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Self-Perceived Health Status among Young Adults: Does a Differentiated Minimum Wage Cut Matter?

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Abstract

The paper investigates whether the imposition of a higher minimum wage cut on very young adults (17-24) differentiates their self-perceived health status compared to that of young adults (25-29). We use data from the Hellenic Statistical Authority over the period between 2010 and 2014 in Greece. Our results are clear: a higher decrease of the minimum wage for very young adults is associated with a higher possibility of an increasing fair reported health status. This possibility is significant only when potential workers are considered; however, this possibility is not an issue neither among young employees nor for inactive young adults.

JEL classification: I10, I18, J08
Keywords: self-perceived health status; minimum wage reform; difference-in-differences estimation technique; young workers

1. Introduction

The economics literature has devoted significant attention to study the effects of minimum wage increases more on employment (see e.g., Card and Krueger, 1994; Neumark and Wascher, 2006) and social (see e.g., Page et al., 2005) outcomes and less on worker health (see e.g., Horn et al., 2017); however, except for minimum wage increases, decreases also may provide useful evidence not only on labor-oriented outcomes, but further to economic and physical welfare. Our contribution to this literature is that we examine the effect of a differentiated minimum wage cut, between two groups of young adults, on their self-perceived health status.

In this respect, the current study puts emphasis on the possibility of an increasing fair reported health status of the very young adults, i.e., those aged 17-24, when a subminimum wage cut in 2012 decreased the minimum wage for this group by 32%, while the rest of

minimum wage workers had a 22% drop in their wage. Thus, by using data from the Hellenic Statistical Authority's database, known as "Statistics on Income and Living Conditions" (SILC), over the period between 2010 and 2014 for all Greek citizens aged 17-29 who do not suffer from any long-standing illness and by applying a quasi-experimental technique, we estimate the previous discussed possibility. Based on our findings, a higher minimum wage cut for very young adults affects positively the possibility of an increasing self-perceived health status compared to that of the age group 25-29; this effect is significant only when potential workers are considered, i.e., those who either are available for a job or search for a job. However, when either employed or inactive young adults are included in our analysis, the differentiated minimum wage cut does not affect differently the reported health status of the very young group compared to that of the rest of young adults.

The remainder of this paper proceeds as below: Section 2 discusses the conceptual framework and the empirical model. Data are reported in Section 3 and the empirical results are presented in Section 4. Finally, Section 5 concludes.

2. Analytical framework

This section discusses the conceptual framework, specifies the dependent variable and presents the empirical model.

2.1. The conceptual framework

Within economics, Grossman's model (1972) is mostly used as a starting point for health outcomes; in this respect, Cawley and Ruhm (2012) note that recent empirical papers rely on this model avoiding the dependence on the model's theoretical attributes. For instance, Horn et al. (2017) investigate whether minimum wage increases affect worker's self-reported measures of general, mental and physical health controlling for individual characteristics, policies that may affect the health of lesser-skilled workers, and state and time fixed effects.

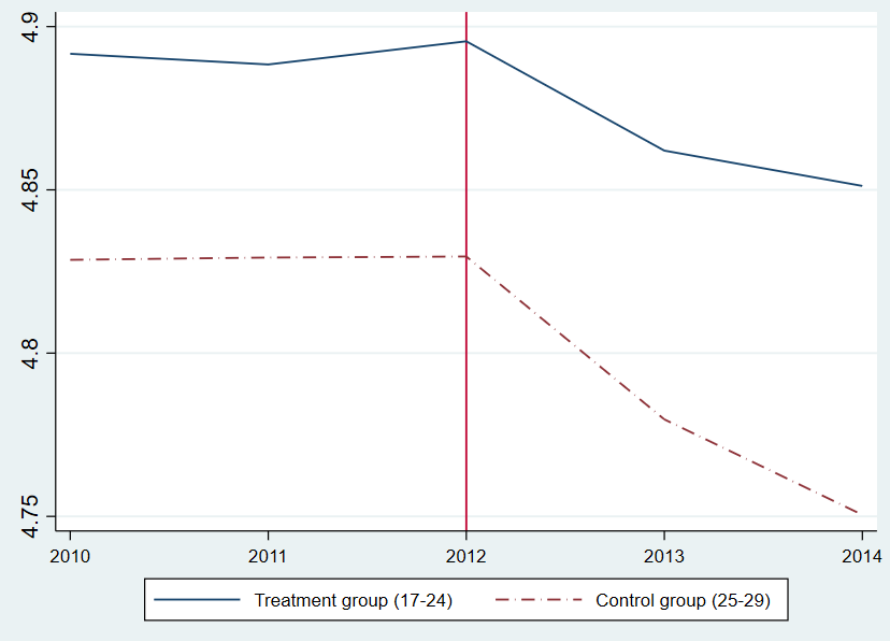
Following Horn et al. (2017), we are going to investigate to what extent a policy intervention, in our case a minimum wage cut, affects the self-perceived health status of young workers in Greece. In March 2012, the minimum wage is decreased and differentiated between two age groups, i.e., for workers above the age of 25, the minimum wage cut is 22% (from 751€ to 586€), while for workers under the age of 25, the minimum wage drops by 32% to 511€.

