Austerity Plan Announcements and the Impact on Employee Well-being

Alina Botezat*

"Gh. Zane" Institute for Economic and Social Research - Romanian Academy Iași Branch

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Abstract

A rich body of literature has focused on the impact of austerity measures on different outcomes (health, employees' behaviours), but little is known about the short-term effects of just *announcing* national austerity plans on these outcomes.

This study aims to contribute to the existing literature by specifically analyzing the impact of austerity plans announcements on employees' well-being. In order to allow for causal interpretation of the estimates, we exploit the unexpected wage cut announcement in Romania on May 6th 2010 regarding a drastic policy measure aimed at the public sector and planned to be effectively implemented two months later. Using data from the Eurobarometer Surveys, we employ a difference-in-difference research design combined with matching based on entropy balancing to identify the causal effects.

Our results reveal that by simply announcing austerity measures it leads to an overall drop in life satisfaction among those working in the public sector. We show that men and married individuals are most affected by the substantial wage cut announcement. Contrary to previous research, our study shows that public sector employees with higher levels of education are more likely to be affected by this policy communication compared to those with only secondary or primary level of education.

Keywords: austerity measures, national announcement, well-being, public sector, Romania
JEL-classification: I31

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*Alina Botezat, Romanian Academy, "Gh. Zane" Institute for Economic and Social Research,
2 Teodor Codrescu Street, 700481 Iasi, E-mail: botezat.alina@yahoo.com.

1. Introduction

Since the start of the economic and financial crisis, different European countries have been forced to implement drastic austerity programs. The imposition of rapid and intense economic measures was partly dictated by budgetary problems such as higher government deficit, external debts, as well as low liquidity buffers. But there is also conclusive evidence that panic and fear were actually the driving forces of many drastic austerity measures abruptly implemented in some countries, generating great suffering for the population (De Grauwe and Ji, 2013).

Regardless of the reasons for introducing these drastic measures, a large body of literature documents the negative impact of austerity measures, such as unemployment, wage cuts and downsizing, on the well-being and mental health of affected individuals (Kuhn et al. 2009; Kassenboehmer and Haisken-DeNew 2009; Marcus 2013; McKee-Ryan et al. 2005; Schmitz 2011). However, very little is known about the effects of just *announcing* austerity plans on employed individuals. This is of particular interest, especially in time of crisis, when the reaction of individuals, subject to sudden policy reforms/measures, may not be anticipated because of higher uncertainty and confusion. Not considering the potential negative effects of large scale announcements regarding the austerity measures might result in underestimating the adverse impact on the employed individuals morale and productivity, as well as on the employment sector as a whole.

This paper aims to further deepen our understanding of the effects of austerity measures on life satisfaction by solely studying the impact of simply *announcing* austerity plans regarding substantial wage cuts in the public sector on the employees' well-being. To do this, we exploit the announcement of the most drastic wage cut austerity measure implemented in a European country during the recent economic crisis. On May 6th 2010, the Romanian President announced on the national television a series of unexpected and unanticipated austerity measures, such as: 25% wage cut for all public sector employees, the revocation of some financial and in-kind incentives for public sector employees and 15% cut in unemployment and maternity leave benefits. These drastic measures were initially announced as temporary measures aimed to last from July 1st until December 31st 2010.

To interpret the estimates in terms of causality, this paper applies a difference-in-difference approach combined with matching (entropy balancing) to control for differences both in observable and unobservable characteristics across treatment and control groups.

Using data from the Eurobarometer Survey, our results show that just announcing austerity plans has a big effect on employees' well-being, especially for those located in urban area. The decrease in life satisfaction is larger for men, married individuals and better-educated workers.

The rest of the paper is structured as follows. Section 2 discusses the context in which the unexpected announcement regarding the drastic wage cuts in the public sector was made and presents the relevant literature. Following the description of the empirical strategy in section 3, section 4 presents the data. Sections 5 and 6 discusse the estimated results and performs a series of robustness and sensitivity checks. Section 7 concludes.

