Salary Caps for Public Managers and Public Sector Performance

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Abstract

This paper examines how wage caps for public sector managers influence their career trajectories and the selection of talent into public employment. We study a 2014 reform in Italy that introduced a cap on top public sector salaries, leveraging unique matched employer-employee data and an event study design. Managers of public firms affected by the cap were, on average, 10 percentage points more likely to leave for a private sector job. Those who transitioned were significantly more productive than those who remained. Manager departures also increased the likelihood that their co-workers exited public employment—particularly among high-productivity individuals. We estimate that the reform resulted in a roughly 2 percent decline in public management productivity, while reducing public employment costs by only 0.1 percent.

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1. Introduction

In many advanced economies, the public sector accounts for a substantial share of total employment—averaging around 20 percent (OECD, 2021). Public employees are responsible for delivering essential services and play a vital role in the functioning of modern democracies. Nevertheless, concerns about inefficiency and a lack of competitive pressures have made the public sector a frequent target of criticism (Garibaldi and Gomes, 2020; Boeri et al., 2021). Among the various proposals aimed at reducing public employment costs, capping the salaries of public managers has proven particularly popular: within the European Union alone, eleven countries have implemented such measures (Bruni, 2017). However, the effects of these policies remain poorly understood. Salary caps may drive out high-performing managers, potentially undermining the quality and effectiveness of public employment. Despite their central role in overseeing service delivery, implementing policies, and enhancing team productivity (Fenizia, 2022), little is known about how public managers respond to wage incentives—largely due to the limited availability of detailed administrative data on public employees.

This paper fills this gap by analyzing the effects of a salary cap introduced in Italy in 2014. The cap applied to all employees in public administration and state-owned enterprises, setting a maximum gross annual salary of €240,000. The policy primarily targeted top public managers and resulted in substantial net wage reductions for this group. We study how the reform affected the career trajectories of these managers—specifically, whether it increased their likelihood of leaving public employment and, if so, whether they exited to retirement or transitioned to the private sector. In addition, we investigate spillover effects on their colleagues and assess the broader implications for the productivity of public management.

Our analysis draws on two unique administrative data sources from the Italian Social Security Institute (INPS). The first is matched employer-employee data covering the entire population of private sector workers and firms. The second is similarly structured data for all public sector employees, including rich information typically unavailable in standard social security records.[1] This comprehensive dataset allows us to identify public managers, measure their earnings, and determine who was affected by the salary cap, including tracking transitions between public and private employment.

We focus our main analysis on managers employed by wholly or partly state-owned enterprises operating in market-oriented sectors such as transport, finance, and communications. These managers are particularly relevant for our analysis, as they are more likely to have outside options in the private sector. To estimate the causal impact of the salary cap, we implement a difference-in-differences strategy, comparing the career outcomes of managers who were affected by the cap to those who were not, before and after the reform. The treatment group consists of managers in public firms earning €240,000 or more in 2014 who experienced direct salary cuts. As a control group, we use public managers earning between €150,000 and €240,000 in 2014, matched one-to-one within age-by-gender cells to ensure comparability.

Our analysis confirms that treated and control managers exhibited parallel trends prior to 2014. By 2020—six years after the introduction of the cap—treated managers were approximately 12 percentage points more likely to have left their 2014 employer than control managers, corresponding to an effect size of about 14 percent. This increase in turnover is almost entirely driven by transitions to the private sector, with no significant impact on retirement probabilities. Treated managers also experienced a 5–10 percent reduction in

[1] In many countries, public sector employees are not formally paying social security contributions and are therefore not included in administrative data drawn from social security registrars.

average weekly wages, concentrated among those who remained in the public sector. Consequently, the reform led to an overall decline in annual labor earnings for affected individuals who did not transition to private employment.

These findings are robust across several alternative matching strategies. We consider control groups composed of managers earning above €100,000 or €200,000 in 2014 (instead of the baseline €150,000 threshold), employ one-to-two matching rather than one-to-one, and replicate our event study analysis on the full, unmatched sample of managers. Additionally, a placebo analysis based on a hypothetical reform in 2009 yields no significant effects, further supporting the validity of our empirical design.

We also extend our analysis to public employees in sectors with limited private sector alternatives, such as health, defense, education, and public administration. Due to data constraints, we observe these individuals only from 2014 onward. Estimated effects in this group are small and statistically insignificant, suggesting that managers in the broader public sector face fewer viable outside options compared to those in state-owned enterprises—our baseline sample.

Next, we examine potential spillover effects within the control group. While managers earning below the cap were not directly affected by an immediate wage cut, the policy may have lowered their expected or potential future earnings. To test this, we conduct a placebo exercise comparing managers just below the cap threshold (€200,000–€240,000)—who are most likely to adjust their expectations in response to the reform—with those further below (€150,000–€200,000). We find a small (2 percentage point) and imprecisely estimated increase in the likelihood of transitioning to the private sector among the higher-earning control group. Although not statistically significant, the effect is directionally consistent with our main findings and suggests that our baseline estimates may understate the true average treatment effect of the policy.

We also investigate how the salary cap affected the selection of managerial talent into public employment. To proxy for managerial productivity, we use worker fixed effects from an AKM wage regression (Abowd et al., 1999) estimated for Italian public and private sector workers in the pre-reform period. Managers are classified as high- or low-quality based on whether their estimated AKM effect lies above or below the group median, and we estimate our model separately for each group.

