

GreeSE Papers

Hellenic Observatory Discussion Papers on Greece and Southeast Europe



Paper No. 222

When Floors Fall: Decentralisation and the Inversion of the Wage Premium

**Nicholas Giannakopoulos, Ioannis Laliotis, Vassilis Monastiriotis,
and Andreas Moustakas**



Hellenic Observatory Centre
for Research on Contemporary
Greece and Cyprus
Research at LSE ■

When Floors Fall: Decentralisation and the Inversion of the Wage Premium

**Nicholas Giannakopoulos, Ioannis Laliotis,
Vassilis Monastiriotis, and Andreas Moustakas**

Papers by external academics who are not based at the LSE do not represent research carried out at the School. Each paper reflects the views and research findings of its respective author(s) and does not necessarily represent those of the Hellenic Observatory or the London School of Economics and Political Science.

GreeSE Paper No. 222

Hellenic Observatory Papers on Greece and Southeast Europe

When Floors Fall: Decentralisation and the Inversion of the Wage Premium

Nicholas Giannakopoulos^a

ngias@upatras.gr

Ioannis Laliotis^{a,b}

ioannis.laliotis@upatras.gr

Vassilis Monastiriotis^{b,c}

v.monastiriotis@lse.ac.uk

Andreas Moustakas^a

a.moustakas@ac.upatras.gr

^aDepartment of Economics
University of Patras, Greece

^bHellenic Observatory Centre
London School of Economics, UK

^cEuropean Institute
London School of Economics, UK

Abstract

State-led decentralisation of collective bargaining may not only affect wages; it changes what a bargaining category means. In 2010–2013, Greek legislation suspended the favourability principle, withdrew extension of sectoral agreements, cut the statutory minimum wage, and opened firm-level bargaining to a new, non-union employee body. Using two decades of survey evidence alongside the hand-coded universe of sectoral and firm-level agreements, we estimate wave-specific, covariate-adjusted wage gaps and set the collective-bargaining estimates against the contracts that generated them. Our findings document a premium inversion: the firm-level wage gap, larger before the reform, collapses among small firms after it, while the sectoral gap rises and concentrates among lower-paid workers. Large firms retain a firm-level gap throughout, independent of the contractual floor. The contract data show why: post-reform firm-level floors converged on the statutory minimum, while the surviving sectoral gap reflects pre-crisis floors rather than renewed bargaining. Extension, favourability, and representation rules functioned as institutional complements; removing them together converted firm-level bargaining into an instrument of wage reduction and left a sectoral premium signalling inertia, not power.

JEL Classification: J31, J51, J52, J58

Keywords: collective bargaining, decentralisation, wage premia, wage floors, minimum wage, Greece

1 Introduction

Collective bargaining systems in much of Europe rest on institutions that reinforce one another rather than operate independently [7, 25]. A statutory or negotiated floor sets a baseline; an extension mechanism carries sectoral terms beyond the firms and unions that signed them, with substantial consequences for wages and employment where it is removed [28]; a favourability rule ensures that lower-level agreements can only improve on, not undercut, that floor; and rules governing who may sign a firm-level agreement determine whose interests it encodes. When one of these pillars is weakened, the system typically adjusts around it. When several are removed at once, the system does not become a more flexible version of itself – it becomes a different system, in which the same contractual categories (a “sectoral agreement”, a “firm-level agreement”) can carry a different economic meaning before and after the change. This article studies a case in which that happened abruptly enough to be measured directly.

Between 2010 and 2013, Greek legislation dismantled, in close succession, each of the four pillars described above. The favourability principle was suspended in 2010. The extension mechanism was withdrawn and the eligibility rules for firm-level bargaining were rewritten in 2011, creating a new, non-union bargaining party – the association of persons – with the explicit purpose of allowing wage agreements below the sectoral floor. The statutory National Minimum Wage (NMW) was cut by 22 percent, and all existing agreements were placed on a sunset clock in 2012. Moreover, the setting of the NMW itself was transferred from collective bargaining to government decree in 2013 – the reverse of the trajectory followed in Britain, where an independent Low Pay Commission was created precisely to set the NMW through evidence and negotiation rather than by decree [32].¹ Among the European countries that decentralised bargaining under fiscal conditionality in this period – including Portugal, Spain, Ireland, and Romania [27] – Greece went furthest and did so fastest, making it the sharpest available test, to our knowledge, of what happens when institutional complements are withdrawn together rather than singly.

We ask a general question through this specific case: how does state-led decentralisation change the wage-setting role of firm- and sector-level bargaining, and which workers retain wage protection once extension and favourability are removed? We answer it using two complementary sources. The Greek Structure of Earnings Survey provides six matched employer–employee cross-sections covering two decades –2002, 2006, 2010, 2014, 2018, and 2022– spanning the mature pre-reform system, the reform window, and a full decade of the post-reform regime. We use these waves to estimate covariate-adjusted wage gaps associated with different collective bargaining regimes, reweighting on the propensity to be observed in each regime to reduce confounding from systematic differences between firms. Because these are repeated cross-sections rather than a firm-level panel, we treat the resulting estimates as wave-specific adjusted wage gaps rather than causal treatment effects of the reform: the legislative shock itself is a genuine and precisely dated exogenous event, but the individual firm- or worker-level wage responses are not separately identified from the concurrent depression, from worker and firm reallocation, and from the changing composition of each bargaining category over a very turbulent period of two decades.

The second and third sources are contractual, and the sectoral one is uniquely new. We hand-code the universe of sectoral agreements signed in Greece from 2002 to 2022 (1,020 contracts) – to our knowledge the first such dataset assembled for Greece – and separately

¹These reforms produced a legislatively driven decentralisation of wage setting under economic-adjustment programme conditionality. But for convenience we will be using the term state-led decentralisation throughout the paper.

extend an existing registry of firm-level agreements through 2022 (4,786 contracts, spanning 2006–2022). Both draw on the archive of the Organisation for Mediation and Arbitration (OMED) and the Ministry of Labour and Social Affairs. No establishment panel reporting bargaining coverage annually, as in Germany's IAB Establishment Panel [6]; no matched employer–employee census linked to collective agreements, as in Portugal's Quadros de Pessoal [11]; and no equivalent of the French industry-agreement registry matched to social security declarations [23], exists for Greece. These contract data are the only systematic record of what happened inside Greek collective bargaining across the reform. We use them not to estimate wages directly, but to triangulate the mechanisms behind the survey-based wage gaps: specifically, who signs firm-level agreements and at what floor, and which sectoral agreements survive mandatory renegotiation and at what floor.

Our central finding is a premium inversion, and its interpretation is the paper's main contribution. Before the reform, the firm-level collective bargaining wage gap was the larger of the two, consistent with above-floor pay-setting at unionised firms – the pattern already documented for a single pre-crisis wave by Daouli et al. [15]. After the reform, the ordering reverses: the firm-level gap collapses towards zero, driven entirely by small firms adopting the new NMW pay terms, while the sectoral gap rises and becomes concentrated in the lower half of the wage distribution. Read on its own, a rising sectoral wage gap could be mistaken for evidence that sectoral bargaining retained or even gained power after the reform. The contract data show the opposite. The reach of sectoral bargaining collapsed –potential coverage fell from near-universal to a fraction of the pre-crisis level– and the sectoral wage gap that survived reflects a small number of legacy agreements whose pre-crisis floors happened to sit far above a statutory NMW that had just been cut by a fifth, not any renewed negotiating strength. On the firm-level side, the mechanism runs the other way: a new bargaining party with no union affiliation requirement drove almost all of the post-2011 growth in firm-level collective agreements, and its negotiated floors converged on the statutory NMW within just two years, pulling the average firm-level wage gap down even as large, typically unionised firms continued to pay a firm-level premium unrelated to the statutory wage floor, echoing the wage-cushion evidence documented for Portuguese firms under sectoral bargaining [11]. A measured wage premium, in other words, can survive the institutional power that originally produced it, and distinguishing the two is a precondition for reading any bargaining-level coefficient as evidence about workers' bargaining position – a distinction closely aligned with Sir David Metcalf's own work connecting collective bargaining institutions to the shape of the earnings distribution [30], and to the pay-compressing, low-pay-protecting role that unions and sectoral standards can play when their reach is intact [34].

The remainder of the article proceeds as follows. We first set out the pre- and post-reform institutional architecture in more detail, distinguishing the four legal changes that are often treated as a single event. We then describe the three data sources and the descriptive evidence they provide on coverage, contract composition, and wage floors. We set out the empirical strategy for the wave-specific wage-gap estimates and the distributional and firm-size extensions, before presenting the results and the contract-based evidence on mechanisms. We close by returning to the general argument: that extension, favourability, and representation rules are institutional complements, that their combined removal has effects that no single-pillar analysis would predict, and that the Greek experience, as the most extreme case among a broader wave of European bargaining reforms, defines the outer bound of what state-led decentralisation can do to the distributional role of collective bargaining.

2 Institutional framework

2.1 The pre-reform bargaining architecture

The collective-bargaining architecture that governed private-sector wage setting before the crisis-era reforms was established by Law 1876/1990. It combined economy-wide wage protection with sectoral coordination and a narrower firm-level bargaining channel. The National General Collective Agreement (NGCA), negotiated by the peak employer organisations and the General Confederation of Greek Workers (GSEE), set the economy-wide minimum wage and regulated basic non-wage conditions [29]. Sectoral agreements established industry-specific wage floors (some of them with a particular, regional focus), while nation-wide or local occupational agreements covered specific occupations. Firm-level agreements completed the hierarchy by adapting pay and working conditions to the circumstances of an individual enterprise.

Two legal principles gave higher-level bargaining its reach and bite. First, the favourability principle required the more favourable provision to apply when collective agreements overlapped. A firm-level agreement could therefore improve on an applicable sectoral floor but could not normally undercut it [26]. Second, the Minister of Labour could extend a sectoral or occupational agreement beyond its signatories when the employers already bound by the agreement employed at least 51 percent of the relevant workforce. Extension was an administrative decision rather than an automatic consequence of signing, but it was used extensively before the crisis. Together, favourability and extension transformed negotiated sectoral standards into broadly applicable wage floors, including for workers employed by non-signatory firms.

Representation rules also limited the pre-crisis scope of decentralised bargaining. On the employee side, a firm-level agreement was normally concluded by a firm union; where no such union existed, the relevant sectoral or occupational union could represent the workforce. Since a firm union could generally be established only in enterprises with at least 50 employees, meaningful firm bargaining was concentrated in larger, more unionised firms. The Organisation for Mediation and Arbitration (OMED) supported the system when direct negotiations failed. Under the original framework, either party could request mediation and, under specified conditions, proceed unilaterally to binding arbitration [26].

Unlike Germany, where uncovered firms may voluntarily orient their wage setting towards sectoral agreements – thereby extending the influence of sectoral bargaining beyond formal coverage [6] – Greece relied primarily on administrative extension and the economy-wide NGCA floor. It had no comparably important mechanism through which sectoral standards could continue to shape wages in uncovered firms. Consequently, when extension was suspended and the renewal of sectoral agreements contracted, sectoral bargaining lost both formal reach and much of its influence outside signatory employers. This contrast helps explain the unusually sharp contraction in Greek bargaining coverage and motivates our distinction between the reach of collective bargaining and the wage-setting bite of the agreements that remained active.

These institutional features are central to the interpretation of the wage gaps we estimate in this paper. Extension governs the reach of a negotiated floor; favourability governs whether a lower-level agreement supplements or undercuts that floor; and representation rules determine which workers and firms enter each bargaining regime. In the pre-reform period, sectoral coverage was consequently broad, whereas firm-level agreements were disproportionately located in larger firms where unions could bargain for pay and other working conditions.

These institutional characteristics motivate our comparison of collective wage-setting regimes, as well as the analysis by firm size and across the wage distribution.

2.2 Decentralisation during the crisis, 2010–2013

The first adjustment programme, legislated through Law 3845/2010 in May 2010, initiated a broader reorganisation of wage setting [19]. The operative firm-level derogation was introduced in December 2010 by Law 3899/2010. It established special firm-level collective agreements that could set terms below the applicable sectoral agreement, subject to the economy-wide minimum, and made this channel available to enterprises irrespective of their total number of employees. This was an initial breach in the pre-crisis hierarchy, but the decisive institutional break came the following year.

Law 4024/2011, effective on 27 October 2011, simultaneously changed agreement hierarchy, coverage, and bargaining eligibility. During the suspension period, firm-level agreements prevailed over sectoral and occupational agreements even when they were less favourable; the extension mechanism for sectoral and occupational agreements was suspended; and firms of any size without a firm union could conclude a firm-level agreement with an association of persons supported by at least three-fifths of their workforce. The law therefore did more than decentralise the level at which wages were negotiated. It changed the composition of firms and employee representatives able to select into firm-level bargaining, opening that regime to smaller and less (or never) unionised workplaces precisely when downward wage adjustment had become legally feasible.

Law 4046/2012 and Cabinet Act 6/2012 deepened the change in February 2012. The monthly wage floor was reduced by 22 percent for workers aged 25 or over, from €751.39 to €586.08, and by 32 percent for workers under 25, to €510.95. The same reform limited collective agreements to a maximum duration of three years and reduced their post-expiry extension to three months. Thereafter, only the basic wage and four allowances – seniority, children, education, and hazardous work – continued to bind until a new collective or individual agreement replaced them. Agreements already in force for at least 24 months in February 2012 expired no later than February 2013. The resulting wave of expirations should therefore be distinguished from the earlier suspension of administrative extension under Law 4024/2011: the former shortened the life and after-effect of existing agreements, whereas the latter reduced their reach beyond signatory employers.

Law 4093/2012 then removed wage setting from the NGCA and established a statutory minimum fixed by the state. Law 4172/2013 provided the consultative procedure through which the government would subsequently determine the rate. The NGCA continued to regulate economy-wide non-wage conditions, but no longer set a generally binding wage floor. Taken together, these measures weakened the two supports of sectoral wage regulation (that is, continued agreement validity and extension to non-signatories) while lowering the fallback wage available outside an active collective agreement.

The expected wage effects are not mechanically uniform. For firm-level bargaining, the new rules admitted many small firms and associations of persons whose agreements were often used to reduce or freeze wages, changing both the content and the composition of the firm-agreement category. For sectoral bargaining, the collapse in renewal and extension sharply reduced coverage, but agreements that survived could still set wages materially above the lower statutory floor. The sectoral coefficient may therefore remain positive, especially toward the bottom of the wage distribution, even as sectoral bargaining becomes much less prevalent. This distinction between the reach of bargaining and the wage-setting bite of

surviving agreements is a central mechanism, which we examine below with contract-level data from the universe of sectoral agreements in Greece.

2.3 Partial restoration and the hybrid post-programme regime

The post-2014 changes did not simply restore the 1990 model. Following Council of State Decision 2307/2014, Law 4303/2014 re-established unilateral access to OMED arbitration under revised procedural and substantive rules; Law 4549/2018 subsequently adjusted that framework. These changes restored part of the dispute-resolution infrastructure, but did not by themselves reverse the decentralisation of agreement hierarchy and coverage.

The more consequential change for this paper occurred at the end of the economic-adjustment programme. Law 4472/2017 linked the expiry of the suspensions to programme completion, and on 21 August 2018 both the extension mechanism and the favourability principle returned to force. By the end of 2018, ten national sectoral agreements had been declared compulsory, covering about 191,000 employees [18]. The restoration was nevertheless partial. Associations of persons remained eligible to conclude firm-level agreements, the state retained responsibility for setting the minimum wage, and the stock of active sectoral agreements had already contracted sharply.

