

The 2011 Industrial Relations Reform and Nominal Wage Adjustments in Greece

Joan Daouli¹ · Michael Demoussis¹ ·
Nicholas Giannakopoulos¹ · Ioannis Laliotis²

Published online: 15 August 2016
© Springer Science+Business Media New York 2016

Abstract This study investigates nominal contractual base-wage adjustments in Greece associated with the 2011 industrial relations reform which re-defined the limits within which base wages could oscillate and allowed workers' associations to negotiate for wages at the firm level. The assessment covers the period 2010–2013 and is based on information extracted from the universe of firm-level contracts signed in this period. We found that firm-level contracts increased dramatically shortly after the reform, now covering a larger pool of workers, especially in larger firms, and are associated with higher base-wage reductions in the post-reform period. At the firm level, wage reductions are higher when workers are represented by a workers' association rather than a typical trade union. In addition, a heterogeneous effect is uncovered regarding the factors that shape base-wage adjustments (firm size, profitability, structure of bargaining body and aggregate unemployment) between new and traditional forms of workers' representation in collective bargaining.

Keywords Wages · Collective bargaining · Reform · Greece

JEL Classification J31 · J41 · J52

✉ Ioannis Laliotis
i.laliotis@surrey.ac.uk

Joan Daouli
daouli@upatras.gr

Michael Demoussis
micdem@upatras.gr

Nicholas Giannakopoulos
ngias@upatras.gr

¹ Department of Economics, University of Patras, Patras, Greece

² School of Economics, University of Surrey, Guildford, UK

Introduction

Reforms in collective bargaining practices and their associated labor market outcomes hold a prominent position in the industrial and labor relations literature and, more often than not, provoke heated public debate. The present study focuses on such a reform in the Greek labor market, which was introduced in November 2011 (Law 4024/2011) and concerns the decentralization of collective bargaining in general and firm-level contracting in particular. According to the reform, workers in those firms that do not meet the requirements for the establishment of a typical trade union (TU, henceforth) at the workplace,¹ may now form a Workers' Association (WA, henceforth) and participate in wage negotiations. Furthermore, contractual base wages can be lower than those reached after negotiations at higher levels, i.e., sectoral/ occupational/ regional, but not lower than the national minimum wage (NMW hereafter). Thus, in the post-reform period, the possibility of base-wage adjustments is stronger while the field for firm-level contracting has been considerably expanded. We note that this reform was part of the Memorandum of Understanding, signed by the Greek Government and the so called “Troika” (European Commission, European Central Bank, International Monetary Fund) in May 2010, when the sovereign debt crisis intensified. Its stated objective was to confront the longstanding wage rigidities in the Greek economy and alleviate the extensive gaps between labor costs and firm-specific productivity (Dickens et al. 2007; OECD 2011; Bentolilla et al. 2012).

Theoretical aspects of nominal wage rigidity are usually analyzed within a general equilibrium framework of the aggregate economy (Blinder 1977; Fischer 1977; Taylor 1980; Calvo 1983; Christiano et al. 2005). Ordinarily, the response of nominal wages to external sources of variation (e.g. reforms) depends on factors related to elements of the wage setting mechanism of collective bargaining, such as type, timing and duration of agreements. In this context, the flexibility of labor contracts is determined by the type of agreement and the distinction between ex-ante and ex-post wage adjustments to the changing economic environment (Gray 1978; Canzoneri 1980). It is also established that contractual agreements depend on the trade union decision-making processes (Ehrenberg et al. 1983). The role of labor market institutions is of paramount importance since nominal wage changes rarely bear a negative sign (Card and Hyslop 1997; Dickens et al. 2007). In addition, institutions are of primary concern in tight economic conditions. For instance, when the issue of base wage cuts is on the table of wage negotiations, the phenomenon of concession bargaining may arise (Cappelli 1985; Holden 1994). That is, in recessionary periods, the bargaining position of unions weakens while employers' leverage gets stronger (e.g. plant closing, lock-out or agreement termination), thus leading to an imbalance that may cause nominal base wage squeezes.

The objectives of this study are the following: First, to document in brief the transformation of the collective bargaining process in Greece. Second, to quantify the resulted extensive (direction of adjustment) and intensive (magnitude of adjustment) margins of nominal base-wage adjustments. Third, to investigate the links between base-wage outcomes and type of workers' representation (WA vs TU) and provide explanations for possible differentiated outcomes. In order to do so, we have developed a unique dataset from the universe of the official centralized and decentralized collective agreements

¹ At least 20 employees under Law 1264/1982.

(contracts) reached in the period January 2010– December 2013. The extracted data refer to settlements and provisions regarding base wage and non-wage outcomes. More specifically, we have extracted information on (a) the level of collective bargaining, i.e. sectoral, occupational, regional and firm, (b) the magnitude of the base-wage adjustment of the lowest paid worker, (c) the dates the agreement was reached and became effective as well as its duration, (d) the type of workers' representation (TU vs WA) and (e) the industry affiliation and the geographical coverage. The importance of contract data and their superiority *vis-a-vis* survey firm-level data in analysing downward wage rigidities is highlighted by Christofides and Stengos (2003). Survey-based studies investigating the determinants of wage adjustment include Babecký et al. (2010), Druant et al. (2012) and Le Le Bihan et al. (2012), while contract-based studies contain the works of Sparks and Wilton (1971), Murphy (1992; 2000), Christofides and Laporte (2002), Christofides and Stengos (2003), Christofides and Li (2005) and Avouyi-Dovi et al. (2013). In both cases, firm-specific variables (e.g. firm size, profitability etc.) as well as aggregate conditions (e.g. real and expected inflation, unemployment and business cycle) have been found to exert a significant impact on the incidence and magnitude of wage adjustments.

We utilize discrete choice models to estimate the determinants of the extensive margin of base-wage adjustments and typical OLS for the estimation of the intensive margin. In the latter case we also estimate limited dependent variable models (Tobit) given the mass of zeros in the distribution of base-wage changes (Avouyi-Dovi et al. 2013). Overall, our results indicate that the incidence of firm-level contracting increased dramatically after the reform, and base-wage reductions are higher in firms in which workers are represented by workers' associations as compared to firms where typical trade unions operate. Moreover, the driving factors of nominal base wage adjustments also seem to depend on the type of workers' representation within the firm.

The structure of the paper is the following. Section 2 presents the institutional setting regarding the system of collective bargaining in Greece in the pre- and post-reform periods. Section 3 presents analytically the data sources and provide evidence on the number of contracts, the type of workers' representation in wage negotiations, the coverage rates, the magnitude of base-wage changes and statistics on selected firms specific attributes and relevant macroeconomic variables. Section 4 presents the empirical strategy and Section 5 the estimation results regarding both, the extensive and intensive margins of nominal base-wage adjustments. Section 6 concludes.

Institutional Setting

Decentralized Bargaining Before the Reform

Decentralized collective bargaining in Greece was established in 1982 (Law 1246/1982) but became effective only after 1990 under the provisions of Law 1876/1990 (Daouli et al. 2013). Complete trade union freedom regarding the creation, internal operation and action was granted by Law 1246/1982. Law 1876/1990 allowed for firm-level collective negotiations in the sense that a bargaining process at the firm level could be initiated either by a firm-level TU with at least 20 members or by an employer with at least 50 employees. Furthermore, firm-level negotiations could be conducted between the employer and an upper-level sectoral TU in the absence of a firm-level one. If a dispute arises, the negotiating

parties could resort to mediation and arbitration procedures. Previous evidence has shown that nearly one third of negotiations had been subjected to mediation and about half of them to arbitration procedures (Koukiadis 2009).

Regarding broader levels of bargaining, negotiations at the national level were taking place periodically, usually every 2 years, between the central confederation of employers (Hellenic Federation of Enterprises) and employees (General Confederation of Greek Workers) with their outcomes being automatically extended to cover every wage earner in Greece. These agreements were then followed by more decentralized bargaining at the sectoral and occupational levels, which always produced improved outcomes for the labor side. This multi-level bargaining process established a series of minimum wage floors, on top of the national one, which were also extended to cover every corresponding worker group.² Moreover, according to the provisions of Law 1876/1990, collective negotiations could take place at the firm level also leading to more favourable outcomes for the labor side. Hence, broader and firm-level collective agreements operated in a cumulative way leading to multiple wage drifts for those workers covered by more than one agreement.³ It is evident that the established hierarchy among the various bargaining levels allowed only for upward wage flexibility (the “*favourability principle*”) regardless of the prevailing macro, local or firm-level conditions. Furthermore, given the positive skewness of the firm-size distribution in the Greek economy, the implementation of firm-level bargaining was very limited.⁴

The 2011 Reform (Law 4024/2011)

The Greek government attempted to address the need for a more decentralized bargaining regime in early 2010 via Law 3899/2010. According to that Law, firms facing severe financial constraints were allowed to establish wages below the thresholds set by sectoral or occupational agreements. That Law also allowed firms with less than 50 employees to sign firm-level contracts as long as workers were represented by a TU. However, this possibility was only figurative since a minimum of twenty workers is required for a TU to be established, therefore the majority of Greek firms was once again automatically excluded. Moreover, it involved considerable administrative costs since the employer side had to submit both the agreement and the rationale behind it to the Council of Social Control of the Labor Inspectorate, and then wait for the council to opine back. As a result, and despite the fact that the favourability principle was lifted in favour of more decentralized bargaining, only a handful of firm-level collective agreements were signed under the provisions of Law 3899/2010. Eventually, it was considered as an inadequate tool for promoting wage adjustments and was replaced by Law 4024/2011 in late 2011. According to the Greek Ministry of Labour, Social Security and Welfare (Hellenic Labour Inspectorate, Annual Report) the number of

² In the case where an agreement at a broader level (sectoral or occupational) was signed by a firm (or, an association of firms) which employed 51 percent or more of the total workforce in the sector or occupation in question, the agreement was extended automatically to cover all the workers in that sector or occupation (Voskeritsian and Komelakis, 2011).