Our results show that the increased likelihood of exiting to the private sector among treated managers is entirely driven by high-AKM individuals. Furthermore, public firms that lose these managers do not succeed in replacing them with candidates of similar quality, resulting in a decline in the overall productivity of public sector management. We estimate this productivity loss at approximately 2 percent relative to pre-reform levels. This decline significantly exceeds the fiscal savings from the policy, which totaled just €180 million between 2015 and 2020—equivalent to only 0.1 percent of the annual public employment wage bill.

The overall impact of the wage cap on public employment extends beyond the directly affected managers and may also influence their co-workers. In the final part of the paper, we examine these potential spillover effects by comparing the co-workers of treated managers who left the public sector for private sector jobs with observationally similar co-workers of treated managers who remained in public firms. We find suggestive evidence that co-workers of departing managers were more likely to leave their firms and transition to the private sector, although the estimates are imprecise. A heterogeneity analysis indicates that this effect is concentrated among high-AKM individuals in managerial roles, suggesting that the departure of talented colleagues further amplifies the adverse effects of the wage cap on public sector productivity.

Our work contributes to several strands of the literature. It relates to a long-standing body of work on the economics of the public sector, particularly concerning incentive structures and organizational hierarchies (Katz and Krueger, 1991; Dustmann and van Soest, 1998; Bradley et al., 2017; Boeri et al., 2021; Fenizia, 2022; Fenizia et al., 2024). More specifically, by providing novel evidence on public wage policies, we add to the literature on how financial incentives influence the recruitment and motivation of public sector workers (Dal Bó et al., 2013; Burgess et al., 2017; Geys et al., 2017; Chen et al., 2024; Deserranno et al., 2024). While much of this work relies on case studies or field experiments (Finan et al., 2017), our analysis exploits a natural experiment and leverages rich administrative data from social security records covering the universe of public employees. Furthermore, whereas existing studies typically explore the effects of positive financial incentives such as performance pay or bonuses, our paper examines the inverse: the consequences of imposing an upper bound on compensation through a salary cap.

This paper also contributes to the broader literature on managers. While prior research has documented the critical role of managers and managerial practices in shaping private sector performance (Bertrand and Schoar, 2003; Bloom and Van Reenen, 2007; Lazear et al., 2015; Giorcelli, 2019; Sauvagnat and Schivardi, 2024), much less is known about managerial dynamics in the public sector (e.g., Rasul and Rogger, 2018; Janke et al., 2019). A recent contribution by Fenizia (2022) underscores the pivotal role of managers in driving productivity and output in the public sector using administrative data from Italy. Our study builds on this work by providing new evidence on how public executives respond to wage caps, shedding light on the incentive structures they face. Given the central role of public managers in the functioning of modern bureaucracies—and the widespread adoption of salary cap policies—our findings carry important implications for policymakers seeking to balance fiscal discipline with the need to preserve managerial quality and public sector performance.

In addition, this paper contributes to the literature on the effects of pay cuts on workers. Previous studies in the private sector context, such as Krueger and Friebel (2022) and Coviello et al. (2022), show that pay reductions can lead to higher turnover, increased absenteeism, and declines in individual productivity and effort. We complement these findings by analyzing the public sector, highlighting how wage caps influence not only individual exit decisions but also broader organizational dynamics and talent retention.

Lastly, this paper contributes to the literature on how individual labor supply shocks affect the careers of co-workers. Recent studies in the private sector have shown that worker exits can increase wages and retention probabilities among remaining employees (Jäger and Heining, 2022), that delayed retirement by older workers can hinder the career progression of younger colleagues (Bianchi et al., 2022), and that peer effects can influence participation in social programs (Dahl et al., 2014). We extend this line of research to the public sector, offering new evidence on how institutional constraints mediate the spillover effects of labor supply shocks within organizations.

The remainder of the paper is structured as follows. Section 2 presents the institutional background and data, along with descriptive statistics on the Italian public sector and its managerial workforce. Section 3 outlines our empirical strategy. Section 4 reports the main results and robustness checks. Section 5 evaluates the reform's effects on the quality of public employment and explores potential spillovers on co-workers. Section 6 concludes.

2. Background, Data and Descriptive Statistics

2.1. Institutional background

The Italian public sector. Public employees account for roughly 13 percent of total employment in Italy (about 3 million workers), compared to an OECD average of 18 percent

(OECD, 2021). This share has declined slowly in the past two decades, partly due to several cost-cutting measures such as turnover restrictions. As of 2021, Italian public employees were, on average, just below 50 years old, almost ten years older than private sector workers. The Italian public sector offers more stable careers and higher weekly earnings than the private sector (€660 versus €590)—see the INPS Annual Report (2023) for more details. Public managers represent roughly 170,000 people, just below 5 percent of public employment. Except for a few categories (e.g., defense), the number of public managers has decreased in line with the rest of public employees (Corte dei Conti, 2020).

The recruitment of public employees, including managers, is highly regulated and occurs almost exclusively through national public calls. The wage progression of managers in public administration depends on firm tenure and experience and is largely determined by national collective bargaining agreements. However, state-owned companies, while still required to follow transparency and impartiality criteria set by the Law (Decree n. 165/2001), have more freedom in setting their hiring and promotion procedures or pay policies and are more similar to private firms. Public managers can be hired with either open-ended or fixed-term contracts. In the latter case, contracts typically last three years.

