.36)
Tertiary education		0.68*** (-4.95)	0.43*** (-6.43)	0.92 (-0.86)		0.63*** (-3.71)	0.45*** (-4.18)	0.85 (-0.96)
Post-tertiary education		0.14*** (-3.85)	0.14*** (-2.76)	0.15*** (-2.66)		0.56** (-2.18)	0.33** (-2.45)	0.87 (-0.41)
Eastern Macedonia-Thrace		1.16 (1.45)	0.85 (-1.18)	1.84*** (4.15)		1.03 (0.22)	0.81 (-1.15)	1.48* (1.84)
Central Macedonia		1.14* (1.82)	1.09 (0.97)	1.25* (1.89)		1.10 (0.79)	1.00 (0.02)	1.29 (1.35)
Western Macedonia		1.01 (0.04)	1.02 (0.09)	0.99 (-0.04)		1.29 (1.30)	0.88 (-0.47)	2.09*** (2.70)
Epirus		0.88 (-1.18)	0.89 (-0.93)	0.87 (-0.79)		1.34* (1.75)	1.33 (1.41)	1.38 (1.16)
Thessaly		0.85 (-1.48)	0.70** (-2.42)	1.14 (0.76)		1.22 (1.27)	0.91 (-0.46)	1.86*** (2.68)
Ionian Islands		0.56*** (-3.00)	0.51*** (-2.72)	0.65 (-1.40)		0.64* (-1.94)	0.31*** (-2.99)	1.33 (0.95)
Western Greece		0.91 (-0.83)	0.89 (-0.92)	0.97 (-0.17)		1.04 (0.23)	1.19 (0.94)	0.73 (-1.00)
Stereia Hellas		0.85	0.69***	1.17		0.96	0.90	1.10

		(-1.55)	(-2.72)	(1.03)		(-0.22)	(-0.52)	(0.36)
Peloponnese		0.68***	0.58***	0.87		0.70**	0.40***	1.31
		(-3.62)	(-3.92)	(-0.81)		(-2.12)	(-3.62)	(1.19)
Northern Aegean		0.76	0.66*	0.97		1.51**	1.35	1.87**
		(-1.59)	(-1.87)	(-0.12)		(2.19)	(1.23)	(2.17)
Southern Aegean		0.80	0.65**	1.15		1.36*	1.41*	1.26
		(-1.35)	(-2.02)	(0.56)		(1.82)	(1.71)	(0.78)
Crete		0.73***	0.76**	0.66**		0.92	0.72*	1.33
		(-3.12)	(-2.34)	(-2.27)		(-0.61)	(-1.69)	(1.30)
Constant	0.05***	0.06***	0.03***	0.03***	0.03***	0.03***	0.02***	0.01***
	(-63.05)	(-42.38)	(-38.58)	(-35.31)	(-55.41)	(-34.07)	(-30.47)	(-27.27)
Observations	30,675	30,675	29,968	29,449	19,717	19,717	19,361	19,189

Notes: The dependent variable “job loss” is an indicator that takes the value 1 when the previous period’s employment status was employed changing to a non-employed status (unemployed or inactive) in the current period and the value 0 when the employed status of the previous period does not change in the current period. The treatment group refers to females aged 15-44 who attended at most secondary education. Columns (1) and (5) report the estimation results without control variables, while in columns (2) and (6), we add them. Further, in columns (3) and (7), the dependent variable takes the value 1 when the previous period’s status was employed and the current status is unemployed, while in columns (4) and (8) the current status changes to inactive. The reference group for educational level is the secondary education and for region of residence is Attica.

(*), (**), (***) are significance level at 10%, 5% and 1%, respectively and t-values are reported in parenthesis.