The statutory floor began to rise only after the restoration. From 1 February 2019, it increased to €650 per month and the separate youth subminimum was abolished. In 2022 it rose to €663 on 1 January and to €713 on 1 May. The 2022 SES wave thus captures a post-programme environment in which extension and favourability again constrained downward firm-level derogation, but bargaining coverage and representative capacity had not returned to their pre-crisis levels.

2.4 Implications for the empirical design

The sequencing of these institutional changes, summarised in Figure 1, motivates estimating wage gaps separately in each Structure of Earnings Survey wave. A pooled pre/post specification would conflate changes in the legal effect of an agreement with changes in the types of firms and workers observed under each regime. The 2002 and 2006 waves represent the mature pre-reform system. The 2010 wave is best interpreted as a crisis-onset benchmark: the adjustment framework was enacted in May, but the operative special firm-level bargaining channel arrived only in December. The 2014 wave captures the decentralised regime after the 2011–2013 reforms and the large-scale expiry of agreements. Because extension and favourability were restored only on 21 August, the 2018 wave is a transition observation rather than a clean post-restoration wave. The 2022 wave provides the first observation of the later hybrid regime after several years of restored extension and favourability and renewed statutory minimum-wage growth.

This institutional mapping also disciplines the interpretation of our estimates. The wave-specific propensity-score models and inverse-probability weights address changes in observed worker and firm composition within each cross-section; they do not convert the legislative sequence into a single before-and-after experiment. The most informative tests are therefore the heterogeneous patterns predicted by the reforms: a sharp deterioration in the firm-level wage gap among smaller firms and toward the lower tail; greater persistence among large firms, where firm unions and rent sharing remained more relevant; a positive lower-tail sectoral gap among the increasingly selected set of active agreements; and partial recovery by 2022 as higher-level protections and the statutory floor strengthened. The firm- and sector-level

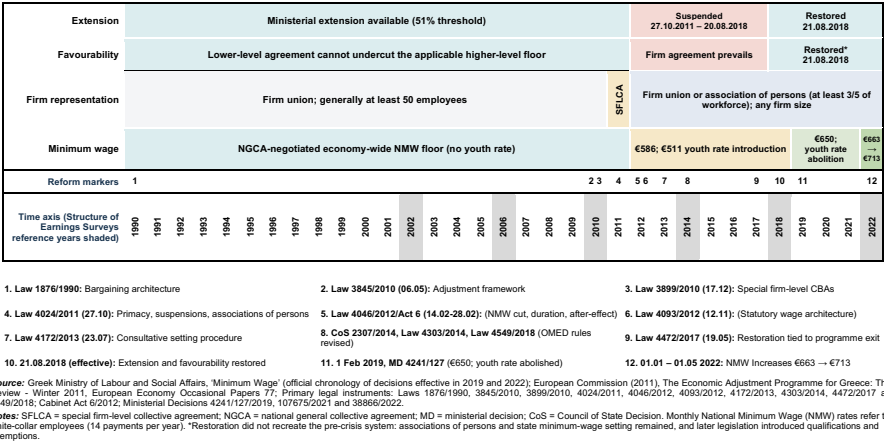


Figure 1. Collective bargaining architecture and reform timeline, 1990–2022

Source: Ministry of Labour and Social Affairs.

agreement archives then provide direct evidence on the channels behind those changing wage gaps – who signed, whether agreements were extended, how many workers they could reach, and where negotiated floors sat relative to the statutory minimum.

3 Data

The analysis combines three sources. The Structure of Earnings Survey (SES) provides repeated cross-sections of workers and employers and is the sole source of the wage estimates. We use two contract archives to interpret how the institutional changes altered the reach and content of bargaining: the universe of all sectoral agreements concluded between 2002 and 2022, and the universe of firm-level agreements covering 2006–2022. The contract records do not enter the SES wage regressions and cannot be linked to SES employers. They therefore provide independent, corroborative evidence on contractual reach, negotiated wage floors, and the composition of bargaining rather than a formal decomposition of the survey estimates.

3.1 Structure of Earnings Survey

The SES, administered by the Hellenic Statistical Authority (ELSTAT), is a cross-sectional matched employer–employee survey of establishments with at least ten employees in mining, manufacturing, and services. Six waves are available: 2002, 2006, 2010, 2014, 2018, and 2022. From 2018 onward, establishment- and firm-level information is supplied in separate files; we link them using a plant–firm crosswalk constructed from the survey identifiers.

The mode of data collection changes in 2022. Through 2018, ELSTAT drew firms from the statistical business register and asked each sampled firm to report information for approximately 10 percent of its workforce, yielding 40,000–60,000 worker records per wave before our sample restrictions. In 2022, ELSTAT integrated payroll records from ERGANI,

the Ministry of Labour's electronic employment registry, and extracted information for every employee of each sampled firm. The 2022 source file consequently contains 551,929 workers in 11,151 establishments and 5,197 firms. The firm sampling frame, sectoral scope, ten-employee threshold, and variable definitions are unchanged; worker coverage within sampled firms is not. This break has three implications. First, the 2022 wave represents the internal wage structure of sampled firms more fully, particularly that of large firms. Second, its much larger worker sample produces substantially more precise estimates, so changes in statistical significance across 2018 and 2022 should not be read as tests of changes in coefficients. Third, payroll records may contain less reporting error than employer-completed questionnaires. We therefore treat comparisons with 2022 as substantively informative but interpret them alongside this change in measurement.

At the worker level, the SES reports annual gross earnings and bonuses, weeks worked, sex, age, education, tenure, contract type, part-time status, and two-digit occupation. Age is recorded in eleven groups, from 15–19 to 65 and above; education in six groups, from primary to postgraduate; and contract type as indefinite, fixed-term, permanent, apprentice, or other. Occupation follows ISCO-88 in 2002–2010 and ISCO-08 in 2014–2022. At the employer level, the survey reports the bargaining regime, five size bands (10–49, 50–249, 250–499, 500–999, and at least 1,000 employees), two-digit industry, and NUTS-2 region. Our outcome is the individual's gross weekly base wage. We subtract bonuses and other additional payments from annual gross earnings and divide by weeks worked in the reference year. The measure is gross of income tax and employee social-security contributions. We focus on base pay because collectively agreed wage floors apply to base wages rather than supplementary payments. The survey records the bargaining regime in seven categories: the national general agreement, sectoral agreements, local sectoral agreements, firm-level agreements, plant-level agreements, other agreements, and the absence of any collective agreement.

Industry follows NACE Rev. 1.1 in 2002–2010 and NACE Rev. 2 from 2014 onward. The two classifications are not comparable at the two-digit level. Because all models are estimated separately by wave, each wave uses its contemporaneous classification. The regressions include NACE-section effects (eight sections under Rev. 1.1 and twelve under Rev. 2) and NUTS-1 region effects.² The sectoral scope of the sample is held constant across waves: we retain NACE Rev. 1.1 divisions 15–74 and their Rev. 2 counterparts, divisions 10–82, which cover manufacturing, utilities, construction, trade, accommodation and food, transport and communication, financial services, and professional and administrative services. Agriculture, mining and quarrying, public administration, education, health, and other personal services fall outside this range in both classifications. Where descriptive statistics report sector shares, we group the sections into eight categories that bridge the two revisions exactly.

We restrict the sample to private-sector employees aged 20–59. We exclude younger and older workers because apprenticeship and early-retirement arrangements may determine their pay independently of the bargaining regime, and exclude public and state-owned enterprises because their wages are administratively determined. These restrictions follow previous work using SES data [15, 25, 41]. The resulting samples contain 46,027 workers in 2,844 firms in 2002; 38,227 in 2,601 firms in 2006; 27,282 in 1,872 firms in 2010; 25,345 in 1,749 firms in 2014; 25,066 in 1,716 firms in 2018; and 439,474 in 4,222 firms in 2022. The regression samples are slightly smaller where covariates are missing.

²Finer two-digit-industry and NUTS-2 effects would leave sparse employer cells in waves containing fewer than 1,900 firms; section and broader-region effects retain meaningful within-cell comparisons across bargaining regimes.

3.2 Bargaining regimes and pay

Employers report the agreement covering at least half of their workforce. Bargaining status is therefore measured at the firm, not worker, level. In 2018 and 2022, when status is reported separately by plant, we assign each firm the agreement type covering the largest headcount share across its plants.

We collapse the seven original SES categories into four mutually exclusive regimes. *National*, the reference category, combines the national general collective agreement and firms reporting no collective agreement.³ *Sector* combines sectoral and local sectoral agreements. *Firm* combines firm- and plant-level agreements. *Other* denotes individual employment contracts and it is a relatively small category in every wave. We retain it as a separate wage-setting regime because it lies outside collective bargaining; however it cannot set wages lower than the national minimum.

Figure 2 documents a pronounced retreat from sectoral bargaining. The employee share classified as sectoral falls from approximately one-half in 2002 to about 15 percent in 2022; the unweighted firm share falls from above one-half to approximately one-tenth. Most of this decline is absorbed by the National category, whose share rises from about 30 to 55 percent of employees and from roughly 40 to 65 percent of firms. Firm-level bargaining expands during 2014–2018 but never replaces the lost sectoral reach. The similar movements in the employee- and firm-weighted panels indicate that the contraction in reported sectoral coverage was not confined to one part of the firm-size distribution.

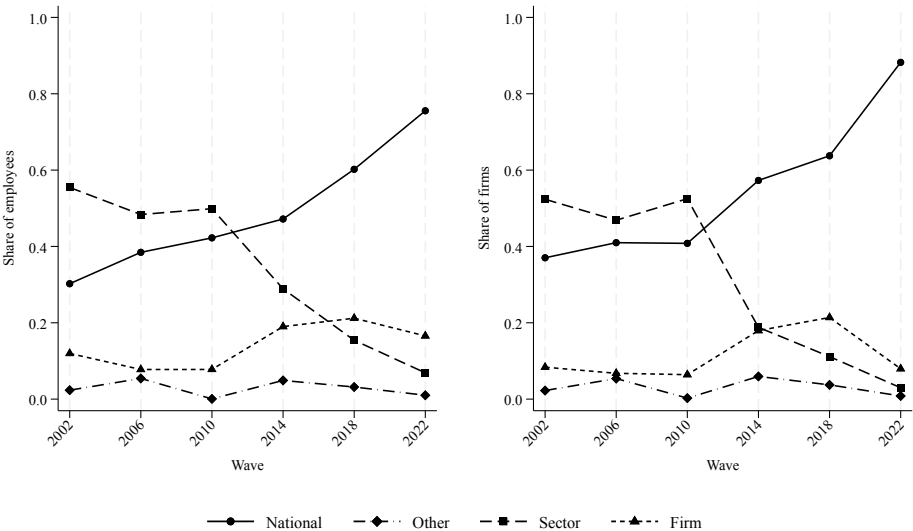


Figure 2. Bargaining-regime composition by wave

Notes: Statistics refer to shares of each bargaining regime by SES wave. Employee shares are weighted by SES sampling weights.

Source: Greek Structure of Earnings Survey (SES), 2002–2022, ELSTAT.

³A small number of firms report “no collective agreement” only in later SES waves, from 2010 onwards. We group them with the national general collective agreement, which applies to all employers and employees in the national economy when no sectoral or firm agreement is in place.

The National category is not a stable institutional benchmark as its legal meaning has changed. Through 2012, the national agreement provided a bargained economy-wide wage floor; from 2013, the government set the statutory minimum and the national agreement ceased to perform that function. A firm classified as National in 2002 was therefore located within the most centralised tier of collective wage setting, whereas the same observed category in 2018 indicates the statutory wage floor. The estimated Firm and Sector coefficients are consequently relative to a benchmark whose composition and institutional content change over time. We interpret cross-wave movements with this qualification in mind.

Table 1 reports unconditional median gross weekly base wages. Before the reforms, firm-level bargaining is associated with the highest median: €339 in 2002, compared with €222 under Sector, €222 under Other and €198 under National; in 2006, the corresponding medians are €383, €278, €236 and €268. The ordering compresses and reverses after 2010. Sectoral wages exceed firm-level wages in 2014 (€346 versus €255) and 2018 (€287 versus €253), while by 2022 the medians converge to €366 under Firm, €338 under Sector and €304 under National, with the individual-contract category recording the highest median, €408. These medians combine bargaining status with large differences in employer size, industry, occupation, education, and other worker characteristics. They motivate, but do not substitute for, the adjusted comparisons below.

Table 1. Median gross base weekly wages by wave (euros)

Regime	2002	2006	2010	2014	2018	2022
<i>National</i>	198	268	331	241	220	304
<i>Other</i>	222	236	367	316	288	408
<i>Sector</i>	222	278	305	346	287	338
<i>Firm</i>	339	383	337	255	253	366

Notes: Cells report the median gross base weekly wage in euros, weighted by the SES employee sampling weight.

Source: Greek Structure of Earnings Survey (SES), 2002–2022, ELSTAT.

Table 2 describes minimum-wage exposure by regime. The SES reports October earnings, which we compare with the statutory minimum in force in October of each reference year. We divide the monthly minimum by 166.667 hours and classify a worker as at or near the minimum if her October hourly wage does not exceed 110 percent of that threshold. Using hourly rather than monthly pay avoids classifying part-time workers as below the minimum solely because they work fewer hours. For the 2014 and 2018 waves we apply the age-specific subminimum of €510.95 to employees aged under 25, which was in force from February 2012 until its abolition on February 2019; all other waves use the single adult rate. This measure is descriptive and is not used in the wage regressions.

Minimum-wage exposure is low across regimes before the reforms, ranging from about 2 to 7 percent in 2002 and 2006. It subsequently rises most sharply under National, reaching 12.6 percent in 2018 and remaining at 11.6 percent in 2022. Under Firm, the share increases from about 2 percent through 2010 to 6.2 percent in 2014 and 7.1 percent in 2018. The corresponding sectoral share remains lower, at 2.2 percent in 2014 and 4.7 percent in 2018, before converging with the firm-level share at 5.8 and 6.2 percent in 2022 as the restored statutory floor rose faster than negotiated floors. Individual employment contracts follow the sectoral pattern until 2018 and peak in 2022. These patterns are consistent with a post-reform system in which the National category and many new firm-level agreements were anchored

Table 2. Share of employees at or near the minimum wage by wave (percent)

Regime	2002	2006	2010	2014	2018	2022
<i>National</i>	7.2	4.7	2.6	8.3	12.6	11.6
<i>Other</i>	5.6	4.8	2.7	2.7	4.8	9.1
<i>Sector</i>	3.6	3.1	2.7	2.2	4.7	5.8
<i>Firm</i>	2.8	1.6	2.0	6.2	7.1	6.2
Total	4.6	3.7	2.6	5.8	10.0	10.3

Notes: Cells report the share of employees, in percent, classified as minimum-wage earners.
Source: Greek Structure of Earnings Survey (SES), 2002–2022, ELSTAT.

near the statutory minimum, while the sectoral agreements that remained active retained higher floors. They are descriptive, however, and also reflect changes in the workers and firms observed in each regime.

Two measurement constraints should be kept in view. First, the SES excludes establishments with fewer than 10 employees. Because the 2011 reform was intended in part to extend firm-level bargaining to small firms, the survey omits the segment in which the associated wage adjustment may have been strongest. Second, the majority-rule classification assigns one regime to an entire firm even if a minority of workers is covered by another agreement. These limitations are inherent in the SES and common to studies that use it to analyse bargaining regimes [3, 15, 22, 25, 36, 41]. Appendix Table 5 reports descriptive statistics for all variables used in the analysis.