The policy. We study Law n. 89\2014, which in May 2014 imposed a salary cap of €240,000 per year (gross of taxes) for public sector managers. This measure aimed to reduce public spending, with the government claiming that "*no public manager should be paid more than the President of the Italian Republic.*"[2] The reform involved all managers working in the public administration and in (wholly or partly) state-owned companies,

[2] The announcement of this policy was not anticipated, as confirmed by limited media coverage and online searches (based on Google Trends) before Spring 2014. See https://st.ilsole24ore.com/art/notizie/2014-03-21/renzi-vuole-tetto-stipendi-manager-pubblici-pari-indennita-napolitano-239181-euro-182229.shtml?uuid=ABTqCm4&refresh_ce=1.

excluding those listed on the stock market.[3] It was de facto targeted at top managers—roughly 0.02 percent of public employees were earning more than the cap in 2014 (the cap was also well above the 99th percentile of the wage distribution in the private sector). This policy sparked intense debate in the political arena, with prominent managers of public companies threatening to resign and warning that the cap could harm the quality of public sector management.[4]

2.2. Data

The empirical analysis relies on longitudinal matched employer-employee data for the population of Italian workers in both the public and private sector, sourced from the Italian Social Security Institute (INPS), which we access through the VisitINPS Scholars program. We merge information from various INPS archives.

"Public-in-private". Our primary source is the matched database for the population of Italian workers and firms in the *private* sector. Due to contribution-related reasons, around 240,000 public employees—roughly 7.5 percent of public employment in Italy—are also included in this database. We refer to these as "public-in-private" workers. Because this is the only group of public employees that we can observe before the reform year (2014), our analysis will focus predominantly on public-in-private workers. This group includes employees of state-owned companies operating in industries with market-like characteristics such as broadcasting, transportation, and financial services, but not workers in broader public administration, health, or education. We conjecture that the effects of a public sector wage cap are more salient for workers with outside options in the private sector, making this group of public employees particularly interesting to study. In addition,

[3] A wage cap for public administration workers had already been set in 2011 equal to the salary of the President of the Constitutional Court (around €310,000). The 2014 law substantially lowered the cap to €240,000 and extended it to managers of state-owned companies, in addition to those in the public administration.
[4] See, for example, https://www.ansa.it/amp/english/news/business/2014/04/09/fat-cat-managers-wont-be-missed_2a117bbe-6a36-4892-8ca6-2f0f5b5a8581.html.

while managers of state-owned companies were, for the first time, covered by a wage cap in 2014, managers of the broader public administration had been subject to a higher cap (€310,000) since 2011 (see Section 2.1). Appendix A provides more detail on how we identify public employees in the private sector data.

The dataset spans the years between 2005 and 2020. It collects information on workers' earnings, weeks worked, contract status (full- or part-time, temporary or permanent), broad occupation (managers, mid-managers, white collars, blue collars) and demographics (e.g., age, gender, location). We only observe total pay and cannot distinguish between base pay and bonuses. We also use this database to collect information for the population of private sector workers and firms, making it possible to identify worker transitions between the public and the private sector.

Broader public sector. The INPS archives also contain longitudinal matched employer-employee data on broader public sector employment (e.g., public administration, health, education, and defense—the majority of public employees in Italy), reporting information on earnings, sector, contract type, and demographics. However, the data are available only starting in 2014, when the wage cap was implemented. Thus, we cannot implement our difference-in-differences strategy (described in the next Section) for these workers, as we cannot estimate pre-reform coefficients for them. That said, we will investigate the effects of the wage cap for this broader group of public employees by examining their post-2014 labor market outcomes—including possible transitions to private firms, as we can track these workers in the private sector database, too.

Firm-level data. Additional firm data is available in the INPS records, reporting the firm's sector, size, age, and location. We merge this data with the worker data using firm identifiers. We also obtained balance sheet data (including information on firm value added) from income statements collected by the Cerved Group. The data, available until 2018, can

again be linked to the INPS archives using firm identifiers. Unfortunately, the Cerved balance sheet data primarily cover private-sector firms, with only a limited number of public companies in our already small sample (see Section 3) matched to it. This limitation prevents us from conducting a comprehensive analysis of the policy's effects on public companies' productivity. Consequently, we will only present suggestive evidence later in the paper.

2.3. Descriptive statistics

Worker characteristics. Table 1 summarizes the demographic and labor market characteristics of Italian public sector workers, with all statistics referring to the year 2014. The analysis begins with the full public sector (Columns 1–3) and then turns to workers employed in public firms operating in market-oriented sectors—referred to as "public-in-private" workers (Columns 4–6). For each group, we first present descriptive statistics for all workers (Columns 1 and 4) and then focus on those earning more than €150,000 in 2014—approximately the 99th percentile of the public sector wage distribution—whom we refer to as "top public managers." Within this subset, we further distinguish between those earning below the €240,000 salary cap (Columns 2 and 5) and those earning above it (Columns 3 and 6).

In 2014, the Italian public sector employed nearly 3.2 million workers (Column 1). Approximately 7.5% of these workers—around 240,000 individuals—were employed in publicly owned companies operating in market-oriented sectors and are included in the public-in-private database (Column 4). As previously noted, public-in-private workers differ markedly from the broader public sector workforce: they have a significantly lower share of women (29% vs. 57%), a higher prevalence of temporary contracts, and more extensive prior experience in the private sector.

Top public managers (Columns 2–3 and 5–6) differ even further from the general public workforce. They have an even lower female share, tend to be older, and possess more work experience on average. The core analysis focuses on public-in-private top managers earning more than €150,000 in 2014—roughly 1,600 individuals (Columns 5–6). Among them, 219 managers earned above the €240,000 cap and constitute our main treatment group (Column 6).

Appendix Table B1 compares these public-in-private managers (within industries) to private sector managers earning more than €240,000. We find that private sector managers tend to earn higher wages, are younger on average, and are more likely to hold open-ended contracts compared to their public-in-private counterparts.