³ Daouli et al. (2013) provide a detailed analysis of the impact of firm-level bargaining on individual wages in Greece during the pre-reform period.

⁴ In the period 2002–2014, no more than 1% of the total number of firms in Greece employed more than 50 employees (Hellenic Statistical Authority and SME Performance Review).

firm-level contracts signed during 2011 was 154 i.e., 95 contracts were signed under Law 1876/1980 and 11 under Law 3899/2010 (period 1/1/2011–27/10/2011) and 48 under Law 4024/2011 (period 27/10/2011–31/12/2011). According to the latter, not only TU but also WA (operating in firms with 5 or more employees and representing at least 60 % of the company's workforce) are given the opportunity to engage in wage negotiations at the firm level. Once an agreement is reached, it prevails over those set at broader levels of collective bargaining, i.e. sectoral or occupational, even if it contains worse terms and conditions for the labor side. Law 4024/2011 has drastically limited the involvement of sectoral TU in decentralized negotiations, i.e. firm-level wage bargaining. Therefore, the process of wage setting is no longer impervious to productivity changes, firm's financial situation and local labor market conditions. Nevertheless, the NMW agreement still constitutes the base wage floor for every wage earner in the Greek economy.⁵ As expected, a dramatic increase in the number of firm-level contracts was observed immediately after the introduction of Law 4024/2011 (November 2011). According to Ioannou and Papadimitriou (2013) the average number of firm-level contracts per year stood at 160 in the period 1990–2011, it spiked to 976 in 2012 and according to the Greek Ministry of Labor, Social Security and Welfare declined to 409 in 2013 (Fig. 1). Furthermore, the number of sectoral/occupational/regional agreements fell considerably during that period. Hence, exploring the wage outcomes of collective bargaining under the new Law is crucial in understanding its impact.

Data and Descriptive Evidence

Data Sources

In order to examine the variation of nominal base-wage outcomes in Greece during the period 2010–2013 we utilize contractual data pertaining to the universe of the official contracts of decentralized firm-level collective agreements. These agreements are publicly available on the website of the Ministry of Labor, Social Security and Welfare and cover the period between January 2010 and December 2013.⁶ The database contains detailed information for 1607 contracts (we excluded those 11 contracts signed during 2011 under Law 3899/2010) on the (a) type of representation, (b) timing and duration of the contract, (c) wage settlements and (e) place of agreement, business name and tax identification number of the firm. In order to provide evidence on the representativeness of the constructed dataset and the coverage rate (in terms of number of firms and employees) we employed the company name and the tax identification number to match each firm engaged in decentralized negotiations to additional information, i.e. number of employees, industry affiliation, ownership and the after-tax net profit margin.⁷ In addition, we were able to construct variables indicating whether the entire workforce of the firm is covered by the contract, clauses regarding industrial peace, trade union dues, time-off for

⁵ For a compact review of the institutional changes in the Greek labor market before and during the fiscal crisis, see Voskeritsian and Komelakis (2011; 2014).

⁶ <http://www.ypakp.gr/index.php?ID=79h7QJQee4NLStoF> (in Greek).

⁷ The matching has been made possible given the access granted from Infobank Hellastat S.A. (IBHS) to its iMentor online search engine. IBHS is a major Greek business information provider and iMentor covers all Greece-based firms, industries and professionals (<http://www.hellastat.eu/index.php/en/on-line/imentor>).

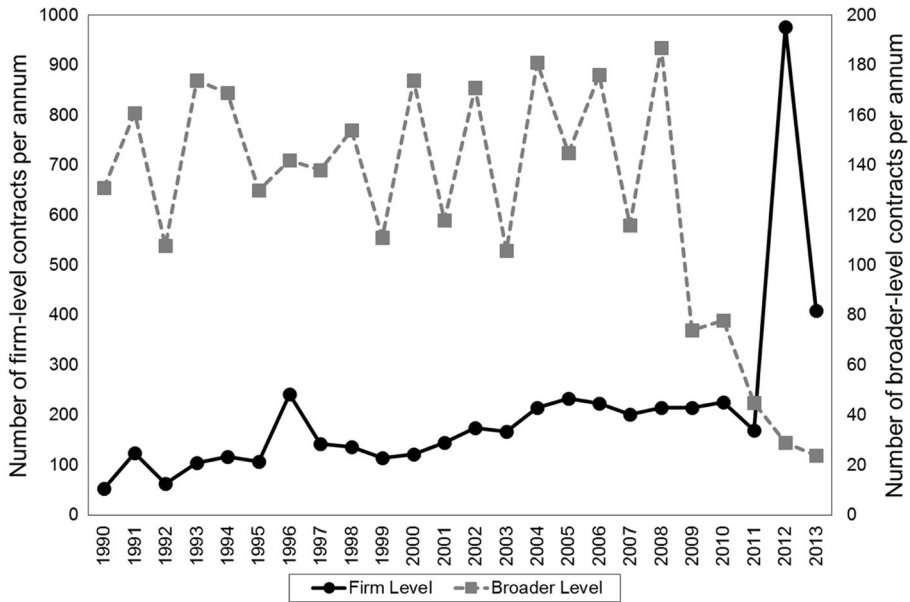


Fig. 1 Evolution of broader and firm-level contracts, Greece (1990–2013)

trade union duties and provisions regarding productivity bonuses.⁸ Given the escalating incidence of decentralized agreements in the post-reform period, the constructed database enables us to investigate the structure of firm-level collective bargaining in the post-reform period. For comparison purposes, we collected information on centralized collective bargaining agreements (sectoral, occupational and regional) for the same period (January 2010–December 2013) and more specifically on the timing and duration of the contract and the wage settlements. This information allows us to compare the nominal base-wage adjustments (extensive and intensive margins) between centralized and decentralized bargaining in the pre and post-reform periods.

Number of Contracts and Type of Representation

As Fig. 1 depicts, the number of firm-level contracts increased considerably since 2010 and at the same time the number of broader-level agreements decreased. The constructed database contains firm-level contracts representing 1607 bargaining pairs. In the pre-reform period, workers could be represented only by a typical TU in firm-level negotiations. In the post-reform period workers could be represented by either a TU or a WA operating within the firm. From the total number of contracts signed in the examined period 58.2 % (936 out of 1607) correspond to agreements signed by a WA and the remaining 41.8 % (671 out of 1607) correspond to other forms of typical trade union (TU) representation at the firm level (trade union/ federal/ occupational/ local).⁹

⁸ Our database does not contain additional components that may capture other margins of potential labour cost adjustments such as employment, hours of work, early retirement, etc.

⁹ We note that TU refers to either the firm-level trade union or a higher level trade union which conducts wage negotiations at the firm-level on behalf of the firm’s employees.

Our dataset shows that the average firm size when a WA (TU) is conducting the negotiations is 30 (521) employees. In addition, three distinct dates are clearly specified in each contract, i.e. date of signature, effective and expiration dates. From the last two we were able to calculate the duration of each contract. The most prevalent duration categories in the examined period are 4 quarters (33.72 %) and 12 quarters (18.25 %). In the pre-reform period, the duration of the majority of contracts was 4 quarters (76.67 %) while the contracts signed in 2012 have a longer duration.

Figure 2 presents the number of agreements signed by TU and WA as well as the number of active contracts (currently effective contracts) in each quarter during the period 2010–2013. It is clear that signed and active contracts by WA dominate in the post-reform period. The figure also shows that in the pre-reform period firm-level contracts were exclusively signed by TU. We also see that the rate of growth in the number of firm-level contracts has increased considerably in the post-reform period. The leap in this growth rate is exclusively due to the increase in the number of contracts signed by WA. Lastly, we note that the number of active contracts remains at high levels despite the drop in the number of signed contracts after 2012q3, indicating the longer duration of firm-level contracts signed shortly after the introduction of the reform.