3.3 Contractual data

The contract archives describe the two margins directly altered by the reforms: the reach and content of sectoral bargaining, and the signatories and wage provisions of firm-level agreements. Although not directly used in the wage regressions with the SES data, their value lies in documenting whether changes in the SES wage gaps coincide with changes in who bargained, how far agreements could reach, and where negotiated floors stood relative to the statutory minimum.

Sectoral agreements We construct an original dataset of sectoral agreements concluded between 2002 and 2022. Law 1876/1990 requires each agreement to be filed with the competent authority; for sectoral agreements this is the General Labour Inspectorate. Filing makes the sectoral agreement effective.⁴ Because the documents are scanned PDFs with heterogeneous formats, we reviewed and coded each contract manually.

The file is organised at the contract–round–occupation level. A contract contributes one observation for each occupation-specific floor in each bargaining round. We record the agreement title and signature date; each round’s start, end, and duration; the raw occupational descriptions and their STEP-92, ISCO-88, and ISCO-08 mappings; four-digit industry under NACE Rev. 1.1 and Rev. 2; and geographic scope, including NUTS-2 region. For each

⁴Arbitration awards issued through the Organisation for Mediation and Arbitration (OMED) have equivalent status. The OMED archive therefore records the population of filed sectoral agreements rather than a sample.

occupation-round, we code the wage floor, wage unit, and revision rule. We also record ministerial extension and its date, the signatory union and employer organisation, references to arbitration, and provisions concerning education premia and family-related entitlements. The analysis retains wage floors expressed as monthly amounts and excludes daily, hourly, piece-rate, and in-kind provisions. The final file contains 8,500 monthly wage floors from 1,020 contracts. The number of agreements becomes small after the crisis because sectoral bargaining itself contracted. However, this does not render the archive uninformative: one extended sectoral agreement could govern the wages of many employers and workers. The relevant object is the reach and content of each institution, not simply the number of contracts.

Firm-level agreements The firm-level file extends the dataset assembled by Giannakopoulos and Laliotis [24], which covers 2006–2017 from the OMED archive. We manually code agreements registered with the Ministry of Labour for 2018–2022, after the Ministry became the system of record. The combined file covers the population of registered firm-level agreements from 2006 to 2022; no comparable archive is available before 2006.

The unit here is the agreement. Repeat agreements are linked through a persistent firm identifier and tax number (AFM). We record the firm's identity; signature, start, and expiration dates; whether employees were represented by a trade union or an association of persons; and NUTS-3 location.⁵ For agreements containing a wage provision, we code the percentage and direction of the negotiated change, the resulting floor, and whether the benchmark is the firm's previous floor, a sectoral agreement, or the national minimum. The file contains 4,786 agreements, approximately 85 percent of which have a coded wage provision.

The AFM allows us to supplement the contracts with public information from the General Commercial Registry (GEMI), the ICAP business database, and company websites. We recover four-digit industry under NACE Rev. 2 and the Greek STAKOD classifications, legal form, ownership, founding year, and employment size. Reliable annual headcounts are unavailable; employment is therefore recorded as a time-invariant size category and is used descriptively rather than as a time-varying firm outcome.

3.4 Potential contractual reach

No consistent measure of bargaining coverage exists for Greece over the full period. The Institutional Characteristics of Trade Unions, Wage Setting, State Intervention and Social Pacts (ICTWSS) series combines administrative estimates through 2010, expert assessments for 2010–2014, and SES-based information thereafter, creating a methodological break at the centre of our analysis [40]. We therefore construct measures of potential contractual reach from the agreement archives and the Labour Force Survey (LFS). These series are descriptive and are not used to classify employers or to estimate wage gaps in the SES.

Contract counts first establish the timing. Approximately 180–200 sectoral agreements were concluded annually during most of the 2000s, but the number fell to 91 in 2009 as deteriorating demand preceded the main legislative reforms. After the suspension of extension and favourability in 2011 and the expiry rules adopted in 2012, only 17–32 sectoral agreements were concluded annually in 2012–2014; the system did not return to its pre-crisis scale. Firm-level agreements moved in the opposite direction. Following the removal of the 50-employee threshold and the introduction of associations of persons, their number rose from about 200 annually before the crisis to almost 1,000 in 2012, before settling near

⁵A source indicator distinguishes the OMED and Ministry registries.

150–200 by 2015. Counts do not measure reach: a sectoral agreement may apply across an industry, whereas a firm-level agreement governs one payroll. Because contracts identify covered sectors, occupations, and regions rather than individual workers, we map them to LFS employment cells defined by two-digit industry, two-digit occupation, and NUTS-2 region. For this construction, a sectoral agreement reaches all occupations in its NACE-by-region cells; an occupational agreement reaches all industries in its ISCO-by-region cells; and a mixed agreement reaches its specified NACE-by-ISCO-by-region cells. A cell is classified as reached in a year if at least one relevant agreement is signed in that year. Sectoral reach is the LFS employment-weighted share of workers in these cells. Firm-level reach is the imputed employment of firms signing an agreement in that year divided by total LFS employment. We use NACE Rev. 1/ISCO-88 through 2007 and NACE Rev. 2/ISCO-08 from 2008 onward. Both measures are dated by signature year and therefore capture the flow of newly signed agreements, not the stock remaining in force. The distinction is limited before 2012, when sectoral agreements were usually annual, but becomes more consequential as multi-year agreements spread. The firm-level measure also inherits error from the time-invariant employer-size categories. We consequently interpret both series as estimates of potential contractual reach rather than realised worker coverage.

Figure 3 shows a sharp contraction in sectoral reach. The constructed share exceeds 90 percent before the crisis, falls to about 60 percent during the transition, and drops below 20 percent thereafter. The reforms and the depression occurred in close succession, and the series begins to decline in 2009; the figure therefore documents timing but does not isolate a legislative effect from the business cycle. Firm-level reach remains much smaller. It rises only briefly above 5 percent and stabilises around 4–5 percent, despite the surge in the agreements count. The divergence between counts and reach reflects the concentration of association-of-persons agreements among small employers: the reforms changed the composition of firm-level bargaining far more than its aggregate reach.

The contract-based series and the employer-reported SES shares measure different objects. Before the crisis, potential sectoral reach is close to 90 percent, while the SES classifies 56.7 percent of workers as sectorally covered in 2002 and 49.2 percent in 2006. For firm-level bargaining, the contract-based estimate is 3–5 percent, compared with SES shares of 19.1 percent in 2014 and 22.6 percent in 2018. Four differences explain much of this gap. The contract series measures potential legal reach, whereas the SES records the regime employers report as governing pay. The contract series assigns reach at the cell level, whereas the SES assigns one majority regime per firm. The former is a flow of signatures; the latter records agreements while they remain in force. Finally, the LFS denominator includes micro-firms excluded by the SES. We use the contract series to describe the institutional reach of newly concluded agreements and the SES measure to compare wages across employer-reported regimes; the two should not be read as alternative estimates of the same coverage rate.

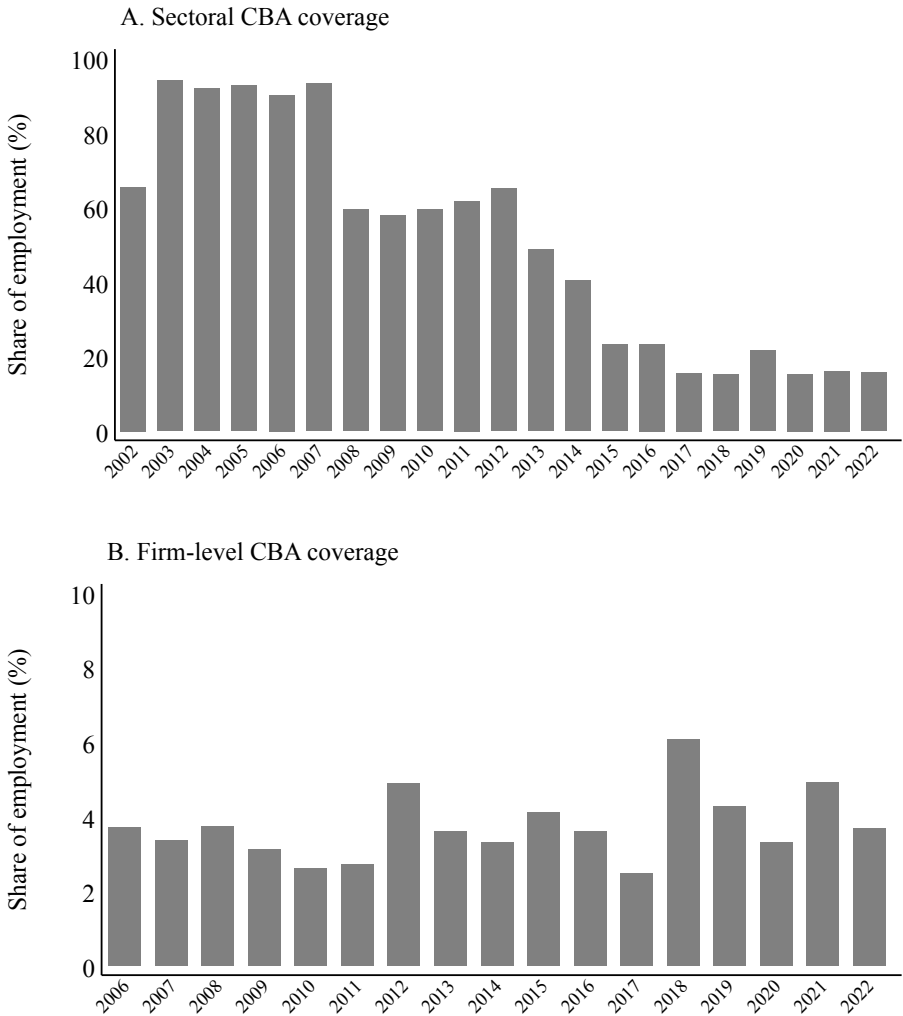


Figure 3. Coverage of collective bargaining agreements in Greece, 2002–2022

Notes: Both panels are dated by signing year. Panel A shows sectoral coverage, 2002–2022: the share of LFS employment in NACE×ISCO×NUTS-2 cells in which at least one sectoral, occupational, or mixed agreement was signed that year, matched under NACE Rev. 1/ISCO-88 through 2007 and NACE Rev. 2/ISCO-08 from 2008. Panel B shows firm-level coverage, 2006–2022: the imputed employment of firms signing an agreement that year, as a share of total LFS employment.

Source: OMED, Ministry of Labour and Social Affairs, Hellenic Statistical Authority Labour Force Survey.

3.5 Wage floors

Figure 4 summarises the wage content of the agreements. In 2006, the employment-weighted mean monthly firm-level floor was approximately €805, compared with €735 for sectoral agreements and a national minimum of €626. By 2008, the corresponding floors were about €913 and €875, both above the €701 minimum. These pre-crisis floors were fixed for the duration of each bargaining round and did not adjust immediately when economic conditions deteriorated. Sectoral floors reached approximately €1,015 in 2011, while firm-level floors declined from their 2009 peak. Sectoral floors reached approximately €1,015 in 2011, while firm-level floors declined from their 2009 peak.

The 2012 reduction in the monthly NMW from €751 to €586 increased the distance between inherited contractual floors and the statutory benchmark without requiring a new agreement. Surviving firm-level floors remained close to €800 through the decentralised period and rose to approximately €918 by 2022. Sectoral floors fluctuated between roughly €750 and €945 and ended near €865. These aggregates conceal a central change in the composition of firm-level bargaining: union-signed agreements generally retained floors above the NMW, whereas association-of-persons agreements clustered near it. The resulting configuration motivates the empirical analysis. If contractual persistence and signatory composition matter, the post-reform SES should display a larger adjusted sectoral gap among the agreements that survive and a smaller aggregate firm-level gap as low-floor association agreements enter that category.

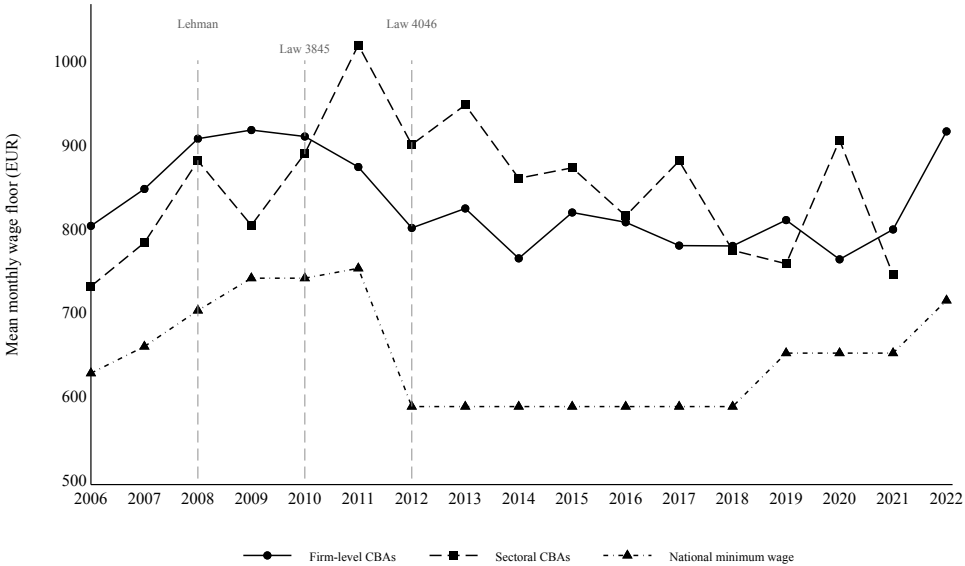


Figure 4. Mean monthly wage floors by bargaining level, 2006–2022

Notes: Annual employment-weighted mean monthly wage floor (EUR) for firm-level and sectoral CBAs alongside the national minimum wage, measured in October of each year. Firm-level floors are weighted by the imputed number of employees in each contracting firm, identified through the firm VAT identifier. Sectoral floors are weighted by the number of employees in the matched cells from the Greek Labour Force Survey. Vertical dashed lines mark Lehman Brothers (September 2008), Law 3845/2010 (May 2010), and Law 4046/2012 (February 2012). Source: OMED, Ministry of Labour and Social Affairs, Hellenic Statistical Authority Labour Force Survey.

4 Empirical strategy

4.1 Selection into bargaining regimes

Wage-setting regime is not randomly assigned. Firm-level agreements have been concentrated among larger employers, while sectoral coverage varies systematically across industries and regions. Unadjusted wage differences therefore combine differences associated with wage-setting regime and differences in the workers and firms observed in each regime. We address selection on observables in two stages: we first reweight employers to balance the observed firm characteristics associated with regime choice, and then estimate wage regressions that condition directly on worker and firm characteristics [12, 17]. Specifically, we estimate a multinomial logit for firm j 's assignment to one of four wage-setting regimes, $T_j \in \{\text{National, Other, Sectoral, Firm}\}$:

$$\Pr(T_j = k \mid f_j) = \frac{\exp(\alpha_k + \beta'_k f_j)}{\sum_l \exp(\alpha_l + \beta'_l f_j)}, \quad k \in \{0, 1, 2, 3\}. \quad (1)$$

National is the base wage-setting regime. The vector f_j contains employer characteristics that are available consistently across waves and unlikely to be affected by treatment status: five firm-size bands, NACE sector, and NUTS-1 region. These are also the dimensions along which bargaining regimes differ most visibly in the descriptive data. Equation (1) is estimated by multinomial logit separately by wave and at the firm level. The model predicts each firm's probability of being observed under National, Other, Sector, or Firm wage setting.