2. Background

2.1 Related literature

Few economic studies explicitly analyze the impact of "news" or policy reforms announcement on different issues (such as health, education) – especially when we refer to a large scale announcement, which targets a broad range of workers groups. As far as we know, only two studies use national, governmental policy announcements to investigate their impact on different outcomes. For instance, Kiefer et al. (2014) analyze how a national government announcement of budget reduction affects employees' well-being and attitudes at work. Their findings show that the announcement decreases well-being, job satisfaction, and job engagement. Vandoros *et al.* (2014), using data from Greece, find that the number of road traffic accidents increased significantly on the first two days following the announcement of austerity measures (wages and pensions cuts, higher taxes). However, only the former study focuses on the identification of causal effects.

Most of the studies that look at the effects of policy communication stem mainly from two branches of literature: public management and organizational research. In general, these papers investigate how announcing and communicating a change *within* an

organization can affect employee's well-being, productivity and work attitude. For instance, Conway el al. (2014) show that announcing austerity measures predicts psychological contract breach, which in turn explains the negative affect on employee attitudes and behaviours. Kiefer et al. (2014) show that announcements on public sector cutbacks have negative effects on job security and emotional well-being.

The evidence from these studies, even though they are more closely related to the field of organizational research, can bring new insights on the underlying mechanisms regarding the pathway between policy reform announcement and well-being. From this perspective, our paper complements earlier findings, the main contribution consisting in the identification of causal effects of austerity plans announcement on life satisfaction.

2.2 The Unexpected Public Sector Wage Cut

The Romanian President, Traian Basescu, publicly announced on May 6th 2010, some of the harshest austerity measures ever adopted in an EU member state, namely that public sector wages were going to be cut by 25% and social benefits, including unemployment benefits, were going to be reduced by 15%. The very strict austerity program was imposed as a condition for further financial assistance provided by the International Monetary Fund (IMF), the EU and the World Bank. These drastic measures did not go into effect automatically, since it took until the end of June for the Romanian Parliament to approve the austerity law. They were initially announced and implemented as temporary measures aimed to last from July 1st until December 31st 2010.

The announcement regarding the huge budget cuts was completely unexpected. Just a few months earlier, the Romanian President, re-elected in 2009 for a five years term, estimated a positive economic growth for the second quarter of 2010. He also declared that "*Neither I, nor the government, nor the National Bank intend to take the country out of the economic crisis because we cannot. The crisis is global and Romania is dependent on what*

happens globally."[1] Also, different representatives of the Romanian public opinion shared at that time optimistic views on the economic outlook for 2010[2].

To further support our statement that the austerity measures announcement was completely unexpected, we explore data generated by Google Trends (https://www.google.com/trends/), a feature which provides information on search queries by plotting the frequencies of searches for a term over specific time frames and countries.

There is a small but burgeoning economics literature that uses Google Trends data to analyze different socio-economic issues such as unemployment (Askitas et al. 2009, Fondeur and Karamé, 2013), consumption (Vosen and Schmidt, 2011), health (Ginsberg *et al.* 2009) or voting behaviour (Stephens-Davidowitz, 2014). In our case, we are confident that the search trend data produced by Google is relevant for our purpose since in Romania the Internet is also an increasingly important source of information, especially for those in urban regions. According to the official statistics, in 2013, nearly 53% of Romanian had access to Internet at home, more than 73% of households being from urban area[3].

To explore the data using Google Trends, we assess the weekly Google activity for two queries: *criza economica* (economic crisis) and *austeritate* (austerity) for the period September 2009 – August 2010, the selected geographic region being Romania. We choose these terms because they are very related to the content of the announcement. If the announcement was indeed unexpected, we would expect spikes in the series short after the announcement was made. Figure 1 offers visual representation of the Google searches, with first week of May 2010 (when the announcement took place) normalized to zero.

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[1] http://www.mediafax.ro/economic/basescu-guvernul-nu-si-a-propus-sa-scoata-tara-din-criza-ci-sa-dezvolte-politici-de-diminuare-a-ei-4959105 (in Romanian)

[2] Cristian Ghinea - Romanian Center for European Policies: „*Despite all these challenges, the overall news is good from Romania (...). The government expects a small economic growth this year, and the worst moments of crisis seem to be behind us*." (Source: http://www.euractiv.com/section/med-south/opinion/no-romania-did-not-send-aid-to-tahiti-or-why-no-news-from-bucharest-is-good-news/).