Coverage Rates

Firm-level contracting in Greece pertains to a small share of firms and employees. According to the weighted data of the Structure of Earning Survey, in 2002 (2006) only 9.1 % (6.1 %) of the total number of employees in workplaces with 10–49 employees are covered by firm-level contracts. In addition, these firm-level contracts correspond to

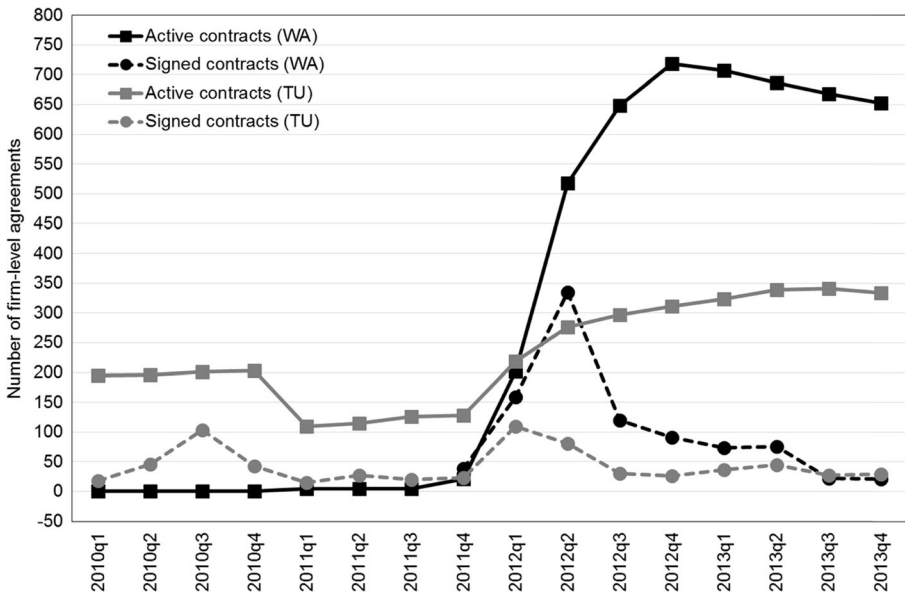


Fig. 2 Evolution of active and signed firm-level contracts by type of workers’ representation, Greece (2010–2013)

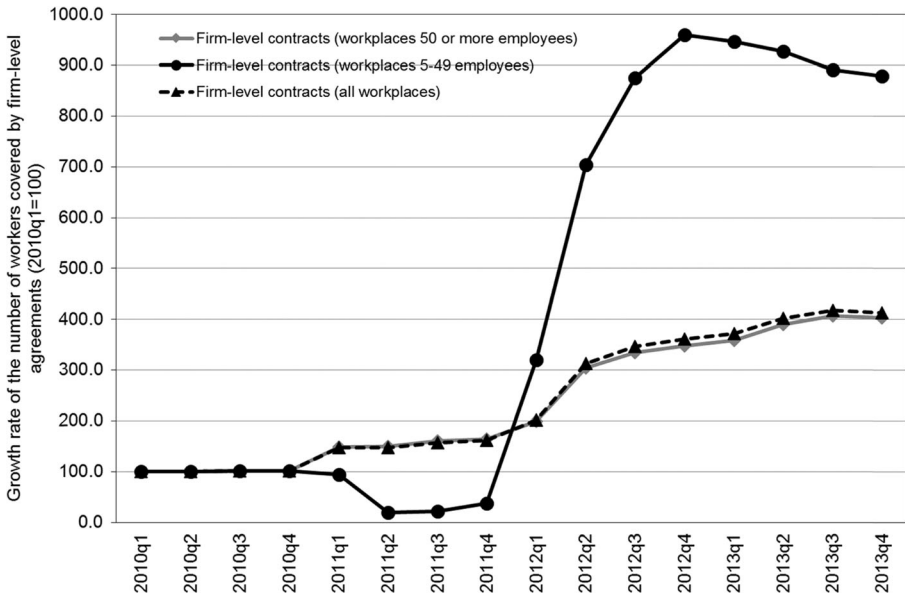


Fig. 3 Evolution of the cumulative number of employees covered by active firm-level contracts, Greece (2010–2013)

8.5 % (6.6 %) of the total number of firms with 10–49 employees. The corresponding coverage rates for workplaces with 50 or more employees are 14 % (9.1 %) and 8.7 % (8.1 %), respectively. Furthermore, the data on centralized bargaining (2002 and 2006) show around 90 % of the workforce in workplaces with 10 or more employees are covered by various forms of collective agreements at the broader level (national/sectoral/occupational/regional). The latest available Structure of Earnings Survey indicates that the share of centralized bargaining has remained unchanged in 2010.¹⁰ Coverage data for the post-reform period are not directly available and, even if they were, they are not comparable with the pre-reform period. This is because under the provisions of the new legislation, firms with 5 or more employees are now eligible to sign firm-level contracts.

The constructed dataset allows us to identify the number of employees covered by every firm-level contract. Figure 3 displays the evolution of the employment coverage of active contracts (number of employees) and for firms with 5–49 and with 50 or more employees (2010q1 = 100). We observe that the number of workers covered by firm-level contracts in workplaces with 5–49 employees increased drastically in the post-reform period. In addition, it increased two and a half-times faster than the growth rate of covered workers in workplaces with 50 or more employees.

To calculate the employment coverage rate we need information on the total number of workers in each firm-size class. This is of particular importance since, in the case of Greece, the bulk of the workforce is employed in firms with less than 10 employees and in particular in the size class of 1–4 employees. Specifically, according to the Greek

¹⁰ Published data from Eurostat show that 80 % of the workforce in the Greek 2010 Structure of Earning Survey is covered by national and/or sectoral collective bargaining agreements without any additional information on firm level contracting.

section of the 2010 European Union Survey of Income and Living Conditions dataset, 51.53 % of the total number of wage earners in workplaces with 1–10 employees work in micro firms (1–4 employees). Combining this information with the weighted quarterly employment data -for different firm sizes- from the Greek Labour Force Survey (2010–2013), we were able to calculate the coverage rate for employees in workplaces with 5–49 and with 50 or more employees (non-government sector workers in NACE Rev.1, codes 10–93). Figure 4 presents the obtained cumulative employment coverage rate of firm-level contracts. As expected, firm-level contracts in firms with 50 or more employees represent a disproportionately higher share of the total employment in this specific class size compared to firms with 5–49 employees. We also observe that the coverage rate increased substantially in the first two quarters of 2012 (i.e., shortly after the introduction of the reform). Thus, in the post-reform period, the number of firm-level contracts increased across the board and the same holds for the coverage rate. However, the increase in the coverage rate concerns primarily firms with 50 or more employees. In fact, half of the workforce in firms with 50 or more employees are covered by firm level agreements in the post reform period. These developments may have important implications for the contractual nominal base-wage changes, which we now turn to explore.

Nominal Base-Wage Changes

Official data for the magnitude of base-wage changes in 2012 are provided by the Ministry of Labor, Social Security and Welfare and the Greek Organisation for Mediation and Arbitration. According to these data, in broader-level agreements with wage provisions (21 out of 29 agreements), almost 33 % stipulated zero changes in contractual base wages, 19 % were associated with wage reductions in the range of 5–

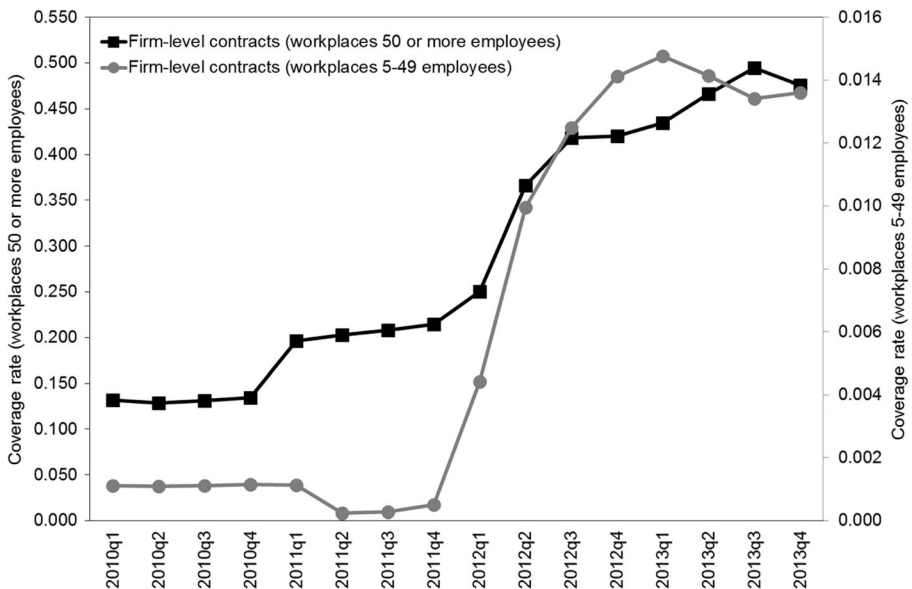


Fig. 4 Cumulative employment coverage rate in workplaces with 5–49 employees and 50 or more employees, Greece (2010–2013)

9 %, 14 % with reductions between 10–14 % and 33 % with reductions of more than 15 %. In the case of firm-level contracting, from the total number of 976 agreements, wage settlements are explicitly reported in 826 agreements. About 57.6 % of these agreements set base wages at the NMW level. The remaining population of agreements (350 out of 826), pertained to base-wage reductions (53 %), 45 % let base wages unchanged and only 2 % led to base wage increases. Half of the contracts with base-wage reductions were associated with a decline of more than 20 % (Ioannou and Papadimitriou 2013).