Table 4.2: The job search difficulty

	2012 reform		2019 reform	
	(1)	(2)	(3)	(4)
After reform	3.30*** (11.67)	3.29*** (11.51)	0.82 (-1.60)	0.90 (-0.82)
Treatment group	1.28*** (2.80)	1.24** (2.28)	0.76*** (-3.30)	0.76*** (-2.99)
After reform * Treatment group	0.64*** (-3.89)	0.65*** (-3.68)	0.86 (-0.99)	0.93 (-0.46)
No school attainment		2.39** (2.03)		1.61 (0.89)
Primary education		1.33*** (3.24)		1.30* (1.71)
Tertiary education		0.96 (-0.31)		0.94 (-0.35)
Post-tertiary education		2.74 (1.63)		1.33 (0.69)
Eastern Macedonia-Thrace		1.11 (0.95)		0.72** (-2.37)
Central Macedonia		1.35*** (4.01)		0.71*** (-3.12)
Western Macedonia		1.34** (2.10)		0.73 (-1.64)
Epirus		1.34*** (2.73)		0.97 (-0.16)
Thessaly		1.03 (0.23)		0.71** (-2.11)
Ionian Islands		0.39*** (-5.23)		0.19*** (-8.28)
Western Greece		1.34*** (2.79)		0.80 (-1.54)
Stereia Hellas		1.45*** (3.53)		0.79 (-1.40)
Peloponnese		1.45*** (3.31)		0.86 (-0.87)
Northern Aegean		1.06 (0.31)		0.65** (-2.06)
Southern Aegean		0.33*** (-6.72)		0.17*** (-10.82)
Crete		0.66*** (-4.35)		0.34*** (-7.81)
Constant	0.91 (-1.23)	0.84** (-2.00)	3.46*** (17.82)	4.89*** (15.56)
Observations	8,026	8,026	4,628	4,628

Notes: The dependent variable “job search difficulty” is an indicator that takes the value 1 when the searching period for a new job lasts for more than 1 year (long-term unemployment) and the value 0 when this period is shorter than 1 year (short-term unemployment). As in Table 4.1, the reference group for educational level is the secondary education and for region of residence is Attica.

(*), (**), (***) are significance level at 10%, 5% and 1%, respectively and t-values are reported in parenthesis.

Table 5.1: A differential effect between young and very young workers

	Job loss		Job search difficulty	
	15-24	25-44	15-24	25-44
	(1)	(2)	(3)	(4)
After reform	1.19** (2.48)	1.19** (2.49)	3.30*** (11.57)	3.30*** (11.55)
Treatment group	2.33*** (6.65)	1.33*** (4.02)	0.89 (-1.02)	1.40*** (3.49)
After reform * Treatment group	1.03 (0.16)	0.91 (-0.92)	0.48*** (-4.83)	0.70*** (-2.96)
Constant	0.07*** (-37.31)	0.06*** (-41.82)	0.87 (-1.45)	0.86 (-1.62)
Observations	18,319	29,581	3,235	6,703
Control variables				
Educational level	Yes	Yes	Yes	Yes
Residence area	Yes	Yes	Yes	Yes

Notes: In columns (1) and (2), the dependent variable is the relative possibility of “job loss” after the establishment of 2012 minimum wage reform; in columns (3) and (4) the dependent variable is the relative possibility of “job search difficulty” after the establishment of 2019 reform. In columns (1) and (3), the treatment group includes only the age group 15-24; the rest of characteristics remain unchanged (female who attended at most secondary education). In columns (2) and (4), the age group 25-44 is included. As in Table 4.1, the reference group for educational level is the secondary education and for region of residence is Attica.

(*), (**), (***) are significance level at 10%, 5% and 1%, respectively and t-values are reported in parenthesis.

Table 5.2: The relative possibility of job loss and the initial job status (2019 reform)

	Job status		Minimum wage-intensive
	Self-employed	Employee	job sector
	(1)	(2)	(3)
After reform	1.61*** (4.14)	0.74 (-1.27)	1.19 (1.47)
Treatment group	0.42*** (-3.21)	4.99*** (10.49)	1.88*** (4.86)
After reform * Treatment group	0.70 (-0.76)	2.35*** (3.28)	2.12*** (4.05)
Constant	0.05*** (-24.37)	0.01*** (-24.80)	0.04*** (-29.16)
Observations	8,900	10,383	12,966
Control variables			
Educational level	Yes	Yes	Yes
Residence area	Yes	Yes	Yes

Notes: The dependent variable is the “job loss”; in columns (1) and (2), the previous period status is self-employed and employee, respectively. Column (3) considers as treatment group a female, aged 15-44 who attended at most secondary education and involved, in the previous year, in one of the most minimum wage-intensive sectors (accommodation and food, primary sector administrative and supporting activities and other services). As in Table 4.1, the reference group for educational level is the secondary education and for region of residence is Attica.