Thus, in our empirical analysis, our aim is to explore the differentiated impact, if exists, on the self-perceived health status between two young-worker groups, those aged 17-24 and 25-29. Indeed, Figure 1 below depicts that, in the pre-reform period, both groups were moving in an almost parallel direction, while in the post-reform period, the self-perceived health status of the treatment group drops, by losing 0.04 points, less than that of the control group which loses 0.08 points after two years from the policy intervention. However, it is intriguing the fact that the self-perceived health status of the persons aged 17-24, after the reform imposition, is decreased less than that of those aged 25-29; someone would expect *a priori* that the higher the minimum wage cut, the higher would be the drop of the self-reported measure of the general health.

Based on the previous Figure and considering that young adults share similar health patterns, from a technical point of view, we apply an appropriate estimation strategy, i.e., the difference-in-differences (DiD) estimation technique, to obtain the impact of the policy intervention to self-perceived health status of very young adults. Through this strategy, we aim to investigate how the mean value of the health status of the treatment group, in our case very young adults aged 17-24, changes after the reform imposition; then, we will compare

this change with the mean value of the health status of the control group, i.e., those with age between 25 and 29.

Figure 1: The evolution of the self-perceived health status by age group



Source: SILC and own calculations

Note: The graph plots the self-perceived health status which takes integer values between 1 and 5, i.e., very bad, bad, fair, good and very good. The treatment group includes all agents aged 17-24 and the control group refers to agents aged 25-29. The red vertical line shows the year when the minimum wage cut is introduced; the blue solid and the red dashed lines refer to the evolution of health status for the treatment and the control groups, respectively.

2.2. The empirical model

Having discussed the estimation strategy, the changing likelihood in the self-perceived health status of the individual *i* can be described as below:

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

where variable *Y* takes the value 1 when an individual reports "very good" health status and the value 0 when the reported health status is "good"[1], *F* is the standard logistic cumulative distribution function and *X* is a set of predictors reported below:

$$X_{it}\beta = \beta_0 + \beta_1 \mathbb{1}_{[t>2012]_t} + \beta_2 \mathbb{1}_{[treatment]_{it}} + \beta_3 \mathbb{1}_{[t>2012]_t} * \mathbb{1}_{[treatment]_{it}} + \beta_4 Z_{it} + \beta_t + \varepsilon_{it} \quad (2)$$

where $\mathbb{1}_{[t>2012]_t}$ is an indicator which takes the value 1 if the year is 2013 or 2014 (post-reform period) and 0 if the year lies between 2010 and 2011 (pre-reform period), $\mathbb{1}_{[treatment]_{it}}$ is an indicator taking the value 1 when a person is part of the treatment group

[1] We avoid using the natural ordering of the self-perceived health status i.e., very good, good, fair, bad, very bad, since less than 2.5% of young workers report fair, bad or very bad health status.

(younger than 25 years old) and 0 when a person is included in the control group (with the age of 25-29), Z is a vector of demographical characteristics (gender, marital status, educational level), β_t controls for time-fixed effects capturing common effects from policies that may influence the health of lesser-skilled workers (see e.g., Horn et al., 2017). We also assume clustered errors with age capturing thus potential common health characteristics associated with ageing.[2] Finally, the coefficient of our interest is β_3 which displays the differentiated mean change in Y (outcome variable) from the policy reform between the two groups.

3. Data analysis

Our survey data come from the database "Statistics on Income and Living Conditions" (SILC) of the Hellenic Statistical Authority. The survey was done between May and September of each year, collected data on a wide range of labor characteristics among them wage, employment status and working experience, as well as the number of years of education, the health-living conditions and demographics *inter alia* the respondent's age and gender.