Our dataset provides a more insightful picture of base-wage changes in the examined period. We employ two measures of nominal base-wage adjustments: the extensive and intensive margins. Regarding the extensive margin, we register each contract in one out of three possible wage outcomes, i.e., “*upward adjustment*” for positive changes, “*wage stickiness*” for zero wage change and “*downward adjustment*” for negative changes.

Table 1 presents summary statistics of contractual base-wage changes by type of collective bargaining (broader level vs firm level) and workers’ representation (TU vs WA) for the examined period as well as for the pre- (January 2010–October 2011) and post-reform (November 2011–December 2013) periods. Regarding the extensive margin, we observe that in the pre-reform period only 3.9 % of firm-level contracts and 7.7 % of broader-level contracts stipulated base-wage reductions. The corresponding figures for the post-reform period are 74.9 and 52.8 %, respectively. Similarly, wage stickiness pertaining to firm-level contracts does not appear to be different between the two periods (around 23.0 %). In contrast, wage stickiness in broader-level contracts has doubled in the post-reform period (from 19.8 to 37.7 %). Regarding the intensive margin, we observe that in the pre-reform period the mean base-wage changes for broader- and firm-level contracts are positive and equal to 1.1 and 2.8 %, respectively. In the post-reform period, the mean base-wage changes are negative and stand at 7.1 % for broader-level contracts and 9.2 % for firm-level ones. Both the extensive and intensive margins of base-wage adjustments indicate that in the post-reform period (a) agreements led to base-wage reductions in both types of collective bargaining, (b) broader-level contracts became stickier and (c) firm-level contracts resulted in greater base-wage reductions.

With regard to firm-level contracting, workers could be represented by either a TU or a WA in the post-reform period. Concerning the extensive margin, nominal downward base-wage adjustments are more prominent in the case of WA (88.6 vs 41.4 %). In contrast, wage stickiness pertains mainly to contracts signed by TU (55.6 vs 10.3 %). In reference to the intensive margin, the average base-wage change is much greater in the case of WA representation (-14.0 vs -4.6 %). Thus, downward nominal base-wage adjustments in firm-level contracting are primarily driven by the bargaining outcomes of WA. This indicates that the introduction of WA by Law 4024/2011 as a new form of workers’ representation is related to greater base-wage reductions than the traditional form of workers’ representation (TU). It is interesting to note that the constructed dataset is considered to be a reliable source of information regarding the direction of base-wage changes since the majority of firm-level contracts (more than 93 %) report in an explicit way the adjustments for the entire period and by type of collective bargaining agreements. However, in the case of the intensive margin, our results may contain a reporting bias since only 36.9 % of firm-level contracts signed by WA, for

Table 1 Summary statistics of nominal base-wage adjustments, by bargaining level, in the pre and post-reform periods

	Entire period				Pre-reform				Post-reform			
	Broader-level		Firm-level		Broader-level		Firm-level		Broader-level		Firm-level	
	Total	WA	TU	WA	Total	WA	TU	WA	Total	WA	TU	WA
Number of contracts	175	936	671	936	121	0	271	0	54	400	936	
Extensive Margin (%)												
Downward adjustment	21.9	88.6	26.3	88.6	7.7	-	3.9	-	52.8	41.4	88.6	
Wage stickiness	25.4	10.3	42.5	10.3	19.8	-	23.2	-	37.7	55.6	10.3	
Upward adjustment	52.7	1.0	31.2	1.0	72.5	-	72.8	-	9.5	2.9	1.0	
Number of contacts	169	909	628	909	116	-	254	-	53	374	909	
Intensive Margin (%)												
Mean	-1.4	-14.0	-1.5	-14.0	1.1	-	2.8	-	-7.1	-4.6	-14.0	
Median	1.1	-15.0	0.0	-15.0	1.6	-	3.0	-	-5.0	0.0	-15.0	
S.D.	7.7	12.6	7.2	12.6	4.8	-	3.1	-	9.7	7.7	12.6	
Min	-45.0	-66.0	-44.0	-66.0	-12.0	-	-20.0	-	-45.0	-44.0	-66.0	
Max	31.0	8.9	15.0	8.9	31.0	-	15.0	-	4.0	11.0	8.9	
Number of contacts	169	336	931	336	116	-	247	-	53	348	336	

Source: Greek Ministry of Labor, Social Security and Welfare (authors' calculations)

which the extensive margin is known, contain the precise magnitude of the base-wage change (336 out of 909).

In order to obtain a vivid picture of the evolution of contractual base-wage adjustments in the examined period we should take into account the binding nature and the effective duration of the contract. Given that the effective period of a specified contract is determined by its effective date and duration. Figure 5 presents the evolution of contractual nominal base-wage changes for all active contracts by type of collective bargaining (sectoral and firm level) and by firm size. We observe that in the pre-reform period, on average, nominal base-wage changes were positive and of the same magnitude regardless of the type of agreement and firm size. This regularity was interrupted in the first quarter of 2012 when the reform was implemented and a reduction in the NMW was imposed by the government. The evolution of the latter for the period 2000–2013 is presented at Fig. 6. In February 2012, the government reduced arbitrarily the NMW by 22 % (from 751 to 586 euros per month). Returning to Fig. 5, we observe that in the post-reform period the size of the downward adjustment in nominal base wages varies with the size of the firm and the type of collective bargaining. Contracts signed at the firm level are associated with higher base-wage reductions as compared to the sectoral level ones. Furthermore, firm-level contracts in workplaces with 50 or more employees exhibit lower wage reductions than those in smaller firms (5–49 employees). Thus, the magnitude of the base-wage downward adjustments is no longer uniform and more specifically, it is greater for firm-level contracts in small-sized firms. We also observe that the wage responsiveness of sectoral agreements, which are now less frequent, appears to take place with a delay and it is smaller in comparison to firm-level ones.

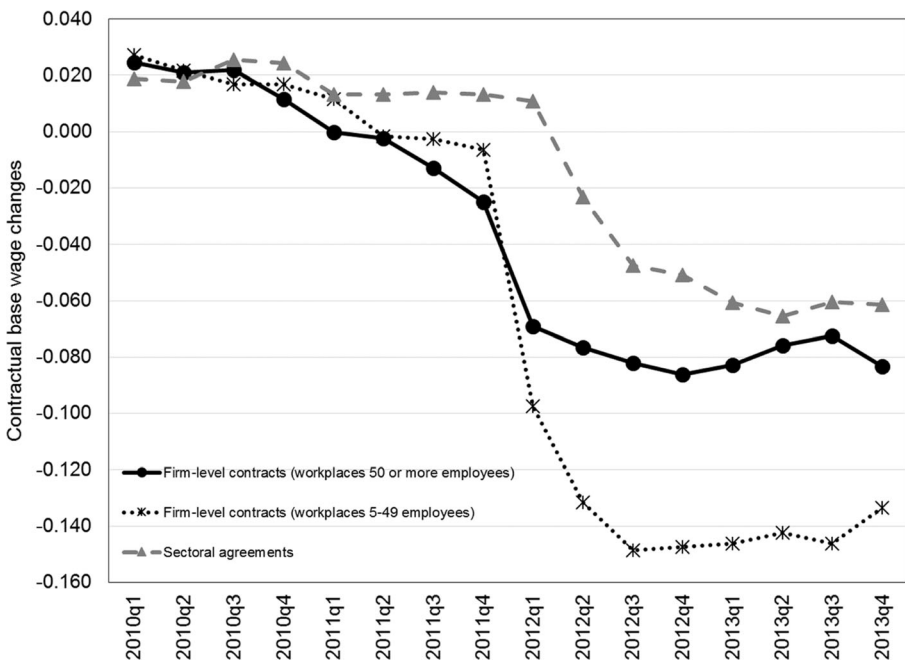


Fig. 5 Nominal base-wage changes in active collective bargaining agreements by type of representation and firm-size, Greece (2010–2013)