Let $\hat{p}_{jkt}$ denote firm j 's predicted probability of its observed regime k in wave t , and let π_{kt} denote the corresponding marginal regime share in that wave. Each worker is assigned her firm's stabilised inverse-probability weight (IPW), $\pi_{kt} / \hat{p}_{jkt}$, which we multiply by the SES sampling weight in the worker-level wage regressions. Stabilisation keeps the weights centred near one and reduces the influence of firms assigned very small predicted probabilities of their observed regime, which can otherwise dominate estimates under unstabilised inverse-probability weighting [4, 14, 37, 38].

Appendix Figure 8 plots the densities of the propensity-score by regime, the appendix Table 12 reports effective sample sizes and support for the propensity-score, and the appendix Table 13 reports the balance of covariates before and after weighting. These assess whether the weighting balances the included firm characteristics; they cannot assess selection on unobservables. For the Sector and Firm contrasts the weighting works as intended: the densities overlap, effective sample sizes run into the thousands, and the mean standardized difference falls in most waves, with the largest firm-size imbalances substantially reduced (for Firm versus National in 2022, from 1.14 to 0.01). The Other contrast is weaker on every diagnostic—its effective sample size is the smallest in each wave, collapsing to 27 (five firms) in 2010, and its post-weighting imbalance is the largest of the three regimes—reflecting the difficulty of reweighting a small, heterogeneous residual category. We therefore do not interpret the Other coefficients; the Firm and Sector estimates, for which balance improves, carry the paper's conclusions.

4.2 Wage equation

In the second step we estimate, for worker i in firm j at wave t ,

$$\ln w_{ijt} = \alpha_t + \beta'_{1t} T_{jt} + \beta'_{2t} x_{it} + \beta'_{3t} z_{jt} + \varepsilon_{ijt}, \quad (2)$$

where w_{ijt} is the gross weekly base wage, excluding bonuses and other additional payments. The vector T_{jt} contains indicators for Other, Sector, and Firm, with National omitted. Worker controls x_{it} comprise sex, age group, education, tenure band, part-time status, contract type, and two-digit occupation. Firm controls z_{jt} comprise the same size, NACE, and NUTS-1 indicators used in equation (1).⁶ We estimate equation (2) by weighted least squares, using the product of the stabilised IPW and the SES sampling weight. Including x_{it} and z_{jt} in the outcome equation adjusts for remaining observable differences after reweighting. Standard errors are clustered by firm [35].

Coefficients β_{1t} are wave-specific, covariate-adjusted wage gaps relative to the National agreement category. Changes in β_{1t} across waves do not identify the effect of the reform: they also incorporate the depression, the NMW reduction, firm exit, worker reallocation, and changes in the composition and legal meaning of each regime. Estimates are interpreted as adjusted associations, and the use of contract data assesses whether their timing and distribution are consistent with the proposed mechanisms.

We then estimate equation (2) separately for firms with 10–49 employees and firms with at least 50 employees. This split follows the pre-2011 eligibility threshold for firm-level bargaining and the post-reform concentration of associations of persons among smaller employers. It asks whether the aggregate firm-level gap masks a different pattern in the firms newly able to conclude such agreements. Because employer size is observed contemporaneously and may itself have changed during the crisis, the results describe heterogeneity by observed size rather than a causal threshold effect.

Appendix Tables 6 and 7 document the underlying compositional changes. Workers under firm-level agreements in 2006 had longer tenure than workers under sectoral agreements (10.0 versus 7.0 years), and were concentrated in larger firms. By 2014, mean tenure in the firm-level category had fallen to 7.3 years and its small-firm share had increased. Weighting and regression adjustment removes differences in observed composition; they cannot eliminate selection on unobservables.

4.3 Distributional estimates

Equation (2) summarises the conditional mean gap but not its location in the wage distribution. This distinction is central because collective agreements operate through wage floors that should bind most strongly at the bottom. A lower-tail increase and a uniform wage shift can generate similar average coefficients while implying different wage-setting mechanisms and distributional consequences [10, 15, 17, 41]. We therefore estimate recentered-influence-function (RIF) regressions for unconditional wage quantiles [21]. For each wave and each quantile $\tau \in \{0.10, 0.20, \dots, 0.90\}$, we replace the dependent variable in equation (2) with the RIF of log weekly base wages at quantile τ and retain the same bargaining indicators, controls, sampling weights, and stabilised IPWs. The coefficients trace how each bargaining regime is

⁶Occupation follows ISCO-88 in 2002–2010 and ISCO-08 in 2014–2022. Because the equation is estimated separately by wave, classification effects are absorbed within the relevant coding system rather than imposed across incompatible classifications.

associated with the corresponding quantile of the marginal wage distribution, integrating over the observed covariate distribution.

5 Results

5.1 Wage gaps under collective bargaining

Table 3 reports wave-specific estimates of equation (2). Panel A uses the SES sampling weights and the full set of covariates; Panel B adds the stabilised IPWs. The substantive pattern is similar across specifications. Reweighting reduces the firm-level coefficient from 14.2 to 13.7 log points in 2006 and from 15.5 to 14.0 log points in 2022, but raises it from 3.5 to 5.6 log points in 2010. Sectoral estimates change little through 2018. In 2022, however, reweighting raises the sectoral coefficient from 9.7 to 13.5 log points. By then the sectoral category is small and concentrated among large employers, so adjustment for firm size and other observed firm characteristics is consequential. We take Panel B as the preferred specification and interpret the differences between panels as evidence about sensitivity to observed composition.

The estimates reveal a clear change in the ordering of the adjusted wage gaps. In the mature pre-reform system, firm-level bargaining carries the larger gap. The firm-level coefficients are 8.8 log points in 2002 and 13.7 in 2006; the corresponding sectoral coefficients are 1.3 and 4.2 log points. The latter is statistically different from zero in 2006 but economically small relative to the firm-level coefficient. This configuration is consistent with the institutional architecture. Ministerial extension spread sectoral floors beyond signatory employers, limiting the difference between firms reporting sectoral and national coverage, while firm-level bargaining was restricted largely to bigger employers that paid above the common floor.⁷

The firm-level gap begins to contract before the decisive 2011–2012 reforms. In 2010 it is 5.6 log points, less than half its 2006 value, while the sectoral coefficient is 0.6 log points and statistically indistinguishable from zero. The 2010 wave is therefore best viewed as a crisis-onset observation: the first adjustment measures were in place, but the association-of-persons channel had not yet operated. Its pattern indicates that the deterioration in the firm-level gap cannot be attributed entirely to the later legal changes. The ordering reverses by 2014. After firm-level precedence, the suspension of favourability and extension, the removal of the size threshold, and the mass expiry of sectoral agreements, the firm-level coefficient falls to 3.1 log points and is imprecisely estimated. The sectoral coefficient rises to 11.3 log points. This is our central empirical result: the wage gap associated with firm-level bargaining contracts just as the gap associated with the much smaller set of surviving sectoral agreements expands. The 2018 estimates preserve that ordering. Because favourability and extension were restored only in August, 2018 is a transition wave rather than a clean observation of the restored regime; the firm-level gap remains small at 0.9 log points, while the sectoral gap is 9.0 log points.

By 2022 both adjusted gaps are again positive and similar in magnitude: 14.0 log points for Firm and 13.5 for Sector. This recovery coincides with the retreat of association-of-persons agreements, restored higher-level protections, and renewed increases in the NMW. It should

⁷This is also linked to the union wage premia literature, according to which firm-level premia ("rent-sharing") exist in firms operating in monopolistic sectors, with high mark-ups, profitability and price-setting power (Abowd and Lemieux [1], Bell et al. [5], Blanchflower et al. [8], Brown and Medoff [9], Card et al. [13], Van Reenen [39]).

not be read as a return to the pre-reform system. Sectoral reach remains far below its pre-crisis level; the National benchmark now combines a statutory rather than bargained wage floor; and the 2022 SES uses administrative payroll records for the full workforce of sampled firms. The 2022 estimates therefore describe the later hybrid regime, not a restoration of the earlier bargaining architecture.

The changing reference category also limits cross-wave comparisons. Each coefficient measures a gap relative to National agreement in that wave. Since both the composition and legal meaning of this benchmark change after 2012, part of the movement in the Firm and Sector coefficients may come from the baseline. The estimates nevertheless establish the conditional ordering of regimes within each wave. Their evolution is most persuasive when read jointly with the regime shares, firm-size patterns, distributional estimates, and contract evidence, rather than as a causal time-series effect of the reform.⁸

Appendix Tables 9–11 examines whether the main Firm and Sector estimates depend on the treatment classification. Separating firms with no collective agreement from National, excluding Other and no-contract firms, or retaining all seven original SES categories leaves the 2014–2018 inversion essentially unchanged. The estimates are therefore not driven by assigning individual contracts to either collective-bargaining category or by pooling no-contract firms with National.

⁸Individual employment contracts (*Other*) closely follow the NMW floor and are statistically insignificant through 2010, although the 2010 estimate is based on only 44 employees in five firms and is therefore uninformative. The gap subsequently increases to 8.5 log points in 2014, 18.7 log points in 2018, and 27.6 log points in 2022. All results are robust when using the sample of full-time employees only, in 8, as the incidence of part-time employment has been increasing across SES waves (5). This pattern suggests increasingly pronounced selection into individual contracting after the reforms: workers covered by individual contracts became progressively less comparable, in observed and potentially unobserved dimensions, to those in the National category. The estimates therefore document the growing distinctiveness of individual wage setting, rather than a causal return to individual contracts. Therefore, we report it throughout but do not use it to interpret the premium inversion. These estimates also clarify the interpretation of the Firm-Sector comparison. The post-reform inversion concerns the relative wage gaps associated with two forms of collective bargaining and is not generated by the treatment of individual contracts. The *Other* category instead captures a separate margin of institutional change: the expansion of wage setting outside collective bargaining. The sensitivity estimates confirm that separating individual contracts from the collective-agreement categories leaves the Firm-Sector inversion in 2014 and 2018 essentially unchanged.

Table 3. Collective bargaining regime and weekly base wages in Greece, 2002–2022

	(1) 2002	(2) 2006	(3) 2010	(4) 2014	(5) 2018	(6) 2022
<i>Panel A: OLS</i>						
Firm	0.095*** (0.029)	0.142*** (0.026)	0.035 (0.025)	0.055* (0.029)	0.005 (0.026)	0.155*** (0.049)
Sector	0.012 (0.013)	0.038*** (0.014)	0.006 (0.014)	0.101*** (0.025)	0.077* (0.041)	0.097 (0.062)
Other	0.039 (0.026)	−0.049 (0.031)	−0.019 (0.087)	0.073*** (0.027)	0.173*** (0.063)	0.206*** (0.073)
Worker controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	46,027	38,227	27,266	25,345	25,066	439,474
<i>Panel B: IPW</i>						
Firm	0.088*** (0.025)	0.137*** (0.025)	0.056** (0.024)	0.031 (0.029)	0.009 (0.027)	0.140*** (0.040)
Sector	0.013 (0.014)	0.042*** (0.014)	0.006 (0.014)	0.113*** (0.023)	0.090** (0.038)	0.135*** (0.051)
Other	0.026 (0.024)	−0.031 (0.032)	−0.023 (0.080)	0.085*** (0.027)	0.187*** (0.071)	0.276*** (0.094)
Worker controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	46,027	38,227	27,266	25,345	25,066	439,474

Notes: The dependent variable is the log weekly base wage, excluding additional pay. The base category is the national general collective agreement/no agreement. Worker controls: sex, age group, education, occupation, tenure, part-time status, contract type. Firm controls: size bins, sector and region fixed effects. Standard errors clustered at the firm level in parentheses.

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Source: Greek Structure of Earnings Survey (SES), 2002–2022, ELSTAT.

5.2 Heterogeneity by firm size

Table 4 separates firms with 10–49 employees from those with at least 50. The split maps directly onto the pre-reform size threshold for firm-level bargaining and the post-reform spread of associations of persons among smaller employers. Among small firms, the firm-level coefficient is 1.8 log points and statistically insignificant in 2002, rises to 7.0 log points in 2006, then becomes imprecise in 2010 and turns negative, though still imprecise, at –3.7 log points in 2014. It remains close to zero in 2018. This sequence is consistent with the composition of small-firm bargaining shifting toward association-of-persons agreements whose contractual floors lay near the statutory minimum. The sectoral coefficients move in the opposite direction: 13.5 log points in 2014, 20.4 in 2018, and 24.6 in 2022. Thus, the post-reform sectoral gap is strongest among employers for which a contractual floor is most likely to constrain pay. The small-firms firm-level coefficient also recovers to 15.3 log points in 2022, but its standard error is large and the result occurs after association agreements had receded sharply.

The firm-level gap is more persistent among firms with at least 50 employees. The point estimate is positive in every wave and statistically different from zero in all but 2018: 11.7 log points in 2002, 15.1 in 2006, 5.7 in 2010, 5.9 in 2014, and 12.4 in 2022. The sectoral gap shows the sharper size gradient during the decentralised period. In 2018 it is 20.4 log points among small firms but only 2.9 and statistically insignificant among larger firms. By 2022, sectoral coefficients are positive in both groups –24.6 log points among small firms and 9.4 among larger firms– as the system moves into the hybrid regime.

The persistence of a firm-level gap among larger employers is difficult to explain solely through compliance with a contractual floor: it remains positive after the NMW cut and after lower-level agreements were allowed to undercut sectoral terms. This pattern is consistent with above-floor wage setting, including rent sharing or productivity-linked pay, as in Metcalf [31], and resembles the wage cushion documented for Portugal by Card and Cardoso [11]. It is also consistent with the broader pattern in Europe documented by Bellmann et al. [6].

Table 4. Heterogeneity by firm size: collective bargaining wage gaps in Greece, 2002–2022 (IPW estimates)

	(1) 2002	(2) 2006	(3) 2010	(4) 2014	(5) 2018	(6) 2022
<i>Panel A: Small firms (10–49 employees)</i>						
Firm	0.018 (0.024)	0.070** (0.030)	0.044 (0.045)	−0.037 (0.045)	0.004 (0.047)	0.152** (0.071)
Sector	0.023 (0.014)	0.061*** (0.016)	0.027 (0.017)	0.135*** (0.027)	0.204*** (0.054)	0.246*** (0.083)
Other	−0.011 (0.042)	0.026 (0.026)	–	0.145*** (0.046)	0.248** (0.113)	0.146*** (0.039)
Observations	14,005	10,007	7,765	7,673	7,449	47,266
<i>Panel B: Large firms (≥50 employees)</i>						
Firm	0.117*** (0.034)	0.151*** (0.031)	0.057** (0.027)	0.059* (0.033)	0.019 (0.031)	0.124*** (0.041)
Sector	0.009 (0.019)	0.042** (0.017)	0.005 (0.018)	0.091*** (0.028)	0.029 (0.044)	0.094* (0.051)
Other	0.045 (0.031)	−0.045 (0.038)	–	0.041 (0.031)	0.136** (0.064)	0.302*** (0.105)
Observations	32,022	28,220	19,501	17,672	17,617	392,208
Worker controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm controls	Yes	Yes	Yes	Yes	Yes	Yes

Notes: The dependent variable is the log weekly base wage, excluding additional pay. Estimates are inverse-probability weighted. The base category is the national general collective agreement/no agreement. Panel A restricts to firms with 10–49 employees; Panel B to firms with 50 or more employees. Worker controls: sex, age group, education, occupation, tenure, part-time status, contract type. Firm controls: sector and region fixed effects. Standard errors clustered at the firm level in parentheses. The 2010 Other coefficient is suppressed in both panels because the cell comprises a single large firm and four small firms, too few to support a firm-clustered standard error.