Our analysis is conducted over the period between 2010 and 2014 on a dataset that includes all Greek citizens, aged 17-29 who do not suffer from any chronic disease. Our aim is to control for potential heterogeneity regarding the association between the self-perceived health status and the cultural dimension among citizens of different countries (see e.g., Roudijk et al., 2017) and to exclude those young adults who suffer from long-standing illness and thus to reduce potential bias that comes from real health problems. Therefore, we keep only young workers who tend to share similar health patterns. Table 1 below provides useful information concerning the self-perceived health status of young adults.

Table 1: Descriptive statistics of the self-perceived health status of young adults (17-29)

Variables	Obs.	Mean	Std. Dev.	Min	Max
Whole sample	9,615	0.90	0.29	0	1
Gender					
Male	5,074	0.91	0.29	0	1
Female	4,541	0.90	0.30	0	1
Marital status					
Single	8,852	0.91	0.29	0	1
Married	763	0.84	0.36	0	1
Age groups					
17-24	5,826	0.92	0.26	0	1
25-29	3,789	0.87	0.33	0	1
Educational level					
No school or primary	150	0.83	0.38	0	1
Secondary or post-secondary	7,572	0.91	0.28	0	1

[2] Bertrand et al. (2004) suggest that, due to potential serial correlation, conventional difference-in-difference standard errors may lead to serious overestimation of t-statistics and significance levels. Thus, to alleviate this problem, we may use clustered robust standard errors.

Tertiary or post-tertiary	1,893	0.88	0.32	0	1
Employment status					
Full-time worker	2,128	0.90	0.30	0	1
Part-time worker	431	0.88	0.32	0	1
Unemployed	2,349	0.88	0.33	0	1
Inactive	4,707	0.92	0.27	0	1

Notes: The variable of interest is the self-perceived health status. The data reported in this table refer to the period between 2010 and 2014 in Greece, for all Greek citizens, aged 17-29 who do not suffer from any chronic disease.

The whole sample includes 13,246 observations. As we expected *a priori*, the mean value of the variable of our interest is 0.90, showing thus a high level of self-perceived health status for all respondents aged 17-29 years old. Further, we split the data, based on the gender, observing no variation in the mean value of the self-perceived health status between males and females, while single persons and married have, on average, health status 0.91 and 0.84, respectively. Between the treatment and the control groups, we note that the former has higher self-perceived health status (0.92) than that of the latter (0.87). In addition, along in similar lines with the respective literature, we find that, on average, fewer years in education are associated with a much lower level of the self-perceived health status. Finally, as for the employment status, i.e., full-time and part-time workers (almost 30% of the whole sample), unemployed (25% of the whole sample) and inactive persons (pupils, students, disabled to work, in compulsory military service who are the 45% of the whole sample), we observe that the latter group shows the highest self-perceived health status (0.92), while part-time workers and unemployed denote, on average, the lowest health status (0.88).

4. Empirical results

This section presents the empirical results of this study. In particular, we examine to what extent a differentiated official minimum wage cut, through the imposition of a subminimum wage for very young adults, may affect differently the self-perceived health status of young adults.

Table 2 below presents the estimated coefficients of eq. (2) in which the dependent variable is the self-perceived health status that takes the value 1 for “very good” and 0 for “good” reported health status, respectively. Odds ratios[3] are displayed in all cases; our focus is on the impact of the minimum wage cut on the possibility of an increasing reported health status for the treatment group (young adults aged 17-24). In all cases, year- fixed effects are included, while clustered standard errors with age are also assumed. Column (1) includes the whole sample in which all employment statuses are considered, i.e., active (employed and unemployed) and inactive. In this regard, we find that the possibility of a reported increasing health status, after the policy intervention, for very young adults increases by 32% compared to that of young adults aged 25-29; however, this impact is marginally insignificant in a 10% confidence interval. Among the demographical characteristics, only the marital status affects

[3] Odds ratio is a ratio of likelihoods (an event to be occurred compared to an event not to be occurred). When this ratio is higher than 1, the possibility an outcome to be happened increases, given some initial assumptions, while when this ratio is less than 1, the same possibility decreases. To calculate the possibility, we simply subtract the given odds ratio from one.

the reported health status; neither the gender nor the years of education show statistically significant impact on the self-perceived health status.