[3] Romanian National Institute of Statistics: http://www.insse.ro/cms/files/statistici/comunicate/com_anuale/tic/tic_r2013.pdf.

Figure 1 shows that both trends for "criza economica" and "austeritate" searches initially peaks in the first week of May 2010. The highest frequency for "criza economica" is observed in the second week of May, which means a time framework of two-three days following the announcement. The highest traffic for "austeritate" is recorded towards the end of June, which actually coincides with the date when the austerity measures were approved by the Romanian Parliament and the austerity law was promulgated by the President. This sudden increase in search traffic both for "criza economica" and "austeritate" is consistent with our assumption that the announcement of public sector wage cut was completely unexpected.

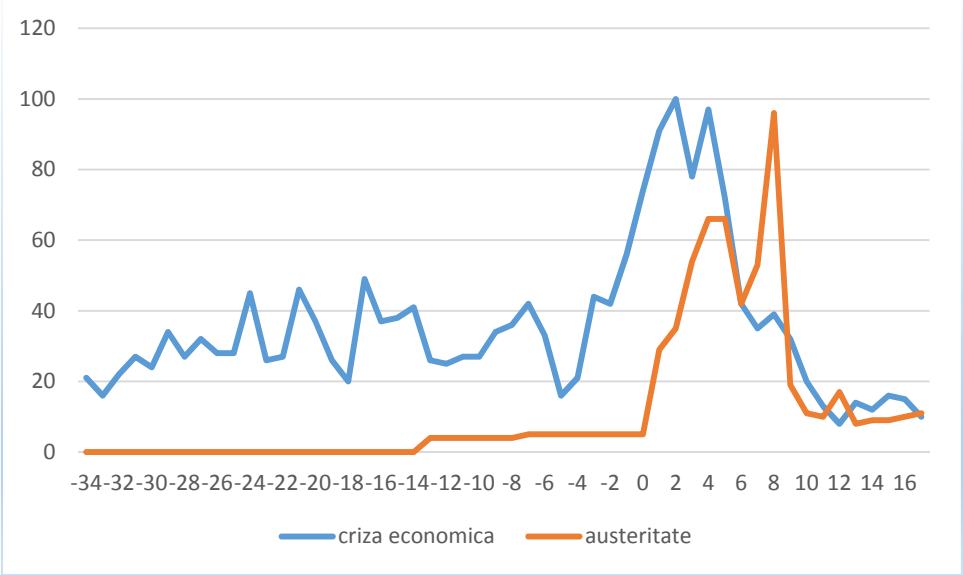

Figure 1: Google Trends graph depicting tendency over the period September 2009 – August 2010 to search for "criza economica" (economic crisis) and "austeritate" (austerity)

3. Estimation strategy

The estimation of the effect of austerity plans announcement on the employees' well-being relies on a difference-in-difference estimation (DiD) setting in combination with a matching procedure. Using the DiD framework, it enables us to control for time-invariant differences in unobservable variables (such as intrinsic/extrinsic motivation, willingness to exert effort

or attitude towards risk), which are correlated to both the selection into working sector (public or private) and the outcome variable (life satisfaction).

To obtain the DiD estimator, we perform the following regression:

$$Y_i = \alpha_0 + \alpha_1 Public_i + \alpha_2 After_{6thMay,i} + \alpha_3 Public_i * After_{6thMay,i} + \epsilon_{DD,i} \quad (1)$$

where $Public_i$ equals 1 if the individual works in the public sector and 0 if she works in the private sector. $After_{6thMay,i}$ is an indicator denoting the period following the announcement. α_3 represents the DiD estimator that measures the change in the level of well-being following the announcement relative to the previous year, among individuals from the public sector relative to those from the private sector.

In an alternative specification (2) of the former regression we also include X_i, a vector of control variables: age, gender, marital status (married, single, other), level of education (primary education or less, secondary education, tertiary education), number of own children (one, two, three, four, five or more). θ_i are survey years indicators.

$$Y_i = \delta_0 + \delta_1 Public_i + \delta_2 After_{6thMay,i} + \delta_3 Public_i * After_{6thMay,i} + \delta_4 X_i + \theta_i + \epsilon_{DDc,i} \quad (2)$$

To ensure that the control group is as similar as possible to the treatment group, we employ entropy balancing, a relatively new matching approach developed by Hainmueller (2012). The main advantage of employing entropy balancing rather than propensity score methods lies in the fact that covariate balancing is fulfilled prior to the outcome analysis. The balancing method assigns a weight to each observation from the control group such that the moments (in our case, mean and variance) of the observed covariates of the weighted control group are identical to the moments of the treatment group.