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Source: Greek Structure of Earnings Survey (SES), 2002–2022, ELSTAT.

5.3 Distributional estimates

Figure 5 shows how the adjusted gaps vary from the 10th to the 90th percentile of the unconditional wage distribution. In 2002 and 2006, the firm-level profile rises through the lower half of the distribution, peaks near the median, and then flattens or declines.⁹ The sectoral profile is smaller and flatter. In 2010, both profiles are attenuated and close to zero across much of the distribution, consistent with the contraction in the mean estimates.

By 2014, the firm-level profile is approximately flat and centred near zero. The sectoral profile is positive at the lower quantiles, declines through the middle, and is absent at the upper tail. In 2018, the same contrast remains: confidence intervals for the sectoral coefficient exclude zero at the lower percentiles, while the firm-level coefficients remain close to zero across the distribution. The post-reform sectoral gap is therefore concentrated where a negotiated wage floor should have the greatest bite. Its absence at the upper tail also weighs against an interpretation based on a uniform sector-wide wage shift.

The 2022 profiles broaden. The firm-level coefficient rises across the distribution, while the sectoral gap is less concentrated at the bottom than in 2014 and 2018. This is consistent with the recovery in the mean estimates, but the 2022 collection break and the selected composition of the remaining bargaining regimes counsel against interpreting the change as a pure institutional effect.

Taken together, Tables 3–4 and Figure 5 establish three facts. First, the pre-reform firm-level gap contracts sharply by 2014–2018 as the sectoral gap expands. Second, the firm-level contraction is concentrated among small employers, while a positive gap persists among larger firms. Third, the post-reform sectoral gap is initially concentrated at the lower end of the wage distribution.

⁹This reproduces the hump-shaped 2006 pattern reported by Daouli et al. [15].

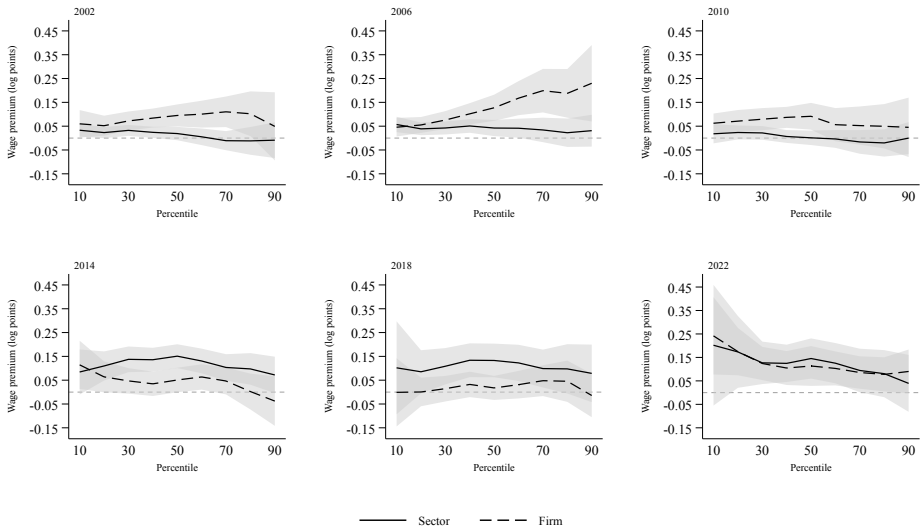


Figure 5. Distributional estimates: RIF-OLS coefficients with IPW

Notes: The dependent variable is the log weekly base wage, excluding additional pay. Estimates refer to IPW. The base category is the national general collective agreement/no agreement. Standard errors clustered at the firm level in parentheses. Shaded bands are 95% confidence intervals.

Source: Greek Structure of Earnings Survey (SES), 2002–2022, ELSTAT.

6 Mechanisms

As noted, contract provisions cannot be used to establish that a particular agreement changed the wages of the surveyed workers. To explore the mechanisms underpinning our derived SES coefficients, in this section we examine whether the timing and distribution of the survey-based wage gaps are consistent with the institutional channels implied by the reforms. Our evidence points to two distinct processes: compositional dilution within firm-level bargaining and persistence among surviving sectoral agreements.

6.1 The firm-level premium: compositional dilution

Law 4024/2011 changed both the hierarchy and representation of firm-level bargaining. Firm-level agreements could take precedence over sectoral terms, the 50-employee threshold was removed, and associations of persons became eligible to negotiate at firm level. The response was immediate. In 2012, the first full year under the new rules, associations of persons signed more than 700 agreements, overwhelmingly among small employers (Figure 6, Panel A). Union-signed agreements continued at roughly their earlier pace (between about 100 and 290 per year) and remained concentrated among larger, higher-paying firms. The expansion of firm-level bargaining thus came primarily from a new type of signatory and employer rather than from growth among incumbent unionised firms.¹⁰

¹⁰Wage adjustments specified in those contracts are indicative of the changing composition of firms engaging in firm-level bargaining. Before 2010, 782 firm-level agreements generated wages that exceeded the negotiated minima by 6.52%, on average. Therefore, bargaining at this level was concentrated among firms with sufficient rents to

The wage provisions differ sharply by signatory. Employment-weighted mean floors in union-signed agreements remain approximately €770–€930 across the period and stay well above the statutory minimum after its 2012 reduction. Association-of-persons agreements converge rapidly toward that minimum: in 2012–2013 their mean floors are within about €15 of the €586 statutory rate and subsequently track it closely (Figure 6, Panel B).¹¹ Because association agreements account for almost all net growth in firm-level contracts during 2012–2018, they pull the aggregate firm-level floor toward the statutory minimum even though union-negotiated floors remain high.

This compositional shift can account for a declining firm-level wage gap without requiring incumbent unionised firms to reduce an existing premium. The timing matches exactly the SES evidence. The association channel opens after the 2010 wave and expands before 2014, when the adjusted firm-level gap falls from 13.7 log points in 2006 to 3.1 and is statistically indistinguishable from zero. The attenuation already visible in 2010 predates this channel and is more plausibly associated with the crisis and initial adjustment. The size estimates provide a further implication: the gap contracts most among small employers, where association agreements are concentrated and competition is likely to limit profitability, but persists more strongly among larger firms, where union-signed agreements remain prevalent and higher profitability may continue to support rent-sharing.

The composition changes again after 2018. Association-signed agreements decline from approximately 205 in 2018 to about 55 in 2019 and remain between 35 and 55 per year thereafter. This decline coincides with the restoration of favourability in August 2018, which removed the legal capacity of a lower-level agreement to undercut an applicable sectoral floor. By 2020–2022, unions again sign about four-fifths of firm-level agreements, and their mean floor reaches approximately €930 in 2022. The SES firm-level gap simultaneously returns to 14.0 log points. This parallel reversal is consistent with the compositional account: as low-floor association agreements recede, the employer-reported Firm category again becomes dominated by unionised, higher-floor employers.

sustain above-minimum pay. After the reforms, the average wage effects in 1,162 agreements signed by firms with a pre-crisis bargaining history remained substantially more favourable (-0.74%) than that in the 2,842 agreements signed by firms entering firm-level bargaining only in the post-reform period (-6.75%). The relative stability of the gap between these group points to a persistent distinction between firms using decentralised collective bargaining to share rents and firms using it primarily as an instrument of wage adjustment.

¹¹See also 24. This contrast is consistent with the signatory gradient in nominal base-wage adjustment Daouli et al. [16].

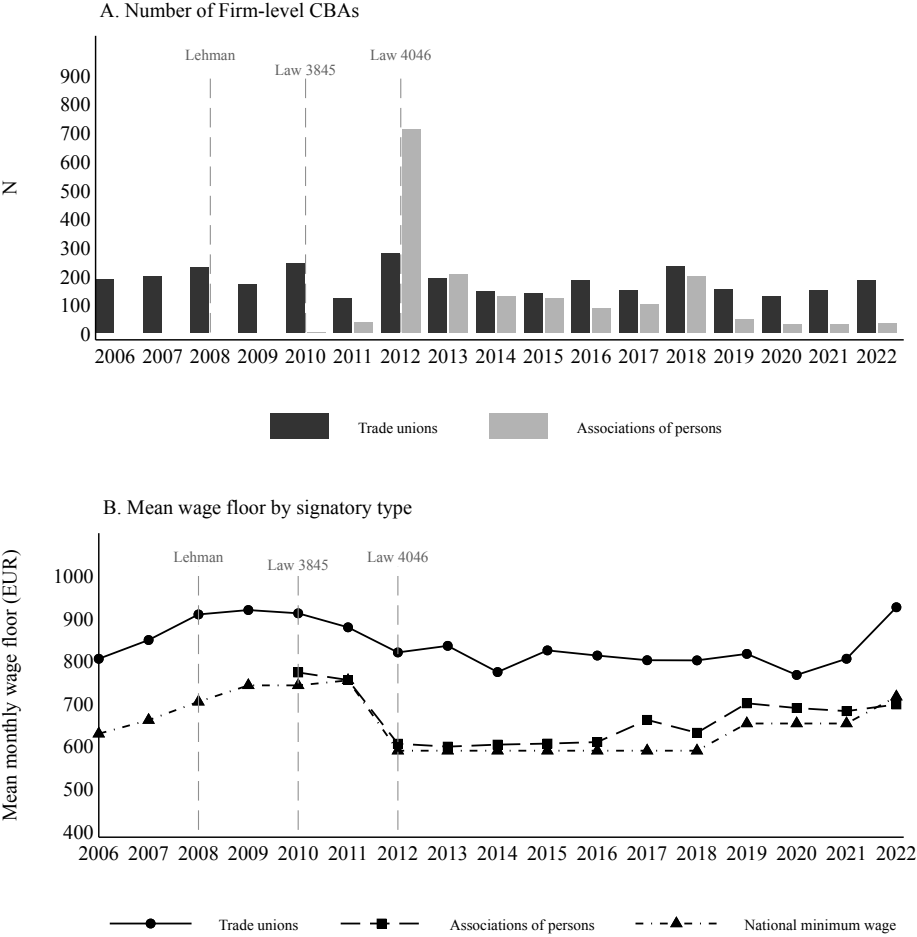


Figure 6. Firm-level mechanism: signatory type and wage floors

Notes: Panel A shows the annual number of firm-level CBAs by signatory type. Panel B shows mean monthly wage floors (EUR) by signatory type alongside the national minimum wage, measured in October of each year; floors are weighted by the imputed number of employees in each contracting firm.

Source: OMED, Ministry of Labour and Social Affairs, minimum wage from the statutory series.

6.2 The sectoral premium: floor persistence

The sectoral pattern is different. A sizeable adjusted sectoral gap emerges while sectoral bargaining is contracting, so it cannot be interpreted as evidence that sectoral bargaining regained broad reach or bargaining power. The contract data instead point to non-renewal, selection among surviving agreements, and nominally persistent floors.

Non-renewal began before the legislative reforms. As demand deteriorated in 2008–2009, an increasing number of expiring sectoral rounds were not renewed, and the employment-weighted non-renewal share exceeded 50 percent in 2009. The subsequent legal changes deepened the contraction. Law 4024/2011 suspended ministerial extension and favourability, while Law 4046/2012 limited agreement duration and after-effect, causing older unrenewed agreements to expire by February 2013. The non-renewal share peaks at approximately 68 percent in 2011 and remains above 40 percent during 2012–2013 (Figure 7, Panel A). Its decline toward zero after 2014 does not indicate a broad renewal. By then the denominator consists of a much smaller and selected group of agreements that had survived the initial contraction; the isolated 2019 increase reflects the expiry of a few such rounds.

The wage floors of surviving agreements explain why a sectoral gap could rise as reach fell. Agreements that were renegotiated retained employment-weighted mean floors of approximately €900–€990 during the reform window. Agreements that were not renewed had last recorded substantially higher floors, about €1,130 in 2011 (Figure 7, Panel B). For the latter group, the figure carries the last observed 2011 floor through 2013 because no new round set a replacement rate and the existing terms remained relevant until statutory expiry, subject thereafter to the restricted after-effect. These points are carried-forward contractual values, not newly observed floors.

The reduction in the statutory NMW from €751 to €586 in February 2012 widened the distance between those inherited floors and the economy-wide benchmark. A positive gap could therefore persist among firms reporting sectoral coverage even without renewed bargaining or stronger unions. At the same time, the collapse in extension meant that the set of employers still reporting sectoral coverage became smaller and more selected. The 11.3-log-point sectoral coefficient in 2014 should therefore be read as a wage gap among surviving sectoral employers relative to the contemporaneous National benchmark, not as evidence of restored sectoral reach.

The distributional estimates reinforce this interpretation. A persistent floor should matter most to workers near the bottom of the wage distribution, and the 2014 and 2018 sectoral coefficients are concentrated precisely there. Similar sluggish adjustment of sectoral floors to statutory-minimum changes is documented for France by Fougère et al. [23], while Adamopoulou and Villanueva [2] show that contractual-floor rigidity binds most strongly near the floor. In the Greek evidence, three independent patterns align: sectoral reach contracts, surviving contractual floors remain high relative to the reduced minimum, and the adjusted SES gap is concentrated at lower quantiles. Together they support a floor-persistence interpretation, while the unlinked and cross-sectional data preclude a causal attribution to any single agreement or reform provision.