Sectors. Table B2 presents the sectoral distribution of public-in-private workers, focusing on top public managers in 2014. Most are concentrated in sectors such as financial activities, transportation, information technology, and other services. In contrast, Table B3 presents the sectoral distribution for the remainder of the public sector, showing a strong concentration of employment in education, health, and local administration.

Transitions. Table 2 provides a descriptive overview of the career outcomes of top public managers following the introduction of the salary cap. Only 40% of treated managers—those earning above the cap—remained in the public sector after 2014, compared to 63% of managers earning below the cap. This higher exit rate among treated managers is driven both by a greater likelihood of retirement (41% vs. 24%) and by more frequent transitions to the private sector (13% vs. 5%). However, some of these differences may reflect underlying demographic disparities: treated managers tend to be older than their counterparts and are therefore closer to retirement age, as shown in Table 1. The next section outlines our empirical strategy, which accounts for these baseline imbalances.

3. Empirical Strategy

Baseline strategy. Our identification strategy exploits the clear structure of the 2014 wage cap reform: public-in-private managers earning above the €240,000 threshold in 2014 constitute the treatment group (see Table 1, Column 6). The broad control group includes all public-in-private managers earning below the cap. To improve comparability between treated and control managers, we first restrict the control group to those earning between €150,000 and €240,000 in 2014 (Table 1, Column 5).[5] Since treated managers are still more likely to be male and older (as shown in Table 1, Columns 5–6), we further refine the control group using a simple matching approach. Specifically, we match each treated public manager to a control manager randomly selected from the same age-by-gender cell and within the €150,000–€240,000 earnings range in 2014.[6] This one-to-one matching (without replacement) successfully pairs nearly all treated managers (213 out of 219) with control units. Descriptive statistics for the matched sample are provided in Table B4, Panel A, Columns 1–2. Aside from the (mechanical) difference in earnings, treated and control managers are similar across observable characteristics.

Using this matched sample, we compare the evolution of outcomes for treated and control managers before and after the introduction of the wage cap.[7] Our main outcomes of interest include the probability of job separation, retirement, transitions to the private sector, weeks worked, and earnings. By tracking these outcomes over time, we aim to quantify the impact of the policy on career trajectories and labor market behavior. To do so, we estimate the following event-study regression:

[5] As we show below, the results are robust to alternative choices of the lower wage bound used to define the potential control group.
[6] We assess the robustness of our results using alternative matching strategies, as detailed below.
[7] Due to our decision to narrow the control group around the €240,000 threshold, our design closely resembles a difference-in-discontinuities approach, as proposed by Grembi et al. (2016).

$$y_{i,t} = \alpha_i + \theta_t + \sum_{j \neq 2013} \rho_j \cdot \mathbb{I}[t = j] \cdot T_i + \varepsilon_{i,t} \qquad (1)$$

Here, $y_{i,t}$ denotes the outcome of interest for worker i in year t, α_i and θ_t are worker and year-fixed effects, respectively, and T_i is a treatment indicator taking the value of one if worker i's wage was above the €240,000 cap in 2014. The coefficients of interest ρ_j capture the difference in outcomes between treated and control managers each year compared to the same difference in 2013 (the year before the implementation of the cap), which is normalized to zero. Standard errors are clustered at the worker's level.

The causal interpretation of the event-study coefficients rests on the standard parallel trends assumption: in the absence of the policy, labor market outcomes for managers earning above and below the cap in 2014 would have followed similar trajectories. To assess the validity of this assumption, we examine pre-trends by plotting the estimated ρ_j coefficients in the years *preceding* the implementation of the wage cap.

Spillovers. A potential concern with our design is that the salary cap may have affected not only the actual wages of managers earning above the threshold but also the expected earnings of those below it. If managers just under the cap revised their expectations downward in response to the reform, the policy could have influenced outcomes within the control group—potentially violating the Stable Unit Treatment Value Assumption (SUTVA). To the extent that these spillover effects operate in the same direction as the estimated average treatment effect on the treated (ATT), our results would represent a conservative estimate—that is, a lower bound—of the policy's true impact. We address these potential spillover effects in Section 4.2.

Effects on co-workers. We extend our analysis to examine the potential spillover effects of the policy on the co-workers of public managers affected by the reform. Specifically, we

compare the co-workers of treated managers who left their jobs for the private sector (treated group) to the co-workers of treated managers who remained in their public firms (control group).[8] Since we cannot directly observe team structures in the data, we adopt a broader definition of co-workers: all employees working in the same firm and municipality as a treated manager in 2014, the year the reform was implemented, whose earnings fell below the salary cap.

Because the co-workers of managers who leave the public firm may differ systematically from those whose managers stay, we implement one-to-one nearest-neighbor propensity score matching to ensure a more comparable set of co-workers for analysis. The matching is based on individual characteristics—age, gender, tenure, and 2014 wage—within the same occupational group. This approach yields a balanced sample of 2,369 treated co-workers and an equal number of control co-workers.[9] Appendix Table B5 provides a detailed description of this sample, presenting characteristics separately for co-workers in management and middle-management roles (Columns 1–2) and those in other occupations, such as white- and blue-collar positions (Columns 3–4). Using this matched sample, we estimate the following regression model:

$$y_{i,t} = \alpha_i + \theta_t + \sum_{j \neq 2013} \delta_j \cdot \mathbb{I}[t = j] \cdot LM_i + v_{i,t} \qquad (2)$$

In this specification, the treatment indicator LM_i takes the value of one if worker i's manager left the public firm and moved to the private sector, and zero if the manager remained. As in previous specifications, we include worker and year fixed effects. While this design helps

[8] To define the treatment group, we consider the co-workers of treated managers who left the public firm in the years after the introduction of the cap and moved to the private sector (27 of 219 treated managers, see Table 2). To define the control group, we consider the co-workers of treated managers who remained at their 2014 (public) company until 2020 (87 out of 219 treated managers, see Table 2).