The implementation of the estimation strategy consists of two steps. Firstly, we use entropy balancing to match individuals from the public sector to individuals who work in

the private sector[4]. In the second step, we perform the regression analysis in a DiD setting by using the weights obtained in the first step. We also control here for the all covariates used in the matching procedure.

Our identifying assumption is that any differences in the level of life satisfaction between treated and (matched) control individuals would be identical in 2009 and 2010 in the absence of the treatment (announcement of austerity measures in the public sector):

$$E[Y_{1i} - Y_{0i}|W_{EB}(X), Public_i = 1] = E[Y_{1i} - Y_{0i}|W_{EB}(X), Public_i = 0] \quad (3)$$

where $Y_{1i} - Y_{0i}$ refers to the change in well-being from before to after the announcement, in the absence of treatment, and $W_{EB}(X)$ represents the weights obtained from the entropy balancing procedure on the conditioning variables (X) presented above.

4. Data

This paper uses data from two sources. The primary data source of our empirical analysis is the Eurobarometer Survey (EB), a representative survey which semi-annually collects data on a series of socio-economic variables, including life satisfaction, our key variable. The Eurobarometer surveys are conducted on behalf of the European Commission and consists of approximately 1000 face-to-face interviews per Member State (1020 interviews in Romania) of persons aged 15 and over. We make use of three survey waves: EB 71.1 and EB 71.3 from 2009 and EB 73.4 from 2010.

For our purposes, the main advantage of using Eurobarometer survey lies in the fact that data collection for EB 73.4 was carried out in Romania between May 7th and May 19th 2010, just immediately after the announcement of the drastic austerity measures were announced, which happened on May 6th. Therefore, using data whose collection began on

[4] Entropy balancing is implemented using the program "ebalance" in Stata 13 (Hainmueller and Xu, 2013).

the next day following the announcement, enables us to capture the immediate effect of the news regarding the drastic wage cut on the employee well-being.

Compared to the original data, we adjusted our sample in the following way. Based on our research question about the effects of the austerity plans announcement on the employees' well-being, we restricted our sample to those of working age (18 – 63 for women, and 18-65 for men) in the reference year, and excluded the individuals, who were - at the time of the interview - stay-at-home persons, unemployed or retired. We also decided not to include the individuals from the rural area, as these individuals were less likely to have been affected by the wage cut in the public sector (Bejenariu and Mitrut, 2015).

4.1 Treatment and Control Group

Given the aim of our paper, information on the individual's sector of employment (public or private) is crucial for our analysis. Unfortunately, the occupation category in the Eurobarometer Survey does not differentiate between *public* and *private* sector of employment. For this reason, we used a second source of data, namely the European Quality of Life Survey (EQLS). Similar to Eurobarometer, the EQLS describes the individual's occupational status using a category variable grouping respondents in: self-employed, managers, other white collars, manual workers, housekeepers, unemployed respondents, retired and students. However, for the employed individuals, EQLS provides direct information whether the sector of employment is public or private.

The most recent waves of the EQLS were carried out in 2007 and 2011 – 2012, covering almost the same time framework as the Eurobarometer Surveys considered for this analysis. As in the Eurobarometer Surveys, data was collected via face-to-face interviews and the respondents were selected by multistage random sampling. Besides collecting socio-demographic information, both EB and EQLS Surveys examine a range of similar issues, such as household and family composition, employment, education, health and subjective well-being.

We proceed further by estimating the propensity scores for working in the public sector. Using initially the EQLS data, we construct the public sector predictive equation by including as explanatory variables all the controls that are available also in the

Eurobarometer surveys, namely age, gender, marital status (married, single, other), level of education (primary education or less, secondary education, tertiary education), number of own children (one, two, three, four, five or more).