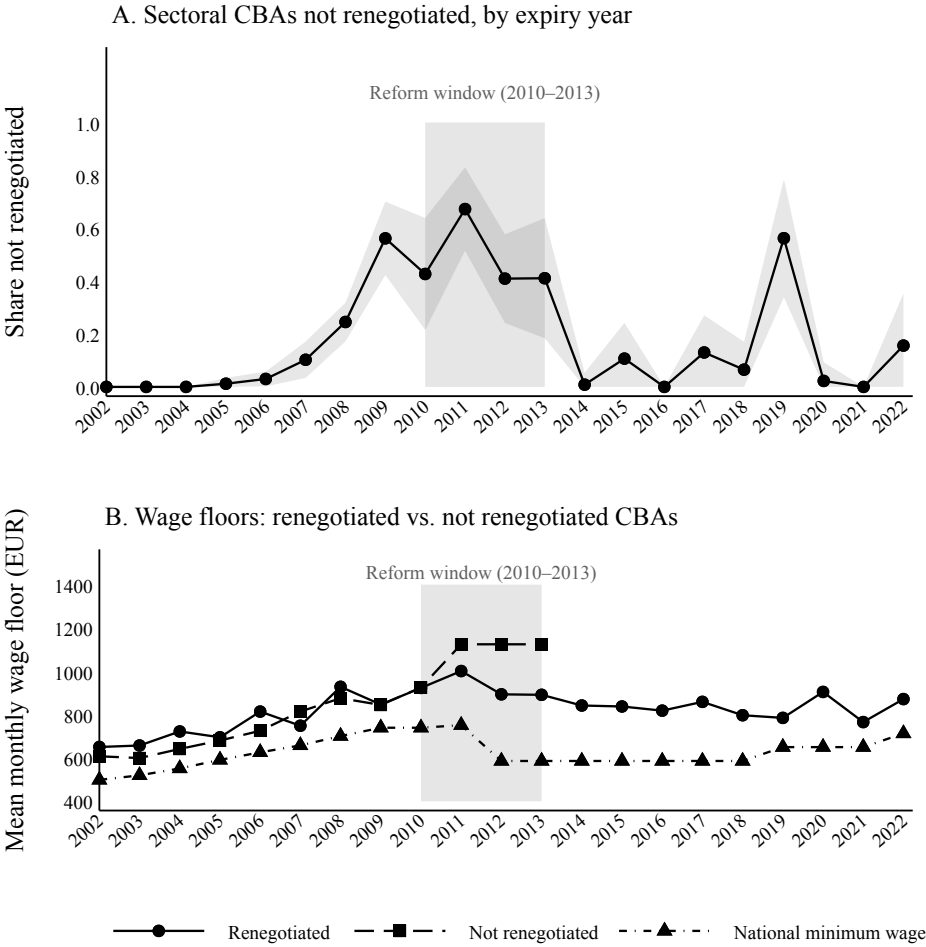


Figure 7. Sectoral mechanism: staggered contracts and floor persistence

Notes: Statistics are weighted using LFS employment. Panel A plots the share of expiring sectoral CBA rounds not followed by a renewal, dated by contractual expiry year; the shaded band is a 95% confidence interval and rounds expiring after 2019 are omitted. Panel B plots mean monthly wage floors (EUR) for renegotiated and not-renegotiated CBAs alongside the national minimum wage, measured in October of each year; the grey band marks the 2010–2013 reform window. The not-renegotiated series is computed from data through 2011 and held at its 2011 level through 2013 because those floors remained in force until Law 4046/2012 terminated them in February 2013.

Source: OMED, Hellenic Statistical Authority Labour Force Survey.

7 Conclusions

This article has traced the wage gaps associated with collective bargaining state-led decentralisation in Greece across six survey waves spanning from 2002 to 2022, from the peak of a centralised, extension-based system through its rapid legislative dismantling and into a decade of partial recovery. The headline finding is a premium inversion: the wage gap associated with firm-level bargaining, the larger of the two before the reform at 13.7 log points in 2006, collapses to a statistically insignificant 3.1 log points by 2014, while the sectoral gap rises over the same period to 11.3 log points and remains positive and concentrated among lower-paid workers through 2018. By 2022, the two gaps have recovered to similar magnitudes –14.0 log points for Firm and 13.5 for Sector– but the reach of sectoral bargaining remains far below its pre-crisis level. The collapse in the firm-level gap is concentrated among small employers and the lower half of the wage distribution; firms with 50 or more employees retain a positive firm-level gap in every wave of the study, though it is imprecisely estimated in 2018, indicating that whatever generates that premium at large firms operates independently of the contractual floor that the reform removed.

Taken together, the evidence points to distinct margins and speeds of adjustment across wage-setting regimes. Firm-level contractual floors adjusted rapidly after the reforms, particularly among newly eligible small firms, as agreements signed by associations of persons converged on the statutory minimum. Sectoral bargaining adjusted differently: the floors of surviving agreements remained comparatively rigid, while its potential reach contracted sharply and persistently. Individual contracts capture a separate margin of institutional change –wage setting outside collective bargaining– but their increasingly positive adjusted gap relative to National, together with the small and selected nature of this category, does not support the same downward-adjustment interpretation. During the subsequent recovery, rapid increases in the statutory minimum narrowed the distance between statutory and negotiated floors. The persistent firm-level gap among larger employers is consistent with firm-specific wage-setting advantages, including rent sharing, although this mechanism cannot be identified here.

The contract data clarify these distinct adjustment margins and prevent the sectoral result from being misread. Taken alone, a rising post-reform sectoral wage gap could look like sectoral bargaining regaining ground. The contract registry shows this is not what happened. Sectoral bargaining's reach contracted sharply and did not recover; the wage gap that survived reflects a small set of legacy agreements whose floors, fixed before the crisis, happened to sit €300–€400 euros above a statutory minimum cut by 22 percent in 2012, generating a premium mechanically rather than through renewed negotiation – floor rigidity of the kind documented for French sectoral minima, where negotiated floors adjust to statutory changes only sluggishly [23]. On the firm-level side, the reform created a specific new channel – the association of persons, a non-union bargaining party introduced in 2011 explicitly to permit wage agreements below the sectoral floor – through which small firms drove the great majority of post-reform firm-level agreements, with negotiated floors that converged on the statutory minimum within two years. Union-signed firm-level agreements, concentrated in larger firms, did not follow this pattern and continued to sit well above the minimum throughout. A measured wage premium, in short, need not indicate the bargaining power that historically produced that category of agreement, and the two must be distinguished before either can be used as evidence for or against a given bargaining structure. The Greek experience is therefore better characterised as state-led decentralisation than as a simple transfer of bargaining authority from sectors to firms. The reforms simultaneously weakened

multi-employer bargaining, facilitated firm-level agreements, and increased the institutional importance of individual wage setting. This distinction matters because decentralisation within collective bargaining and individualisation outside it have different implications for bargaining coverage, wage coordination, and the protection of low-paid workers.

There is a broader lesson here, about institutional complementarity. Four pillars supported the pre-reform system: a statutory or negotiated floor, an extension mechanism that carried sectoral terms beyond signatory firms, a favourability rule that prevented lower-level bargaining from undercutting that floor, and a representation rule that determined who could sign a firm-level agreement on workers' behalf. Removing extension and favourability together, while simultaneously widening who could sign a firm-level agreement, did not produce a more flexible version of the pre-reform system; it produced a system in which firm-level bargaining could become an instrument for reducing pay rather than supplementing it, and in which a positive sectoral coefficient could persist for reasons unrelated to sectoral bargaining strength. Among the countries that decentralised collective bargaining under fiscal conditionality after 2010 – Portugal, Spain, Ireland, and Romania among them [27] – Greece removed the most pillars in the shortest time, which is what makes it informative for systems that have not gone as far: the Greek case identifies what full removal looks like, against which partial reforms elsewhere can be benchmarked. The result should generalise most directly to economies that share Greece's starting configuration – multi-level bargaining, administrative extension, a large small-firm sector, and limited plant-level union presence – and less directly to systems, such as Germany's, where firms voluntarily orient toward sectoral terms even without a binding extension mechanism [6], or where established works councils provide an alternative channel for worker voice at the firm level.

Two limitations bound how far the present evidence extends, and both point to where the next stage of this research programme should go. The Structure of Earnings Survey excludes establishments with fewer than ten employees, precisely the segment the 2011 reform was designed to bring within reach of firm-level bargaining, so the wage consequences of decentralisation for the smallest firms remain unobserved here. And because the survey is a repeated cross-section rather than a longitudinal panel, the reweighting strategy used throughout addresses selection on observable firm and worker characteristics but cannot rule out selection on unobservables that are stable within firms over time; nor does the present analysis speak to employment, hours, or firm survival, margins on which reforms of this kind have been shown to matter elsewhere [20], and on which the evidence is in any case mixed [33]. Firm-level identifiers linking the contract registries to tax, social-security, or business-register data would allow both limitations to be addressed directly, and represent the most promising route to a design capable of isolating the reform's effect from the depression that accompanied it. Until such linked data are available, the contribution of the present evidence is to document, with unusual institutional detail, how the meaning of a collectively bargained wage premium can change even when the coefficient measuring it does not – a distinction that economists and industrial-relations scholars should keep in close view [30].

References

- [1] John M. Abowd and Thomas Lemieux. The effects of product market competition on collective bargaining agreements: The case of foreign competition in canada. *Quarterly Journal of Economics*, 108(4):983–1014, 1993. doi: 10.2307/2118454.
- [2] Effrosyni Adamopoulou and Ernesto Villanueva. Wage determination and the bite of collective contracts in italy and spain. *Labour Economics*, 76:102147, 2022. doi: 10.1016/j.labeco.2022.102147.
- [3] Dirk Antonczyk, Bernd Fitzenberger, and Katrin Sommerfeld. Rising wage inequality, the decline of collective bargaining, and the gender wage gap. *Labour Economics*, 17(5):835–847, 2010.
- [4] Peter C. Austin and Elizabeth A. Stuart. Moving towards best practice when using inverse probability of treatment weighting using the propensity score to estimate causal treatment effects in observational studies. *Statistics in Medicine*, 34(28):3661–3679, 2015. doi: 10.1002/sim.6607.
- [5] Brian Bell, Pawel Bukowski, and Stephen Machin. Rent sharing and inclusive growth. *Centre for Economic Performance Discussion Paper*, (1638), 2019.
- [6] Lutz Bellmann, Christian Dustmann, and Bernd Fitzenberger. Collective bargaining in germany: Trends and challenges. Discussion Paper 26171, RFBerlin – ROCKWOOL Foundation Berlin, 2026.
- [7] Manudeep Bhuller, Karl Ove Moene, Magne Mogstad, and Ola L. Vestad. Facts and fantasies about wage setting and collective bargaining. *Journal of Economic Perspectives*, 36(4):29–52, 2022. doi: 10.1257/jep.36.4.29.
- [8] David G. Blanchflower, Andrew J. Oswald, and Peter Sanfey. Wages, profits, and rent-sharing. *Quarterly Journal of Economics*, 111(1):227–251, 1996. doi: 10.2307/2946662.
- [9] Charles Brown and James Medoff. The employer size-wage effect. *Journal of Political Economy*, 97(5):1027–1059, 1989. doi: 10.1086/261644.
- [10] David Card. The effect of unions on the structure of wages: A longitudinal analysis. *Econometrica*, 64(4):957–979, 1996. doi: 10.2307/2171852.
- [11] David Card and Ana Rute Cardoso. Wage flexibility under sectoral bargaining. *Journal of the European Economic Association*, 20(5):2013–2061, 2022. doi: 10.1093/jeea/jvac020.
- [12] David Card and Sara de la Rica. Firm-level contracting and the structure of wages in spain. *Industrial and Labor Relations Review*, 59(4):573–592, 2006. doi: 10.1177/001979390605900403.
- [13] David Card, Francesco Devicienti, and Agata Maida. Rent-sharing, holdup, and wages: Evidence from matched panel data. *Review of Economic Studies*, 81(1):84–111, 2014. doi: 10.1093/restud/rdt022.

- [14] Matias D Cattaneo, David M Drukker, and Ashley D Holland. Estimation of multivalued treatment effects under conditional independence. *The Stata Journal*, 13(3):407–450, 2013.
- [15] Joan Daouli, Michael Demoussis, Nicholas Giannakopoulos, and Ioannis Laliotis. Firm-level collective bargaining and wages in Greece: A quantile decomposition analysis. *British Journal of Industrial Relations*, 51(1):80–103, 2013. doi: 10.1111/j.1467-8543.2012.00918.x.
- [16] Joan Daouli, Michael Demoussis, Nicholas Giannakopoulos, and Ioannis Laliotis. The 2011 industrial relations reform and nominal wage adjustments in Greece. *Journal of Labor Research*, 37(4):460–483, 2016. doi: 10.1007/s12122-016-9232-5.
- [17] John DiNardo, Nicole M. Fortin, and Thomas Lemieux. Labor market institutions and the distribution of wages, 1973–1992: A semiparametric approach. *Econometrica*, 64(5):1001–1044, 1996. doi: 10.2307/2171954.
- [18] Eurofound. Annual review of working life 2018. Report, Publications Office of the European Union, Luxembourg, 2019.
- [19] European Commission. The economic adjustment programme for greece: Third review – winter 2011. European Economy Occasional Papers 77, Directorate-General for Economic and Financial Affairs, European Commission, Brussels, February 2011.
- [20] Bernardo Fanfani. The employment effects of collective wage bargaining. *Journal of Public Economics*, 227:105006, 2023. doi: 10.1016/j.jpubeco.2023.105006.
- [21] Sergio Firpo, Nicole M. Fortin, and Thomas Lemieux. Unconditional quantile regressions. *Econometrica*, 77(3):953–973, 2009. doi: 10.3982/ECTA6822.
- [22] Bernd Fitzenberger, Karsten Kohn, and Alexander C. Lembcke. Union density and varieties of coverage: The anatomy of union wage effects in Germany. *ILR Review*, 66(1):169–197, 2013.
- [23] Denis Fougère, Erwan Gautier, and Sébastien Roux. Wage floor rigidity in industry-level agreements: Evidence from france. *Labour Economics*, 55:72–97, 2018. doi: 10.1016/j.labeco.2018.09.001.
- [24] Nicholas Giannakopoulos and Ioannis Laliotis. Industrial relations reform, firm-level bargaining and nominal wage floors. *The Manchester School*, 88(1):37–59, 2020. doi: 10.1111/manc.12273.
- [25] Simon Jäger, Suresh Naidu, and Benjamin Schoefer. Collective bargaining, unions, and the wage structure: An international perspective. NBER Working Paper 33267, National Bureau of Economic Research, 2024. Forthcoming in the Handbook of Labor Economics.
- [26] Aristeia Koukiadaki and Damian Grimshaw. Evaluating the effects of the structural labour market reforms on collective bargaining in Greece. Conditions of Work and Employment Series 85, International Labour Organization, Geneva, 2016.

- [27] Paul Marginson and Christian Welz. Changes to wage-setting mechanisms in the context of the crisis and the EU's new economic governance regime. Technical report, Eurofound, Dublin, 2014.
- [28] Pedro S. Martins. 30,000 minimum wages: The economic effects of collective bargaining extensions. *British Journal of Industrial Relations*, 59(2):335–369, 2021. doi: 10.1111/bjir.12564.
- [29] Manos Matsaganis. Union structures and pension outcomes in Greece. *British Journal of Industrial Relations*, 45(3):537–555, 2007. doi: 10.1111/j.1467-8543.2007.00627.x.
- [30] David Metcalf. Unions and the distribution of earnings. *British Journal of Industrial Relations*, 20(2):163–169, July 1982. doi: 10.1111/j.1467-8543.1982.tb00094.x.
- [31] David Metcalf. Industrial relations and economic performance. *British Journal of Industrial Relations*, 31(2):255–283, 1993.
- [32] David Metcalf. The low pay commission and the national minimum wage. *The Economic Journal*, 109(453):46–66, February 1999. doi: 10.1111/1468-0297.00402.
- [33] David Metcalf. Why has the british national minimum wage had little or no impact on employment? *Journal of Industrial Relations*, 50(3):489–512, June 2008. doi: 10.1177/0022185608090003.
- [34] David Metcalf, Kirstine Hansen, and Andy Charlwood. Unions and the sword of justice: Unions and pay systems, pay inequality, pay discrimination and low pay. *National Institute Economic Review*, 176(1):61–75, April 2001. doi: 10.1177/0027950101176001.
- [35] Brent R. Moulton. Random group effects and the precision of regression estimates. *Journal of Econometrics*, 32(3):385–397, 1986. doi: 10.1016/0304-4076(86)90021-7.
- [36] Raül Ramos, Esteban Sanromà, and Hipólito Simón. Collective bargaining levels, employment and wage inequality in spain. *Journal of Policy Modeling*, 44(2):375–395, 2022. doi: 10.1016/j.jpolmod.2021.09.006.
- [37] Tymon Słoczyński and Jeffrey M Wooldridge. A general double robustness result for estimating average treatment effects. *Econometric Theory*, 34(1):112–133, 2018.
- [38] S Derya Uysal. Doubly robust estimation of causal effects with multivalued treatments: an application to the returns to schooling. *Journal of Applied Econometrics*, 30(5): 763–786, 2015.
- [39] John Van Reenen. The creation and capture of rents: Wages and innovation in a panel of u.k. companies. *Quarterly Journal of Economics*, 111(1):195–226, 1996. doi: 10.2307/2946661.
- [40] Jelle Visser. What happened to collective bargaining during the great recession? *IZA Journal of Labor Policy*, 5(1):1–35, 2016. doi: 10.1186/s40173-016-0061-1.
- [41] Wouter Zwysen and Jan Drahokoupil. Collective bargaining and power: Wage premium of collective agreements in europe 2002–2018. *British Journal of Industrial Relations*, 62(2):335–357, 2024. doi: 10.1111/bjir.12777.

