The Subminimum Wage Reform in Greece and the Labour-Labour Substitution Hypothesis

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Abstract

The paper examines the effects of the age-differentiated decreases in the minimum wage which Greece implemented in 2012, and which involved the introduction of a subminimum wage as a result of the reduction of the minimum wage by 22% for workers aged 25 and above, and by 32% for those aged less than 25. Using data from the Greek Labor Force Survey, we estimate probit models and find that after the reform there was no statistically significant change in the differential employment probability advantage for private sector employees aged 25-27 over those aged 22-24. We also find that the probability of labour force participation for individuals in the 25-27 group becomes significantly higher (relative to the 22-24 group), which is reflected in a (statistically) significant improvement in the relative job finding rate for non-agricultural, private-sector employees of this group after the reform. Moreover, the reform had no significant differential impact on employment terminations; i.e. it had no differential impact on either dismissals or quits. These findings remain unaltered to a series of robustness checks.

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A widespread concern regarding the minimum wage institution is that it may end up harming the younger and less-skilled workers, i.e. a significant part of those that it intended to help (see, e.g. Stigler, 1946). This long-standing concern received some empirical support, which was crystallized as the "consensus" view by Brown et al. (1982, p. 524) who, on the basis of a six-volume report summarizing evidence for the United States and Canada, concluded that: for teenagers (ages 16-19), a 10 percent increase in the minimum wage reduced teen employment, most plausibly, between 1 and 3 percent; for young adults (ages 20-24), the employment impact is "negative and smaller than that for teenagers"; for adults, the "direction of the effect...is uncertain in the empirical work as it is in the theory."

The purpose of this paper is to examine the effects of the age-differentiated decreases in the minimum wage which Greece implemented in 2012 as part of its economic adjustment programme(s) agreed with the European Union (EU), the International Monetary Fund (IMF), and the European Central Bank (ECB) – aka *Troika*. Until March 2012, all workers, independent of age, were entitled to the same monthly minimum wage (€751), as determined by the last National General Collective Agreement (signed in 2009). In March 2012, this wage was reduced by government decree to €586 for workers aged 25 and above (a decline by 22 %), and to €511 for those aged less than 25 (a decline by 32%). Moreover, it was stipulated that the new minimum wage rates would remain fixed until the end of the economic adjustment programmes, which are still (March 2018) in operation.

The avowed aim of the legislated reduction in the minimum wage and the introduction of a sub-minimum wage in Greece was to "permit a decline in the gap in the level of the minimum wage relative to peers (Portugal, Central and South-East Europe)" and to "help address high youth unemployment and employment of individuals on the margin of the labor market" (Law 4093/2012, Appendix V_1). The second concern was motivated by the extremely high unemployment rates for youth and young adults – which, in the first quarter of 2012, stood at 63.3% for the 15-19 age group, and 51.0% for the 20-24 group, and by the presumption that "labour-labour" substitution (see, e.g. Fairris and Bujanda (2008), Neumark and Wascher, 2011), would ensure an improvement in the *relative* employment prospects of those aged under 25.

To examine whether the expected outcomes did indeed materialize, we use the "quasi-experimental" nature of this wage reform in order to enquire whether there were any differential employment dynamics in favour of individuals aged less than 25. More specifically, we focus on differential employment dynamics for individuals around the age of 25, i.e. for individuals aged 22-24 and 25-27 (but also for one-, and four-year bands around the age of 25). In this way, we are able to isolate the impact of the introduction of the sub-minimum wage from the operation of the wider macroeconomic environment, and to examine the impact of the reform on groups of

workers which are likely to be close substitutes – thus allowing for a relevant examination of the labour-labour substitution hypothesis.

The large size and permanence of the above reform enables us to avoid an issue faced by many empirical studies, namely the fact that many of the minimum wage increases that have been analyzed in the literature are either small, or, their real value has been eroded by the underlying price inflation. In such circumstances, the expected changes in employment or other variables will be minimal, since the presence of even small adjustment costs implies that labor demand today is a forward-looking decision and depends critically on the expected path of minimum wages. To the extent that minimum wages (as, e.g., in the US) are set in nominal terms (and infrequently), a given increase in the nominal value of the minimum wage does not imply persistence in the real value of the minimum wage. As a result, labour demand would never fully adjust to a given minimum wage increase and the long-run consequences of a given minimum wage increase for employment might be quite small (Sorkin, 2015). In contrast, for large and permanent changes, firms have strong incentives to alter their input mix (or exit the market as soon as possible), because the loss in profit from sub-optimal behavior would be significant.

The data used for our analysis come from the Greek Labor Force Survey (LFS), which is a household survey of about 32,600 households each quarter, corresponding to a sampling rate of 0.85%. We estimate probit models to examine whether the introduction of a subminimum wage had differential impact on workers aged around the age threshold for the subminimum wage. Contrary to policymakers' expectations, we find that after the reform there was no statistically significant change in the differential employment probability advantage for private sector employees aged 25-27 over those aged 22-24. (The same holds true when we increase the size of the groups to those aged 25-29, and 20-24, respectively, or whether we restrict the size to just those aged 24, and 25.) We also find that the probability of labour force participation for individuals in the 25-27 group becomes significantly higher (relative to the 22-24 group), indicating that the further reduction in the minimum wage for the younger group had the expected labour supply effects (i.e. in response to a relative wage cut it reduced the group's relative labour supply). The (relative to the younger group) increase in labour force participation of the 25-27 group is reflected in a (statistically) significant improvement in the relative job finding rate for non-agricultural, private-sector employees of this group after the reform. Moreover, we find that the reform had no significant differential impact on employment terminations; i.e. it had no differential impact on either dismissals or quits.

These findings are in contrast with the labour-labour substitution hypothesis, according to which any legislation-generated labor cost differential among similar workers that are close substitutes in production is expected to induce differential hiring/retention in favour of workers whose relative labour costs have decreased. However, the extent to which this is reflected in *market* outcomes depends not only

on the relevant labour demand elasticity, but on the labour supply elasticity as well (see, e.g. Fullerton and Metcalf, 2002). For example, if in order to attract the extra number of workers below the age of 25 firms would have to offer significantly higher wages (due to a steeply rising labour supply curve), the market outcome will be muted and the employment response will be minimal (Saez et al., 2017). Nevertheless, given the state of the Greek economy in the period under study (with the relevant unemployment rates being in excess of 30%), it would be difficult to justify the assumption of a steep labour supply curve for young workers. However, other forces may have been operating which could nullify the change in the legislated relative wage minima. This could be due to the existence of union bargaining agreements which entailed wages above the legislated minima and the presence of within-firm fairness norms which do not permit employers to discriminate pay reductions by age. Our data do indeed reveal that the average wage cut was equiproportional for both age groups, thus negating the legislated change in relative labour costs.

In addition to examining the employment effects of the subminimum wage reform, we also enquire as to whether the reform affected labor market reallocations.[1] We find that the direct effect of the reduction in the minimum wage is positive and statistically significant, i.e. the reform increases the probability of transition from one sector to another. This is consistent with the expected reallocation of economic activity from the non-traded to the traded sector, since the latter is expected to expand (in both relative and absolute terms) in response to "internal devaluation". However, we find no differential effect on individuals in the 25-27 group relative to the 22-24 group. These findings indicate that the introduction of a subminimum wage was not an important driver of inter-sectoral adjustment.

Given that labour market reforms have been undertaken from the outset of the Greek crisis, we have also examined whether the previous waves of labour market reforms had a delayed effect, which could blur our findings. In particular, we control for the May 2010 decision by the Greek government to reduce the minimum wage for newly hired, and previously unemployed, workers that were up to 24 years old. According to this decision the minimum wage for these workers would be reduced by 20% (from €751 to €601), while their social security contributions would be financed by public funds; moreover, the maximum duration of such contracts was set to 12 months. We find that our previous findings remain intact.

The rest of the paper is organized as follows. In Section 2 we provide a review of the relevant literature. Section 3 presents the main features of the Greek minimum wage system. Section 4 discusses the data, explains the empirical methodology, presents the main results of our analysis, and various robustness tests. Section 5 examines the

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[1] Labour market reallocation was expected to be an integral part of the Economic Adjustment Programmes for Greece, as the latter envisaged a reallocation of economic activity from the non-traded to the traded sectors.

effects of the reform on labour reallocation, whereas Section 6 controls for the effects of previous reforms. Concluding remarks are offered in the final section.

2. Related Literature

The consensus view regarding the employment effects of minimum wages as established by Brown et al. (1982) turned out to be short-lived. The dent in the consensus view, sometimes termed the "new minimum wage research," came with research relying on quasi-experimental evaluations of cross-sectional and longitudinal data, in particular Card (1992a, 1992b) and Card and Krueger (1994), who failed to find negative employment effects for young or low-wage workers in the United States. These findings caused a stir among economists and released a flurry of theoretical and empirical research (see e.g. Card and Krueger, 1995 and 2000; Machin and Manning, 1997; Neumark and Wascher, 2000 and 2008; Manning, 2003; Dickens and Manning, 2004; Portugal and Cardoso, 2006; Hyslop and Stillman, 2007; Dube et al., 2010; Allegretto et al., 2011; Neumark et al., 2014; Totty, 2017) which, to say the least, has not managed to re-establish the previous consensus.

The key focus of the new minimum wage research has been the realization that the identification of minimum wage effects requires both a sufficiently sharp focus on potentially affected workers and the construction of a valid counterfactual "control group" for what would have happened absent changes in the minimum wage. In what follows we first review studies which feature cases similar to the quasi-experimental nature of the minimum wage reform undertaken in Greece, and which have examined whether minimum wage hikes could result in labour-labour substitution.

Pereira (2003) has examined the labor market impacts of the change in Portugal's minimum wage law in 1987, which extended the "full" minimum wage entitlement to 18- and 19-year-old employees; before 1987 this group's minimum wage was set at 75% of the "adult" value. which featured (i) an increase by 50% in the minimum wage for workers aged 17 (since it was raised from 50% to 75% of the full minimum wage), and (ii) an increase by 33% for workers aged 18 or 19 (since it was raised from 75% to the full minimum wage). Using information from employer-based national surveys, she looked at annual changes in age-specific employment levels and wages from 1985 to 1989. The age groups examined were: (i) 18- and 19-year-olds; (ii) 20 to 25-year-olds; and (iii) 30- to 35-year-olds. Using the employment and wage experiences of the 30- to 35-year-old group over the period as a control, she estimated the impact of the large minimum wage change on wages and employment of the younger groups relative to the control. The substantial increase in the minimum wage for the youngest workers was found to result in the average wage growth of the youngest workers being 7 percent higher than in the control group. The minimum wage increase brought a substantial decline in the employment of 18- to 19-year-olds, with an estimated elasticity of employment with respect to the minimum wage in the

range −0.2 to −0.4 for this group. There was also substantial substitution toward the presumably close substitutes in the 20- to 25-year-old group.

The same Portuguese reform has also been studied by Portugal and Cardoso (2006). Unlike Pereira (2003), who used a non-random sample from the Ministry of Labour, they based their analysis on a panel of linked employer–employee data that covers, for each year, nearly all of the wage earners in the private sector. They found that two years after the rise in the minimum wage for teenagers (17-19 years old), there was a decrease in the share of teenagers among newly hired workers, both in continuing firms and in new firms. They also found that the share of teenagers in job separations in continuing firms decreased *sharply* following the rise in their minimum wage. The authors concluded that the main short-term impact of the 1987 minimum wage change in Portugal was the reduction of separations from the employer, which compensated for the reduction of job accessions, and resulted in an overall rise in teenage employment. Moreover, from a worker perspective, they found that teenagers subject to a high wage increase resulting from the change in the minimum wage were more prone to keep their job than comparable groups of workers. This result points to the relevance of supply-side factors, as job attachment for low-wage youngsters may rise following an increase in their minimum wage, reducing the high job turnover that is characteristic of low-wage workers.

Hyslop and Stillman (2007) examined the effects of large changes in the minimum wages affecting youth workers in New Zealand which took place in 2001. The reform entailed (i) a lowering of the eligible age for the adult minimum wage from 20 to 18 years – which resulted in a 69% increase in the minimum wage for persons 18 and 19 years old, and (ii) a rise in the minimum wage applying to 16 and 17 years old from 60% to 80% of the adult minimum- resulting in a 41% increase in their minimum wage. They found: no evidence of adverse effects on youth employment immediately following the reform, but some weak evidence of employment loss by 2003, (ii); evidence of a 10–20% increase in hours worked following the reform for employed 16–17 years old, and up to a 10% increase for employed 18–19 years old; the combined, wage, hours, and employment changes lead to significant increases in labour earnings and total income of teenagers relative to young adults (20-25 years old); and evidence of a decline in educational enrolment, and an increase in unemployment, inactivity, and benefit receipt rates, suggesting that while the minimum wage reform increased the labour supply of teenagers, this increase was not matched by as large an increase in employment. Hyslop et al. (2012) have further examined the 2001 New Zealand reform, by using a linked employer-employee database. They found that firms that had high levels of teen employment at the beginning of the period reduced their shares of teen employment. Moreover, these firms had lower survival rates, on the order of about 5 per cent for firms in the main teen-employing industries and 10–20 per cent for firms in other industries. In contrast,

firms that entered the main teen-employing industries during the period had about 2 per cent higher teen employment shares than continuing firms.[2]

The effects of policy-engineered changes in the relative cost of employing younger workers have been examined by Saez et al. (2017) in their analysis of a Swedish payroll tax cut targeted to young workers. The payroll tax cut was large (16 percentage points in total) and was implemented in two steps: first, on July 1st, 2007, the payroll tax rate was cut to 21.3% for workers turning 19-25 during the calendar year, and second, on January 1st, 2009, the payroll tax rate was further cut to 15.5% and eligibility was raised to age 26. Using administrative data the authors found a zero effect on net-of-tax wages of young treated workers relative to slightly older untreated workers, even six years after the reform. Moreover, their graphical cohort analysis provides evidence in favour of labour-labour substitution by uncovering positive effects on the employment rate of the treated young workers, of about 2-3 percentage points, which arise primarily from fewer separations (rather than more hiring). They have also analyzed the firm-level effects of the tax cut, by sorting firms according to their share of treated young workers and tracing out graphically the time series of firms' outcomes. Heavily treated firms were found to expand after the reform: employment, capital, sales, value added, and profits all increased.