[9] The matching procedure is done without replacement, using a 0.05 caliper, and within broad workers' occupation cells (managers, mid-managers, white collars, blue collars).

control for time-invariant differences between co-workers, it cannot fully account for unobserved, time-varying factors that may differ between those exposed to leaving versus staying managers. To assess the plausibility of the parallel trends assumption, we again examine the pre-2014 event-study coefficients. However, because a manager's decision to exit may be correlated with unobserved shocks that also influence co-worker outcomes, we interpret the co-worker analysis as descriptive rather than causal.

4. Results

4.1. Baseline analysis

Figures 1 and 2 illustrate the event-study coefficients derived from the estimation of Equation 1 on the matched balanced sample of public managers outlined in Section 3. Additionally, we separately present coefficient estimates for the year 2020, summarizing the long-run effects of the reform in Table 3.

Employment outcomes. Figure 1 focuses on employment outcomes. Across the various event-study plots, coefficients in the pre-reform years are close to zero, validating the parallel trends assumption. Part A of Figure 1 (and Table 3, Panel A, Column 1) presents the probability of staying at the 2014 firm, demonstrating that treated managers are more likely to leave their jobs following the introduction of the cap. The effect is modest (ranging from 2 to 5 percentage points) in 2015 and 2016 but progressively grows larger over time. By 2020, managers affected by the cap are almost 13 percentage points—roughly 14 percent of the post-2014 control mean—more likely to have left their public sector firm than control managers (Appendix Figure B1 plots the raw means for treated and control managers over time). Part B of Figure 1 (and Table 3, Panel A, Column 2) shows that this is not due to increased retirement probabilities, as the estimated coefficient hovers around zero after 2014, but instead reflects a stark increase in the probability that managers move to the

private sector (Figure 1 Part C and Table 3, Panel A, Column 3). This effect amounts to about 12 percentage points in 2020. Finally, we find no evidence of effects on treated managers' labor supply at the intensive margin. This is reflected in the null coefficients for the number of weeks worked, as shown in Figure 1, Part D (and Table 3, Panel A, Column 4).

Earnings. Figure 2, Part A, presents the event-study coefficients for (log) weekly wages. The corresponding long-run effects are reported in Table 3, Panel B, Columns 1–3, which show wage coefficients separately for all treated managers (Column 1), those who remain in the public sector (Column 2), and those who move to the private sector (Column 3). Treated managers experience a wage decline of 5–10 percent in the years following the reform, driven primarily by those who remain in the public sector. In contrast, we estimate no wage effect for treated managers who transition to the private sector.[10] Combining wage and employment effects, we find that the policy led to an overall average reduction in labor earnings for treated managers (Figure 2 Part B and Table 3, Panel B, Column 4).

4.2. Robustness and other results

We now address potential concerns with our design. First, we examine the possibility of spillovers affecting the control group. Next, we test the robustness of our findings through placebo exercises, and alternative samples and specifications. We summarize the long-run coefficient estimates in Table 4. All corresponding event-study plots are provided in Appendix B.

Spillover effects. Beyond the direct impact on managers' earnings above the cap, the policy may also have affected expectations or perceived wage trajectories of managers below

[10] The effect for leavers is estimated imprecisely due to the small number of managers in this group. Descriptively, public managers who move to a private firm earn wages that are, on average, well above the 99th percentile of the private-sector wage distribution and do not experience wage losses relative to their pre-2014 public-sector salary—in fact, they see small wage gains compared to their previous wage in the public sector.

the threshold, potentially inducing spillover effects on the control group. To assess this, we redefine the treatment group to include managers earning between €200,000 and €240,000 in 2014—just below the cap but potentially responsive to the reform—and compare them to a revised control group of managers earning between €150,000 and €200,000. As in the main analysis, we apply one-to-one matching within age-by-gender cells to ensure comparability. Balancing statistics for this sample are reported in Table B4, Panel A, Columns 3–4.

Table 4, Panel A (and Appendix Figure B2), presents event-study estimates from Equation 1 using this alternative sample. We find no significant effects on job separation, retirement, or weeks worked. There is a small, statistically insignificant increase (1.5 percentage points after five years) in the probability of moving to the private sector. Crucially, the absence of strong spillover effects suggests that our baseline design (Figure 1) yields conservative estimates of the policy's impact, representing, if anything, a lower bound of the true average treatment effect on the treated (ATT).

Alternative matching strategies. To further assess the robustness of our baseline findings, we re-estimate Equation 1 using alternative sample definitions. The results are presented in Table 4, Panels B–E, and Appendix Figures B3–B6, with balancing statistics reported in Appendix Table B4.

First, we vary the pool of potential control managers by including those earning above €100,000 or above €200,000 in 2014 (instead of the baseline threshold of €150,000), prior to matching. These changes produce alternative matched samples, but the results remain both qualitatively and quantitatively consistent with the baseline: managers affected by the cap are more likely to leave their job and transition to the private sector.

Second, we increase the number of matched controls by pairing each treated manager with two control managers (instead of one) within each age-by-gender cell. This doubles the size of the control group. Re-estimating Equation 1 with this expanded sample again produces results closely aligned with our baseline findings.