(*), (**), (***) are significance level at 10%, 5% and 1%, respectively and t-values are reported in parenthesis.

Figures

Figure 3.1: The evolution of the nominal minimum wage in Greece

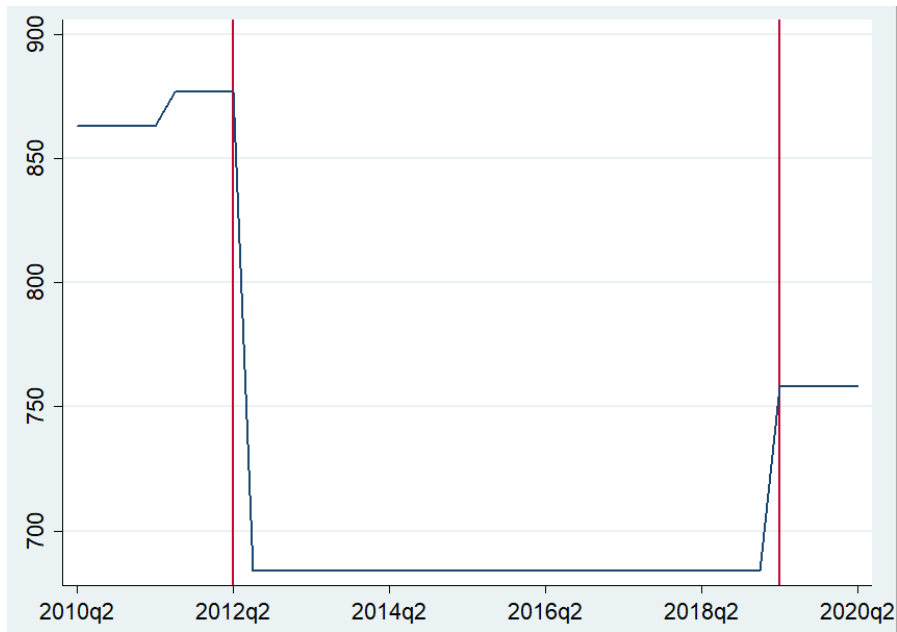
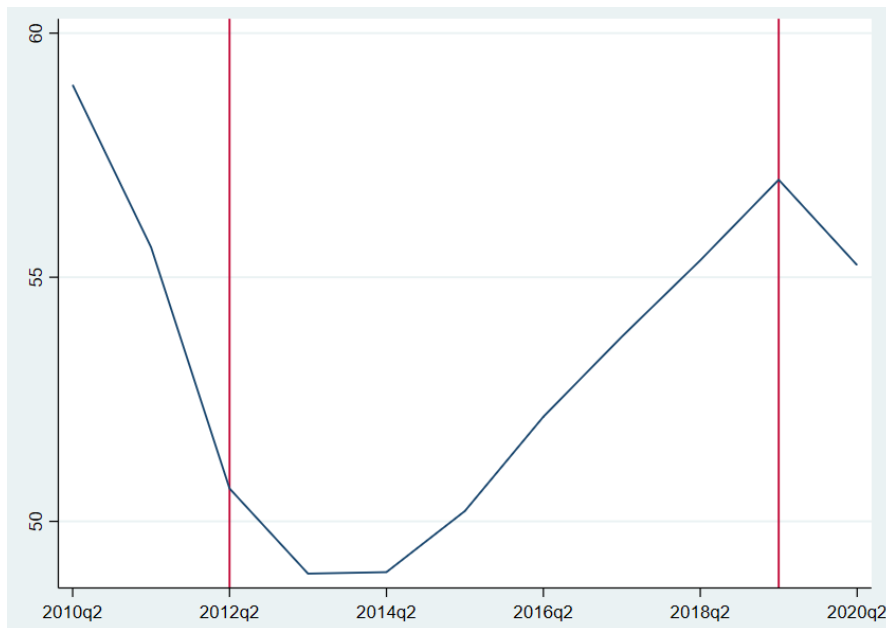
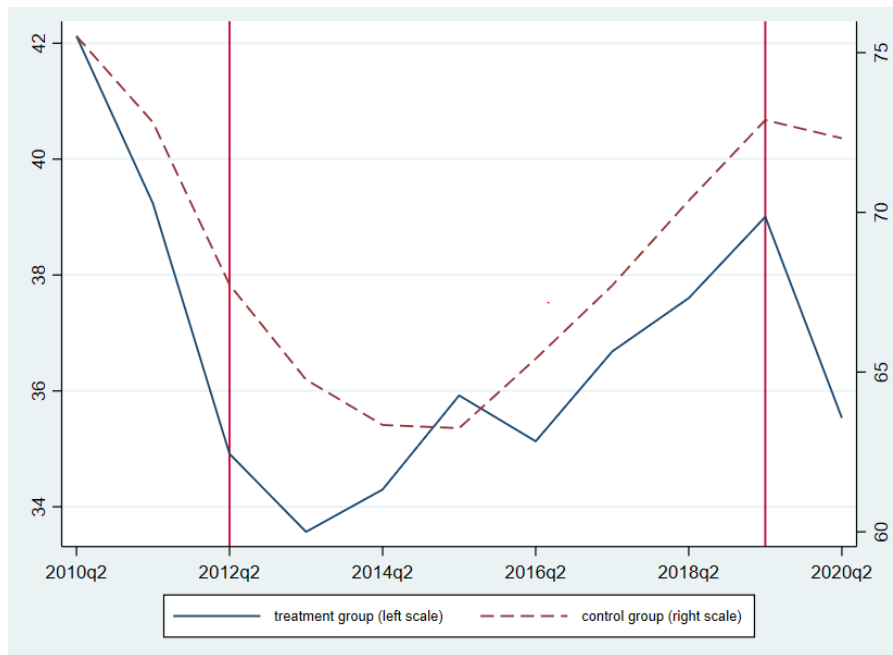