The first study to take an early look at the effects of the introduction of a subminimum wage rate in Greece is by Yannelis (2014). His data spans 2009Q1 to 2013Q3 (i.e. three years before the reform and one year after). He estimated linear probability models and found that the relative increase in the minimum wage for workers in the 25-27 age group resulted in relative employment losses in comparison to workers in the 22-24 age group, who had a larger minimum wage cut. In addition to differences in the time period covered by his data (our data cover the period from 2008Q1 to 2016Q1), the difference in results may also be due to the fact that Yannelis' estimates might be biased.[3] We do not face such a problem, as we estimate probit models and obtain the relevant marginal effects.[4] We should highlight that estimating probit models with random effects or LPMs, does not change our findings qualitatively or quantitatively. Karakitsios (2016), in a study covering a similar time span as the present study, has also studied the effects of the subminimum wage reform, and found evidence in favour of the labour-labour substitution hypothesis. However, while he estimates models for employment only, we also provide estimates for labour force participation, job losses as well as the sectoral reallocation effects. In addition, we

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[2] The authors' preferred explanation for these findings is that start-up and surviving firms are able to adapt their technology to the greater availability of higher-priced teen workers over the period (e.g. Lewis, 2011). The change in relative teen wages may have been sufficiently large and discrete to have induced entering firms to adopt production techniques that used teen workers differently. Firms that were less able to adapt were less likely to survive.

[3] Horrace and Oaxaca (2006) discuss why OLS estimates of the LPM model could be inconsistent.

[4] In addition, the LPMs that Yannelis (2004) employs, provide estimates of the marginal effects at the mean of the distribution of covariates (marginal effects at the mean), whereas we calculate average marginal effects, which we feel are more appropriate here.

focus on employed vs. unemployed individuals, whereas he reports results for full-time employment only. Finally, he only reports coefficients and the odds ratio for the interaction between the reform and the age group, whereas we estimate the "marginal effects" of the reform, i.e. the difference in the change in employment probability for the two age groups caused by the reform.

We now turn to studies which have assessed the impact of minimum wages on labour-labour substitution without relying on data involving policy changes in the relative size of age-differentiated minimum wages.[5]

Giuliano (2013), using personnel data from a large US retail firm with more than 700 stores nationwide, has exploited geographic variation in initial wage levels to estimate the effects of the 1996 federal minimum wage increase. In particular, this study focused on the differences between teenagers and adults in wage and employment effects. Unlike previous studies of specific groups of low-wage workers which have relied on household survey data and have been unable to examine changes within firms in relative wages, overall employment, and the composition of employment, her data are detailed enough and have allowed her to derive precise measures of wage and employment changes both for a store's workforce as a whole and for different groups of workers within a store. Contrary to the standard competitive model, she found that in response to minimum wage hikes the required increases in the relative wage of teenagers led to small, but statistically significant, increases in (i) their relative employment, (ii) their labour market participation (especially of the younger and the more affluent of them), and (iii) in their share of new hires. Moreover, she found that at some stores the teenagers that were hired were of higher quality than teenagers already employed at the stores, and of higher quality than the young adults at the stores.[6]

Harazstosi and Lindner (2017) have analysed a very large (about 60% in real terms) and persistent increase in the minimum wage which took place in Hungary in 2001. They found that despite the large increase in the minimum wage, and the large increases in the compensation of low wage workers, there were only limited effects on employment even four years after the reform. Moreover, by grouping workers according to observable characteristics (age, education, gender, region) they

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[5] A separate, but related, literature has examined the impact of "Living Wage Laws", i.e. the decisions by many cities in the United States and around the world to enact living wage ordinances which cover specific groups of workers often within narrow geographic boundaries. These *living wages* are usually defined as the wage necessary to provide a full-time, year-round worker and his or her family with the sufficient income to ensure an adequate standard of living, and are in many cases significantly above (often by more than 30%) the minimum wage. Studies from both the UK (Wills and Lineker, 2012) and the US (Fairris and Bujanda, 2007) indicate the existence of labour-labour substitution following the implementation of a living wage policy, with new hires (i) being better educated, (ii) receiving higher wages in their previous jobs, and (iii) more likely to be male.

[6] Lang and Kahn (1998) have also presented evidence that is consistent with substitution from low-skilled adults to possibly higher-skilled teenage students in food-service occupations.

concluded that the "type" of workers employed at the bottom of the wage distribution did not change as a result of the minimum wage hike, indicating that there was no labour-labour substitution between different types of labour (e.g. low- and high-skilled workers).

Cengiz et al. (2018) have used hourly wage data from the US 1979-2016 Current Population Survey to estimate the impact of state-level minimum wage increases. Pooling 138 such policy changes, they have implemented an event study analysis covering three years prior to and five years following each change. Their baseline specification shows that in the five years following the minimum wage increase, employment for affected workers rose by a statistically insignificant 2.8% (s.e. 2.9%). They also test for the possibility of labour-labour substitution by partitioning workers into groups based on four education and six age categories. They found no evidence that low-skilled workers are replaced with high-skilled workers following a minimum wage increase. They also analysed separately those without a high school degree, those with high school or less schooling, women, black or Hispanic individuals, and teens. Despite the considerable variation in the bite of the policy, the employment effects in these sub-groups were mostly close to zero and not statistically significant.

3. Minimum Wages and Collective Bargaining in Greece

Minimum wage (MW) legislation was first introduced in Greece in 1953. The MW in Greece is (still) determined at the national level and sets the floor for all wage settlements in the country (independently of regional, sectoral, or firm level), with the exception of wages in the public sector.

During the pre-crisis regime and until May 2010, the "starting point" of the wage-setting mechanism in Greece was the National General Collective Agreement (EGSSE). The process leading to the EGSSE involved negotiation between the social partners – represented by third-tier organizations of employees and employers – and its outcomes included a "freely bargained" MW level (as well as the settlement of various non-wage issues). This MW outcome acted as a legal floor and created a strong signal for the lower-tier collective bargaining that followed and which was implemented at different levels.

The EGSSE was given legal force by the government and it covered all workers independently of age (must be at least 15 years old), sex, or employment status, and it is legally binding for all workers in the private sector, in state-owned enterprises, as well as for non-permanent civil servants. (Until the late 1970s, MWs were differentiated according to gender, with females earning less than males.) The negotiations usually took place every two years and allowed for bi-annual wage adjustments in line with inflation. It must, however, be mentioned that the value of the MW varied according to the employee's length of service and marital status; there

were also different rates applied to blue- and white-collar workers. (The normal averaging period for complying with the MW legislation is the (6:40h) day for blue-collar workers and the month for white-collar workers). For example, the EGSSE for 2008-2009 provided for staggered increases in minimum levels of pay: 3.45% beginning on 01.01.2008, 3.0% beginning on 01.09.2008, and 5.5% beginning on 01.05.2009.[7]

The statutory level of pay is compulsory even in cases where the employee is paid by piecework, on a percentage basis or in the form of tips. With regard to part-time work, although the position of part-time workers is not covered by collective agreements, they are in effect protected by the extension to them of a pro rata equivalent of the pay levels established for full-time workers. For workers that are less than 18 years old, Law 1837/89 specifies that those that are less than 16 years old, as well as those that are studying, their maximum hours of work must be less than 6 hours per day and 30 hours per week. (This implies that the maximum monthly income for workers that are studying and are less than 18-years old will be 75% of the stipulated MW for a person working 40 hours per week.). Enforcement of the MW legislation is carried by the Inspectorate for Labour, and the employer can be sued for non-compliance by either the Inspectorate or by the employee. Anecdotal evidence suggests that the strictness with which these procedures are enforced is very idiosyncratic.

The pre-crisis collective bargaining framework is reflected in the number of agreements reached, which for the period from 1990 until 2009 were:
• about 190 sectoral or occupational agreements at the national or local level (involving bargaining between either second-tier employer and employee organizations, or between first-tier employer and employee organizations);
• about 150 enterprise agreements covering workers in a single enterprise, which were conducted between employers and company trade union organizations covering workers in the specific enterprise.

The large number of collective agreements signed each year was considered by trade union officials as the clearest manifestation of the fragmentation of trade union power (Fotoniata and Moutos, 2010). However, the deregulation of the wage-setting mechanism induced by the first Memorandum of Understanding (MoU), and enforced by legislation and government decrees, moved in the opposite direction. It initially targeted the "decentralized" part of the collective bargaining process (i.e. the framework for sectoral and occupational agreements) and ended with the abolition of the EGSSE. There was no substantial involvement of social partners in the design of

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[7] It should also be noted that (private sector) workers in Greece still receive 14 monthly wages during a calendar year, thus the equivalent of receiving fourteen payments of, e.g. €586 each, during a twelve-month period, is equal to twelve monthly payments of €684 each.

structural reforms, or any form of public consultation prior to the imposition of the measures. In this context, any subsequent social intervention achieved only small amendments of secondary importance (Moutos, 2015).

The widespread deregulation of the collective bargaining mechanism was part of the first MoU (Law 3845/10), and took effect one year later through Law 4024/2011. This law was instrumental in opening the way for enterprise agreements to differentiate the conditions regarding employment and pay from those stipulated under pre-existing sectoral collective agreements. One of its main provisions was the authorization of "Associations of Persons" as a negotiating and signing party in the collective bargaining process. According to the new legislation an association can be created and negotiate for the conclusion of an enterprise level agreement if at least 60 per cent of the firm's employees participate, regardless of the firm's size. The outcome of this negotiation (agreement) has the following characteristics: (a) precedence over sectoral and occupational agreements, even if it involves less favourable terms, thus abolishing the principle of the most favourable arrangement, (b) compliance with the wage and non-wage settlements of the EGSSE; and (c) no time limit with regard to its coverage.

Under this legislative regime there was a sea change in the collective bargaining process compared with the pre-crisis dynamic in terms of number and types of agreements signed. More specifically, in 2012 the number of agreements reported to the Labour Ministry had altered as follows:
• 29 sectoral or occupational agreements at the national or local level;
• 976 enterprise agreements covering workers in a single enterprise (up from 238 in 2010, and 179 in 2011).
We note that 73% of all enterprise agreements were signed by Associations of Persons, while only 17% were signed by enterprise unions, and 10% were due to local or sectoral collective agreements. The wage bargains concluded under the new regime suggest that, in effect, Associations of Persons worked like a Trojan horse in facilitating wage reductions. It bears noting that among the enterprise agreements signed in 2012, there was wide disparity in outcomes, depending on whether the bargaining unit from the labour side was the newly formed Associations of Persons or the pre-existing enterprise unions. Thus, while only 4% of agreements signed with an enterprise union involve wage reductions, the corresponding measure rises to 65% in the case of Associations of Persons.

Under the first MoU (Law 3845/2010, Annex IV) the Greek government adopted legislation introducing a subminimum MW in order to "promote employment creation for groups at risk such as the young and long term unemployed". The new provisions were targeted at the entry-level workers in the labour market and at apprenticeships, by determining the terms of employment, compensation and social security contribution for employees aged below 25. In this context the following reforms were implemented: (i) for unemployed persons up to 24 years old a minimum rate was

introduced at 80% of the full rate (determined by the EGSSE), while the social security contributions were paid by the public Manpower Employment Organization (OAED), and the maximum duration of such contracts was set at 12 months (Law 3845/2010; (ii) for workers entering the labour market for the first time and aged below 25 years old a minimum rate was introduced at 84 per cent of the full rate, and provision for an automatic admission of the participating enterprises to the OAED's Programme regarding the subsidy of the employer's social security contributions (Law 3863/2010); and (iii) for 15–18-year-olds who are on apprenticeships (up to one year) a minimum rate was introduced at 70 per cent of the full rate (Law 3863/2010). At the same time, there was a provision (Law 3845/2010) that the full minimum rate (€751, paid in 14 monthly instalments during a 12-month period) would remain fixed in nominal terms for three years. The take-up of these programmes was very small; according to data from the Ministry of Labour and Social Insurance, only 3.690 persons benefited from them from the start of the programme in October 2010 to its end in October 2014.

The subsequent institutional framework adopted in 2012 (Law 4046/2012 and Decision 6/28.2.2012) provided (i) a decrease of the (then) current MW level (€751) by 22% at all levels (i.e., irrespective of tenure or marital status) until the end of the programme period; (ii) an additional 10% reduction for workers under the age of 25 (with no exemptions); (iii) an abolition of the 10% surcharge on the MW that employers had to pay to married workers (iv) a freeze of wage increases based on length of service (tenure) until the unemployment rate falls below 10%. These reforms, according to the government's expectations, would "permit a decline in the gap in the level of the MW relative to peers (Portugal, Central and South-East Europe)" and would "help address high youth unemployment and employment of individuals on the margin of the labor market" (Law 4093/2012, Appendix V_1).

Until February 2012, the 12-month equivalent of the basic[8] MW in Greece stood at €877, which was higher than the equivalent rates in Spain (€768) and Portugal (€566), and considerably higher than the MW in Eastern European countries of comparable economic development (e.g., €310 in the Czech Republic, €296 in Hungary, €336 in Poland, €763 in Slovenia). In 2013, the (12-month equivalent) MW in Greece was €684, which was lower than the MW in Slovenia and Spain, but still considerably higher than in Portugal and the rest of the countries (see Table 1). However, according to OECD[9], in 2013, MWs as a proportion of median earnings were 46% in Greece, which was lower than the equivalent proportion in Slovenia (64%), Hungary (54%), Portugal (52%), and Poland (50%), but higher than in the Czech Republic (37%) and in Spain (38%).