Third, we estimate Equation 1 using the full unmatched sample—comparing all public managers earning above €240,000 in 2014 to those earning between €150,000 and €240,000. The results replicate the main effects and further uncover a significant increase in retirement: by 2020, treated managers were nearly 20 percentage points more likely to retire than their control counterparts. This effect is, however, not driven by the salary cap reform but rather by the higher average age of treated managers, as reported in Table 1, Columns 5–6. This result justifies matching on age in our baseline design.

Taken together, these robustness checks reinforce the credibility of our baseline estimates and support the conclusion that the policy had significant effects on job mobility among high-earning public managers.

Placebo test. As an additional robustness check, we replicate our main design using a placebo reform date of 2009 instead of 2014. In this exercise, we compare public managers earning more than €240,000 in 2009 to those earning between €150,000 and €240,000 in the same year. We apply the same one-to-one matching procedure within age-by-gender cells as in the main analysis. Descriptive statistics for the matched sample are provided in Table B4, Panel B, Columns 5–6. The results, shown in Table 4, Panel F, and Appendix Figure B7, reveal no significant differences in career trajectories around the €240,000 threshold before and after 2009, reinforcing the validity of our baseline findings.

Broader public sector analysis. As noted earlier, our main analysis focuses on managers of state-owned companies, where comparable roles in the private sector are more likely to

exist. To assess the generalizability of our findings, we extend the analysis to managers in other areas of the public sector—including public administration, health, education, and defense. Due to data limitations, we observe these workers only from 2014 onward, as the relevant INPS dataset becomes available only at that point. Consequently, we cannot estimate pre-reform coefficients for this group.

We replicate the matching procedure within age-by-gender cells, with descriptive statistics for the matched sample reported in Table B4, Panel B, Columns 7–8. The results, shown in Table 4, Panel G, and Appendix Figure B8, suggest that treated managers in these broader public sector roles are somewhat more likely to transition to the private sector following the reform, but the estimated effects are small and statistically insignificant. This finding aligns with the notion that outside options for managers in traditional public sector roles are more limited than for those in state-owned enterprises, and that salary caps may thus have weaker effects on their career choices.

5. Productivity of Public Sector Employment

Our analysis has demonstrated that managers affected by the cap are more likely to leave public companies and transition to private sector jobs. This raises an important question: are the managers who move to the private sector in response to the wage cap positively selected? Additionally, are the replacements for these departing managers equally productive, or do they differ in terms of productivity?

5.1. Managers' quality

Heterogeneity by manager quality. To measure manager quality, we estimate AKM regressions (Abowd et al., 1999) using the universe of Italian workers in the INPS database from 2005 to 2013—the period prior to the reform. From these regressions, we extract

worker fixed effects and standardize them to lie between zero and one. Following, for example, Bombardini et al. (2019) and Baltrunaite et al. (2020), we interpret these standardized fixed effects as measures of individual productivity. Additional details on the estimation procedure are provided in Appendix C.

We explore heterogeneity in responses to the reform by splitting the sample of treated managers based on their estimated AKM fixed effects. Specifically, we divide treated managers into two groups—above and below the median AKM value—and estimate event studies for each subgroup, comparing them to the full matched control group. Figure 3 shows that the increased likelihood of leaving the public sector and transitioning to a private firm is driven almost entirely by high-AKM managers (see dashed lines in Figure 3, Parts A and C). In contrast, treatment effects for low-AKM managers are small and statistically insignificant. Long-run effects (measured in 2020) are summarized in Table 5, with separate panels for high-AKM (Panel A) and low-AKM (Panel B) public managers.

5.2. Benefits and Costs

The evidence suggests that while the wage cap reform helped reduce public expenditures, it also came with potential costs in terms of lost managerial talent and productivity. To gauge the fiscal benefits, we conduct back-of-the-envelope calculations. The average annual wage reduction for treated public managers was €47,381. Multiplying this by the number of treated managers in the entire public sector (657, see Table 1 Column 3) yields estimated annual public wage bill savings of approximately €31 million. Over the six-year period from 2015 to 2020, total savings amount to around €186 million—equivalent to roughly 0.1% of the total annual cost of public employment as computed in Corte dei Conti (2020).

Quantifying the costs of the reform is more challenging. We attempt to do so using our AKM estimates, namely, we compare the mean AKM fixed effect of all treated public managers

prior to the reform with the mean AKM fixed effect of treated managers who remained in the public sector after the introduction of the salary cap. Based on this simple exercise, we find that the departure of some managers in response to the cap led to an estimated 2% decline in public management productivity relative to pre-reform levels. This likely represents a substantial loss compared to the relatively modest fiscal savings.

To assess whether this productivity loss was mitigated by hiring equally (or more) productive replacements, we examine each departing manager's "cell"—defined as the intersection of their firm and municipality, serving as a proxy for their managerial context. We then compare the average AKM fixed effect of new hires in that cell to the departing manager's own AKM value. On average, replacement managers have AKM effects that are approximately 10% lower than those of the managers who left for the private sector. This suggests that departing managers were not replaced by equally productive peers, reinforcing concerns about the unintended costs of the reform.

While our results document a decline in public management productivity following the introduction of the cap, an important question is whether this reduction translated into poorer performance of public companies or a deterioration in public services. These outcomes are notoriously difficult to measure (Fenizia, 2022). To explore this issue, we draw on firm-level balance sheet data (see Section 2.2) to examine changes in labor productivity, measured as value added per worker.