A Appendix

The appendix proceeds in three parts. Table 5 reports the sample composition across SES waves. Tables 6 and 7 report covariate means by bargaining regime, for the pre-crisis and post-reform waves respectively.

The robustness tables re-estimate the main specification under alternative assumptions. Table 8 restricts the sample to full-time employees. Tables 9, 10, and 11 vary the treatment of the bargaining categories: no-contract firms are separated from the National benchmark; no-contract and individual-contract firms are excluded entirely; and the model is re-estimated using all seven original SES categories rather than the four collapsed regimes.

The remaining exhibits report the weighting diagnostics. Figure 8 shows the propensity-score distributions by regime and wave. Table 12 reports the effective sample size implied by the stabilised weights, together with the range of fitted probabilities within each cell. Table 13 reports standardised covariate differences before and after weighting.

A.1 Summary statistics and covariate means by bargaining regime

Table 5. Summary statistics

	2002	2006	2010	2014	2018	2022
<i>Wages</i>						
Weekly wage (EUR)	349.990	496.086	463.431	397.727	377.918	447.594
Weekly base wage (EUR)	294.253	428.720	388.857	332.873	316.422	398.039
<i>Age group</i>						
20–24	0.088	0.063	0.046	0.038	0.067	0.055
25–29	0.176	0.160	0.137	0.105	0.112	0.103
30–34	0.180	0.183	0.189	0.176	0.146	0.125
35–39	0.150	0.176	0.185	0.193	0.173	0.134
40–44	0.142	0.144	0.166	0.177	0.177	0.163
45–49	0.123	0.127	0.123	0.153	0.147	0.161
50–54	0.091	0.098	0.105	0.102	0.112	0.150
55–59	0.049	0.048	0.050	0.055	0.067	0.108
<i>Gender</i>						
Male	0.609	0.588	0.570	0.570	0.570	0.555
Female	0.391	0.412	0.430	0.430	0.430	0.445
<i>Education</i>						
Primary	0.149	0.116	0.073	0.056	0.039	0.044
Lower secondary	0.136	0.133	0.121	0.096	0.087	0.080
Upper secondary	0.475	0.499	0.522	0.520	0.532	0.480
Post-secondary non-tertiary	0.043	0.060	0.070	0.076	0.093	0.078
Technological Educational Institute	0.066	0.069	0.079	0.090	0.090	0.118
University	0.131	0.123	0.136	0.163	0.158	0.200
Tenure (years)	7.124	7.196	7.367	7.604	6.112	5.690
<i>Part-time</i>						
Full-time	0.938	0.918	0.918	0.825	0.734	0.720
Part-time	0.062	0.082	0.082	0.175	0.266	0.280
<i>Contract type</i>						
Open-ended	0.910	0.915	0.903	0.895	0.864	0.842

continued on next page

Table 5 continued

	2002	2006	2010	2014	2018	2022
Fixed-term	0.085	0.082	0.094	0.103	0.132	0.157
<i>Bargaining regime</i>						
National	0.302	0.385	0.422	0.472	0.602	0.755
Other	0.023	0.054	0.001	0.049	0.032	0.010
Sector	0.555	0.484	0.499	0.289	0.154	0.069
Firm	0.120	0.078	0.078	0.190	0.212	0.166
<i>Firm size (employees)</i>						
10–49	0.327	0.206	0.226	0.261	0.344	0.261
50–249	0.269	0.323	0.286	0.285	0.291	0.358
250–499	0.089	0.123	0.120	0.111	0.126	0.111
500–999	0.081	0.099	0.091	0.099	0.086	0.084
≥1,000	0.234	0.249	0.277	0.244	0.153	0.186
<i>Sector of economic activity</i>						
Manufacturing	0.313	0.308	0.211	0.180	0.207	0.165
Utilities	0.038	0.034	0.029	0.015	0.007	0.016
Construction	0.053	0.055	0.062	0.058	0.038	0.039
Wholesale & retail trade	0.243	0.249	0.305	0.300	0.241	0.247
Accommodation & food	0.109	0.104	0.119	0.141	0.248	0.266
Transport, information & comms.	0.096	0.100	0.107	0.132	0.101	0.102
Financial & insurance	0.068	0.068	0.070	0.071	0.044	0.031
Real estate, prof. & admin.	0.080	0.082	0.097	0.104	0.114	0.134
<i>Regions</i>						
Attica	0.677	0.686	0.699	0.679	0.615	0.626
Northern Greece	0.187	0.200	0.182	0.178	0.207	0.199
Central Greece	0.070	0.062	0.061	0.062	0.078	0.078
Aegean & Crete	0.065	0.052	0.058	0.081	0.101	0.097
Firms	2,844	2,601	1,872	1,749	1,716	4,222
Employees	46,027	38,227	27,282	25,345	25,066	439,474

Notes: Statistics are weighted.

Source: Greek Structure of Earnings Survey, 2002–2022 (ELSTAT).

Table 6. Covariate means by bargaining regime: 2002, 2006, 2010

	2002				2006				2010			
	National	Other	Sect.	Firm	National	Other	Sect.	Firm	National	Other	Sect.	Firm
<i>Age group</i>												
20–24	0.101	0.097	0.088	0.055	0.060	0.095	0.066	0.038	0.039	0.000	0.050	0.053
25–29	0.193	0.183	0.179	0.121	0.156	0.150	0.171	0.121	0.127	0.240	0.145	0.131
30–34	0.195	0.176	0.180	0.141	0.178	0.203	0.189	0.155	0.175	0.323	0.197	0.203
35–39	0.152	0.139	0.153	0.138	0.174	0.180	0.179	0.165	0.175	0.160	0.191	0.196
40–44	0.136	0.131	0.142	0.157	0.150	0.142	0.141	0.143	0.173	0.108	0.161	0.158
45–49	0.107	0.105	0.122	0.176	0.133	0.100	0.121	0.153	0.135	0.101	0.114	0.120
50–54	0.073	0.089	0.090	0.146	0.101	0.088	0.088	0.150	0.118	0.023	0.096	0.100
55–59	0.043	0.079	0.048	0.067	0.047	0.041	0.045	0.074	0.058	0.045	0.046	0.039
<i>Education</i>												
Primary	0.151	0.218	0.151	0.125	0.132	0.073	0.103	0.148	0.078	0.022	0.073	0.045
Lower secondary	0.150	0.161	0.138	0.084	0.135	0.156	0.129	0.125	0.114	0.020	0.126	0.123
Upper secondary	0.488	0.399	0.491	0.382	0.497	0.569	0.500	0.452	0.519	0.287	0.526	0.520
Post-sec. non-tert.	0.045	0.034	0.041	0.049	0.059	0.036	0.065	0.053	0.062	0.020	0.075	0.078
Technological Educational Institute	0.062	0.062	0.055	0.129	0.071	0.037	0.072	0.070	0.085	0.312	0.072	0.093
University	0.104	0.127	0.124	0.231	0.107	0.128	0.130	0.152	0.143	0.339	0.128	0.141
Mean tenure (years)	5.451	6.661	7.192	11.125	7.165	5.421	6.964	10.024	8.264	5.420	6.716	6.694
Share female	0.407	0.429	0.404	0.288	0.402	0.501	0.421	0.339	0.403	0.430	0.460	0.387
Share part-time	0.054	0.143	0.063	0.063	0.058	0.130	0.104	0.027	0.063	0.000	0.100	0.069
Share fixed-term	0.088	0.150	0.086	0.065	0.092	0.127	0.074	0.050	0.101	0.005	0.086	0.112
<i>Firm size (employees)</i>												
10–49	0.444	0.236	0.286	0.240	0.226	0.242	0.195	0.157	0.198	0.591	0.261	0.149
50–249	0.314	0.295	0.259	0.201	0.337	0.271	0.327	0.267	0.298	0.409	0.281	0.243
250–499	0.083	0.238	0.094	0.052	0.122	0.107	0.122	0.144	0.102	0.000	0.130	0.152
500–999	0.068	0.131	0.094	0.044	0.090	0.128	0.093	0.157	0.085	0.000	0.082	0.190
≥1,000	0.092	0.099	0.268	0.462	0.226	0.252	0.263	0.275	0.316	0.000	0.246	0.265
Employees	13,514	967	26,079	5,467	14,635	2,020	18,807	2,765	11,498	44	13,496	2,244
Firms	1,053	64	1,489	238	1,066	140	1,219	176	764	5	983	120

Notes: Statistics are weighted.

Source: Greek Structure of Earnings Survey (SES), 2002–2010, ELSTAT.

Table 7. Covariate means by bargaining regime: 2014, 2018, 2022

	2014				2018				2022			
	National	Other	Sect.	Firm	National	Other	Sect.	Firm	National	Other	Sect.	Firm
<i>Age group</i>												
20–24	0.047	0.024	0.023	0.042	0.077	0.043	0.047	0.054	0.058	0.041	0.055	0.043
25–29	0.128	0.076	0.074	0.105	0.124	0.081	0.100	0.090	0.107	0.094	0.108	0.085
30–34	0.178	0.159	0.171	0.182	0.156	0.155	0.131	0.128	0.132	0.149	0.114	0.097
35–39	0.192	0.208	0.199	0.180	0.170	0.191	0.172	0.181	0.135	0.160	0.135	0.128
40–44	0.166	0.181	0.186	0.190	0.171	0.162	0.191	0.187	0.160	0.180	0.170	0.173
45–49	0.141	0.155	0.175	0.150	0.138	0.173	0.169	0.152	0.158	0.146	0.162	0.174
50–54	0.095	0.123	0.114	0.095	0.101	0.130	0.126	0.129	0.142	0.127	0.158	0.186
55–59	0.053	0.075	0.056	0.055	0.062	0.066	0.065	0.080	0.108	0.103	0.097	0.113
<i>Education</i>												
Primary	0.066	0.080	0.038	0.053	0.042	0.032	0.029	0.038	0.044	0.042	0.033	0.048
Lower secondary	0.101	0.105	0.080	0.104	0.088	0.064	0.073	0.099	0.082	0.085	0.068	0.073
Upper secondary	0.520	0.416	0.516	0.552	0.541	0.517	0.524	0.516	0.480	0.411	0.532	0.464
Post-sec. non-tert.	0.076	0.073	0.068	0.088	0.097	0.137	0.080	0.085	0.079	0.094	0.072	0.079
Technological Educational Institute	0.092	0.124	0.083	0.086	0.086	0.062	0.086	0.111	0.124	0.090	0.115	0.094
University	0.146	0.202	0.215	0.117	0.146	0.188	0.209	0.152	0.191	0.277	0.179	0.242
Mean tenure (years)	6.254	7.993	9.922	7.331	4.843	7.830	8.538	7.693	5.133	7.853	6.014	7.965
Share female	0.419	0.392	0.454	0.430	0.416	0.400	0.505	0.420	0.436	0.360	0.475	0.475
Share part-time	0.158	0.063	0.200	0.207	0.272	0.295	0.325	0.199	0.227	0.339	0.451	0.446
Share fixed-term	0.098	0.086	0.075	0.162	0.142	0.041	0.126	0.125	0.141	0.160	0.237	0.200
<i>Firm size (employees)</i>												
10–49	0.339	0.246	0.152	0.238	0.409	0.211	0.168	0.308	0.318	0.077	0.090	0.083
50–249	0.330	0.375	0.194	0.289	0.328	0.392	0.241	0.209	0.406	0.329	0.274	0.174
250–499	0.126	0.178	0.086	0.092	0.130	0.118	0.092	0.142	0.110	0.132	0.126	0.107
500–999	0.107	0.114	0.066	0.128	0.076	0.069	0.058	0.136	0.058	0.115	0.099	0.198
≥1,000	0.098	0.087	0.503	0.254	0.057	0.210	0.441	0.205	0.108	0.348	0.411	0.438
Employees	12,877	1,327	6,295	4,846	14,537	908	3,957	5,664	325,647	3,985	32,598	77,244
Firms	1,002	104	329	314	1,094	64	191	367	3,725	35	126	336

Notes: Statistics are weighted.

Source: Greek Structure of Earnings Survey (SES), 2014–2022, ELSTAT.

Table 8. Collective bargaining regime and weekly base wages, 2002–2022: full-time employees

	(1) 2002	(2) 2006	(3) 2010	(4) 2014	(5) 2018	(6) 2022
<i>Panel A: OLS</i>						
Firm	0.082*** (0.027)	0.142*** (0.026)	0.052** (0.025)	0.036 (0.022)	0.006 (0.024)	0.038* (0.023)
Sector	0.010 (0.014)	0.031** (0.013)	0.004 (0.014)	0.109*** (0.021)	0.052 (0.036)	0.058 (0.039)
Other	0.018 (0.029)	−0.038 (0.030)	−0.023 (0.083)	0.072*** (0.026)	0.101*** (0.037)	0.159*** (0.057)
Worker controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	43,200	35,500	25,600	21,600	19,600	391,000
<i>Panel B: IPW</i>						
Firm	0.078*** (0.023)	0.138*** (0.025)	0.070*** (0.024)	0.016 (0.023)	0.011 (0.024)	0.040 (0.028)
Sector	0.010 (0.014)	0.034** (0.013)	0.005 (0.015)	0.112*** (0.019)	0.066* (0.035)	0.069** (0.032)
Other	0.000 (0.025)	−0.025 (0.032)	−0.027 (0.077)	0.087*** (0.024)	0.063* (0.037)	0.156** (0.064)
Worker controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	43,200	35,500	25,600	21,600	19,600	391,000

Notes: The sample is restricted to full-time employees. The dependent variable is the log weekly base wage, excluding additional pay. The base category is the national general collective agreement/no agreement. Worker controls: sex, age group, education, occupation, tenure, contract type. Firm controls: size bins, sector and region fixed effects. Standard errors clustered at the firm level in parentheses.

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Source: Greek Structure of Earnings Survey (SES), 2002–2022, ELSTAT.

Table 9. Bargaining regime and weekly base wages: no-contract firms separated from the national agreement (IPW estimates)

	2002	2006	2010	2014	2018	2022
Firm	0.088*** (0.025)	0.137*** (0.025)	0.059** (0.024)	0.040 (0.029)	0.020 (0.027)	0.152*** (0.042)
Sectoral	0.012 (0.014)	0.042*** (0.014)	0.008 (0.015)	0.122*** (0.023)	0.101*** (0.038)	0.152*** (0.050)
Other	0.026 (0.024)	−0.031 (0.032)	−0.021 (0.080)	0.095*** (0.027)	0.207*** (0.073)	0.286*** (0.098)
No contract	–	–	0.011 (0.023)	0.079 (0.051)	0.176*** (0.064)	0.011 (0.039)
Observations	46,027	38,227	27,266	25,345	25,066	439,474

Notes: The dependent variable is the log weekly base wage, excluding additional pay. The base category is the national general collective agreement. Dashes indicate that no firm reports the absence of a collective agreement in 2002 or 2006. Worker controls: sex, age group, education, occupation, tenure, contract type. Firm controls: size bins, sector and region fixed effects. Standard errors clustered at the firm level in parentheses.