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[8] By "basic" we mean the MW which an unmarried person with no tenure with the current employee is entitled to. Since the MW in Greece is paid in 14 monthly instalments during a 12 month period, a basic MW of €751 paid 14 times a year is equivalent to 12 monthly payments of €877 each.

[9] See, https://www.oecd-ilibrary.org/employment/data/earnings/minimum-wages-relative-to-median-wages_data-00313-en .

Since March 2012, the level of the MW is set by administrative act, where the role of the social partners is reduced to basic non-binding consultation, and it remains fixed at €586 (rounded to the nearest integer) for workers aged 25 and above, and at €511 for those aged below 25. However, as shown in Table 2, the basic minimum wage used to apply to unmarried workers with less than 3 years of employment with the current employer. Thus, in 2011, the MW stood at €751 (paid 14 times within a 12-month period) for an unmarried worker (independently of age) with less than 3 years of service with the current employer, and it reached up to €1075 for a married person with 9 years of service – a gap of €323 between the two minima. From March 2012 the gap between the two minima was reduced significantly, and it has stood since then at €176.

The incidence of MW workers used to be large in total dependent employment in Greece. Dolado et al. (1996) and Fotoniata and Moutos (2010) estimate the pre-crisis proportion of employees remunerated at, or near, the MW to be about 20%. An update of this share can be found by consulting the data provided by the Information System ERGANI (in force since March 2013, under the responsibility of the Ministry of Labour and Social Insurance). More specifically, according to the data for November 2013, the number of employees in the private sector earning up to the MW was recorded at 1.37 million, of which about 1.1 million were full time and about 270 thousand were part time or in job rotation. Data on the wage distribution are only available for full-time workers and are presented in Figure 1. Given that the range of MWs in 2013 was from €511 (for those under 25) to €762 (for workers with 3 triennia of service), it appears that the proportion of workers remunerated at, or near, the MW remained very large (i.e. about 30%). By 2017, according to the same source of data, about 34% of workers were earning up to €600 per month, of which about one-third were workers with monthly earnings of €501–€600, and two-thirds were part-time workers, shift workers or workers on short-time contracts.

4. Data and Empirical Methodology

4.1 Data

The data employed in our work come from the Greek Labor Force Survey (LFS), made available to us by the Hellenic Statistical Authority. The LFS data are the main

administrative source for the Greek labor market.[10] LFS is a large household survey, consisting of about 32,600 households each quarter, corresponding to a sampling rate of 0.85%. Households are selected randomly and stay in the sample for six quarters. Each period, one-sixth of the sample is replaced. The survey collects information on demographic characteristics, main job characteristics, the existence and characteristics of a second job, educational attainment, participation in education as well as previous working experience and search for a job. The participation in the survey is compulsory.

Two of the dependent variables of interest are indicators of whether a person is *employed* or *economically active* (i.e. a person *participates* in the labor force). A person is considered to be *employed* if during the week it was surveyed, it worked even for just one hour for pay or profit; or if it was working in the family business; or it was not at work but had a job or business from which it was temporarily absent. *Unemployed* are persons, who were without work in the week surveyed; were currently available for work; and were either actively seeking work in the past four weeks or had already found a job to start within the next three months. Finally, a person is classified as *economically active* if it is either employed or unemployed.

The two aforementioned variables (employed and economically active) are constructed from the variable *katap*, available with the LFS survey.[11] In some experiments, we employ actual hours worked, which are the total number of hours actually worked during the reference week in the main job (given by variable *e27_orR* in the LFS survey). Other variables that are being used are gender (*A07*), marital status (*a11_r*) and education level (*E80_2*).

Here we mostly focus on individuals between the ages of 22 and 27 for two reasons. First, there are few younger individuals in the LFS. Second, individuals aged 28 and above probably have different characteristics and career paths, hence including them in the sample would probably violate the "common trends" assumption. The sample we end up work working with is an unbalanced panel of individuals. For each quarter *t*, an individual's *i* response is included. We should also stress here that the change in the minimum wage took place on 1st March of 2012. The period before the reform includes the periods 2008:Q1–2011:Q4, whereas the post-reform period is 2012:Q1–2016:Q1.

4.2 Baseline Empirical Model

The main purpose of this paper is to assess the impact the 2012 MW reform had on employment, focusing on individuals aged 22 to 27. The main assumption underlying our work is that if a subminimum wage for workers aged below 25 had not been

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[10] LFS has produced quarterly estimates since 1981. Since 1998, LFS has been a continuous quarterly survey.

[11] We do not focus on whether an individual is employed *full time* in what follows, but rather on the employments status.

introduced, the employment trend would have been the same for all individuals, as they faced the same type of reforms, economic environment and had (roughly) similar characteristics (common trends assumption). Both age groups were expected to be mainly new entrants to the labor market, and no other differential treatment was in effect, except the legislated difference in the MW.

In Tables 3 and 4, summary statistics before and after the reform for the two age groups are presented. The incidence of the MW in our sample appears to be, before the reform, similar to the data presented in the previous Section. Nevertheless, it is worth noting the huge rise in the incidence of the MW after the reform, despite the considerable reduction in its level; this is due to the deep recession that was still evolving in Greece. The deep recession was reflected in a 36% drop of the average monthly wage for the group aged 25-27 in our sample; the 22-24 age group suffered a drop in their average monthly wage by 36% as well. The significantly larger decline in the monthly wage for the 25-27 group than the decline in their MW may be due to fairness or worker morale considerations, as firms may be reluctant to subject workers who were previously paid the same wage to significantly different pay cuts (see, e.g. Bewley, 2002; Saez et al., 2017). The, in-sample, equi-proportional changes in the average wages of the two groups are also observed for the unemployment rates, which both increased by 22 percentage points. Similar developments are also observed for the rest of the variables.

[Tables 3 and 4 about here.]
[Figures 1 and 2 about here.]

In order to examine the potentially differential impact the reform had on individuals above and below the age of 25, we examine different outcome variables, which in most cases are binary. We posit that the latent variable of interest can be expressed as

$$y_{it}^* = \alpha_0 + \alpha_1 \mathbf{1}(\text{age}_{it} \geq 25) \times \mathbf{1}(t \geq 2012Q1) + \alpha_2 \mathbf{1}(t \geq 2012Q1) +$$
$$\alpha_3 \mathbf{1}(\text{age}_{it} \geq 25) + \mathbf{x}_{it}'\boldsymbol{\beta} + \lambda_t + \epsilon_{it} \qquad (1)$$

where y_{it}^* is the outcome variable of interest for individual worker i at time t.[12] Note that the observed binary outcome is

$$y_{it} = \begin{cases} 1 & \text{if } y_{it}^* \geq 0 \\ 0 & \text{otherwise} \end{cases} \qquad (2)$$

where in our application y_{it} is an indicator capturing the employment status, labor force participation status, whether an individual has entered a new job or lost her job during the last quarter, etc.

The variable $\mathbf{1}(t \geq 2012Q1)$ is an indicator of whether the time period is after the reform; and $\mathbf{1}(\text{age}_{it} \geq 25)$ is an indicator of whether the individual's age in a particular quarter is 25 years and above, implying that she is subject to the standard minimum wage and not the subminimum – applicable only to those below the 25 year

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[12] We should highlight here that our data does not have a full panel structure for the whole time period of our analysis. In what follows we treat our data as a set of repeated cross-sections. In our robustness analysis below we explicitly account for the (unbalanced) panel data structure of our data.

threshold. The vector $\mathbf{x}_{it}$ contains individual level controls including gender, marital status and educational attainment, as well as controls capturing the overall state of the economy (explained below), and λ_t denotes time effects. The probit models we estimate below are akin to difference-in-difference regressions, so the coefficient of interest α_1 as it represents the difference in the outcome variable between the two age groups (above and below 25) stemming from the minimum wage reform (relatively larger minimum wage for older individuals). The main assumption for the comparison is that workers slightly above or below the age of 25 would follow the same time trend in the absence of the reform (common trends assumption).

Note that the coefficient α_1 does hot have the usual direct interpretation one finds in linear regression models: its sign and significance convey some information, but in most cases what is more straightforward to interpret is the "marginal effect" of $\mathbf{1}(\mathrm{t} \geq 2012Q1)$ via its interaction with $\mathbf{1}(\mathrm{age}_{it} \geq 25)$.[13] In particular, we compute the change in the predicted probability caused by a change of $\mathbf{1}(\mathrm{age}_{it} \geq 25)$ from zero (individual is under 25) to one (individual is above 25), when $\mathbf{1}(\mathrm{t} \geq 2012Q1) = 0$ and when $\mathbf{1}(\mathrm{t} \geq 2012Q1) = 1$ and compare the two. Note that in this way, we calculate

$$\Pr\big(y_{it} = 1 \big| \mathbf{1}(\mathrm{age}_{it} \geq 25) = 0, \mathbf{x}_{it}, \mathbf{1}(\mathrm{t} \geq 2012Q1) = 0\big) -$$
$$\Pr\big(y_{it} = 1 \big| \mathbf{1}(\mathrm{age}_{it} \geq 25) = 1, \mathbf{x}_{it}, \mathbf{1}(\mathrm{t} \geq 2012Q1) = 0\big), \qquad (3a)$$
and,
$$\Pr\big(y_{it} = 1 \big| \mathbf{1}(\mathrm{age}_{it} \geq 25) = 0, \mathbf{x}_{it}, \mathbf{1}(\mathrm{t} \geq 2012Q1) = 1\big) -$$
$$\Pr\big(y_{it} = 1 \big| \mathbf{1}(\mathrm{age}_{it} \geq 25) = 1, \mathbf{x}_{it}, \mathbf{1}(\mathrm{t} \geq 2012Q1) = 1\big) \ , \qquad (3b)$$
and then compare these two differences in predicted probabilities.[14]

4.3 Empirical Findings

In this section we discuss the main results, namely how the relative decrease in the minimum wage for individuals aged less than 25 has affected labor market outcomes.

4.3.1 Employment Rate Estimates

Before we start discussing the results, let us first explain how the results are presented in Tables 5a – 5c, since some of the tables that follow have a similar structure. In the top panel of Table 5a, we report the marginal effects of all covariates employed in the model on the probability of being employed for individuals between 22 and 27 years of age, including the marginal effects of $\mathbf{1}(\mathrm{age}_{it} \geq 25)$ and $\mathbf{1}(\mathrm{t} \geq 2012Q1)$. Comparing the marginal effects of the latter (i.e. when $\mathbf{1}(\mathrm{t} \geq 2012Q1)$ takes the

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[13] The "direct" marginal effect of $\mathbf{1}(t \geq 2012Q1)$ would capture the effect of the reform on trend employment (the probability of being employed in fact) for both age groups. While of interest in its own right, the "interaction" term is what matters for our interpretation below.

[14] Equation (3a) gives the change in predicted probability for an individual above 25 years before the labor market reforms, and equation (3b) is the marginal effect of an individual above 25 years after the labor market reforms. In what follows we report average marginal effects (i.e. we average across all individuals in the sample).

value 1 relative to what happens when it is zero), we get an estimate of the effect of the subminimum wage reform on the (overall) probability of being employed.[15] Note that strictly speaking, this effect could also capture the overall turmoil in the labor market as a result of the demand, and credit constraints that most firms experienced during the entire period. To control for the influence of these variables we include (the log of real) GDP and *Loans* among the explanatory variables.[16] The addition of these variables may be important for another reason as well: the existence of firing and hiring costs implies that firms may be willing to engage in labour-labour substitution only if there is an improvement in the prospects of firm survival, and if financing for these upfront expenses is available.

By comparing the marginal effects of $\mathbf{1}(\text{age}_{it} \geq 25)$ under two instances i.e. when $\mathbf{1}(t \geq 2012Q1) = 0$ (before the reform was implemented) and when $\mathbf{1}(t \geq 2012Q1) = 1$ (after the reform was implemented), we are able to see the estimates of the probability of being employed, when the individual is above 25 years of age under the two regimes. In the lower panel of Table 5a, we report the difference in the marginal effects of $\mathbf{1}(\text{age}_{it} \geq 25)$ under the two regimes, which is an estimate of the (differential) effect of the reform on the probability of being employed for those aged above 25.

In columns (1)-(2) we present results for all individuals in our sample. In columns (3)-(4) we exclude self-employed individuals as well as family workers, and in columns (5)-(6), we additionally exclude public-sector employees and individuals that are employed in the agricultural sector.

[Tables 5a-5c about here]

We start by noting that the reform, *per se*, does not appear to have influenced the probability of being employed. Moreover, upper secondary education, being married, and being male increases the probability of being employed, regardless of the specification used. The evolution of GDP, and the availability of credit, also have a positive effect on the probability of employment. The effect of belonging to the group of individuals aged 25-27 is invariably positive, i.e. (the probability of being employed for the group aged 25-27 is between 6 and 7 percentage points higher than for the group aged 22-24) and this effect is strongly significant. But what is of interest to us is whether the latter effect has changed after the reform which introduced the subminimum wage for those aged less than 25. We find that when all individuals are taken into account (columns (1)-(2) of Table 5a), the wage reform has decreased the

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[15] Note that strictly speaking, this effect could also capture the overall turmoil in the labor market as a result of (i) the generalized reduction in the minimum wage, (ii) the fiscal adjustment Greece has been undertaking, and (iii) the demand, and credit constraints that most firms experienced.

[16] Loans are the total amount of outstanding loans towards firms with maturity between one and five years, deflated by CPI. Data for loans were obtained from the Bank of Greece (Table 2a, https://www.bankofgreece.gr/pages/el/statistics/rates_markets/deposits.aspx) and for CPI from ELSTAT. GDP is measured as (seasonally adjusted figures) of Chain-linked volumes, with reference year 2010 (GDP_SA_CLV10), also obtained from ELSTAT.

differential employment probability advantage of those aged 25-27 over the 22-24 group by (about) 1.5 percentage points, i.e. whereas before the reform the employment probability for individuals in the 25-27 group was 7.5 percentage points higher than for the 22-24 group, this differential employment probability advantage became 6.0 percentage points. We note that this effect is statistically significant at the 5% level. In columns (3)-(4), where we restrict the sample by excluding self-employed individuals as well as family workers, we find again that the sub-minimum wage reform decreased the differential employment probability advantage of those aged 25-27 by (about) 0.7 percentage points, but the effect is now statistically insignificant. The same result obtains in columns (5)-(6), where the sample additionally excludes public-sector employees and individuals that are employed in the agricultural sector, i.e. there is no statistically significant change in the differential probability advantage of the 25-27 group. These findings indicate that that the introduction of a sub-minimum wage did not succeed in boosting the (relative) employment prospects of private-sector, dependent employees, aged 22-24, relative to the 25-27 group.