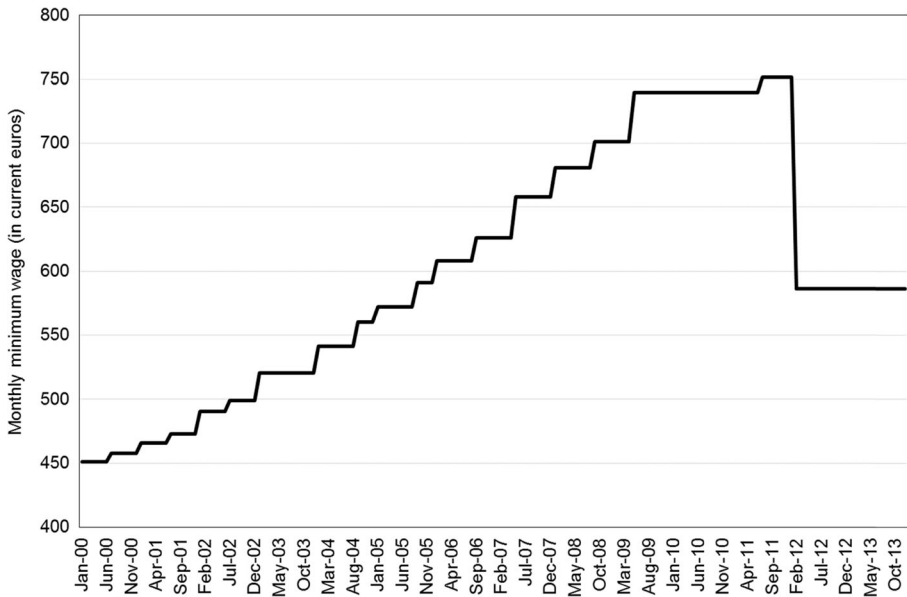


Fig. 6 Nominal monthly national minimum wage in current euros, Greece (2000–2013)

Firm-Specific Attributes and Macroeconomic Conditions

The variation in bargained base-wage outcomes reflects differences either in these outcomes between the pre- and post-reform period and/or in firm-specific attributes. Table 2 presents summary statistics for the variables included in our dataset. For comparison purposes, we report summary statistics for the pre- and post-reform periods and by type of workers' representation (WA vs TU). With regard to firm-level contracts signed by TU, we observe that in the post-reform period the frequency of contracts with provisions for trade union dues and the duration of the contracts have increased and now concern primarily larger firms. Regarding the comparison between TU and WA in the post-reform period, we observe that a higher percentage of agreements signed by WA include an industrial peace clause and pertain to smaller firms. Lastly, contracts signed by WA pertain to private firms, located in Northern Greece, with smaller average profitability and concentrated in "Retail trade" and "Other activities".

In addition, the share of contracts with provisions for productivity bonuses is higher in the case of TU compared to the share of those contracts signed by WA (0.092 vs 0.026). This indicates that in contracts signed by TU there is a higher probability of identifying sources of wage flexibility (e.g. bonuses) that may operate independently of the contractual base wages. We should note however that while this share was stable in the period 2010–2012 (around 0.122) it declined to 0.075 in 2013. In contrast, in the case of contracts signed by WA this share fluctuated between 0.026–0.036 for the post reform period. In other words, in the case of TU, the downward adjustment process is not only evident in the case of base wage outcomes but also in the part of flexible wage components. This may indicate that firms with a substantial portion of flexible wages are more able to adjust their marginal labour costs by reducing the flexible part of contractual wages rather than the base wage itself.

Table 2 Frequencies of firm-level contracting by period, type of worker representation and firm-level characteristics

	Pre-reform period	Post-reform period	
	TU	TU	WA
Contract clauses			
Industrial peace	.048	.047	.130
Trade union dues	.022	.277	.004
Time-off union duties	.346	.310	.001
Provisions for productivity bonuses	.095	.092	.026
Duration of labor contract			
1–4 quarters	.712	.357	.370
5–8 quarters	.125	.270	.167
9 or more quarters	.163	.373	.463
Firm size			
5–19 employees	.369	.245	.418
20–49 employees	.077	.077	.448
50–149 employees	.147	.210	.108
150 or more employees	.407	.467	.026
Firm ownership			
State/Municipal/Cooperative/Social	.074	.163	.039
Private	.926	.837	.961
Net profit margin (after tax)			
0–25 percentile	.144	.160	.145
25–75 percentile	.232	.242	.330
75–100 percentile	.151	.200	.155
Missing: not reported	.473	.397	.370
Industry			
Manufacturing	.616	.502	.269
Retail trade	.040	.080	.286
Services	.317	.375	.155
Other (Agriculture/Fishing, Construction, Leisure)	.027	.043	.290
Region			
Northern Greece	.144	.250	.447
Central Greece	.125	.130	.193
Attica	.698	.563	.284
Aegean and Crete	.033	.057	.076
Number of contracts	271	400	936

Source: Greek Ministry of Labor, Social Security and Welfare and database created by the authors using the iMentor online search engine (authors' calculations)

An additional source of variation that may affect nominal base-wage adjustments, is the macroeconomic environment in which collective bargaining takes place. In this context it is interesting to examine whether base-wage outcomes observed in our

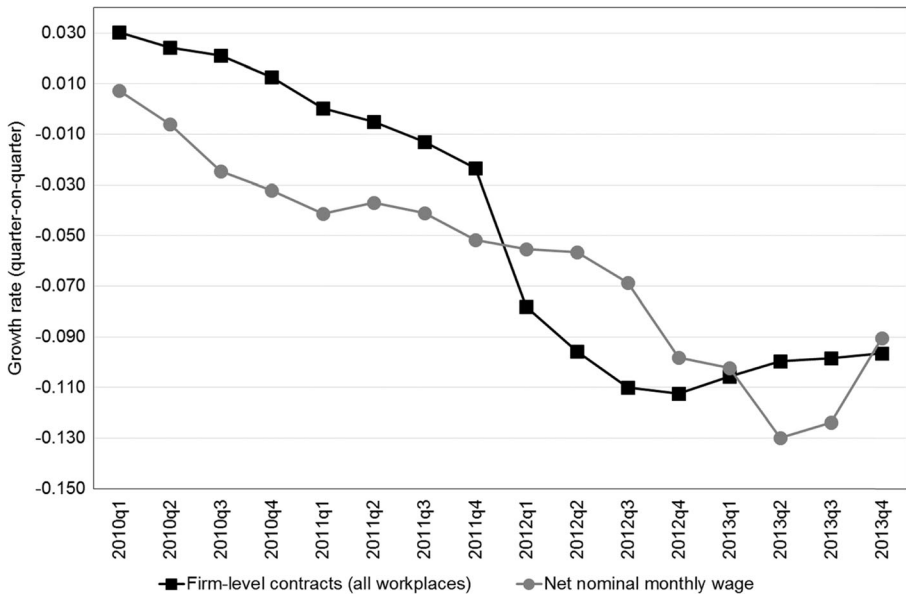


Fig. 7 Evolution of nominal contractual base-wage changes (firm-level contracts) and net nominal monthly market wage (LFS), Greece (2000–2013)

dataset follow the general market wage developments in the Greek economy. An appealing feature of our dataset is that it allows such comparisons. The evidence provided so far indicates that contractual base wages in firm-level agreements signed after the reform lead more often to reductions. Using data on net monthly nominal wages (non-government sector) from the Labour Force Survey we present at Fig. 7 the growth rates of both wage series.¹¹ We observe that both share a rather common trend (correlation coefficient of 50 %) indicating that contractual base wages follow the general downward path of the Greek economy. Given this and using the date and place of agreement for each firm-level contract we are able to take into account several macroeconomic variables and events which could drive the observed base-wage changes (i.e., monthly national unemployment, local annual unemployment at the NUTS-3 level, monthly expected Eurozone inflation with 2010 as the base year and a dummy indicator for the post-February 2012 period in which the reduced NMW became effective).

Empirical Strategy

In this section we present the empirical strategy for modelling nominal base-wage adjustments using the provisions on contractual base-wage outcomes explicitly determined within each firm-level contract. In particular, the unit of analysis is the contract (i.e. the firm-level agreement) and concerns a specific firm-union bargaining pair. For

¹¹ Wage data at the firm-level are not available since only firms listed in the Athens Stock Exchange are obliged to follow the International Accounting Standards (IAS).

analytical purposes, we aim to investigate the determinants of the extensive and the intensive margins of nominal base-wage adjustments. With regard to the reform in question, the downward nominal base-wage adjustments could be the result of the reform and/or reflect the deteriorating economic conditions. However, the ability of firms and workers to sign a firm-level contract by establishing a WA at the workplace is a particularity in our analytical setting since it constitutes a new type of workers' representation in collective bargaining, which could be associated with the post-reform period base-wage adjustments. That is, only a subset of the contracts signed in the post reform period are signed by a WA. Thus, we need to disentangle the effect of the reform from other time variant effects which are common to all contracts.¹² For example, in the pre- and post-reform periods, heterogeneity in downward nominal base-wage adjustments between different bargaining levels and different types of workers' representation during firm-level collective negotiations (TU vs WA) might be involved. Therefore, we consider five sources of variation. In particular, our set of independent variables capture (a) the post-reform period effect that differentiates the wage bargaining outcomes from those reached in the pre-reform period, (b) the upgraded role of WA in decentralized bargaining, (c) the structure of workers' representation during wage negotiations and the duration of contracts, (d) several firm-specific attributes (demographic and financial) and (e) the macroeconomic environment in which decentralized bargaining takes place.