Due to the relatively small individual-level sample and imperfect matching with the firm-level data, the resulting firm sample is too limited to support an event-study analysis akin to that used in the worker-level regressions.[11] Instead, we conduct a simple cross-sectional

[11] Our 219 treated managers are employed across 59 distinct public companies. However, only 17 of these firms can be matched to the Cerved balance sheet data, and even among them, value-added information is missing for some years. These limitations prevent us from conducting event-study estimations at the firm level.

"reduced-form" analysis, comparing the (log) change in labor productivity between 2011–2013 and 2015–2018 for two groups of public firms: those with at least one manager earning above the cap in 2014, and those without.[12] This analysis is motivated by our worker-level findings, which show that public firms employing high-earning managers were more likely to lose them to the private sector after the reform (a "first-stage" effect). Appendix Table B6 shows that prior to the cap's introduction, differences in productivity growth between firms with and without treated managers were small. After 2014, however, firms with high-earning managers experienced a more pronounced decline in labor productivity.

While this evidence is suggestive of broader organizational impacts, the analysis is based on a small sample of just over 40 firms. As a result, we refrain from drawing strong conclusions or attempting any formal quantification of these effects.

5.3. Co-worker effects

We have shown that wage cap policies increase the likelihood that high-quality managers in public firms transition to the private sector, with direct negative effects on public sector productivity. So far, our analysis has not considered potential spillover effects on the careers of these managers' co-workers. Ex ante, the direction of such effects is ambiguous. On one hand, the departure of a manager might open up promotion opportunities, increasing retention among remaining staff. On the other hand, employees may feel demotivated or lose confidence in the organization following their manager's exit, potentially increasing turnover.[13]

[12] These regressions are based on the sample of public companies that employed at least one manager earning above €150,000 in 2014—that is, the set of firms employing the top public managers from our baseline analysis.

[13] Public managers typically do not have access to incentive tools commonly used in the private sector, such as bonuses or performance-based pay. In the absence of these traditional motivation mechanisms, effective public managers may instead be better at allocating tasks or at identifying alternative ways to motivate workers—as argued in Fenizia (2022).

Table 6 reports the long-run event-study coefficients comparing co-workers of treated managers who move to the private sector with observationally similar co-workers of treated managers who remain in the public sector, as outlined in Section 3. Here, we focus on co-workers in management and middle-management roles, which likely have closer employment ties with top management. Panel A shows coefficient estimates for all such co-workers, while Panels B and C focus separately on high-productivity (Panel B) and low-productivity (Panel C) co-workers based on their estimated AKM fixed effect. We show coefficient estimates for co-workers in non-managerial roles in Appendix Table B7. Full event-study plots are also provided in Appendix Figures B9 to B11.

The results indicate that co-workers of departing managers are themselves more likely to leave their jobs and transition to the private sector—although the coefficients are estimated with some imprecision (Table 6 Panel A). Notably, roughly one fifth of treated managers who move to the private sector are "followed" by at least one co-worker from the same firm in subsequent years.

This pattern is especially evident among high-productivity co-workers in management positions (Table 6 Panel B), who also experience a reduction in weeks worked—possibly due to closer professional ties with the departing manager or disruptions to their own career prospects. These findings suggest that the negative impact of public wage caps on productivity extends beyond the departing managers themselves, affecting their high-productivity peers as well. In contrast, among co-workers in blue- and white-collar roles, we do not observe clear effects nor any differences in outcomes between high- and low-AKM individuals (Table B7), indicating more limited or diffuse spillover effects in these occupational groups.

6. Conclusion

Despite their widespread use, public sector wage caps have received limited attention in economic research. This paper analyzes a 2014 reform in Italy that introduced a cap on the salaries of top public managers. Using a matched event study design, we examine the impact of this policy on the careers of public managers, focusing particularly on those employed in state-owned enterprises.

We find that managers affected by the cap are significantly more likely to leave the public sector and transition to private-sector jobs. These effects are concentrated among higher-productivity managers, who, on average, are not replaced by equally productive counterparts—resulting in an overall decline in the productivity of public management. In addition, we observe increased job separations among high-productivity co-workers of departing managers, pointing to broader adverse effects of wage caps on the quality of public employment.

These findings carry important implications for policymakers seeking to reduce public expenditure while maintaining a high-performing public sector. While wage caps can contribute to cost savings, our results suggest that they may also undermine the efficiency of public sector organizations, particularly those operating in competitive, market-like environments.

It is important to note that our analysis focuses on managers in state-owned enterprises—who are more likely to have attractive outside options in the private sector. For managers in more traditional public roles (e.g., public administration, education, health, or defense), we find more limited evidence of negative effects. Nevertheless, state-owned firms account for a sizable share of public employment and play a key role in delivering essential services to citizens (IMF, 2020).

Overall, our findings suggest that wage caps may have unintended negative consequences on the management and performance of public companies, while yielding relatively modest fiscal savings. Future research, supported by richer data, is needed to more fully assess the broader implications of wage cap policies for the provision of public services and overall social welfare.