Even within the confines of the perfectly competitive model, and under the assumption that actual wages are at the legislated minima, it is not difficult to understand why the labour-labour substitution hypothesis may not hold in this case. In the presence of hiring and firing costs, the reduction in wages that employers would gain from hiring a 24-year old may not be larger than the sum of firing and hiring costs if the firm were to fire her -since within 12 months the subminimum wage rate would no longer apply for this employee (i.e. when she turns 25) - in order to hire another 24-year old. If the firm plans on keeping the employee for many years, the reduction in wage costs by 10% for just one year may represent a very small percentage of the present value of total wage costs that the firm would incur throughout the employee's tenure, and may not provide enough of an incentive to prefer 24- over the 25-year olds. This implies that the labour-labour substitution hypothesis is more likely to hold in cases of jobs involving simple tasks and too little on-the-job training. It also implies that employees may be willing to hire persons aged significantly less than the subminimum age threshold, thus possibly inducing labour-labour substitution among subminimum wage workers, i.e. preferring 20 year olds to 24 year olds.

The arguments above have assumed that employers' labour costs for each age group are equal to the legislated minima, or, that the change in the wages received by employees of each age group are proportional to the legislated changes so that the change in relative labour costs are similar to the legislated change in the relative wage minima. In fact, as shown in Table 4 and discussed previously, the two age groups (25-27 and 22-24) faced the same proportional drop (i.e., by 36%) between the pre-reform and the after-reform period; thus, the policymakers' intentions of bringing about a change in relative labour costs did not materialize. This lack of change in *market-determined* relative labour costs may be due to steeply rising labour supply

curves; however, this is unlikely given the very high unemployment rates experienced (and still ruling) by the relevant age groups. A more likely explanation is that due to fairness considerations firms try to maintain internal pay structures that entail strict relationships between the relative pay of employees, and which are not affected by changes in legislation (Bewley, 2002).

In Tables 5b and 5c we repeat the same exercise with different age bands. In Table 5b we present results when we narrow the age bands to just one year around the age threshold at which the sub-minimum wage applies (i.e. for 24- and 25-year olds). By narrowing the age bands we make it more likely that the two groups are close substitutes. Yet, we still find that the introduction of a sub-minimum wage did not succeed in boosting the (relative) employment prospects of private-sector, dependent employees, aged 24, relative to those aged 25. In Table 5c, we consider more broadly defined age groups (20-24 and 25-29), which, on the one hand, makes it less likely that the groups of workers are close substitutes and would have faced a common trend in their employment prospects, but on the other hand makes the potential benefits from employing a 20-year old who shall receive for 5 years the subminimum wage larger. We still find that the introduction of a sub-minimum wage did not succeed in boosting the (relative) employment prospects of private-sector, dependent employees, aged 20-24, relative to those aged 25-29.

4.3.2   Participation Rates

We next turn to labour force participation, the results for which are reported in Table 6. We note again that higher education and being male result in higher labor force participation, whereas being married results in a lower probability of participating in the labor market, both before and after the minimum wage reform, (possibly because the need and the opportunity for specialization in "home production" are greater for the married –especially in the presence of children). We also note that the reform alone does not seem to have a (statistically) significant impact on the probability of being active in the labor market. However, what we do find is that the probability of labor force participation for individuals in the 25-27 age group becomes significantly higher (relative to the 20-24 group) in the post-reform period. In particular, the estimated probability is 1.4 percentage points higher after the reform. This estimate clearly shows that while the overall labor force participation has not been affected after the reform, individuals in the 25-27 group ended up participating more actively in the labor market, relative to their younger peers. One possible explanation of this finding is that the lower minimum wage for the younger individuals drove some of them out of the labor force (i.e. those whose reservation wage was above the sub-minimum), possibly because younger persons find it more preferable to turn to education possibilities, instead of working for such low wages.

[Table 6 about here.]

The last four columns of Table 6 show the labour force participation effects for the narrower defined age groups (24-and 25- year old), and the broader defined groups (20-24 and 25-29) (respectively). Following the reform, there was no (statistically) significant change in the differential probability of labour market participation of 25-year olds relative to the 24-year olds. This can again be understood on the basis of the relatively short period for which a 24-year old will be subject to the subminimum wage, thus it is unlikely that she would be willing to let a suitable job opportunity pass by – especially in periods of very high unemployment. In contrast, Table 4c reveals that when the age groups are widened there is a significant increase in the differential probability of labour market participation for the 25-29 age group (relative to the 20-24 group) after the reform; this finding matches well with the explanation offered above and strengthens our intuition about the results.

4.4 Employment Dynamics

Our findings that the introduction of a sub-minimum wage did not have a differential employment effect may mask considerable differences regarding worker flows, since any employment outcome can be the result of different combinations of worker flows across labour market states (e.g. Blanchard and Diamond, 1990). For example, the absence of a differential employment effect between the two age groups can be the result of simultaneous lower job finding rates and job loss rates for the 25-27 age group relative to the 22-24 group. We note that, as stressed by Davis et al. (1996), employment inflows and outflows should not be confused with job creation and destruction, since, e.g., when a worker quits and becomes unemployed, and the firm responds by hiring another, previously unemployed, worker, we have employment inflows and outflows, but no job creation or destruction.[17]

To delve more into the dynamics of the Greek labor market and the effects the subminimum wage reform had on it, we try to assess how the reform affected job findings, dismissals and quits. The results for these variables are reported in Tables 7 and 8 respectively.

[Tables 7 and 8 about here.]

Table 7 reports results for job finding. Leaving individual level controls aside,[18] we note again that the reform had no direct effects on the probability of job finding. Being in the 25-27 age group results in a lower probability of finding a job, with the effect being significant both before and after the MW reform. More importantly, however, we find that there is no differential effect of belonging to the group of younger workers after the reform. That is, the probability of finding a job for an individual belonging in the 22-24 group is between 0.3 and 0.7 percentage points

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[17] The data available in the Greek LFS allows us to study employment inflows and outflows, and not job creation and destruction.

[18] Being married and educated has a positive and significant effect on the probability of job finding. The same holds for male individuals.

higher, but this differential does not change significantly between the pre-reform and the post-reform period.

In Table 8 we report results for dismissals (columns (1)-(2)) and quits (columns (3)-(4)). Being in the 25-27 age group results in a higher probability of being dismissed, with the effect being significant, both before and after the MW reform. Regarding quits, there is no difference between the two groups, both before and after the reform. However, we again find that the reform had no differential effect on either dismissals or quits of the 25-27 age group relative to the 22-24 group.

Together, the above findings appear to be in contrast with previous work from other countries (e.g. Portugal and Cardoso, 2006, for Portugal; Dube et al., 2012, for the United States; Brochu and Green, 2013, for Canada) who find that in response to minimum wage hikes there is a decline in separation rates which is offset by a decline in hiring. They interpret their findings by appealing to Burdett-Mortensen (1998) type models of the labour market, i.e. separations decline as workers become more attached to their jobs, while hiring declines as the cost of labour increases. We attribute the absence of a differential impact on job-finding, dismissals, and quits for the younger group in our study to the existence of considerable firing and hiring costs, which in tandem with the briefness of the period for which a worker of the younger group would be subject to the subminimum wage, make the net benefit of labour-labour substitution too small.

To sum up, the reform did not seem to have any strong effects on employment. Interestingly enough, the lower MW seems to have driven younger employees out of the labour force, while firms also did not show any preferential treatment for the less costly younger employees. As far as the job finding rates are concerned, there is no differential effect on the two groups of workers.

5. Employment Reallocation

The results presented thus far, do not consider at all the potential effects of the MW reform on labor market reallocations. In principle, either due to search reasons (e.g. a lower wage is more likely to induce search for a higher paying job), or due to the possibility that the further cut in the MW for younger workers can boost further the sectors using intensively young unskilled workers (e.g. hotels and restaurants), the introduction of a subminimum wage can facilitate job-to-job transitions across sectors. To the extent that this effect has been operating, it may have had beneficial effects on the economy beyond any apparent employment effects since it will have aided in the hoped-for reallocation of economic activity towards the "dynamic" sectors and the "orderly liquidation" of the declining, or of the government-largesse dependent, sectors.

In order to assess this effect, in Table 9 we estimate models where the dependent variable is an indicator of whether the person has changed industries during the reference period. There are two things we note here. First, the direct effect of the reform is (statistically) insignificant, i.e. the reform has no effect on the probability of transition from one sector to another. Second, the transition rate is between 8 and 10 percentage points lower for workers in the 25-27 age group relative to the 22-24 group. Third, the introduction of the subminimum wage had no significant impact on the difference in the transition rates between the two groups.

[Table 9 about here.]

6. Extensions and Robustness Tests

6.1 Controlling for Previous Reforms

Labor market reforms have been one of the cornerstones of the structural adjustment programs in Greece. In order to examine the potential influence of other reforms on our results, we control for the reform that took place in 2010 (see Section 3), and allowed (previously) *unemployed* persons up to 24 years old to be paid at 80% of the minimum wage (the basic minimum wage was then €740, so the sub-minimum wage was €592).

In order to evaluate these joint effects, we focus on employment and labor participation status and estimate models of the form:

$$y_{it}^* = \alpha_0 + \alpha_1 \mathbf{1}(\text{age}_{it} \geq 25) \times \mathbf{1}(t \geq 2012Q1) + \alpha_2 \mathbf{1}(t \geq 2012Q1) +$$
$$\alpha_3 \mathbf{1}(\text{age}_{it} \geq 25) + \delta_1 \mathbf{1}(\text{age}_{it} \geq 25) \times \mathbf{1}(t \geq 2010Q2) + \delta_2 \mathbf{1}(t \geq 2010Q2) +$$
$$\mathbf{x}_{it}'\boldsymbol{\beta} + \lambda_t + \epsilon_{it} \qquad (4)$$

Using (4) we may now estimate three effects of interest: (*i*) the differential effect of the 2010 reform on individuals above 25 years of age; (*ii*) the differential effect of the 2012 reform on individuals above 25 years of age, taking into account that the 2010 reform was already in place; and (*iii*) the 'total' differential effect of both the 2010 and the 2012 reforms. Our estimation results are reported in Tables 8 and 9.

[Tables 10 and 11 about here.]

For both employment and participation rates there is no difference in the conclusions derived in the previous section which did not take into account the 2010 reform. This is understandable given the limited uptake of the 2010 reform.

6.2 Further Robustness Results

In order to exploit the (unbalanced) panel data structure of our dataset we resorted to two types of experiments. First, for all models above that entail binary dependent variables, we estimated probit models with random effects – rather than simply pooling the data. We find that all our findings above remain largely unaffected. The

(point) estimates change slightly, but the qualitative nature of our (previous) conclusions remains intact.

[**Tables A1-A5 about here**]

As a second robustness check, we have also estimated LPMs along the lines of Yannelis (2014). The results are presented in Tables A1-A5 in the Appendix. As we have noted before, OLS estimates of LPMs might be inconsistent. With this caveat in mind, we estimated LPMs with individual fixed effects and found no significant difference of our conclusions: for instance we find no significant change in the employment probability differential between individuals belonging in the 25-27 age group relative to the 22-24 group. We also find no significant differential effect on the rate of labor force participation. Along the same lines, we are unable to uncover any differential effect regarding job findings and job losses nor any effect on the probability of transition across sectors. Even if we use a specification similar to the one in Yannelis (2014) – see Table A5, where the dependent variable is an indicator of full time employment, we find no effect of the 2012 labor market reform on the employment outcome. These results indicate that the difference in results must be due to the shorter time span used by Yannelis.[19]

7. Conclusion

The introduction of a subminimum wage in Greece in February 2012 for persons aged less than 25 was part of the "internal devaluation" policy package. It included a 22% decrease in the basic minimum wage which (until then) was applying to all persons independent of age, and a 32% decrease in it if the person was less than 25 years old. This was motivated as a policy measure to tackle the very high unemployment rate of persons below the age of 25 (which was heading north of 50% at the end of 2011 – against an overall unemployment rate which had just surpassed the 20% mark).

Using persons just above the age of 25 as the control group we have relied on administrative data from the Greek LFS over the period 2008Q1-2016Q1 to examine the effects of the introduction of a subminimum wage. We find no evidence in support of the labour-labour substitution hypothesis, i.e. we uncover no differential change in the probability of employment for persons just above or just below the age threshold (of 25) at which the subminimum applies (this holds for both narrower and broader age groups). Moreover, we find that the probability of labour force participation for individuals in group not subject to the subminimum wage becomes significantly higher (relative to the group subject to it), indicating that the further reduction in the minimum wage for the younger group had the expected labour supply effects (i.e. in

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[19] However, given that the effects of factor price changes are more likely to become apparent as the time horizon gets longer, thus more likely that the labour-labour substitution effect would be present in our sample than in the (shorter-horizon) sample used by Yannelis, it is hard to explain what drives the difference in our results.

response to a relative wage cut it reduced the group's relative labour supply). The (relative to the younger group) increase in labour force participation of the 25-27 group is reflected in a (statistically) significant improvement in the relative job finding rate for the non-agricultural, private-sector employees of this group after the reform. Moreover, we find that the reform had no significant differential impact on employment terminations; i.e. it had no differential impact on either dismissals or quits. These results remain robust to changes in the age bands around the age threshold at which the subminimum wage applies.