In the next step, we use these propensity scores to perform out-of-sample predictions for the Eurobarometer data. Thus, for each employed individual from the Eurobarometer dataset, we obtain her predictive probability of working in the public sector.

As in Bejenariu and Mitrut (2015), we make use of official data to split our sample into most and least likely employed in the public sector. According to the data provided by the Romanian National Institute of Statistics for 2010, 28% of the employed population were working in the public sector and 72% in the private sector. Using this percentile split, we assign to the treatment group (employed in the public sector) those individuals with the 28% highest propensity scores. Accordingly, those with the predicted probabilities below the 72th percentile were assigned to the control group (employed in the private sector).

4.2 Outcome

The outcome variable is *life satisfaction* which, in general, has been viewed in the literature as a satisfactory proxy measure for individual welfare (Di Tella and MacCulloch, 2006, Luechinger et al. 2010, Frey and Stutzer 2010). In the Eurobarometer Survey, life satisfaction is assessed using the following measure:

> *On the whole, are you very satisfied, fairly satisfied, not very satisfied or not at all satisfied with the life you lead?*

The qualitative responses are rated as follows: "very satisfied"=1, "fairly satisfied"=2, "not very satisfied"=3 and "not at all satisfied"=4. In the present paper, *life satisfaction* was handled as a cardinal variable, the variable being transformed so that higher values indicate individuals better satisfied with their lives. To ease the interpretation of the estimated results, we standardized the outcome variable to have mean 0 and variance 1. Therefore, the coefficients are directly interpretable in terms of changes in standard deviations of the outcome.

4.3 Descriptive statistics

Table 1 provides summary statistics for outcome and conditioning variables across treatment and control groups (before and after matching), as well as for the whole sample. As shown in the last column, the publicly employed individuals seem to differ in many aspects from those employed in the private sector, the differences in means between treatment and control group before matching being statistically significant from zero in almost all cases.

Compared to those from the private sector, the publicly employed individuals are more likely to be older (57.72 vs. 35.17 years), more likely to be married (68.31% vs. 62.22%) and ofently have only one or two children. Individuals in the control group are more than twice more likely to have a university degree (45% vs. 27.29%) and less likely to live in a rural area. The level of life satisfaction of publicly employed individuals is on average approximately 0.42 units significantly lower than the level of life satisfaction of privately employed individuals. This implies a difference of approximately 42% of a standard deviation since the score of life satisfaction is normed to have a standard deviation of 1.

The 5th column reports means for the control group after matching. Employing entropy balancing, the means are equal for the control and treatment groups. As mentioned before, the variances of the conditioning variables are also balanced.

5. Results

5.1 Estimation results

Table 2 contains the results for the effects of announcing drastic austerity measures on the well-being of individuals from the public sector. We present the estimations for four specifications. Our main coefficient of interest is the interaction term, which captures the impact of the announcement on life satisfaction. Column (1) displays the results from estimating the unconditional difference-in-difference model. In the next specification, we include also our controls. As shown in the previous section, the publicly employed individuals differ in many aspects from those employed in the private sector. By applying the balancing method, we ensure that only comparable individuals are compared. The results

of the matching DiD estimator are presented in the last columns. The last specification is the preferred one since it includes also the covariates in the regression.

Table 1: Summary statistics

Variable	All	Treated*	Controls		(unmatched)
			unmatched	matched	Difference
Age	41.46	57.72	35.17	57.72	22.55***
Male‡	53.02	51.23	53.71	51.23	-2.48
Urban‡	62.30	52.64	66.03	52.64	-13.39***
Marital status‡					
Married	63.92	68.31	62.22	68.31	6.09***
Single	20.96	3.52	27.71	3.52	-24.18***
Other	14.09	27.64	8.85	27.64	18.79***
Education‡					
Primary education or less	4.12	10.56	1.63	10.56	8.93***
Secondary education	55.82	62.15	53.37	62.15	8.78***
Tertiary education	40.06	27.29	45.00	27.29	-17.71***
Number of children‡					
One child	14.09	20.25	11.71	20.25	8.54***
Two children	35.49	60.21	25.94	60.21	34.28***
Three children	26.22	13.20	31.25	13.20	-18.04***
Four children	16.05	3.87	20.76	3.87	-16.89***
Five children or more	8.15	2.46	10.35	2.46	-7.88***
Life satisfaction	-1.78	-0.3	0.12	-0.3	-0.42***
N	2037	568	1469	568	

Source: Authors' calculations using three waves of Eurobarometer Survey (71.1, 71.3 and 73.4) and two waves of European Quality of Life Survey (2007 and 2011).

