Minimum Wage Effects on Employment and Changes in the Wage Distribution in Greece*

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May 2015

Abstract

This paper is a preliminary analysis of the employment effects of the minimum wage cut adopted in 2012 and the corresponding age-based differentiation for workers above and below 25 years old. The analysis is constrained on full-time private sector workers of two substitute age groups, i.e. 20-24 and 25-29 years old. It is found that employment rates for ‘younger’ workers have been decreased in a lesser extent in comparison with the rates of ‘older’ workers. Furthermore, changes in the earnings’ distribution of private sector full-time employees are presented. The main finding of this part of the paper is that distribution shifted significantly to the left. Minimum wage reform is considered to play an important role to this shift.

* The author wishes to thank Manos Matsaganis, Panos Tsakloglou and Michalis Veliziotis for their helpful comments, suggestions and advice and the Hellenic Statistical Service (ELSTAT.) for providing access to the Greek Labour Force Survey and Survey on Income and Living Conditions.
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1. Introduction

Minimum wage’s importance in modern economies is unambiguous. It sets the lower bound to the wage paid to individual workers in the formal sector. Although, many economists claim that it also affects the informal sector. For several decades the minimum wage issue has caused an intense debate among labor economists. This debate mainly concerns the effects of the minimum wage on employment, wages or the wage distribution.

The present study focuses on the employment and wage effects of the minimum wage decrease that was implemented in 2012 in the context of the austerity programs adopted by the Greek government. The main purpose is to study the impact of the age-based minimum wage reform by analyzing employment rates of two different age groups: those aged 20 – 24 and 25 – 29 as minimum wage has been cut more for workers aged below 25 years old.

Firstly, the minimum wage effects on employment are investigated for the aforementioned age groups and secondly the changes on the wage distribution are presented. In the present paper, we focus on private sector full-time workers and use a simple difference-in-differences method. Thus, we get that employment rates for workers aged 25 – 29 years fell more than for these for ‘younger’ workers. Also, we find important results related with a shift of the wage distribution. In the present paper, we use data from Labor Force Survey (LFS) and Survey on Income and Living Conditions (SILC) between 2009 and 2014.

In the next section, a brief literature review about minimum wage employment effects is presented. Section 3 discusses the employment effects of the minimum wage cut. Section 4 describes the changes in the wage distribution through the recent economic crisis and in section 5 conclusions are presented.

2. Literature review

A large part of the labor economics literature is focused on minimum wage effects. However, the results of these studies vary considerably as they predict different effects in both qualitative and quantitative level. On the other side, theory offers unambiguous predictions about minimum wage effects only in the case of perfectly competitive labor market. In this context, a minimum wage set above the market-clearing level will reduce employment as employment participation will be higher but some workers, especially the low-paid, will be displaced out of the labor market. At this case minimum wage will destroy jobs and lead to higher unemployment (Stigler 1946). On the other hand, studying the effects of minimum wage on employment under noncompetitive conditions is a much more complicated issue. As Stigler (1946: 535-43) and Lester (1947: 135-48) claimed, minimum wage may have a positive impact on employment if it is set above the monopsonistic equilibrium level and simultaneously below the competitive equilibrium level. Thus, the monopsonistic labor market model predictions depend on the new minimum wage level. Therefore, in theoretical level, minimum wage employment effects depend on the form of the labor market and the prevailing conditions in it.

Despite the fact that it is not in the present study’s purposes to offer an analytical review of the related literature, the main pillars of the minimum wage effects debate are presented in this section. During the 1960s and 1970s time-series studies found negative impact of the minimum wage on employment. Additionally, Brown et al. (1982: 487-
suggested that there is a negative but smaller effect for young adults and no certain effect for adults. To some extent, the results above confirmed the aforementioned standard theoretical predictions.

A few years later, during the 1990s, important studies about minimum wage based on “natural experiments” and cross-state variations have been realized. The benchmark of these studies is that of Card and Krueger (1994: 772-93) which analyses the impact of the 1992 minimum wage increase on employment in New Jersey. Using a difference-in-differences method, they found that there is no evidence of negative employment effects by the minimum wage increase in New Jersey. Contrariwise, they found that employment slightly increased concluding that minimum wage increase has the potential to create jobs. Although, they highlight that minimum wage increase led to rising prices. On the contrary, Neumark and Wascher (1992: 55-81; 1994: 497-512) support that there is a negative and significant impact of the minimum wage on employment.