In this context, we estimate a simple empirical model of the following form:

$$y_{jt} = a + \beta_1 P_t + \beta_2 WA_{jt} + \beta_3 C_{jt} + \beta_4 F_{jt} + \beta_5 M_t + e_{jt} \quad (1)$$

where, y_{jt} is the base-wage outcome for a specific contract j signed at time t , P_t is a dummy indicator for the post-reform period (November 2011–December 2013), WA_{jt} is a dummy indicator denoting whether the specific contract is signed by a WA, C_{jt} is a vector of contract related characteristics (i.e. specific clauses and duration), F_{jt} a vector of firm-specific attributes (size of workforce, ownership, industry and regional affiliation) and financial variables (after-tax net profit margin), M_t is a vector of macroeconomic correlates (national and local unemployment, expected inflation and reduction in the NMW imposed by the government) and e_{jt} is the error term. Given that the extensive margin of nominal adjustments refers to a categorical dependent variable capturing three alternative outcomes (“downward” or “upward” adjustments and “wage stickiness”) a multinomial logit model is utilized to recover the corresponding parameter estimates shown in equation (1). In the case of the intensive margin, typical regression techniques (OLS) are utilized.

Nevertheless, the estimated impact of WA on both measures of base-wage adjustments is subject to the problem of sample selection, since our dataset contains only firms that have signed a firm-level contract. That is, we are missing the group of firms that compose the counterfactual and thus, we are unable to estimate the impact of several firm-specific variables on firm's intension to sign a firm-level contract. However, restricting our analysis to the post-reform period ($P = 1$) we are able to investigate whether firm-level contracts in the post-reform period signed by a WA (instead of a

¹² Since the available data do not allow us to construct a valid counterfactual, our results should not be interpreted as causal ones. Ideally, this counterfactual would have contained firms that do not negotiate at the firm-level in the pre- and post-reform periods.

TU) are associated with different bargaining outcomes regarding contractual base wages. Thus, equation (1) is reduced to the following specification:

$$y_{jt} = \beta_0 + \beta_2 WA_{jt} + \beta_3 C_{jt} + \beta_4 F_{jt} + \beta_5 M_t + e_{jt} \quad (2)$$

In order to get estimates of the parameters included in equation (2) we utilize (a) in the case of the extensive margin, a binary logit model since in the post-reform period we do not observe contracts with base wages increases and (b) in the case of the intensive margin, a Tobit model given the mass of zeros in contractual base-wage changes.

In an attempt to estimate the differentiated effect of the utilized independent variables we will also estimate a conditional on WA model specification of the following form:

$$y_{jt} = (a_0 + \beta_3 C_{jt} + \beta_4 F_{jt} + \beta_5 M_t + e_{jt}) \Big|_{WA} \quad (3)$$

This will enable us to derive estimates of the effects of the independent variables for a sub-sample of contracts signed by the new form of workers' representation ($WA = 1$) and by a typical trade union ($WA = 0$). This exercise is expected to shed light on whether firms with different structural characteristics (i.e. firm-size) have a different base-wage adjustment profile. One related hypothesis is that for the bargaining pair in which a WA is involved the downward base-wage adjustment is negatively related to firm size. Another hypothesis to be tested concerns the negative correlation between current unemployment rates and the process of downward adjustment given that the bargaining power of WA is weak (e.g. compared to a TU, a WA has a rather loose structure).

Three alternative model specifications of equation (1) will be estimated for the entire period (2010–2013). The first pertains to the unconditional estimate of the post-reform effect on nominal wage adjustments. The second specification decomposes the effect of WA on downward adjustment from the adjustment in the post-reform period and the third relates to the full model specification outlined in equation (1). Given that the reference period in equation (2) is exclusively the post-reform period, we will estimate two model specifications. The first pertains to the unconditional estimate of WA on nominal base-wage adjustments and the second, to the full model specification (equation 2). Lastly, several specifications of equation (3) will be estimated. In this context, we will compare the estimated parameters of the set of independent variables for the sub-samples of WA and TU. Furthermore, we will check the robustness of the estimated parameters from the TU sub-sample by adding bargaining related outcomes of TU. We note that these outcomes are of no particular importance in the case of WA (Table 2).

Estimation Results

Table 3 (Panel A) presents the estimated marginal effects for the extensive margin and OLS estimates for the intensive one. With regard to the extensive margin, we observe that firm-level contracts signed during the post-reform period exert a higher probability of “downward” adjustment compared to contracts signed during the pre-reform period (70.9 percentage points). In the case of “wage stickiness”, the estimated effect of the post-reform period is practically zero (0.3 percentage points) and, as expected, the

Table 3 The extensive and intensive margins of nominal contractual base-wage adjustments in the pre- and post-reform periods (Law 4024/2011) and in negotiations with different type of workers’ representation (marginal effects)

	Extensive margin			Intensive margin
	Downward	Wage stickiness	Upward	Wage change
Panel A				
Post-reform	.709 (.018)***	.003 (.033)	-.712 (.031)***	-.120 (.005)***
Log-pseudo-likelihood	-974.90			-
R-squared	-			.222
Panel B				
Post-reform	.629 (.042)***	.074* (.042)	-.703 (.065)***	-.074 (.005)***
WA	.503 (.031)***	-.466*** (.032)	-.037 (.019)**	-.094 (.008)***
Log-pseudo-likelihood	-826.22			-
R-squared	-			.351
Panel C				
Post-reform	-.033 (.172)	.070 (.143)	-.037 (.053)	-.007 (.021)
WA	.328 (.073)***	-.278 (.066)***	-.049 (.035)	-.074 (.012)***
Clause: Industrial peace	.117 (.051)**	-.120 (.048)**	.003 (.015)	-.032 (.016)**
Clause: Union dues	-.481 (.128)***	.511 (.126)***	-.030 (.012)**	.064 (.012)***
Clause: Time-off union duties	-.335 (.159)**	.275 (.132)**	.060 (.044)	.026 (.007)***
Clause: Productivity bonuses	-.169 (.102)*	.182 (.097)*	-.013 (.012)	-.001 (.013)
Duration: 1–4 quarters	-.242 (.045)***	.227 (.042)***	.016 (.014)	.032 (.009)***
Duration: 5–8 quarters	-.100 (.062)	.093 (.059)	.007 (.019)	.011 (.011)
Firm size: 5–19 employees	.074 (.077)	-.094 (.067)	.019 (.020)	-.019 (.010)
Firm size: 20–49 employees	.038 (.078)	-.054 (.067)	.016 (.027)	.001 (.011)
Firm size: 50–149 employees	.001 (.076)	-.038 (.062)	.038 (.036)	-.013 (.010)
Ownership: Private firm	-.132 (.066)**	.117 (.058)**	.015 (.017)	.032 (.012)**
Profit margin: 0–25 percentile	.129 (.053)***	-.101 (.051)**	-.027 (.009)***	-.012 (.011)
Profit margin: 25–75 percentile	.172 (.050)***	-.145 (.045)***	-.027 (.012)**	-.006 (.011)
Profit margin: missing	.134 (.055)**	-.101 (.050)**	-.032 (.016)**	.001 (.011)
National unemployment	.119 (.033)***	-.104 (.030)***	-.015 (.006)**	-.011 (.003)***
Local unemployment	.006 (.005)	-.005 (.004)	-.001 (.001)	-.002 (.001)*
Expected inflation (Eurozone)	-.274 (.386)	.190 (.356)	.084 (.068)	.072 (.041)*
Reduction in NMW	.119 (.075)	-.087 (.070)	-.031 (.028)	-.043 (.010)***
Industry dummies	Yes	Yes	Yes	Yes
Region dummies	Yes	Yes	Yes	Yes
Linear time trend	Yes	Yes	Yes	Yes
Log-pseudo-likelihood	-659.99			-
R-squared	-			.460
Number of contacts	1537			931
Number of firms	1203			655

Source: Greek Ministry of Labour, Social Security and Welfare (authors’ calculations)

Notes: The results from the extensive margin refer to the estimated marginal effects of the multinomial logit model while in the case of the intensive margin they correspond to the OLS estimated coefficients. Robust standard errors in parentheses with clustering at the firm-level

*Statistically significant at the .10 level; **at the .05 level; ***at the .01 level

marginal effect for the “upward” adjustment category is negative and equal to 71.2 percentage points. These findings imply that firm-level contracts in the pre-reform period were associated with upward adjustment in nominal base wages while in the post-reform period they are associated with downward adjustment.

Panel B presents the estimation results when a WA indicator is included as an additional correlate. We observe that firm-level contracts signed during the post-reform period exhibit a higher probability of downward adjustment (compared to contracts signed in the pre-reform period, 62.9 percentage points) while those signed by WA are more likely to be associated with downward base-wage adjustment (compared to contracts signed by TU, 50.3 percentage points). In contrast, in the “wage stickiness” case we observe that contracts in the post-reform period have 7.4 percentage points higher probability of zero changes in base wages compared to firm-level contracts signed in the pre-reform period. Furthermore, contracts signed by WA are 46.6 percentage points less likely (compared to TU) to stipulate zero changes in contractual wages.