Notes: The columns 2-5 present means of selected variables for treated, controls (matched and unmatched), as well as for the whole sample. *"Treated" refers to the publicly employed individuals as defined by the 28-72 split. ‡ indicates that the mean is represented as a percentage share. The last column displays the differences in means between treatment and unmatched control group. Significance levels of testing whether or not the difference is equal to 0: ***p<0.01.

The estimates from all specifications show that the austerity plan announcement regarding the wage cuts has a significant negative impact on the well-being of those from the public sector. In the matching DiD estimator in columns (3), the coefficient increases in magnitude, the result being robust to including also the covariates (column 4). According to our preferred specification (4), the level of well-being of those from the public sector decreases on average by 0.42 points, or about 42% of a standard deviation since the level of life satisfaction is normed to have a standard deviation of 1.

Table 2: The effects of announcing drastic austerity measures on employee' well-being

	DiD	**DiD+ Controls**	**Matching**	**Matching + Controls**
	(1)	(2)	(3)	(4)
Public	-0.28***	-0.05	-0.19**	0.03
	(0.08)	(0.13)	(0.06)	(0.15)
After	-0.32***	-0.34***	-0.24*	-0.27**
	(0.08)	(0.08)	(0.14)	(0.13)
Interaction	-0.38***	-0.36***	-0.46***	-0.42***
	(0.14)	(0.14)	(0.18)	(0.17)
Observations	1258	1258	1258	1258
R^2	0.07	0.10	0.08	0.12

Note: "DiD" refers to the simple difference-in-difference estimator without matching. "Matching" refers to the DiD results after entropy balancing. Robust standard errors are presented in parentheses. *, **, *** indicates significance at the 10%, 5% and 1% level, respectively.

5.2 Subgroups results

So far, in our analysis we have been focused on the impact of the announcement on life satisfaction for all individuals, regardless of their gender, marital status or level of education. Overall, our results show that simply announcing austerity measures has significant negative effects on the well-being of public sector workers. However, such a large scale announcement regarding wage cuts may affect differently men and women, married compared to single individuals, or individuals with different levels of education.

Previous studies have shown that the impacts of austerity measures and economic recession have been felt most strongly for men and low-educated workers (Hoynes et al. 2012; Elsby et al. 2010). Job satisfaction, which is a component of life satisfaction, was found to be higher correlated with job security in case of less-educated workers compared to more-educated workers (Artz and Kaya, 2014).

Thus, in our case, gender and level of education may be a source of effect heterogeneity. Table 3 presents the matching DiD estimates for the following key subgroups: male, female, married, unmarried, higher educated workers (tertiary education level), less-educated-workers[5].

Table 3: Subgroup analysis - Matching Difference-in-Difference Estimates of the Effect of the Announcement on Life Satisfaction

	Male	**Female**	**Married**	**Single**	**Tertiary education**	**Secondary education**
Public	0.21	-0.18	-0.04	0.17	0.02	-0.05
	(0.23)	(0.20)	(0.18)	(0.27)	(0.30)	(0.18)
After	-0.02	-0.59***	-0.24*	-0.30	0.04	-0.50***
	(0.17)	(0.18)	(0.15)	(0.26)	(0.19)	(0.18)
Interaction	-0.50**	-0.24	-0.34	-0.66**	0.67**	-0.28
	(0.25)	(0.24)	(0.21)	(0.32)	(0.29)	(0.23)
Observations	655	603	751	507	610	625

Note: Robust standard errors are presented in parentheses. *, **, *** indicates significance at the 10%, 5% and 1% level, respectively.

Our matching DiD estimates indicate that the effects of the austerity plans announcement on the level of well-being are heterogeneous by gender, marital status and level of education. Men are more likely to be impacted, a fact which is consistent with the results from previous studies. The impact of the announcement on life satisfaction is statistically significant only for the unmarried individuals. In contrast with previous evidence from research, the better-educated workers are more likely to be affected by the announcement compared to less-educated individuals.