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.
Source: Greek Structure of Earnings Survey (SES), 2002–2022, ELSTAT.

Table 10. Bargaining regime and weekly base wages: firms without a collective agreement excluded (IPW estimates)

	2002	2006	2010	2014	2018	2022
Firm	0.087*** (0.025)	0.138*** (0.025)	0.059** (0.024)	0.037 (0.029)	0.021 (0.027)	0.150*** (0.042)
Sectoral	0.012 (0.014)	0.041*** (0.014)	0.009 (0.015)	0.118*** (0.023)	0.105*** (0.038)	0.164*** (0.048)
Observations	45,060	36,207	26,430	23,042	23,268	430,125

Notes: The dependent variable is the log weekly base wage, excluding additional pay. The base category is the national general collective agreement. Firms reporting an individual employment contract or no collective agreement are excluded from the sample and from the first stage. Worker controls: sex, age group, education, occupation, tenure, contract type. Firm controls: size bins, sector and region fixed effects. Standard errors clustered at the firm level in parentheses.

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.
Source: Greek Structure of Earnings Survey (SES), 2002–2022, ELSTAT.

Table 11. Bargaining regime and weekly base wages: all seven survey categories (IPW estimates)

	2002	2006	2010	2014	2018	2022
Firm	0.078*** (0.026)	0.143*** (0.026)	0.059** (0.025)	0.032 (0.029)	0.018 (0.027)	0.155*** (0.044)
Plant	−0.061 (0.071)	0.033 (0.053)	0.011 (0.052)	0.098** (0.049)	0.003 (0.124)	0.074** (0.036)
Sectoral	0.014 (0.014)	0.040*** (0.014)	0.008 (0.015)	0.127*** (0.023)	0.100** (0.040)	0.132** (0.054)
Local sectoral	−0.041 (0.056)	0.033 (0.049)	0.155* (0.080)	0.081 (0.082)	0.090 (0.057)	0.181*** (0.064)
Other	0.027 (0.024)	−0.031 (0.033)	−0.021 (0.080)	0.094*** (0.027)	0.204*** (0.072)	0.282*** (0.096)
No contract	—	—	0.011 (0.023)	0.078 (0.052)	0.176*** (0.064)	0.009 (0.039)
Observations	46,027	38,227	27,266	25,345	25,066	439,474

Notes: The dependent variable is the log weekly base wage, excluding additional pay. The base category is the national general collective agreement. Dashes indicate that no firm reports the absence of a collective agreement in 2002 or 2006. Worker controls: sex, age group, education, occupation, tenure, contract type. Firm controls: size bins, sector and region fixed effects. Standard errors clustered at the firm level in parentheses.

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Source: Greek Structure of Earnings Survey (SES), 2002–2022, ELSTAT.

A.2 Propensity scores

Propensity score distributions, by collective bargaining regime

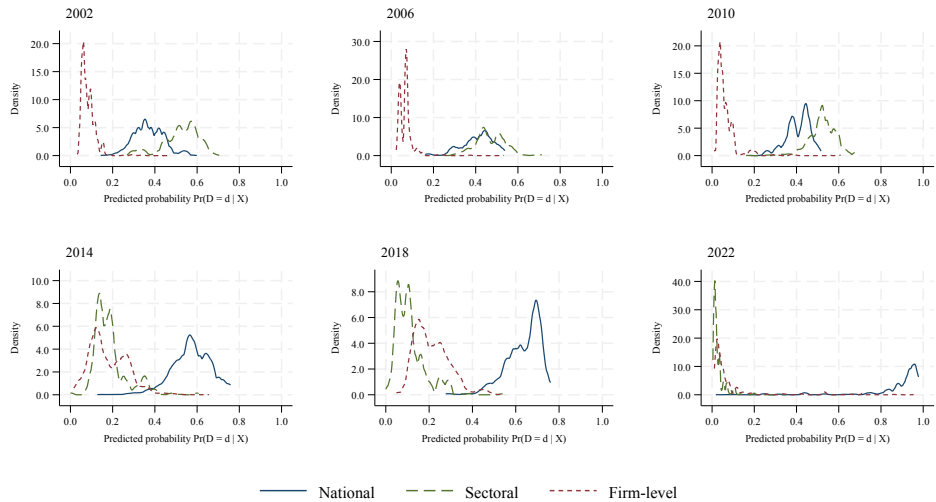


Figure 8. Propensity score distributions by collective bargaining regime, 2002–2022

Notes: Kernel densities of the estimated propensity scores.
Source: Greek Structure of Earnings Survey (SES), 2002–2022, ELSTAT.

Table 12. Overlap and effective sample size by wave and bargaining regime

Wave	Regime	Firms	Workers	ESS	Min. $\hat{p}$	Max. $\hat{p}$
2002	National	1,053	13,514	9,403	0.170	0.599
	Other	64	967	581	0.008	0.113
	Sector	1,489	26,079	13,444	0.267	0.705
	Firm	238	5,467	3,166	0.045	0.476
2006	National	1,066	14,635	6,953	0.166	0.539
	Other	140	2,020	989	0.018	0.126
	Sector	1,219	18,807	9,241	0.273	0.713
	Firm	176	2,765	1,259	0.024	0.534
2010	National	764	11,498	4,894	0.230	0.516
	Other	5	44	27	0.004	0.019
	Sector	983	13,496	6,070	0.268	0.686
	Firm	120	2,244	727	0.016	0.609
2014	National	1,002	12,877	5,291	0.223	0.758
	Other	104	1,327	495	0.018	0.221
	Sector	329	6,295	3,598	0.088	0.607
	Firm	314	4,846	2,150	0.016	0.656
2018	National	1,094	14,537	4,070	0.277	0.761
	Other	64	908	291	0.004	0.140
	Sector	191	3,957	1,699	0.019	0.540
	Firm	367	5,664	2,332	0.049	0.547
2022	National	3,725	325,647	38,513	0.045	0.978
	Other	35	3,985	493	0.002	0.093
	Sector	126	32,598	2,298	0.005	0.320
	Firm	336	77,244	3,476	0.011	0.955

Notes: Firms and workers are counts entering the second-stage regression. ESS is the effective sample size, $(\sum w)^2 / \sum w^2$, computed within each regime using the stabilized IPW $\times$ employee weight; it falls below the nominal worker count when weights are dispersed. Min. and Max. $\hat{p}$ are the smallest and largest fitted probabilities of the own regime among firm-years in the cell. The 2010 Other cell (five firms, 44 workers, effective sample size 27) is the thinnest in the panel and is not interpreted.

Source: Greek Structure of Earnings Survey (SES), 2002–2022, ELSTAT.

Table 13. Covariate balance before and after stabilized inverse probability weighting, by wave

Variable	Other vs. National		Sectoral vs. National		Firm vs. National	
	Unweighted	Weighted	Unweighted	Weighted	Unweighted	Weighted
<i>Panel A. 2002</i>						
Female	0.046	0.018	0.005	0.002	0.251	0.166
Age group	0.117	0.077	0.097	0.059	0.416	0.205
Education	0.060	0.155	0.037	0.030	0.412	0.167
Tenure band	0.073	0.022	0.205	0.152	0.609	0.293
Part-time	0.301	0.297	0.040	0.073	0.038	0.085
Contract type	0.270	0.288	0.031	0.062	0.105	0.043
Firm size	0.405	0.000	0.519	0.374	0.815	0.247
NACE section	0.538	0.246	0.104	0.200	0.105	0.082
NUTS-1 region	0.066	0.019	0.064	0.121	0.124	0.042
Mean	0.208	0.125	0.123	0.119	0.319	0.148
<i>Panel B. 2006</i>						
Female	0.199	0.165	0.038	0.079	0.132	0.066
Age group	0.134	0.188	0.076	0.171	0.230	0.076
Education	0.054	0.017	0.101	0.055	0.073	0.035
Tenure band	0.179	0.220	0.002	0.130	0.331	0.110
Part-time	0.250	0.201	0.169	0.216	0.156	0.111
Contract type	0.113	0.011	0.061	0.047	0.128	0.047
Firm size	0.082	0.098	0.101	0.057	0.253	0.275
NACE section	0.506	0.209	0.196	0.160	0.031	0.085
NUTS-1 region	0.186	0.051	0.088	0.108	0.210	0.114
Mean	0.189	0.129	0.092	0.114	0.172	0.102
<i>Panel C. 2010</i>						
Female	0.053	0.140	0.114	0.135	0.033	0.018
Age group	0.410	0.562	0.141	0.174	0.136	0.211
Education	0.869	0.911	0.042	0.026	0.062	0.046
Tenure band	0.184	0.371	0.123	0.134	0.149	0.204
Part-time	0.367	0.346	0.134	0.175	0.024	0.029
Contract type	0.421	0.436	0.034	0.049	0.069	0.080
Firm size	1.393	1.426	0.163	0.091	0.103	0.461
NACE section	0.592	0.184	0.027	0.060	0.263	0.036
NUTS-1 region	0.569	0.573	0.190	0.117	0.037	0.053
Mean	0.540	0.550	0.108	0.107	0.097	0.126
<i>Panel D. 2014</i>						
Female	0.053	0.036	0.072	0.024	0.022	0.039
Age group	0.224	0.201	0.193	0.146	0.059	0.096
Education	0.134	0.370	0.182	0.121	0.048	0.021
Tenure band	0.252	0.248	0.471	0.343	0.132	0.214
Part-time	0.306	0.345	0.111	0.006	0.129	0.066
Contract type	0.103	0.094	0.094	0.027	0.180	0.036
Firm size	0.101	0.256	0.879	0.327	0.404	0.185
NACE section	0.146	0.205	0.093	0.012	0.190	0.014
NUTS-1 region	0.147	0.235	0.220	0.139	0.117	0.060
Mean	0.163	0.221	0.257	0.127	0.142	0.081
<i>Panel E. 2018</i>						
Female	0.034	0.030	0.179	0.083	0.007	0.007
Age group	0.184	0.083	0.171	0.159	0.186	0.193
Education	0.123	0.011	0.160	0.068	0.039	0.039
Tenure band	0.502	0.464	0.489	0.345	0.344	0.336
Part-time	0.050	0.312	0.114	0.016	0.173	0.116
Contract type	0.081	0.176	0.030	0.045	0.026	0.078
Firm size	0.483	0.599	0.937	0.358	0.497	0.304
NACE section	0.255	0.388	0.105	0.048	0.156	0.070

Continued on next page

Table 13 (continued)

Variable	Other vs. National		Sectoral vs. National		Firm vs. National	
	Unweighted	Weighted	Unweighted	Weighted	Unweighted	Weighted
NUTS-1 region	0.303	0.088	0.121	0.059	0.030	0.006
<i>Mean</i>	0.224	0.239	0.256	0.131	0.162	0.128
<i>Panel F. 2022</i>						
Female	0.156	0.291	0.078	0.061	0.078	0.013
Age group	0.004	0.244	0.025	0.084	0.160	0.066
Education	0.139	0.175	0.020	0.129	0.063	0.017
Tenure band	0.298	0.461	0.143	0.219	0.308	0.054
Part-time	0.250	0.037	0.487	0.281	0.476	0.066
Contract type	0.057	0.181	0.246	0.108	0.159	0.145
Firm size	0.816	0.051	0.903	0.281	1.136	0.007
NACE section	0.350	0.439	0.038	0.055	0.135	0.005
NUTS-1 region	0.389	0.055	0.101	0.026	0.027	0.027
<i>Mean</i>	0.273	0.215	0.227	0.138	0.283	0.045

Notes: Entries are absolute standardized differences between each bargaining regime and the National base. *Unweighted* uses the SES employee sampling weight only; *Weighted* uses the stabilized inverse probability weight multiplied by the employee sampling weight. The standardized difference is $(\bar{x}_d - \bar{x}_0) / \sqrt{(s_d^2 + s_0^2)/2}$, computed at the worker level.

Source: Greek Structure of Earnings Survey (SES), 2002–2022, ELSTAT.

Previous Papers in this Series

221. Efi Adamopoulou, Manolis Galenianos, Nicholas Giannakopoulos, Pantelis Kammas, and Ioannis Laliotis, [Earnings Dynamics Through Boom, Crisis, and Recovery: Evidence from Greece](#), July 2026
220. Peter Sanfey and Dimitris Sourvanos, [Out of the abyss: Has Greece fully recovered from the crisis?](#), June 2026
219. Ioannis G. Fountoukidis, Eleni L. Dafli, Ioannis E. Antoniou, and Nikos C. Varsakelis, [Recurrence as a Governance Signal: Diagnostic Network Metrics for Public Procurement Oversight in Greece](#), May 2026
218. Theodoros Zachariadis and Elias Giannakis, [Slow but Tangible Progress: The Economic Dividends of Decarbonisation in Cyprus](#), April 2026
217. Christos Papagiannis, Stefanos Tyros and Sofia Vasilopoulou, [Beyond Left and Right: Quantitative Evidence of the Establishment–Anti-Establishment Dimension in Greece](#), March 2026
216. Kyriakos Andreou, Andreas Fousteris, Sotirios Kokas, Alexandros Kontonikas and Emmanouil Pyrgiotakis, [Modelling Greek Firms’ Survival Rates and Identifying “Zombies”](#), February 2026
215. Stelios Giannoulakis, Angelos Kanas, Marina-Eliza Spaliara and John Tsoukalas, [U.S. Tariffs and Greek Exports](#), January 2026
214. Antonis Pastellopoulos, [Cypriot Identity as an Alternative: Grassroots Perspectives on Cypriotness and Nationalism](#), December 2025
213. Charis Psaltis, Neophytos Loizides, Andreas Michael, Nikandros Ioannidis, Edward Morgan Jones and Laura Sudulich, [Natural resources co-management, green transition and divided societies - Zones of agreement in the Cyprus case using a conjoint survey experiment](#), November 2025
212. Michalis Nikiforos, Vlassis Missos, Christos Pierros and Nikolaos Rodousakis, [The café economy: Structural transformation in Greece in the wake of austerity and “reforms”](#), October 2025
211. Andreas Psarras, Theodore Panagiotidis and Andreas Andronikidis, [Fuel price effects on motor vehicle collisions: Evidence from Greece](#), September 2025
210. Yani Kartalis, [From Ostensible to Actual Media Pluralism. An examination of content diversity in Greece's fragmented online media system.](#), August 2025
209. Aikaterini E. Karadimitropoulou, Tryfonas Christou, Michael Chletsos and Alexandros P. Bechlioulis, [Wage Reforms and Equality Gains: Evidence from Greece](#), July 2025
208. Theodoros Zachariadis, Constantinos Taliotis, Melina Moleskis and Pantelis Solomou, [A Climate Neutrality Strategy for Cyprus](#), June 2025
207. Kyriakos Drivas and Afroditi Anagnosti, [On the Role of Innovation in the Generation of Value-Added Trade Opportunities](#), April 2025
206. Athanasia Chalari, [Transitioning from European Citizenship towards Immigration Identities after Brexit \(the case of Greek diaspora in the UK\)](#), March 2025