In general, Card and Krueger’s study fueled a large wave of empirical research about minimum wage’s impact on employment. These studies called as “the new minimum wage research”. This kind of research focused on the ‘bite’ of the minimum wage considering that minimum wage is more likely to affect more low-wage workers. Card and Krueger (1995) support that the main finding of this research is a minimum wage increase can cause a neutral or positive effect on employment. Actually, this study caused a large contestation of the prevailing theoretical predictions. Generally, in contrast with Card and Krueger, many panel data based studies were realized and their findings confirmed the standard theoretical predictions mentioned above. In a more recent study related to the minimum wage effects on the wage distribution, Neumark and Wascher (2004: 425-50) stated that minimum wage changes are more likely to affect workers in different ways according to their skill level and position to the wage distribution. Regarding the wage effects of a minimum wage increase, their findings are similar to Card and Krueger’s as they estimate positive and statistically significant effects. Although, they detect negative and significant employment effects for those workers paid near or at the minimum wage.

Hyslop and Stillman (2004) used a difference-in-differences approach in order to study the effects of a large reform in minimum wage in New Zealand. They compared employment effects between two age groups: teenagers and adults between 20 and 25 finding positive but insignificant effects.

Finally, Neumark and Wascher (2007) concluded that studies included “in the new minimum wage research were diverse in their findings” and in some extent, this is true. Even more recently, Neumark et al. (2013: 608-648) argue that empirical analysis that used time-series, conducted in negative impact of minimum wage on employment.

In the Greek literature, there are few studies dealing with minimum wage effects. Koutsogeorgopoulou (1994: 86-99) finds negative impact for both men and women. Also, Karageorgiou (2004: 39-67) concludes that there is negative but insignificant effect for young adults and positive effect for teenagers. Fotoniata and Moutos (2009) presented the major features of the minimum wage’ evolution based on interviews from the labor market participants and focused on the influence of the minimum wage on the gender and the age-related wage gap. Recently, Yannelis (2014) finds that employment increases following the minimum wage cut through new hires.
3. Employment effects of minimum wage differentiation

Austerity programs have cost hundreds of thousands of jobs. During the onset of the crisis, since 2010 up to 2014, the number of unemployed has almost tripled. The same happened to the unemployment rate, which increased from 9.5% to 26.1% during the same time period as shown in Figure 1. We have to mention that the unemployment rate shows a downward trend by mid-2013 but it is expected to remain above 20% by the end of 2015 (OECD, Employment Outlook 2014).

Another remarkable feature of Greek labor market is high unemployment rates for young people. As presented in Figure 1, unemployment rates for those aged between 20 and 24 years is higher than this of the total population not only during the crisis but also prior to it. In this context in 2012 the Greek government decided to cut minimum wage by 22% for all workers and by 32% for workers aged below 25 years old to restrain high youth unemployment.

In this section, a simple difference-in-differences approach is employed comparing the employment rates of two age groups: those aged 20-24 and 25-29 years old. This selection was made as the minimum wage have been differentiated since 2012 for workers aged below 25 years and these two groups are almost substitutes. In summary, following Hyslop and Stillman (2004) we calculate the employment rates of the aforementioned age groups and then we study their evolution during the crisis, i.e. between 2009 and 2014. We also found their yearly changes between the same quarters of each year and finally we compare these changes in order to find out which age group is more affected by the minimum wage differentiation.

In Figure 2, we show the evolution of employment rates for the two age groups between 2009 and 2014. We focus on full-time private sector workers as they are more likely to be affected by the minimum wage change in terms of jobs. Note that studying the effect on working hours could be a possible issue of further analysis. The red vertical line in this figure notes the time of minimum wage cut, i.e. the first quarter of 2012, and the employment rates have been calculated as the proportion of full-time workers in the private sector to the total population of the specific age-group.

Since the onset of the crisis both employment rates have been decreased in a large extent. This finding is quite expected as the economy suffered a deep recession and unemployment has been increasing significantly. Thus, the main challenge of the present study is to isolate the impact of the crisis. This is the reason that a difference-in-differences method is used.

To be more precise, in Figure 3, we present the year-to-year change in employment rate for each age group in quarterly basis. We observe that employment rate for 20-24-year-old full-time workers in private sector has been decreased with slightly higher rate than the corresponding rate for 25-29-year-old workers. We can conclude that ‘younger’ workers were hit in a higher extent than the ‘older’ workers. This also remains for a year after the minimum wage cut. Although, since the third quarter of 2013, employment for ‘younger’ workers seems to get increased in contrast with that of 25-29-year-old workers which started to get increased in a later time. This figure may reveals a time-lagged effect of the minimum wage cut.

The results of the difference-in-difference method are summarized in Table 1. The treatment group is the 20-24-year-old worker and the control group is consisted of 25-29-year-old ones. We compare the change in employment rates for two periods, one before and one after the minimum wage change. As it is likely to be a time-lag effect we choose year 2013 as the ‘post-reform’ period. The ‘pre-reform’ period is year 2011.
The argument of time-lag existence is strengthened if we alternate the ‘pre-reform’ and the ‘post-reform’ period. This is revealed in Table 2, where the ‘pre-reform’ is year 2011 without the first quarter and the ‘post-reform’ period is 2012 without the first quarter too. In this case, the difference-in-difference is much smaller.