When additional correlates (i.e., firm-specific attributes and macroeconomic variables) are taken into consideration the estimated results (Panel C) show that the estimated effects of the post-reform period and the WA indicators are now smaller with the former becoming practically zero. Thus, firm-level contracts signed by WA have 32.8 percentage points higher probability of downward adjustment compared to those signed by a TU. We also observe that the probability of downward adjustment is lower in contracts where the workers’ representation is well structured, the duration of contracts is short, the firm is privately owned, recording higher profit margins and operating in times of low unemployment.

Regarding the intensive margin, the unconditional OLS estimate (Panel A) indicate that the magnitude of the downward adjustment in the post-reform period corresponds to an estimated reduction of -12.0 %. This negative effect is reduced to -7.4 when the indicator of WA is taken into consideration (Panel B). In this case we also found that contracts signed by a WA are associated with an average base-wage reduction of 9.4 %. Moving to the augmented version of our empirical model (Panel C) we observe that the estimated effects are further reduced and in fact the estimated effect of the post-reform dummy indicator becomes statistically insignificant. With regard to the effect of the WA dummy variable we observe that firm-level contracts signed by WA are associated with a reduction of 7.4 % in base wages. Thus, we conclude that the downward nominal base-wage adjustment (extensive and intensive margins) observed in the post-reform period is a composition effect consisting of a time-period effect (post-reform period) and a structural effect (involvement of a WA in collective bargaining).

Table 4 presents estimation results of equation (2) referring to firm-level contracts signed in the post-reform period. As shown in Panel A, firm-level contracts signed by WA have 46.8 percentage points higher probability of downward base-wage adjustment compared to those signed by TU. However, this effect is reduced (23.1 percentage points) when additional correlates are taken into consideration (Panel B). We note that the effects of the remaining independent variables are similar to those of Table 3. With regard to the intensive margin, again, we observe that WA are associated with base-wage reductions.¹³

¹³ The WA dummy is likely to be endogenous, given that this form of worker representation may depend on the need of specific firms for substantial base wage adjustments or on other firm-specific attributes, e.g. on firm size. We have also attempted to elaborate the endogenous character of the existence of a WA using firm size as instrument. However, the obtained 2SLS results have led to qualitatively and qualitatively similar results which are available from the authors upon request.

Table 4 Workers' Association and the extensive and intensive margins of nominal contractual base-wage adjustments in the post-reform period (marginal effects)

	Extensive margin (Downward)	Intensive margin (Wage change)
Panel A		
WA	.468 (.033)***	-.091 (.008)***
Log-pseudo-likelihood	-548.99	-74.71
Panel B		
WA	.231 (.069)***	-.045 (.012)***
Clause: Industrial peace	.072 (.029)**	-.023 (.015)
Clause: Union dues	-.446 (.172)***	.107 (.037)***
Clause: Time-off union duties	-.268 (.166)	.077 (.030)**
Clause: Productivity bonuses	-.140 (.090)	.018 (.021)
Duration: 1–4 quarters	-.186 (.037)***	.034 (.009)***
Duration: 5–8 quarters	-.081 (.048)*	.011 (.012)
Firm size: 5–19 employees	.063 (.048)	-.036 (.013)**
Firm size: 20–49 employees	.032 (.048)	-.010 (.014)
Firm size: 50–149 employees	.026 (.044)	-.027 (.013)**
Ownership: Private firm	-.064 (.040)	-.039 (.014)***
Profit margin: 0–25 percentile	.085 (.029)***	-.024 (.015)
Profit margin: 25–75 percentile	.105 (.030)***	-.017 (.013)
Profit margin: missing	.077 (.034)**	.003 (.014)
Monthly unemployment	.083 (.027)***	-.016 (.009)
Local unemployment	.002 (.003)	-.001 (.001)
Expected inflation (Eurozone)	-.168 (.246)	.129 (.079)
Reduction in NMW	.042 (.057)	-.034 (.014)**
Industry dummies	Yes	Yes
Region dummies	Yes	Yes
Linear time trend	Yes	Yes
Log-pseudo-likelihood	-435.22	24.17
Number of contacts	1263	665
Number of firms	1068	522

Source: Greek Ministry of Labour, Social Security and Welfare (authors' calculations)

Notes: The results from the extensive margin refer to the estimated marginal effects of the binary logit model and from the intensive margin to the estimated marginal effects of a Tobit model. Robust standard errors in parentheses with clustering at the firm-level

*Statistically significant at the .10 level; **at the .05 level; ***at the .01 level

Table 5 presents estimation results for the extensive and intensive margins of base-wage adjustments for the post-reform period and for WA and TU, separately. In the case of extensive margin in contracts signed by WA (column 1) we observe that the probability of downward adjustment is higher in contracts with prolonged duration, smaller firm sizes and in periods of high unemployment. Regarding the sub-sample of contracts signed by TU (column 2) we observe that the probability of downward adjustment is higher in contracts with prolonged duration, in non-privately owned

Table 5 Workers' Association and the extensive and intensive margins of nominal contractual base-wage adjustments in the post-reform period (marginal effects)

	Extensive margin (Downward)			Intensive margin (Wage change)		
	WA [1]	TU [2]	TU [3]	WA [4]	TU [5]	TU [6]
Clause: Industrial peace	—	—	.267 (.133)**	—	—	-.033 (.014)**
Clause: Union dues	—	—	-.245 (.107)**	—	—	.039 (.018)**
Clause: Time-off union duties	—	—	-.172 (.108)	—	—	.035 (.014)**
Clause: Productivity bonuses	—	—	-.173 (.090)*	—	—	.018 (.014)
Duration: 1–4 quarters	-.108 (.022)**	-.159 (.096)*	-.227 (.095)**	.044 (.015)**	.016 (.011)	.026 (.011)**
Duration: 5–8 quarters	-.053 (.032)	-.010 (.096)	-.062 (.094)	.008 (.022)	.005 (.010)	.016 (.010)
Firm size: 5–19 employees	.077 (.037)**	-.106 (.117)	.037 (.137)	-.090 (.026)**	.009 (.015)	-.018 (.015)
Firm size: 20–49 employees	.059 (.037)	.119 (.133)	.161 (.138)	-.048 (.026)	.006 (.015)	-.003 (.015)
Firm size: 50–149 employees	.032 (.022)	-.035 (.101)	-.013 (.101)	-.065 (.030)**	-.006 (.011)	-.014 (.011)
Ownership: Private firm	-.018 (.024)	-.289 (.123)**	-.224 (.135)*	.096 (.030)**	.032 (.012)**	.019 (.010)*
Profit margin: 0–25 percentile	.027 (.014)*	.337 (.135)**	.327 (.135)**	-.028 (.023)	-.031 (.016)*	-.026 (.015)*
Profit margin: 25–75 percentile	.024 (.016)	.347 (.101)**	.348 (.107)**	-.002 (.024)	-.028 (.013)**	-.025 (.012)**
Profit margin: missing	.045 (.018)**	.064 (.123)	.092 (.126)	.009 (.023)	-.003 (.015)	-.004 (.015)
Monthly unemployment	.038 (.013)**	.089 (.077)	.096 (.079)	-.019 (.016)	-.016 (.009)*	-.018 (.009)**
Local unemployment	.002 (.002)	-.015 (.010)	-.013 (.009)	-.001 (.001)	.001 (.001)	.001 (.001)
Expected inflation (Eurozone)	-.148 (.105)	-.057 (.495)	-.141 (.476)	.281 (.189)	.064 (.048)	.070 (.049)
Reduction in NMW	-.039 (.020)*	.079 (.129)	.049 (.138)	-.053 (.017)**	-.004 (.014)	-.001 (.013)
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes
Region dummies	Yes	Yes	Yes	Yes	Yes	Yes
Linear time trend	Yes	Yes	Yes	Yes	Yes	Yes
Predicted probability	947	.380	.380	—	—	—
Number of contacts	900	363	363	328	337	337
Number of firms	788	290	290	258	272	272

Source: Greek Ministry of Labour, Social Security and Welfare (authors' calculations)

Notes: The results from the extensive margin refer to the estimated marginal effects of the binary logit model and for the intensive margin to the estimated marginal effects of a Tobit model. Robust standard errors in parentheses with clustering at the firm-level

*Statistically significant at the .10 level; **at the .05 level; ***at the .01 level

firms and in firms with low profit margin. These results remain unaltered when characteristics for the bargaining structure of TU are taken into consideration. However, these additional variables are found to exert statistically significant effects on the extensive margin. These results point to the presence of substantial differences in the factors that shape the downward base-wage adjustment between WA and TU. While firm size and current unemployment do play a role in the case of WA they do not seem to matter when the workers' side is represented by TU. In contrast, while bargaining structure characteristics and profitability indicators seem to be related with the extensive margin in the case of TU, they do not seem to matter when the workers' side is represented by WA. Similar patterns are also observed in the case of the intensive margin.