Figure 3.2: The evolution of the total employment rate in Greece



Note: The employment rate has been calculated by dividing the number of employed persons with the population 15-64 years old per period.

Figure 3.3: The evolution of the employment rate per group



Note: The graph plots the employment rate of treatment and control groups. The former group includes all females, aged 15-44 who attended at most secondary education; the latter group refers to males, aged 45-64 who attended secondary, tertiary or post-tertiary education.

Appendix A

Table A1: The job loss with fixed effects

	2012 reform				2019 reform			
	<u>Non-employed</u>	<u>Unemployed</u>	<u>Inactive</u>		<u>Non-employed</u>	<u>Unemployed</u>	<u>Inactive</u>	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
After reform	1.24** (2.45)	1.27*** (2.67)	1.40*** (2.67)	1.19 (1.41)	1.26** (2.10)	1.24* (1.93)	1.15 (0.93)	1.34* (1.77)
Treatment group	0.77 (-0.63)	0.66 (-1.04)	2.12 (1.20)	0.42* (-1.67)	3.53*** (3.39)	2.96*** (2.86)	11.64*** (4.75)	1.44 (0.63)
After reform * Treatment group	0.98 (-0.25)	0.96 (-0.46)	0.85 (-1.24)	0.99 (-0.08)	1.31* (1.87)	1.32* (1.92)	1.13 (0.65)	1.89*** (2.88)
Constant	0.10*** (-25.09)	0.13*** (-20.18)	0.02*** (-18.25)	0.10*** (-17.41)	0.07*** (-22.80)	0.08*** (-17.50)	0.01*** (-14.70)	0.05*** (-14.44)
Observations	30,675	30,675	29,968	29,449	19,717	19,717	19,361	19,189
Age effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time effects (year)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Control variables	No	Yes	Yes	Yes	No	Yes	Yes	Yes

Note: The dependent variable “job loss” is an indicator that takes the value 1 when the previous period’s employment status was employed changing to a non-employed status (unemployed or inactive) in the current period and the value 0 when the employed status of the previous period does not change in the current period. The treatment group refers to females aged 15-44 who attended at most secondary education. Columns (1) and (5) report the estimation results without control variables, while in columns (2) and (6), we add them. Further, in columns (3) and (7), the dependent variable takes the value 1 when the previous period’s status was employed and the current status is unemployed, while in columns (4) and (8) the current status changes to inactive.

All cases include age and time fixed effects, and control variables (educational level, residence area). The reference group for educational level is the secondary education and for region of residence is Attica.

(*), (**), (***) are significance level at 10%, 5% and 1%, respectively and t-values are reported in parenthesis.