To sum up, both employment rates have been decreased. As shown in Figure 4, if we set 2009 as the base year, we observe that both age groups’ employment rates have followed the same path not only before the minimum wage reform but also for a year after it. However, since the mid-2013 employment for ‘younger’ workers appears to bounce up faster than for ‘older’ workers. This may be an additional evidence for the existence of the time-lagged effect of the minimum wage reform.

4. The changes in the wage distribution and the contribution of minimum wage cut

In this part of our study, we combine data from LFS and EU-SILC in order to analyze the changes in the earnings’ distribution. The main reason for combining data from both surveys is to get accurate information about wages as in LFS they are grouped in bands. Also, these wage bands have changed during the period we study. These changes are shown in Table 3.

The combination of the two datasets has been realized as follows: we use the distribution of full-time employees in the private sector from LFS in quarterly and annual basis. Then, we calculate the annual means for wages by EU-SILC dataset and for each wage band as determined in LFS. Finally, we calculate the weighted means for each year in order to find the wage distribution. All wages are calculated in real terms by using 2014 as the base year.

In Figure 5 we present the earnings’ distribution for full-time private sector employees. This figure offers a clear description of the changes in the wage distribution during the crisis. As expected, the wage distribution moved to the left, meaning that wages have fallen significantly. Of course, this shift could not only be entirely attributed to the minimum wage cut. Although, we strongly believe that minimum wage decrease was a determining factor in the wage distribution change. This argument becomes more powerful if we observe that there is a significant change of the distribution between 2011 and 2012.

5. Conclusion

In the present paper, we used a simple difference-in-differences approach in order to analyze a potential employment effect of a minimum wage cut adopted by the Greek government in 2012. Our analysis is focused on full-time private sector workers as the minimum wage cut applied only to private sector. The approach employed in this papers results that employment rates for 20-24-year-old workers have been decreased less than the corresponding rate for the ‘older’ age group. We could argue that this finding possibly reveals a positive employment effect as the further minimum wage cut applied to workers aged below 25 year old may favored them. However, we have to note that employment rates for the ‘younger’ age group were initially low and this may be a reason for lower volatility.

Additionally, we also analyzed the changes in the earnings’ distribution of full-time private sector employees between 2008 and 2014. Our findings lead to the conclusion
that the wage distribution has moved significantly to the left. We cannot attribute this shift only to the minimum wage cut but we consider this as a very important factor that affected the whole distribution. Finally, we could not clearly say that employees aged less than 25 years old were favored by the further minimum wage increase in terms of employment. The same also holds for the wage distribution and its relationship with the minimum wage cut. To get more reliable results, it is essential to use more advanced econometric methods and a larger time period sample.
Figure 1. Unemployment rate for total populations and age groups 20-24 and 25-29-year-old individuals (%), 2009-2014.

Source: Labour Force Survey, Greek Statistical Authority (EL.STAT.)

Figure 2. Employment rates for full-time private-sector workers 20-24 and 25-29-year-old individuals (%), 2009-2014.

Source: Labour Force Survey, Greek Statistical Authority (EL.STAT.)
**Figure 3.** Year-to-year employment rates for full-time workers of the private sector aged 20-24 and 25-29 (%), 2009-2014.

**Source:** Labour Force Survey, Greek Statistical Authority (EL.STAT.)

**Figure 4.** Employed persons, full-time workers of the private sector aged 20-24 and 25-29 (2009=100), 2009–2014.

**Source:** Labour Force Survey, Greek Statistical Authority (EL.STAT.)
Figure 5. Earnings’ distribution of full-time private sector employees, 2008–2014.

Source: Labour Force Survey, Greek Statistical Authority (EL.STAT.), Survey on Income and Living Conditions (SILC)
## Table 1. Results from difference-in-difference method – Case 1

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\(^1\) before: 2011q1-2011q4  
\(^2\) after: 2013q1-2013q4  
\(^3\) treatment: aged 20-24  
\(^4\) control: aged 25-29

*Source: Labour Force Survey, Greek Statistical Authority (EL.STAT.)*

## Table 2. Results from difference-in-difference method – Case 2

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\(^1\) before: 2011q2-2011q4  
\(^2\) after: 2012q2-2012q4  
\(^3\) treatment: aged 20-24  
\(^4\) control: aged 25-29

*Source: Labour Force Survey, Greek Statistical Authority (EL.STAT.)*
Table 3. Wage bands, LFS 2008 - 2014

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Source: Labour Force Survey, Greek Statistical Authority (EL.STAT.)
References