[5] Due to the rather small number of individuals who have only primary education level, I did not perform the analysis using such cases.

6. Robustness and Sensitivity

This section performs different robustness and sensitivity checks to test our results. Firstly, we consider different matching methods. Secondly, we check the sensitivity of our results to definition of treatment group by using a slightly different percentile split. Thirdly, we run a placebo regression to check the plausibility of the identifying assumption.

6.1 Different methodological approaches

As a robustness check, we consider propensity score methods instead of entropy balancing. Firstly, we apply propensity score weighting as an alternative to entropy balancing. To match the covariate distribution of the treatment group, the covariate distribution of the control group is reweighted by assigning weights of 1 to the treatment group observations and weights $\hat{p}(x)/(1-\hat{p}(x))$ to the control group cases, where $\hat{p}(x)$ represents the estimated propensity score (Guo and Fraser, 2014).

Secondly, we rely on kernel matching to further perform the robustness checks[6]. The control group observations are weighted by their distance in propensity score from treated observations within a bandwidth of the propensity score (for an in depth discussion see Imbens, 2000; Stuart, 2010). Kernel matching requires a decision on the kernel function and on a bandwidth parameter, the latter requirement being more important compared to the former one (Caliendo and Kopeinig, 2008). For this paper, we use an Epanechnikov kernel with a bandwidth of 0.06. Both propensity score matching and kernel matching lend themselves to calculation of the average treatment effect on the treated. Columns 2 and 3 from Table 4 present the estimates of the average treatment effect on the treated using propensity score weighted regression and kernel matching. The effects are similar in magnitude, sign and statistical significance to the results in the main specification.

[6] Kernel matching is implemented using the program "psmatch2" in Stata 13 (Leuven et al., 2015).

Tabel 4: Sensitivity analysis: the effects of announcing drastic austerity measures on employee' well-being

	Main specification	**PS-weighting**	**PS-matching**	**Another percentile – split (40-60) (entropy balancing)**	**Placebo regression**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**
Public	0.03	0.04	0.04	0.24	-0.05
	(0.15)	(0.15)	(0.15)	(0.16)	(0.20)
After	-0.27**	-0.10	-0.25**	-0.22	-0.20
	(0.13)	(0.14)	(0.13)	(0.15)	(0.16)
Interaction	-0.42***	-0.44**	-0.44**	-0.33*	0.07
	(0.17)	(0.17)	(0.17)	(0.18)	(0.21)
Observations	1258	1258	598	1258	867
R^2	0.12	0.11	0.11	0.10	0.06

Note: Specification (1) is the main estimation specification as in Table 2, last column. Specifications (2) and (3) display the difference-in-difference results after propensity score weighting and kernel matching, respectively. In specification (4), we perform the analysis using a percentile split (40-60 instead of 28-72) to define the treatment group. Specification (5) performs a falsification test that pretends that the announcement took place a year earlier. Robust standard errors are presented in parentheses. *, **, *** indicates significance at the 10%, 5% and 1% level, respectively.

We perform the sensitivity analysis also for our subgroups of individuals. Panels A and B in Table 5 present the results for propensity score weighting and kernel matching. The estimates of the interaction terms barely change in magnitude compared to the results from the main analysis (Table 3), indicating that the effects are robust across different matching procedures.

6.2 Sensitivity to definition of treatment group

In our main analysis, we have used the 28-72 percentile split to define our treatment group (public sector workers). As a sensitivity test, we perform the analysis using a different percentile split. Thus, we assign to the treatment group (employed in the public sector) those individuals with the 40% highest propensity scores. Accordingly, the individuals with the predicted probabilities below the 60^{th} percentile were assigned to the control group (employed in the private sector).

Column 4 in Table 4 displays the results. The coefficient of the interaction term is negative and statistically significant, but slightly smaller in magnitude. We have also performed the subgroup analysis using this definition of the treatment group (Table 5, Panel C). The impact of the announcement on different groups is, in general, slightly smaller as in the main analysis and statistically significant only for the single individuals. Also the coefficient for the low-educated workers turns statistically significant in this specification.