Further, in columns (2) and (3), we put emphasis on the employed young adults; Column (2) includes all employed persons who report that their annual gross wage is close to a minimum wage, while Column (3) refers to all employed persons irrespective of wage reporting; in this case, the possibility of an increasing self-perceived health status, after the differentiated minimum wage cut, is not statistically significant between the treatment and the control groups. Perhaps, the gross wage differential (75€ per month) may not be so crucial to differentiate the living standards between the two groups. The rest of coefficients remain almost unchanged. However, when we include in our analysis unemployed young adults who either search for a job (Column (4)) or are available for job (Column (5)), we observe a significant impact on the possibility of an increasing self-perceived health status (91% or 85%) from very young adults as a result of the imposition of the subminimum wage. Perhaps, this intriguing result may be explained by the fact that, for very young adults, the possibility to find a new job, after the introduction of the subminimum wage, is increased since the labor cost for firms are now quite lower than that before the policy intervention. The rest of coefficients do not differ significantly compared to those in column (1). Finally, Column (6) includes inactive young adults who are either students or disabled to work or in compulsory military service; our findings show that the imposition of a differentiated minimum wage between the groups does not differentiate the self-reported health status.

5. Conclusion

In this study, we offer some new evidence regarding the effects of the imposition of a subminimum wage on the self-perceived health status among young Greek citizens who do not suffer from any chronic disease. Labor economics literature mainly puts emphasis on the effects from a minimum wage increase on labor market outcomes. To the best of our knowledge, this paper is one of the few works that analyze the impact of a differentiated minimum wage cut on the reported health status among young adults.

A higher minimum wage decrease for very young adults (17-24 years old) improves the possibility of a reported increasing fair health status by either 85% or 91% compared to that of the rest of young adults (25-29 years old) when included only unemployed who either search for a job or are available for job. Perhaps, this result may be reasonable since a higher minimum wage cut, due to the imposition of the subminimum wage, comes along with a higher possibility to find a new job. However, when employees or inactive young adults are considered, we observe that a higher cut of the minimum wage does not differentiate the reported health status between the two age groups of young adults.

The public debate concerning these policies, that basically focuses on employment effects, should also include other welfare effects, that directly affect the productivity in the labor market, *inter alia* the health status and the desire for job satisfaction.

Table 2: The differentiated impact of a minimum wage cut on young adults (2012 minimum wage reform)

	Whole sample	Employed		Unemployed		Inactive
		With reported wage	Without reported wage	Looking for a job	Available for work	
	(1)	(2)	(3)	(4)	(5)	(6)
After reform	0.49***	0.46	0.44***	0.57*	0.57*	0.65
	(-3.67)	(-1.20)	(-3.29)	(-1.91)	(-1.88)	(-1.63)
Treatment group	1.23	1.04	1.10	0.86	0.88	1.50
	(1.28)	(0.06)	(0.39)	(-0.71)	(-0.57)	(1.53)
After reform*treatment group	1.32	0.93	1.13	1.91**	1.85**	0.96
	(1.50)	(-0.10)	(0.56)	(2.52)	(2.25)	(-0.17)
Gender	0.98	1.75**	0.93	1.03	1.02	1.00
	(-0.18)	(2.34)	(-0.44)	(0.19)	(0.11)	(0.00)
Marital status	0.65***	1.04	0.67***	0.60***	0.59***	0.67
	(-4.01)	(0.10)	(-2.77)	(-2.86)	(-3.09)	(-1.20)
Education	0.92	0.90	0.93	1.02	1.03	0.89
	(-1.57)	(-0.65)	(-1.17)	(0.39)	(0.55)	(-0.91)
Constant	15.87***	14.77***	19.03***	8.40***	8.36***	14.66***
	(15.08)	(2.87)	(11.92)	(9.07)	(8.64)	(4.79)
Observations	8,113	437	2,135	1,884	1,866	3,930
Pseudo R^2	0.02	0.06	0.04	0.01	0.01	0.02
Wald x^2 (8)	177.44	28.05	630.35	60.55	89.11	344.03
Clustered standard errors	With age	With age	With age	With age	With age	With age
Time-fixed effects	Year	Year	Year	Year	Year	Year

Notes: The dependent variable is the self-perceived health status. The dataset includes all Greek citizens, aged 17-29 who do not suffer from any chronic disease. Column (1) includes the whole sample, i.e., employed, active and inactive persons; Columns (2) and (3) include only employed, Columns (4) and (5) include unemployed and Column (6) includes all inactive young adults.

(*), (**), (***) are significance level at 10%, 5% and 1%, respectively and t-values are reported in parenthesis. In each column, we provide a Pseudo R^2, a measure of the goodness of fit of the model, and also a Wald x^2 test under the null hypothesis that all coefficients equal zero with 8 number of parameters removed from the model. Clustered standard errors are reported with age. Finally, year-fixed effects are also included in all specifications.

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