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Figures

Figure 1: Distribution of Monthly Wage Earnings in November 2013 (€)

Source: ERGANI (November. 2013)
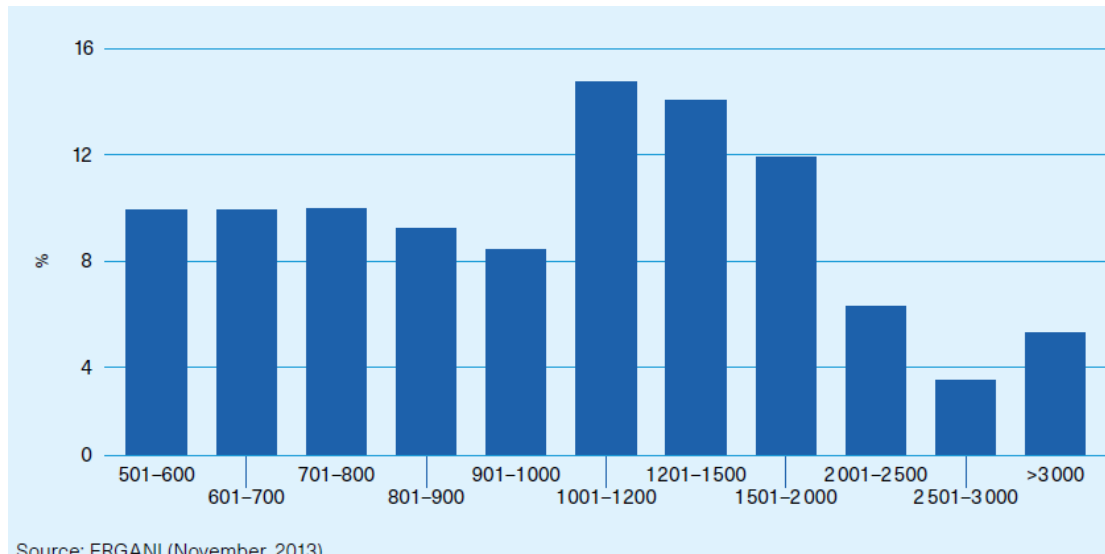
Figure 2: Employment Rates
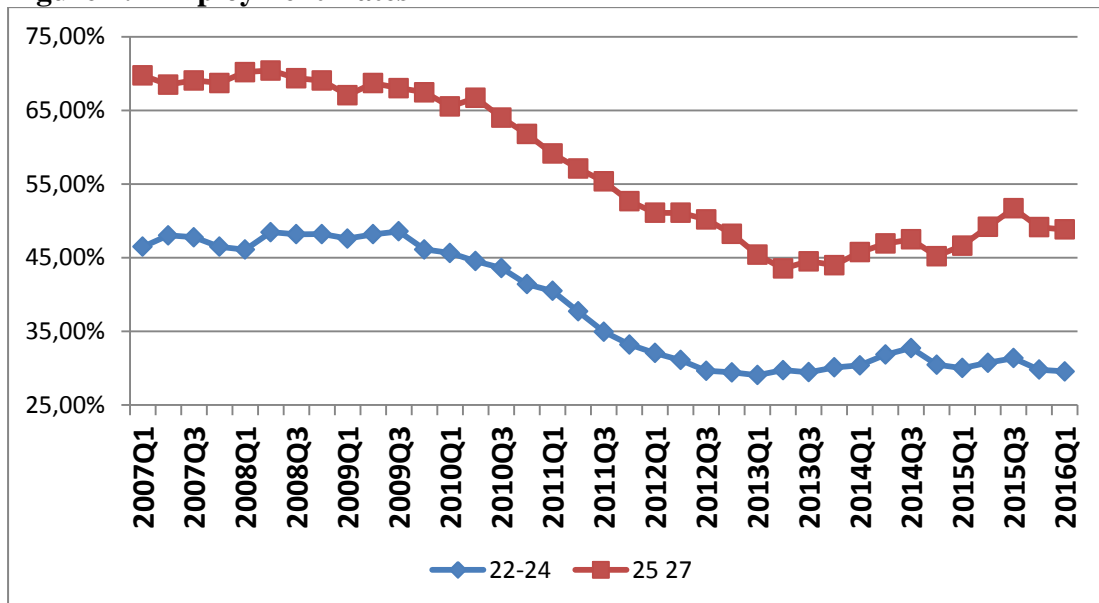
Source: Greek LFS

Tables

Table 1: Minimum Wages Levels (12-month equivalent, €)

	2012	2013	2014	2015	2016	2017
Gzech Republic	310	318	310	332	366	407
Greece	877	684	684	684	684	684
Hungary	296	335	342	333	351	412
Poland	336	393	404	410	434	453
Portugal	566	566	566	589	618	650
Slovenia	763	784	789	791	791	805
Spain	748	753	753	757	764	826

Source: Eurostat

Table 2: Monthly Minimum Wages in Greece (in €)

DATE		SINGLE				MARRIED			
		BASIC	1 TRIENNIUM	2 TRIENNIA	3 TRIENNIA	BASIC	1 TRIENNIUM	2 TRIENNIA	3 TRIENNIA
2008	1/1/2008	680.59	748.65	816.71	884.77	748.65	823.52	898.38	973.24
	1/9/2008	701.00	771.10	841.20	911.30	771.11	848.22	925.33	1002.45
2009	1/5/2009	739.56	813.51	887.47	961.43	813.52	894.87	976.23	1057.58
2010	1/1/2010	739.56	813.51	887.47	961.43	813.52	894.87	976.23	1057.58
2011	1/7/2011	751.39	826.53	901.67	976.81	826.54	909.20	991.85	1074.51
2012	14/2/2012	586.08	644.69	703.29	761.91	644.69	709.16	773.63	838.10
	12/11/2012	586.08	644.69	703.29	761.91	586.08	644.69	703.29	761.91
2013	1/1/2013	586.08	644.69	703.29	761.91	586.08	644.69	703.29	761.91
2014	1/1/2014	586.08	644.69	703.29	761.91	586.08	644.69	703.29	761.91
2015	1/1/2015	586.08	644.69	703.29	761.91	586.08	644.69	703.29	761.91
2016	1/1/2016	586.08	644.69	703.29	761.91	586.08	644.69	703.29	761.91
2017	1/1/2017	586.08	644.69	703.29	761.91	586.08	644.69	703.29	761.91
2018	1/1/2018	586.08	644.69	703.29	761.91	586.08	644.69	703.29	761.91

Source: Greek Ministry of Labour

Table 3: Percentage of the sample that are paid up to the minimum wage

Time Periods\Age Groups	Age: 22-24	Age: 25-27
2008q1-2011q4	38.80%	27.81%
20121q1-2016q1	55.91%	49.09%

Table 4: Summary Statistics

Variable \ Age Group	Pre-Reform		Post-Reform	
	22-24	25-27	22-24	25-27
Age	22.99	26.03	23.01	26.00
	(0.82)	(0.82)	(0.82)	(0.82)
Unemployment Rate	0.28	0.21	0.50	0.43
	(0.45)	(0.41)	(0.50)	(0.50)
Actual HoursWorked	39.10	39.11	38.44	38.58
	(12.73)	(12.87)	(14.09)	(14.04)
Monthly Wage	760.30	834.21	484.50	530.07
	(264.07)	(269.57)	(292.56)	(314.81)
Job Finding Rate	0.02	0.01	0.02	0.01
	(0.13)	(0.12)	(0.12)	(0.12)
Separation Rate	0.02	0.02	0.02	0.03
	(0.14)	(0.15)	(0.14)	(0.17)
Transition Rate	0.18	0.12	0.23	0.15
	(0.38)	(0.32)	(0.42)	(0.36)
Quits	0.08	0.07	0.03	0.04
	(0.27)	(0.25)	(0.16)	(0.20)
Dismissals	0.28	0.33	0.31	0.34
	(0.45)	(0.47)	(0.46)	(0.47)
Female (%)	0.49	0.48	0.48	0.48
	(0.50)	(0.50)	(0.50)	(0.50)
Married (%)	0.10	0.20	0.07	0.16
	(0.30)	(0.40)	(0.25)	(0.36)
Non-Greek (%)	0.12	0.12	0.08	0.09
	(0.32)	(0.32)	(0.27)	(0.29)
Publicsector (%)	0.12	0.15	0.11	0.14
	(0.32)	(0.36)	(0.31)	(0.34)
Agriculture (%)	0.08	0.07	0.12	0.09
	(0.27)	(0.25)	(0.32)	(0.29)
Observations	35,595	38,709	27,762	29,165

COVARIATES	(1) Pre Reform	(2) Post Reform	(3) Pre Reform	(4) Post Reform	(5) Pre Reform	(6) Post Reform
Above 25 years	0.0747***	0.0601***	0.0726***	0.0645***	0.0734***	0.0685***
	(0.0041)	(0.0046)	(0.0045)	(0.0051)	(0.0049)	(0.0056)
Post Reform	0.0005		-0.0015		-0.0103	
	(0.0108)		(0.0122)		(0.0134)	
Gross Domestic Product	0.7728***	0.7738***	0.8734***	0.8752***	0.9144***	0.9175***
	(0.1228)	(0.1208)	(0.1374)	(0.1361)	(0.1487)	(0.1484)
Loans	0.0763**	0.0764**	0.0774**	0.0776**	0.0840**	0.0843**
	(0.0304)	(0.0301)	(0.0340)	(0.0339)	(0.0368)	(0.0368)
Male	0.1052***	0.1053***	0.0851***	0.0853***	0.0674***	0.0676***
	(0.0032)	(0.0034)	(0.0035)	(0.0036)	(0.0038)	(0.0039)
Marital Status	0.0584***	0.0585***	0.0713***	0.0714***	0.0591***	0.0594***
	(0.0046)	(0.0046)	(0.0051)	(0.0052)	(0.0058)	(0.0058)
Low secondary education	0.0102	0.0102	0.0046	0.0046	0.0225**	0.0226**
	(0.0075)	(0.0075)	(0.0086)	(0.0086)	(0.0091)	(0.0091)
Upper secondary education	0.0310***	0.0311***	0.0405***	0.0405***	0.0516***	0.0518***
	(0.0062)	(0.0062)	(0.0071)	(0.0071)	(0.0075)	(0.0076)
Post-secondary non-tertiary education	-0.0055	-0.0055	0.0123	0.0123	0.0208**	0.0209**
	(0.0072)	(0.0072)	(0.0081)	(0.0081)	(0.0086)	(0.0086)
Undergraduate education	0.0065	0.0065	0.0354***	0.0355***	-0.0191**	-0.0192**
	(0.0066)	(0.0066)	(0.0075)	(0.0075)	(0.0081)	(0.0081)
Post-graduate education	-0.0258*	-0.0258*	0.0027	0.0027	-0.0132	-0.0132
	(0.0152)	(0.0152)	(0.0163)	(0.0163)	(0.0174)	(0.0174)
N	95290		80658		71010	
Pseudo R^2	0.0711		0.0719		0.0732	
Wald χ^2(23)	8305.40		7436.91		6847.02	

Difference: Post-Reform vs. Pre-Reform Marginal Effects

	-0.0146**		-0.0080		-0.0049	
	(0.0061)		(0.0068)		(0.0073)	

Notes: The table reports the marginal effects of the covariates listed in the left column on the probability of being employed. A person is classified as employed if during the reference week preceding the survey, the individual has worked for at least one hour or more or was temporarily absent from work. People who are considered out of the labour force are excluded from the sample. Columns (1)-(2) report results for the full sample. Columns (3)-(4) report results for a sample excluding self-employed and family workers. Columns (5)-(6) report results from a sample that excludes self-employed, family workers, public servants and persons working in the agricultural sector. Observations are at the quarterly frequency sampled between 2008:Q1 and 2016:Q1. All specifications include year and quarter effects. The data source is the Greek Labor Force Survey. Individuals between the ages of 22 and 27 are included in the sample. Robust standard errors in parentheses. ***, **, and * denote significance at the 1%, 5% and 10% level respectively.

COVARIATES	(1) Pre Reform	(2) Post Reform	(3) Pre Reform	(4) Post Reform	(5) Pre Reform	(6) Post Reform
Above25	0.0376***	0.0071	0.0327***	0.0137	0.0291***	0.0151*
	(0.0069)	(0.0074)	(0.0076)	(0.0084)	(0.0082)	(0.0090)
Post Reform	0.0099		0.0010		-0.0013	
	(0.0188)		(0.0212)		(0.0229)	
GDP	0.6381***	0.6327***	0.7194***	0.7196***	0.7988***	0.7993***
	(0.2126)	(0.2080)	(0.2363)	(0.2342)	(0.2536)	(0.2528)
Loans	0.0465	0.0461	0.0327	0.0327	0.0526	0.0526
	(0.0524)	(0.0517)	(0.0584)	(0.0582)	(0.0629)	(0.0629)
Male	0.1120***	0.1110***	0.0920***	0.0920***	0.0716***	0.0717***
	(0.0055)	(0.0058)	(0.0061)	(0.0062)	(0.0066)	(0.0066)
Low secondary education	0.0432***	0.0428***	0.0636***	0.0636***	0.0415***	0.0415***
	(0.0084)	(0.0083)	(0.0092)	(0.0093)	(0.0103)	(0.0103)
Upper secondary education	0.0208	0.0206	0.0148	0.0148	0.0385**	0.0386**
	(0.0131)	(0.0130)	(0.0151)	(0.0151)	(0.0159)	(0.0159)
Post-secondary non-tertiary education	0.0301***	0.0298***	0.0371***	0.0371***	0.0512***	0.0513***
	(0.0108)	(0.0107)	(0.0123)	(0.0123)	(0.0131)	(0.0131)
Undergraduate education	-0.0221*	-0.0220*	-0.0023	-0.0023	0.0075	0.0075
	(0.0125)	(0.0124)	(0.0140)	(0.0140)	(0.0149)	(0.0149)
Post-graduate education	-0.0189*	-0.0188*	0.0071	0.0071	-0.0421***	-0.0422***
	(0.0115)	(0.0114)	(0.0129)	(0.0129)	(0.0139)	(0.0140)
N	32669		27933		24793	
Pseudo R^2	0.0718		0.0698		0.0798	
Wald $\chi^2(23)$	2958.42		2551.28		2343.31	
Difference: Post-Reform vs. Pre-Reform Marginal Effects						
	-0.0305***		-0.019*		-0.014	
	(0.0101)		(0.0113)		(0.0121)	

Notes: The table reports the marginal effects of the covariates listed in the left column on the probability of being employed. A person is classified as employed if during the reference week preceding the survey, the individual has worked for at least one hour or more or was temporarily absent from work. People who are considered out of the labour force are excluded from the sample. Columns (1)-(2) report results for the full sample. Columns (3)-(4) report results for a sample excluding self-employed and family workers. Columns (5)-(6) report results from a sample that excludes self-employed, family workers, public servants and persons working in the agricultural sector. Observations are at the quarterly frequency sampled between 2008:Q1 and 2016:Q1. All specifications include year and quarter effects. The data source is the Greek Labor Force Survey. Individuals between the ages of 24 and 25 are included in the sample. Robust standard errors in parentheses. ***, **, and * denote significance at the 1%, 5% and 10% level respectively.