6.3 Placebo regression

As a further robustness check, we perform a falsification exercise. In this sense, we use only data from the EB 71.1 and EB 71.3 from 2009 as if the announcement regarding the wage cut in the public sector took place immediately before data for EB 71.3 was collected. We expect that the interaction term from the matching DiD setting to be statistically insignificant.

The results are displayed in Column 5, Table 4. When we replicate our empirical strategy, the estimate is insignificant and close to zero. This result confirms the main assumption of our analysis that the well-being of treated and matched controls follows a similar trend before the treatment (announcement regarding large scale wage cut in the public sector).

Table 5: Sensitivity analysis: Subgroups results

	Male	Female	Married	Single	Tertiary education	Secondary education
Panel A: PS- weighting						
Public	0.20	-0.19	-0.05	0.22	0.07	-0.05
	(0.23)	(0.20)	(0.18)	(0.29)	(0.31)	(0.18)
After	0.06	-0.31*	-0.15	0.01	0.01	-0.18
	(0.20)	(0.18)	(0.15)	(0.28)	(0.21)	(0.19)
Interaction	-0.49*	-0.24	-0.35*	-0.70**	-0.70**	-0.31
	(0.25)	(0.24)	(0.20)	(0.32)	(0.29)	(0.23)
Observations	655	603	751	507	610	625
R^2	0.08	0.20	0.11	0.14	0.09	0.12
Panel B: PS- matching						
Public	0.19	-0.19	-0.05	0.22	0.06	-0.05
	(0.22)	(0.22)	(0.19)	(0.27)	(0.33)	(0.18)
After	-0.04	-0.61***	-0.24	-0.26	0.02	-0.48***
	(0.19)	(0.19)	(0.16)	(0.23)	(0.24)	(0.17)
Interaction	-0.50*	-0.23	-0.34	-0.71**	-0.70**	-0.32
	(0.26)	(0.24)	(0.21)	(0.31)	(0.31)	(0.22)
Observations	311	286	386	211	204	364
R^2	0.08	0.20	0.11	0.14	0.09	0.12
Panel C: Another percentile –split (40-60) – entropy balancing						
Public	0.46**	-0.06	0.38**	0.08	0.16	0.27
	(0.21)	(0.23)	(0.17)	(0.30)	(0.28)	(0.20)
After	-0.05	0.47**	-0.25	-0.10	-0.11	-0.28
	(0.20)	(0.23)	(0.16)	(0.31)	(0.24)	(0.20)
Interaction	-0.37	-0.23	-0.20	-0.73**	-0.20	-0.44*
	(0.25)	(0.27)	(0.20)	(0.35)	(0.29)	(0.23)
Observations	655	603	751	507	610	625
R^2	0.08	0.16	0.10	0.12	0.06	0.10

Note: Robust standard errors are presented in parentheses. *, **, *** indicates significance at the 10%, 5% and 1% level, respectively.

7. Conclusion

This paper analyzes the impact of austerity plans announcements on employees' well-being. Using data from Eurobarometer Surveys and European Quality of Life Survey from 2009 and 2010, we exploit the unexpected wage cut announcement in Romania on May 6th 2010 regarding a drastic policy measure (25% reduction in wages in the public sector). In order to interpret the results in terms of causality, this paper applies a combination of matching (entropy balancing) and difference-in-difference estimation that is robust against selection on observables and unobservable characteristics.

This paper adds to an emerging literature on the effects of public sector downsizing and cutback management on employee well-being. Our results reveal that by simply announcing austerity measures leads to an overall drop in life satisfaction among those working in the public sector. We show that men and married individuals are most affected by the substantial wage cut announcement. Contrary to previous research, our study shows that public sector employees with higher levels of education are more likely to be affected by this policy communication compared to those with only secondary or primary level of education.

Our analysis confirms and complements earlier findings by showing that the effects of austerity measures could already be noticed from the moment of the announcement, before the policy reforms being effectively implemented. Not considering the potential negative effects of large scale announcements about austerity measures might result in underestimating the adverse impact on the employed individuals' morale and productivity, as well as on the employment sector as a whole. When preparing policy reforms, especially those aimed at generating shortages for specific groups of population, policy-makers should take into account that simply announcing austerity measures might have already an impact on individuals' jobs and life satisfaction.

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