We note that our results regarding the optional peace clause indicate that employees engage in concession bargaining by not undertaking coercive actions (e.g., strikes, lockouts, boycotts) and while they accept base wage reductions they “buy” some sort of employment security due to the outside threat of unemployment. Of course a stronger view in favour of this argument requires data on the firing rate of firms with and without peace clause which however are not available and thus further research on this topic is warranted. In addition, our results reveal that the downward base wage adjustment process is more severe (in both the extensive and the intensive margins) in workplaces without provisions on clauses regarding trade union dues and time-off for trade union duties. This may indicate that in firms which are characterized by cooperative (with unions) workplace relations and recognize the long-established role of trade unions, the downward base wage adjustment is less abrupt than in firms which do not follow such types of integrative collective bargaining practices.

Conclusions

The decentralization of the collective bargaining process is viewed as a key instrument for linking wages to individual productivity, firm-specific conditions and the prevailing conditions in the labor market. This study presents stylized facts regarding base-wage adjustments and attempts a first assessment of the effects of a specific aspect of the 2011 industrial relations reform in Greece. We have developed a unique dataset relying on data extracted from the universe of the publicly available collective agreements at all levels of collective bargaining (broader and firm-level agreements), covering a considerable period before and after the reform (January 2010–December 2013). Extracted information from the firm-level agreements were matched to firm-specific variables (firm size, ownership, industry affiliation, net profit margin) and were also linked to several semi-aggregate (industry affiliation, local unemployment) and aggregate variables (national unemployment, inflation and changes in NMW).

A considerable expansion of firm-level bargaining was observed in the examined period, especially in the first quarter after Law 4024/2011 became effective. In this context, we show that employee coverage by firm-level contracting is on the increase especially for firms with more than 50 employees. According to our results (a) in the post reform period, all contractual agreements were associated with base-wage reductions, (b) firm-level contracting in the reformed collective bargaining framework facilitated downward adjustment in nominal base wages, (c) contracts signed at the firm-level led to greater wage reductions than those signed at broader levels of bargaining, (d) the observed wage adjustments (extensive and intensive margins) are

more likely to occur in firms in which workers are represented via the new form of representation in collective negotiations at the firm level, workers' association and (e) substantial differences are observed in the factors that shape the downward base-wage adjustment processes between new and traditional forms of workers' representation in collective bargaining (i.e., firm size, profitability, structure of bargaining body and aggregate unemployment). We should point out that, at the aggregate level, the adjustments in nominal base wages, agreed upon in decentralized collective bargaining, are still shaped by traditional forms of workers' representation (i.e., trade unions) since workers' associations concern a rather small share of the total workforce in non-government jobs.

Several caveats are in order. The first relates to the lack of firm-level data for those firms deciding not to engage in firm-level collective bargaining. This limitation does not allow us to compare the adjustments of wage outcomes for "treated" and "untreated" firms in the pre- and post-reform periods. Thus, our findings although descriptive provide an indication for the impact of the new form of workers' representation (due to the reform). Of course, they cannot be considered as causal since the possibly different characteristics of treated and untreated firms may have imposed biases on the results. The second pertains to the lack of data on individual-level contracts which according to anecdotal evidence are on the increase. This limitation implies that our findings regarding downward wage rigidities cannot be generalized for the Greek economy as a whole. Third, given the short period under examination, firm-level contracts cannot be followed over time. Therefore, the estimated results could be attributed to compositional effects, given that the reform has allowed workers in smaller firms to participate in decentralized negotiations. Also, the estimates of the effects of WA on the intensive margin of base-wage adjustments may be influenced by reporting biases with regard to the exact amount of base-wage changes. In addition, the generalization of the results should be avoided as they only cover a recessionary period and one should be cautious in seeking symmetric upward adjustments during a period of economic expansion.

Further research should focus on identifying the impact of the reform on real wages using matched employer-employee longitudinal survey data. In this context, the analysis on whether the reform was a successful tool to alleviate the extensive gap between labor costs and firm-specific productivity seems to be a natural extension of the present study. Also, the developed herein dataset could be used to determine the impact of the reform on other non-wage aspects of collective bargaining in Greece (e.g., contract duration, working hours, performance-related pay). Lastly, the substitutability or complementarity of the base wage and the flexible part of the total wage bill needs to be addressed as more appropriate data become available.

Acknowledgments The authors are grateful for discussions and comments from participants at the LSE Workshop on "The State of the Greek Labour Market", the 26th annual Conference of the European Association of Labour Economists, the 29th Annual Congress of the European Economic Association, the 5th International Ioannina Meeting on Applied Economics and Finance and the Seminar Series at the Bank of Greece. The database is available upon request. The usual disclaimer applies.

Compliance with Ethical Standards

Funding This study is conducted without any funding.

Conflict of Interest The authors declare that they have no conflict of interest.

References

- Avouyi-Dovi S, Fougere D, Gautier E (2013) Wage rigidity, collective bargaining, and the minimum wage: evidence from French agreement data. *Rev Econ Stat* 95(4):1337–1351
- Babečký J, Du Caju P, Kosma T, Lawless M, Messina J, Rööm T (2010) Downward nominal and real wage rigidity: survey evidence from European firms. *Scand J Econ* 112(4):884–910
- Bentolila S, Dolado JJ, Jimeno JF (2012) Reforming an insider-outsider labor market: the Spanish experience. *IZA J Europ Labor Stud* 1(4):1–29
- Blinder AA (1977) Indexing the economy through financial intermediation. In *Stabilization of the Domestic and International Economy*, vol. 5 in Carnegie-Rochester Public Policy Series. North Holland
- Calvo GA (1983) Staggered prices in a utility maximizing framework. *J Monet Econ* 12(3):383–398
- Canzoneri BM (1980) Labor contracts and monetary policy. *J Monet Econ* 6:241–255
- Cappelli P (1985) Plant-level concession bargaining. *Ind Labor Relat Rev* 39(1):90–104
- Card D, Hyslop D (1997) Does inflation ‘Grease the wheels of the labor market’? In: Romer CD, Romer DH (eds) *Reducing inflation: motivation and strategy*. University of Chicago Press, Chicago, pp 71–122
- Christiano JL, Eichenbaum M, Evans CL (2005) Nominal rigidities and the dynamic effects of a shock to monetary policy. *J Polit Econ* 113(1):1–45
- Christofides NL, Laporte A (2002) Menu costs, nominal wage revisions, and intra contract wage behavior. *Ind Relat* 41(2):287–303
- Christofides NL, Li D (2005) Nominal and real wage rigidity in a Friction model. *Econ Lett* 87:235–241
- Christofides NL, Stengos T (2003) Wage rigidity in Canadian collective bargaining agreements. *Ind Labor Relat Rev* 56(3):429–448
- Daouli JJ, Demoussis M, Giannakopoulos N, Laliotis I (2013) Firm-level collective bargaining and wages in Greece: a quantile decomposition analysis. *Br J Ind Relat* 51(1):80–103
- Dickens TW, Goette L, Groshen EL, Holden S, Messina J, Schweitzer ME, Turunen J, Ward ME (2007) How wages change: micro evidence from the International Wage Flexibility Project. *J Econ Perspect* 21(2): 195–214
- Druant M, Fabiani S, Kezdi G, Lamo A, Martins F, Sabbatini R (2012) Firms’ price and wage adjustment in Europe: survey evidence on nominal stickiness. *Labour Econ* 19:772–782
- Ehrenberg GR, Danziger L, San G (1983) Cost-of-living adjustment clauses in union contracts: a summary of results. *J Labor Econ* 1:212–245
- Fischer S (1977) Long-term contracts, rational expectations and the optimal money supply rule. *J Polit Econ* 85(1):191–205
- Gray JA (1978) On indexation and contract length. *J Polit Econ* 86:1–18
- Holden S (1994) Wage bargaining and nominal rigidities. *Eur Econ Rev* 38:1021–1039
- Ioannou X, Papadimitriou K (2013) Collective bargaining in Greece during 2011 and 2012. Policy Report for the Greek Organisation for Mediation and Arbitration, Athens, April 2013 (in Greek)
- Koukiadis DI (2009) General characteristics of the Greek labour law. *Comparative Labor Law and Policy Journal* 30(2):145–158
- Le Bihan H, Montornès J, Heckel T (2012) Sticky wages: evidence from quarterly microeconomic data. *Am Econ J Macroecon* 4(3):1–32
- Murphy KJ (1992) Determinants of contract duration in collective bargaining agreements. *Ind Labor Relat Rev* 45(2):352–365
- Murphy KJ (2000) What effect does uncertainty have on the length of labor contracts? *Labour Econ* 7:181–201
- OECD (2011) OECD economic surveys: Greece 2011, OECD Publishing
- Sparks GR, Wilton DA (1971) Determinants of negotiated wage increases: an empirical analysis. *Econometrica* 39(5):739–750
- Taylor JB (1980) Aggregate dynamics and staggered contracts. *J Polit Econ* 88(1):1–23
- Voskeritsian H, Komelakis A (2014) The transformation of employment regulation in Greece: towards a dysfunctional liberal market economy? *Relat Industrielles/Indust Relat* 69(2):344–365