Table 5c: Employment Effects (20-24 and 25-29 age groups)

COVARIATES	(1) Pre Reform	(2) Post Reform	(3) Pre Reform	(4) Post Reform	(5) Pre Reform	(6) Post Reform
Above25	0.1101***	0.1022***	0.1114***	0.1078***	0.1114***	0.1145***
	(0.0034)	(0.0039)	(0.0037)	(0.0043)	(0.0040)	(0.0046)
Post Reform	-0.0052		-0.0072		-0.0156	
	(0.0085)		(0.0097)		(0.0107)	
GDP	0.7788***	0.7852***	0.8831***	0.8886***	0.9379***	0.9427***
	(0.0961)	(0.0949)	(0.1086)	(0.1078)	(0.1188)	(0.1186)
Loans	0.0746***	0.0752***	0.0810***	0.0815***	0.0866***	0.0870***
	(0.0237)	(0.0236)	(0.0268)	(0.0268)	(0.0294)	(0.0294)
Male	0.1033***	0.1042***	0.0831***	0.0836***	0.0693***	0.0697***
	(0.0025)	(0.0026)	(0.0027)	(0.0028)	(0.0030)	(0.0031)
Low secondary education	0.0707***	0.0713***	0.0860***	0.0867***	0.0758***	0.0764***
	(0.0032)	(0.0033)	(0.0037)	(0.0038)	(0.0042)	(0.0043)
Upper secondary education	0.0127**	0.0128**	0.0139**	0.0140**	0.0335***	0.0336***
	(0.0057)	(0.0058)	(0.0067)	(0.0067)	(0.0070)	(0.0070)
Post-secondary non-tertiary education	0.0371***	0.0374***	0.0506***	0.0509***	0.0633***	0.0635***
	(0.0047)	(0.0047)	(0.0055)	(0.0055)	(0.0058)	(0.0058)
Undergraduate education	0.0025	0.0025	0.0247***	0.0248***	0.0358***	0.0359***
	(0.0055)	(0.0055)	(0.0063)	(0.0063)	(0.0067)	(0.0067)
Post-graduate education	0.0323***	0.0326***	0.0662***	0.0665***	0.0134**	0.0134**
	(0.0050)	(0.0051)	(0.0058)	(0.0058)	(0.0063)	(0.0063)
N		152618		127621		111140
Pseudo R^2		0.0755		0.0776		0.0763
Wald χ^2(23)		13740.91		12443.29		11074.56
Difference: Post-Reform vs. Pre-Reform Marginal Effects						
	-0.0079		-0.0036		0.0031	
	(0.005)		(0.0056)		(0.006)	

Notes: The table reports the marginal effects of the covariates listed in the left column on the probability of being employed. A person is classified as employed if during the reference week preceding the survey, the individual has worked for at least one hour or more or was temporarily absent from work. People who are considered out of the labour force are excluded from the sample. Columns (1)-(2) report results for the full sample. Columns (3)-(4) report results for a sample excluding self-employed and family workers. Columns (5)-(6) report results from a sample that excludes self-employed, family workers, public servants and persons working in the agricultural sector. Observations are at the quarterly frequency sampled between 2008:Q1 and 2016:Q1. All specifications include year and quarter effects. The data source is the Greek Labor Force Survey. Individuals between the ages of 20 and 29 are included in the sample. Robust standard errors in parentheses. ***, **, and * denote significance at the 1%, 5% and 10% level respectively.

Table 6: Labour Force Participation (22-24 and 25-27 age groups/24- and 25-year olds/20-24 and 25-29 age groups)

COVARIATES	(1) Pre Reform	(2) Post Reform	(3) Pre Reform	(4) Post Reform	(5) Pre Reform	(6) Post Reform
Above 25 years	0.1644***	0.1787***	0.0518***	0.0606***	0.0519***	0.0787***
	(0.0032)	(0.0040)	(0.0052)	(0.0063)	(0.0040)	
Post Reform	0.0068		0.0111		0.0008	
	(0.0088)		(0.0158)		(0.0071)	
Gross Domestic Product	0.1612*	0.1579*	0.1510	0.1471	0.0556	0.0554
	(0.0977)	(0.0951)	(0.1700)	(0.1643)	(0.0772)	(0.0768)
Loans	0.0182	0.0178	0.0022	0.0021	0.0026	0.0026
	(0.0238)	(0.0233)	(0.0415)	(0.0404)	(0.0187)	(0.0186)
Male	0.1080***	0.1058***	0.0832***	0.0811***	0.1503***	0.1499***
	(0.0025)	(0.0026)	(0.0045)	(0.0045)	(0.0019)	(0.0020)
Marital Status	-0.1051***	-0.1031***	-0.1150***	-0.1125***	0.0107***	0.0107***
	(0.0039)	(0.0039)	(0.0071)	(0.0071)	(0.0026)	(0.0026)
Low secondary education	0.0769***	0.0751***	0.1003***	0.0972***	0.0107***	0.0107***
	(0.0058)	(0.0057)	(0.0099)	(0.0098)	(0.0026)	(0.0026)
Upper secondary education	-0.1190***	-0.1168***	-0.0816***	-0.0800***	0.0628***	0.0626***
	(0.0050)	(0.0049)	(0.0085)	(0.0084)	(0.0046)	(0.0046)
Post-secondary non-tertiary education	0.1981***	0.1928***	0.2081***	0.2002***	-0.1726***	-0.1721***
	(0.0056)	(0.0060)	(0.0098)	(0.0106)	(0.0039)	(0.0039)
Undergraduate education	0.1292***	0.1260***	0.1257***	0.1217***	0.2132***	0.2124***
	(0.0053)	(0.0053)	(0.0090)	(0.0091)	(0.0044)	(0.0048)
Post-graduate education	0.1186***	0.1157***	0.0518***	0.0606***	0.1937***	0.1930***
	(0.0121)	(0.0119)	(0.0052)	(0.0063)	(0.0041)	(0.0045)
N	13168		43215		220312	
Pseudo R²	0.1402		0.0830		0.1394	
Wald χ²(23)	16594.09		3452.14		29575.04	
Difference: Post-Reform vs.					0.0268***	
Pre-Reform Marginal Effects	0.0142***		0.0087			
	(0.0055)		(0.0082)		(0.0063)	

Notes: The table reports the marginal effects of the covariates listed in the left column on the probability of participating in the labour force for the full sample of persons aged 22-27. Columns (3) and (4) correspond to individuals between 24- and 25-year olds. Observations are at the quarterly frequency sampled between 2008:Q1 and 2016:Q1. All specifications include year and quarter effects. The data source is the Greek Labor Force Survey. Robust standard errors in parentheses. ***, **, and * denote significance at the 1%, 5% and 10% level respectively.

Table 7: Job Finding Effects (22-24 and 25-27 age groups)

COVARIATES	(1) Pre Reform	(2) Post Reform	(3) Pre Reform	(4) Post Reform	(5) Pre Reform	(6) Post Reform
Above 25 years	-0.0126***	-0.0097***	-0.0129***	-0.0089***	-0.0143***	-0.0077***
	(0.0018)	(0.0019)	(0.0019)	(0.0020)	(0.0023)	(0.0018)
Post Reform	-0.0027		-0.0019		-0.0051	
	(0.0050)		(0.0055)		(0.0053)	
Gross Domestic	0.0134	0.0120	0.0189	0.0176	0.0472	0.0374
Product	(0.0452)	(0.0412)	(0.0487)	(0.0462)	(0.0521)	(0.0435)
Loans	-0.0150	-0.0134	-0.0162	-0.0150	-0.0156	-0.0124
	(0.0128)	(0.0107)	(0.0136)	(0.0117)	(0.0148)	(0.0109)
Male	0.0021**	0.0019**	0.0024**	0.0023**	0.0035***	0.0028***
	(0.0011)	(0.0010)	(0.0011)	(0.0011)	(0.0013)	(0.0011)
Marital Status	-0.0032**	-0.0029**	-0.0033*	-0.0030*	-0.0018	-0.0014
	(0.0016)	(0.0015)	(0.0017)	(0.0016)	(0.0019)	(0.0015)
Low secondary	0.0014	0.0013	0.0004	0.0004	0.0027	0.0021
education	(0.0019)	(0.0017)	(0.0022)	(0.0020)	(0.0024)	(0.0018)
Upper secondary	0.0054***	0.0048***	0.0040**	0.0037**	0.0048**	0.0037**
education	(0.0017)	(0.0015)	(0.0019)	(0.0018)	(0.0020)	(0.0016)
Post-secondary non-tertiary education	0.0078***	0.0070***	0.0055**	0.0050**	0.0067***	0.0052***
	(0.0021)	(0.0020)	(0.0022)	(0.0021)	(0.0024)	(0.0019)
Undergraduate	0.0198***	0.0177***	0.0167***	0.0154***	0.0183***	0.0144***
education	(0.0026)	(0.0027)	(0.0027)	(0.0028)	(0.0031)	(0.0027)
Post-graduate	0.0249***	0.0224***	0.0253***	0.0235***	0.0266***	0.0212***
education	(0.0066)	(0.0063)	(0.0070)	(0.0069)	(0.0078)	(0.0065)
N	93095		78742		69241	
Pseudo R^2	0.0396		0.0381		0.0399	
Wald $\chi^2(22)$	596.89		484.93		423.22	

Difference: Post-Reform vs. Pre-Reform Marginal Effects

	0.0029		0.004		0.0066*	
	(0.003)		(0.0032)		(0.0034)	

Notes: The table reports the marginal effects of the covariates listed in the left column on the probability of an unemployed person being hired. Columns (1)-(2) report results for the full sample. Columns (3)-(4) report results for a sample excluding self-employed and family workers. Columns (5)-(6) report results from a sample that excludes self-employed, family workers, public servants and persons working in the agricultural sector. Observations are at the quarterly frequency sampled between 2008:Q1 and 2016:Q1. All specifications include year and quarter effects. The data source is the Greek Labor Force Survey. Individuals between the ages of 20 and 29 are included in the sample. Robust standard errors in parentheses. ***, **, and * denote significance at the 1%, 5% and 10% level respectively

Table 8: Effects on Dismissals and Quits (22-24 and 25-27 age groups)

COVARIATES	(1) Pre Reform	(2) Post Reform	(1) Pre Reform	(2) Post Reform
Above 25 years	0.0117***	0.0101***	-0.0001	0.0009
	(0.0030)	(0.0029)	(0.0016)	(0.0005)
Post Reform	0.0019		-0.0049	-0.0049
	(0.0092)		(0.0042)	(0.0042)
Gross Domestic Product	0.0725	0.0771	-0.0806	-0.0209
	(0.0709)	(0.0785)	(0.0875)	(0.0157)
Loans	0.0027	0.0029	0.0105	0.0027
	(0.0229)	(0.0245)	(0.0179)	(0.0055)
Male	0.0018	0.0019	-0.0016	-0.0004
	(0.0018)	(0.0019)	(0.0014)	(0.0004)
Marital Status	0.0032	0.0034	0.0053	0.0014*
	(0.0031)	(0.0033)	(0.0040)	(0.0008)
Low secondary education	0.0084*	0.0089*	0.0033	0.0009
	(0.0050)	(0.0053)	(0.0035)	(0.0008)
Upper secondary education	0.0043	0.0046	0.0030	0.0008
	(0.0038)	(0.0041)	(0.0026)	(0.0006)
Post-secondary non-tertiary education	0.0075*	0.0079*	0.0047	0.0012
	(0.0045)	(0.0047)	(0.0035)	(0.0008)
Undergraduate education	-0.0130***	-0.0138***	-0.0016	-0.0004
	(0.0043)	(0.0043)	(0.0023)	(0.0005)
Post-graduate education	-0.0138**	-0.0147**	0.0103	0.0028
	(0.0069)	(0.0071)	(0.0090)	(0.0026)
N	32134		31170	
Pseudo R^2	0.0637		0.0744	
Wald χ^2(23/22)	376.96		90.77	

Difference: Post-Reform vs. Pre-Reform Marginal Effect

	-0.0016		0.001	
	(0.0047)		(0.0017)	

Notes: The table reports the marginal effects of the covariates listed in the left column on the probability of a person being fired in columns (1)-(2) and on the probability of a person quitting his/her job in columns (3)-(4). The reported results are based on a sample that excludes self-employed, family workers, public servants and persons working in the agricultural sector. Observations are at the quarterly frequency sampled between 2008:Q1 and 2016:Q1. All specifications include year and quarter effects. The data source is the Greek LFS. Individuals between the ages of 20 and 29 are included in the sample. Robust standard errors in parentheses. ***, **, and * denote significance at the 1%, 5% and 10% level respectively.

Table 9: Results for Transitions Across Sectors

COVARIATES	(1) Pre Reform	(2) Post Reform	(3) Pre Reform	(4) Post Reform	(5) Pre Reform	(6) Post Reform
Above 25 years	-0.0811***	-0.0944***	-0.0903***	-0.1011***	-0.0999***	-0.1009***
	(0.0040)	(0.0062)	(0.0047)	(0.0074)	(0.0053)	(0.0081)
Post Reform	0.0188		0.0237		0.0144	
	(0.0125)		(0.0152)		(0.0164)	
Gross Domestic Product	0.0065	0.0070	-0.0162	-0.0177	-0.0109	-0.0115
	(0.1219)	(0.1317)	(0.1442)	(0.1570)	(0.1604)	(0.1695)
Loans	-0.0185	-0.0200	-0.0392	-0.0427	-0.0648*	-0.0686*
	(0.0286)	(0.0306)	(0.0339)	(0.0363)	(0.0380)	(0.0389)
Male	-0.0147***	-0.0159***	-0.0094***	-0.0103***	0.0057	0.0060
	(0.0030)	(0.0033)	(0.0035)	(0.0038)	(0.0040)	(0.0042)
Marital Status	-0.0312***	-0.0338***	-0.0413***	-0.0453***	-0.0295***	-0.0313***
	(0.0042)	(0.0047)	(0.0048)	(0.0056)	(0.0056)	(0.0061)
Low secondary education	0.0072	0.0080	0.0013	0.0014	0.0065	0.0070
	(0.0055)	(0.0061)	(0.0073)	(0.0082)	(0.0079)	(0.0085)
Upper secondary education	0.0382***	0.0421***	0.0261***	0.0290***	0.0259***	0.0277***
	(0.0047)	(0.0053)	(0.0060)	(0.0068)	(0.0066)	(0.0072)
Post-secondary non-tertiary education	0.0614***	0.0673***	0.0438***	0.0485***	0.0428***	0.0457***
	(0.0059)	(0.0068)	(0.0073)	(0.0082)	(0.0079)	(0.0087)
Undergraduate education	0.1412***	0.1525***	0.1207***	0.1316***	0.1537***	0.1622***
	(0.0060)	(0.0078)	(0.0072)	(0.0089)	(0.0085)	(0.0107)
Post-graduate education	0.1790***	0.1922***	0.1812***	0.1955***	0.1909***	0.2007***
	(0.0173)	(0.0189)	(0.0194)	(0.0211)	(0.0218)	(0.0236)
N	63156		48524		38876	
Pseudo R^2	0.0450		0.0426		0.0536	
Wald $\chi^2(23)$	2242.91		1741.84		1742.76	
Difference: Post-Reform vs. Pre-Reform Marginal Effects						
	-0.0133*		-0.0108		-0.0010	
	(0.0079)		(0.0093)		(0.0103)	

Notes: The table reports the marginal effects of the covariates listed in the left column on the probability of a person changing industry. Columns (1)-(2) report results for the full sample. Columns (3)-(4) report results for a sample excluding self-employed and family workers. Columns (5)-(6) report results from a sample that excludes self-employed, family workers, public servants and persons working in the agricultural sector. Observations are at the quarterly frequency sampled between 2008:Q1 and 2016:Q1. All specifications include year and quarter effects. The data source is the Greek Labor Force Survey. Individuals between the ages of 20 and 29 are included in the sample. Robust standard errors in parentheses. ***, **, and * denote significance at the 1%, 5% and 10% level respectively.

Table 10: Employment Effects Whilst Taking into Account Previous Reforms (22-24 and 25-27 age groups)

Covariates	(1) Pre reform (before 2012)	(2) Between 2010 and reform	(3) Post reform	(4) Pre reform (before 2012)	(5) Between 2010 and reform	(6) Post reform	(7) Pre reform (before 2012)	(8) Between 2010 and reform	(9) Post reform
Above 25 years	0.0714***	0.0792***	0.0605***	0.0691***	0.0780***	0.0652***	0.0690***	0.0802***	0.0690***
	(0.0054)	(0.0062)	(0.0047)	(0.0060)	(0.0070)	(0.0052)	(0.0064)	(0.0075)	(0.0056)
Post Reform	-0.0001	-0.0001		-0.0026	-0.0027		-0.0113	-0.0114	
	(0.0108)	(0.0109)		(0.0123)	(0.0124)		(0.0135)	(0.0135)	
Prev. Reform	-0.0086			-0.0155			-0.0140		
	(0.0112)			(0.0126)			(0.0136)		
Gross Domestic Product	0.7294***	0.7357***	0.7376***	0.7974***	0.8050***	0.8076***	0.8482***	0.8512***	0.8547***
	(0.1352)	(0.1326)	(0.1308)	(0.1509)	(0.1494)	(0.1484)	(0.1628)	(0.1617)	(0.1617)
Loans	0.0852***	0.0860***	0.0862***	0.0936**	0.0945**	0.0948**	0.0990**	0.0994**	0.0998**
	(0.0324)	(0.0331)	(0.0329)	(0.0364)	(0.0370)	(0.0369)	(0.0396)	(0.0399)	(0.0400)
Male	0.1049***	0.1057***	0.1060***	0.0850***	0.0858***	0.0861***	0.0675***	0.0678***	0.0680***
	(0.0032)	(0.0033)	(0.0035)	(0.0035)	(0.0036)	(0.0037)	(0.0038)	(0.0039)	(0.0039)
Marital Status	0.0581***	0.0587***	0.0589***	0.0710***	0.0719***	0.0721***	0.0591***	0.0594***	0.0598***
	(0.0046)	(0.0046)	(0.0047)	(0.0051)	(0.0052)	(0.0053)	(0.0058)	(0.0058)	(0.0059)
Low secondary education	0.0102	0.0102	0.0103	0.0046	0.0047	0.0047	0.0226**	0.0227**	0.0228**
	(0.0075)	(0.0075)	(0.0076)	(0.0086)	(0.0087)	(0.0087)	(0.0091)	(0.0091)	(0.0092)
Upper secondary education	0.0310***	0.0312***	0.0313***	0.0405***	0.0408***	0.0410***	0.0518***	0.0520***	0.0523***
	(0.0062)	(0.0062)	(0.0063)	(0.0071)	(0.0072)	(0.0072)	(0.0076)	(0.0076)	(0.0076)
Post-secondary non-tertiary education	-0.0054	-0.0055	-0.0055	0.0124	0.0125	0.0125	0.0210**	0.0211**	0.0211**
	(0.0071)	(0.0072)	(0.0072)	(0.0081)	(0.0082)	(0.0082)	(0.0086)	(0.0086)	(0.0087)
Undergraduate education	0.0065	0.0066	0.0066	0.0354***	0.0357***	0.0358***	-0.0192**	-0.0193**	-0.0193**
	(0.0066)	(0.0066)	(0.0066)	(0.0075)	(0.0075)	(0.0076)	(0.0081)	(0.0081)	(0.0082)
Post-graduate education	-0.0257*	-0.0259*	-0.0259*	0.0028	0.0028	0.0028	-0.0131	-0.0131	-0.0132
	(0.0151)	(0.0152)	(0.0153)	(0.0163)	(0.0164)	(0.0164)	(0.0175)	(0.0175)	(0.0175)
N / Pseudo R^2 / Wald $\chi^2(25)$	95290 /0 .0712 / 8317.85			80658 /0.0719 / 7449.41			71010 / 0.0732 / 6858.81		

Difference: Post-Reform vs. Pre-Reform Marginal Effects

	(i)	(ii)	(iii)	(i)	(ii)	(iii)	(i)	(ii)	(iii)
	0.0078	-0.0187**	-0.0109	0.0089	-0.0128	-0.0039	0.0112	-0.0116	0.000
	(0.0082)	(0.0077)	(0.0071)	(0.0091)	(0.0086)	(0.0078)	(0.0098)	(0.0092)	(0.0084)

Notes: The table reports the marginal effects of the covariates listed in the left column on the probability of being employed. A person is classified as employed if during the reference week preceding the survey, the individual has worked for at least one hour or more or was temporarily absent from work. Columns (1)-(3) report results for the full sample. Columns (4)-(6) report results for a sample excluding self-employed and family workers. Columns (7)-(9) report results from a sample that excludes self-employed, family workers, public servants and persons working in the agricultural sector. Columns (1), (4) and (7) report the marginal effects of all covariates when both reforms are *switched on* jointly. Columns (2), (5) and (8) report the marginal effects of all covariates when only the *Previous Reform* takes place. Columns (3), (6) and (9) report the marginal effects of all covariates when the *Previous Reform* is already active, and the minimum wage reform takes place. In the bottom panels column (i) reports the difference in marginal effects when only the initial reform takes place; column (ii) when the minimum wage reform takes place, given that the initial reform holds; and column (iii) the 'joint' effect of the two reforms Observations are at the quarterly frequency sampled between 2008:Q1 and 2016:Q1. All specifications include year and quarter effects. The data source is the Greek Labor Force Survey. Individuals between the ages of 22 and 27 are included in the sample. Robust standard errors in parentheses. ***, **, and * denote significance at the 1%, 5% and 10% level respectively.

Table 11: Effects on Labour Force Participation Whilst Taking into Account Previous Reforms (22-24 and 25-27 age groups)

Covariates	(1) Pre reform (before 2012)	(2) Between 2010 and reform	(3) Post reform	(4) Pre reform (before 2012)	(5) Between 2010 and reform	(6) Post reform	(7) Pre reform (before 2012)	(8) Between 2010 and reform	(9) Post reform
Above 25 years	0.1642***	0.1668***	0.1773***	0.1643***	0.1687***	0.1844***	0.1682***	0.1729***	0.1926***
	(0.0043)	(0.0050)	(0.0042)	(0.0046)	(0.0055)	(0.0044)	(0.0048)	(0.0058)	(0.0045)
Post Reform	0.0079			0.0070			0.0064		
	(0.0089)			(0.0097)			(0.0104)		
Prev. Reform	0.0091		0.0089	0.0078		0.0076	0.0102		0.0100
	(0.0086)		(0.0084)	(0.0094)		(0.0092)	(0.0101)		(0.0099)
Gross Domestic Product	0.2116*	0.2078*	0.2036**	0.1951	0.1925*	0.1891*	0.1745	0.1722	0.1693
	(0.1093)	(0.1061)	(0.1031)	(0.1187)	(0.1162)	(0.1134)	(0.1267)	(0.1242)	(0.1216)
Loans	0.0095	0.0094	0.0092	0.0101	0.0099	0.0098	0.0099	0.0098	0.0096
	(0.0254)	(0.0250)	(0.0245)	(0.0277)	(0.0274)	(0.0269)	(0.0298)	(0.0295)	(0.0289)
Male	0.1091***	0.1072***	0.1051***	0.0943***	0.0931***	0.0914***	0.0889***	0.0877***	0.0862***
	(0.0027)	(0.0026)	(0.0026)	(0.0028)	(0.0027)	(0.0027)	(0.0030)	(0.0029)	(0.0028)
Marital Status	-0.1061***	-0.1044***	-0.1025***	-0.1118***	-0.1106***	-0.1087***	-0.1272***	-0.1258***	-0.1238***
	(0.0040)	(0.0039)	(0.0039)	(0.0043)	(0.0042)	(0.0042)	(0.0046)	(0.0045)	(0.0045)
Low secondary education	0.0781***	0.0763***	0.0744***	0.0903***	0.0888***	0.0870***	0.1017***	0.0998***	0.0980***
	(0.0059)	(0.0057)	(0.0057)	(0.0068)	(0.0066)	(0.0065)	(0.0071)	(0.0070)	(0.0069)
Upper secondary education	-0.1201***	-0.1183***	-0.1161***	-0.1173***	-0.1161***	-0.1144***	-0.1186***	-0.1175***	-0.1158***
	(0.0051)	(0.0050)	(0.0049)	(0.0057)	(0.0056)	(0.0055)	(0.0060)	(0.0059)	(0.0058)
Post-secondary non-tertiary education	0.2020***	0.1961***	0.1905***	0.2391***	0.2338***	0.2283***	0.2537***	0.2472***	0.2420***
	(0.0067)	(0.0058)	(0.0063)	(0.0076)	(0.0066)	(0.0072)	(0.0080)	(0.0070)	(0.0075)
Undergraduate education	0.1314***	0.1281***	0.1247***	0.1648***	0.1616***	0.1581***	0.1534***	0.1502***	0.1473***
	(0.0057)	(0.0053)	(0.0054)	(0.0065)	(0.0061)	(0.0062)	(0.0068)	(0.0065)	(0.0065)
Post-graduate education	0.1206***	0.1176***	0.1146***	0.1552***	0.1523***	0.1490***	0.1566***	0.1533***	0.1503***
	(0.0125)	(0.0120)	(0.0118)	(0.0135)	(0.0131)	(0.0129)	(0.0147)	(0.0142)	(0.0140)
N / Pseudo R^2 / Wald $\chi^2(25)$	131168 / 0.1402 / 16597.90			116536 / 0.1431 / 16093.08			106888 / 0.1354 / 14785.39		

Difference: Post-Reform vs. Pre-Reform Marginal Effects

	(i)	(ii)	(iii)	(i)	(ii)	(iii)	(i)	(ii)	(iii)
	0.0025	0.0106	0.0131**	0.0044	0.0157**	0.0201***	0.0047	-0.0198***	0.0245***
	(0.0066)	(0.0066)	(0.0066)	(0.007)	(0.007)	(0.0067)	(0.0075)	(0.0074)	(0.0069)

Notes: The table reports the marginal effects of the covariates listed in the left column on the probability of being active in the labor force. Columns (1)-(3) report results for the full sample. Columns (4)-(6) report results for a sample excluding self-employed and family workers. Columns (7)-(9) report results from a sample that excludes self-employed, family workers, public servants and persons working in the agricultural sector. Columns (1), (4) and (7) report the marginal effects of all covariates when both reforms are *switched on* jointly. Columns (2), (5) and (8) report the marginal effects of all covariates when only the *Previous Reform* takes place. Columns (3), (6) and (9) report the marginal effects of all covariates when the *Previous Reform* is already active, and the minimum wage reform takes place. In the bottom panels column (i) reports the difference in marginal effects when only the initial reform takes place; column (ii) when the minimum wage reform takes place, given that the initial reform holds; and column (iii) the 'joint' effect of the two reforms Observations are at the quarterly frequency sampled between 2008:Q1 and 2016:Q1. All specifications include year and quarter effects. The data source is the Greek Labor Force Survey. Individuals between the ages of 22 and 27 are included in the sample. Robust standard errors in parentheses. ***, **, and * denote significance at the 1%, 5% and 10% level respectively.

Appendix

Table A.1: Employment and Labor Participation Effects – Linear Probability Models

VARIABLES	(1)	(2)	(3)	(4)
Above 25 years	0.0065	0.0022	0.0050	-0.0001
	(0.0052)	(0.0056)	(0.0057)	(0.0029)
Post Reform	-0.0005	-0.0028	-0.0076	0.0035
	(0.0070)	(0.0072)	(0.0071)	(0.0036)
Above 25 years × Post Reform	-0.0043	0.0012	-0.0021	0.0028
	(0.0069)	(0.0072)	(0.0072)	(0.0039)
Gross Domestic Product	0.3634***	0.3964***	0.3511***	0.0827**
	(0.0721)	(0.0789)	(0.0795)	(0.0364)
Loans	0.0670***	0.0690***	0.0625***	0.0056
	(0.0152)	(0.0165)	(0.0167)	(0.0075)
Marital Status	0.0701	0.0888	0.1050	-0.1188
	(0.0559)	(0.0677)	(0.0759)	(0.0781)
Low secondary education	-0.0334	0.0035	0.0111	-0.3112**
	(0.0778)	(0.0720)	(0.0681)	(0.1508)
Upper secondary education	0.0291	0.0857	0.0951	0.0502
	(0.1085)	(0.1546)	(0.1524)	(0.1554)
Post-secondary non-tertiary education	0.0240	0.0317	0.0101	0.4836***
	(0.1286)	(0.1611)	(0.1522)	(0.1600)
Undergraduate education	0.0771	0.1564	0.2016	0.5188***
	(0.1118)	(0.1648)	(0.1606)	(0.1572)
Post-graduate education	0.0589	0.1381	0.2172	0.8427***
	(0.1166)	(0.1681)	(0.1636)	(0.1756)
Constant	-4.1969***	-4.6750***	-4.1929***	-0.4604
	(0.8954)	(0.9826)	(0.9900)	(0.4646)
N	95,290	80,658	71,010	131,168
R^2	0.0057	0.0049	0.0069	0.0940
Number of individuals	23,725	20,283	18,066	32,340

Notes: The table reports estimates of the effects of the covariates listed in the left column on the probability of being employed in Columns (1)-(3) and on the probability of being participating in the labor force in Column (4) employing Linear Probability Models (LPMs). Columns (1) reports results for the full sample. Column (2) report results for a sample excluding self-employed and family workers. Column (3) reports results from a sample that excludes self-employed, family workers, public servants and persons working in the agricultural sector. The dummy variable for males was excluded from the estimation being collinear with other fixed effects included in the estimation. Observations are at the quarterly frequency sampled between 2008:Q1 and 2016:Q1. All specifications include individual fixed effects, as well as year and quarter fixed effects. The data source is the Greek Labor Force Survey. Individuals between the ages of 22 and 27 are included in the sample. Robust standard errors in parentheses. ***, **, and * denote significance at the 1%, 5% and 10% level respectively.

Table A.2: Job Finding and Job Loss Effects – Linear Probability Models

VARIABLES	(1)	(2)	(3)	(4)
Above 25 years	0.0003	0.0002	-0.0002	0.0028
	(0.0028)	(0.0030)	(0.0030)	(0.0055)
Post Reform	-0.0061*	-0.0069*	-0.0080**	0.0013
	(0.0037)	(0.0039)	(0.0039)	(0.0056)
Above 25 years × Post Reform	0.0015	0.0031	0.0029	0.0031
	(0.0037)	(0.0038)	(0.0038)	(0.0062)
Gross Domestic Product	-0.0165	-0.0230	-0.0132	0.0107
	(0.0436)	(0.0470)	(0.0476)	(0.0972)
Loans	-0.0041	-0.0052	-0.0084	0.0089
	(0.0092)	(0.0102)	(0.0103)	(0.0199)
Marital Status	0.0341*	0.0399*	0.0436*	-0.0632
	(0.0185)	(0.0223)	(0.0249)	(0.1074)
Low secondary education	0.0345	0.0108	0.0053	0.0135*
	(0.0373)	(0.0096)	(0.0084)	(0.0072)
Upper secondary education	-0.0456	0.0217*	0.0132	0.0252***
	(0.0512)	(0.0124)	(0.0105)	(0.0088)
Post-secondary non-tertiary education	-0.0318	0.0199	0.0258	0.0585**
	(0.0563)	(0.0213)	(0.0173)	(0.0263)
Undergraduate education	-0.0317	0.0539**	0.0623**	0.0256*
	(0.0521)	(0.0242)	(0.0262)	(0.0140)
Post-graduate education	-0.0327	0.0517	0.0413	0.0363**
	(0.0589)	(0.0373)	(0.0393)	(0.0151)
Constant	0.3307	0.3606	0.2760	-0.1423
	(0.5570)	(0.5997)	(0.6059)	(1.2310)
N	95,290	80,658	71,010	131,168
R^2	0.0057	0.0049	0.0069	0.0940
Number of individuals	23,725	20,283	18,066	32,340

Notes: The table reports estimates of the effects of the covariates listed in the left column on the probability of being hired in Columns (1)-(3) and on the probability of a person losing its job in Column (4) employing Linear Probability Models (LPMs). Columns (1) reports results for the full sample. Column (2) report results for a sample excluding self-employed and family workers. Column (3) reports results from a sample that excludes self-employed, family workers, public servants and persons working in the agricultural sector. The dummy variable for males was excluded from the estimation being colinear with other fixed effects included in the estimation. Observations are at the quarterly frequency sampled between 2008:Q1 and 2016:Q1. All specifications include individual fixed effects, as well as year and quarter fixed effects. The data source is the Greek Labor Force Survey. Individuals between the ages of 22 and 27 are included in the sample. Robust standard errors in parentheses. ***, **, and * denote significance at the 1%, 5% and 10% level respectively.

Table A.3: Transitions Across Sectors – Linear Probability Models

VARIABLES	(1)	(2)	(3)
Above 25 years	-0.0090	-0.0101	-0.0052
	(0.0075)	(0.0088)	(0.0095)
Post Reform	-0.0134	-0.0180	-0.0179
	(0.0125)	(0.0149)	(0.0171)
Above 25 years × Post Reform	0.0074	0.0108	0.0046
	(0.0119)	(0.0143)	(0.0162)
Gross Domestic Product	-0.3034***	-0.3243***	-0.3504***
	(0.0957)	(0.1145)	(0.1262)
Loans	-0.0632***	-0.0754***	-0.0860***
	(0.0202)	(0.0239)	(0.0266)
Marital Status	0.0123	0.0020	-0.0317
	(0.0548)	(0.0729)	(0.0860)
Low secondary education	-0.0423	-0.0562	-0.0673
	(0.1381)	(0.2418)	(0.2629)
Upper secondary education	0.1183	0.2389*	0.2282
	(0.1118)	(0.1410)	(0.1743)
Post-secondary non-tertiary education	0.0827	0.1178***	0.1175***
	(0.1275)	(0.0095)	(0.0107)
Undergraduate education	0.0399	0.1586	0.1593
	(0.1091)	(0.1379)	(0.1729)
Post-graduate education	0.0181	0.2083	0.1874
	(0.1253)	(0.1406)	(0.1818)
Constant	4.6373***	4.9840***	5.3880***
	(1.1751)	(1.4072)	(1.5475)
N	63,156	48,524	38,876
R^2	0.0967	0.1116	0.1117
Number of individuals	16,781	13,105	10,476

Notes: The table reports estimates of the effects of the covariates listed in the left column on the probability of a person changing industry employing Linear Probability Models (LPMs). Columns (1) reports results for the full sample. Column (2) report results for a sample excluding self-employed and family workers. Column (3) reports results from a sample that excludes self-employed, family workers, public servants and persons working in the agricultural sector. The dummy variable for males was excluded from the estimation being colinear with other fixed effects included in the estimation. Observations are at the quarterly frequency sampled between 2008:Q1 and 2016:Q1. All specifications include individual fixed effects, as well as year and quarter fixed effects. The data source is the Greek Labor Force Survey. Individuals between the ages of 22 and 27 are included in the sample. Robust standard errors in parentheses. ***, **, and * denote significance at the 1%, 5% and 10% level respectively.

Table A.4: Employment Effects Controlling for Previous Reforms – Linear Probability Models

VARIABLES	(1)	(2)	(3)
Above 25 years	0.0116*	0.0082	0.0126*
	(0.0061)	(0.0066)	(0.0067)
Post Reform	-0.0023	-0.0051	-0.0105
	(0.0072)	(0.0074)	(0.0073)
Above 25 years × Post Reform	0.0003	0.0064	0.0042
	(0.0074)	(0.0078)	(0.0077)
Previous Reform	0.0159**	0.0143*	0.0158**
	(0.0069)	(0.0077)	(0.0077)
Above 25 years × Previous Reform	0.0049	0.0016	0.0002
	(0.0057)	(0.0063)	(0.0061)
Gross Domestic Product	0.4080***	0.4255***	0.3772***
	(0.0833)	(0.0908)	(0.0913)
Loans	0.0590***	0.0625***	0.0555***
	(0.0144)	(0.0156)	(0.0158)
Marital Status	0.0696	0.0885	0.1046
	(0.0560)	(0.0677)	(0.0759)
Low secondary education	-0.0323	0.0034	0.0109
	(0.0779)	(0.0721)	(0.0682)
Upper secondary education	0.0288	0.0839	0.0929
	(0.1085)	(0.1548)	(0.1527)
Post-secondary non-tertiary education	0.0235	0.0299	0.0078
	(0.1286)	(0.1613)	(0.1524)
Undergraduate education	0.0767	0.1547	0.1994
	(0.1118)	(0.1651)	(0.1608)
Post-graduate education	0.0591	0.1372	0.2161
	(0.1167)	(0.1683)	(0.1638)
Constant	-4.6042***	-4.9259***	-4.4070***
	(1.0070)	(1.1018)	(1.1057)
N	95,290	80,658	71,010
R^2	0.0058	0.0050	0.0070
Number of individuals	23,725	20,283	18,066

Notes: The table reports estimates of the effects of the covariates listed in the left column on the probability of being employed accounting for the effects of *Previous Reforms*, employing Linear Probability Models (LPMs). Columns (1) reports results for the full sample. Column (2) report results for a sample excluding self-employed and family workers. Column (3) reports results from a sample that excludes self-employed, family workers, public servants and persons working in the agricultural sector. The dummy variable for males was excluded from the estimation being collinear with other fixed effects included in the estimation. Observations are at the quarterly frequency sampled between 2008:Q1 and 2016:Q1. All specifications include individual fixed effects, as well as year and quarter fixed effects. The data source is the Greek Labor Force Survey. Individuals between the ages of 22 and 27 are included in the sample. Robust standard errors in parentheses. ***, **, and * denote significance at the 1%, 5% and 10% level respectively.

Table A.5: Employment (Full Time Employees Only) Effects – Linear Probability Models

VARIABLES	(1)	(2)	(3)
Above 25 years	0.0039	0.0006	0.0019
	(0.0050)	(0.0054)	(0.0054)
Post Reform	-0.0052	-0.0077	-0.0111*
	(0.0064)	(0.0068)	(0.0067)
Above 25 years × Post Reform	0.0014	0.0019	0.0014
	(0.0063)	(0.0068)	(0.0067)
Gross Domestic Product	0.3313***	0.4218***	0.3913***
	(0.0682)	(0.0759)	(0.0766)
Loans	0.0510***	0.0594***	0.0608***
	(0.0146)	(0.0163)	(0.0166)
Marital Status	0.0783	0.0995	0.1173
	(0.0602)	(0.0731)	(0.0823)
Low secondary education	-0.0106	0.0431	0.0482
	(0.0450)	(0.0559)	(0.0551)
Upper secondary education	-0.0854	-0.0273	-0.0212
	(0.0630)	(0.0965)	(0.0957)
Post-secondary non-tertiary education	0.0053	-0.0481	-0.0637
	(0.1049)	(0.1136)	(0.1060)
Undergraduate education	0.0357	0.0826	0.1477
	(0.0702)	(0.1141)	(0.1100)
Post-graduate education	0.0402	0.0911	0.1650
	(0.0735)	(0.1155)	(0.1143)
Constant	-3.6739***	-4.8433***	-4.6139***
	(0.8432)	(0.9391)	(0.9479)
N	95,290	80,658	71,010
R^2	0.0061	0.0063	0.0088
Number of individuals	23,725	20,283	18,066

Notes: The table reports estimates of the effects of the covariates listed in the left column on the probability of being employed employing Linear Probability Models (LPMs). In all specifications the dependent variable is a qualitative variable indicating whether the individual is employed full time or not. Columns (1) reports results for the full sample. Column (2) report results for a sample excluding self-employed and family workers. Column (3) reports results from a sample that excludes self-employed, family workers, public servants and persons working in the agricultural sector. The dummy variable for males was excluded from the estimation being collinear with other fixed effects included in the estimation. Observations are at the quarterly frequency sampled between 2008:Q1 and 2016:Q1. All specifications include individual fixed effects, as well as year and quarter fixed effects. The data source is the Greek Labor Force Survey. Individuals between the ages of 22 and 27 are included in the sample. Robust standard errors in parentheses. ***, **, and * denote significance at the 1%, 5% and 10% level respectively.