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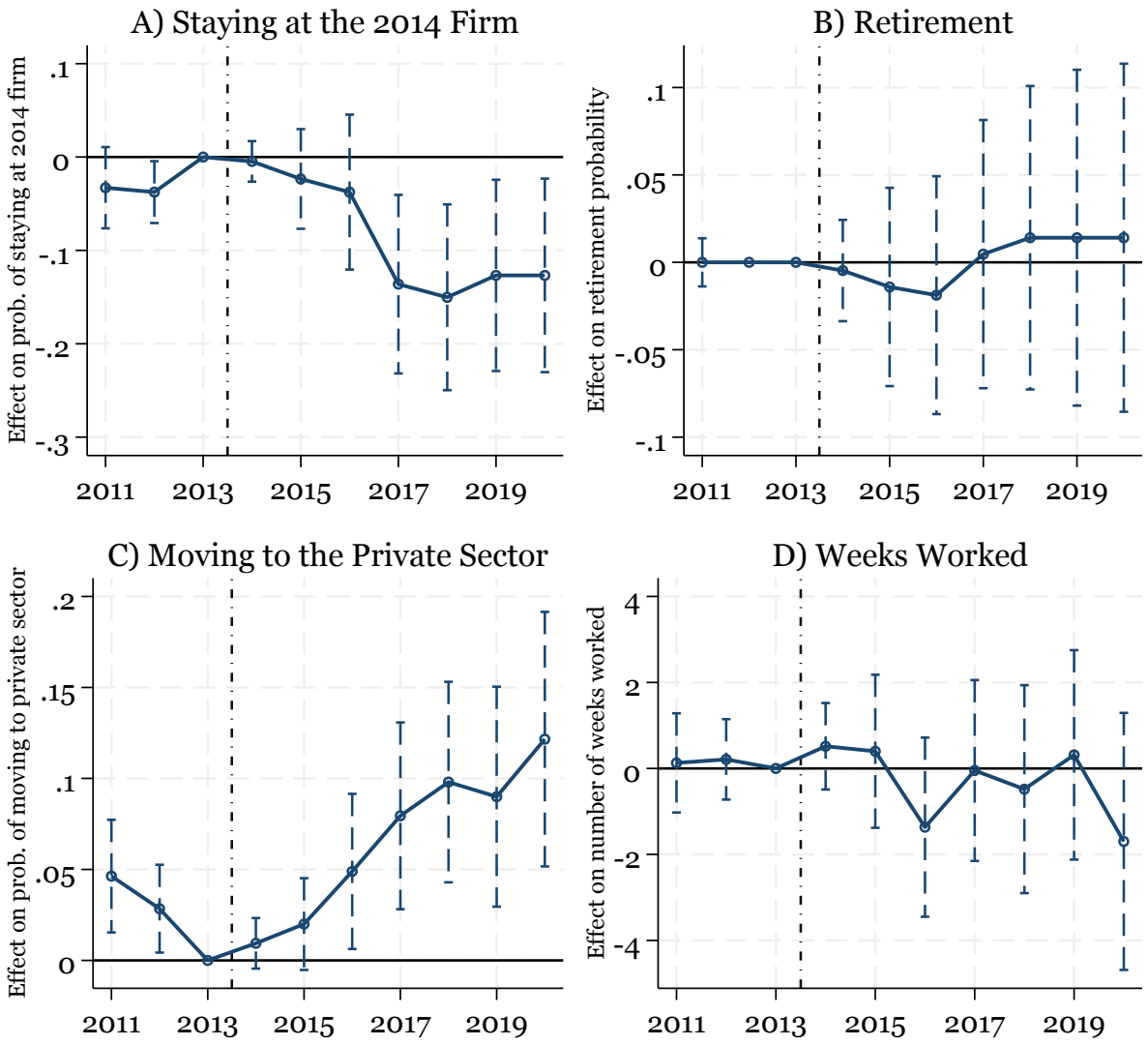
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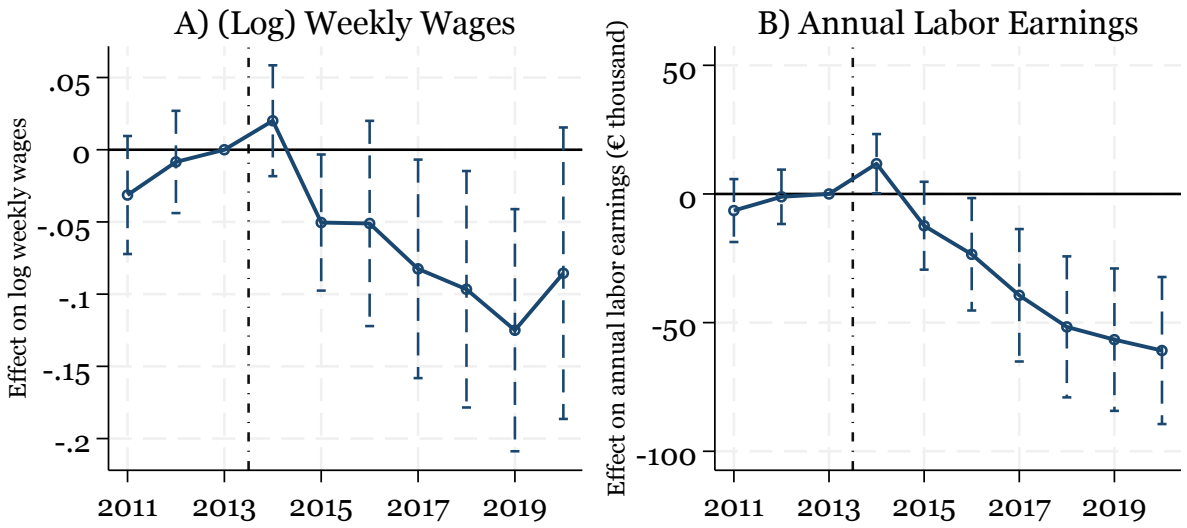
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Figure 1. The Effects of the 2014 Salary Cap on Public Managers: Employment Outcomes



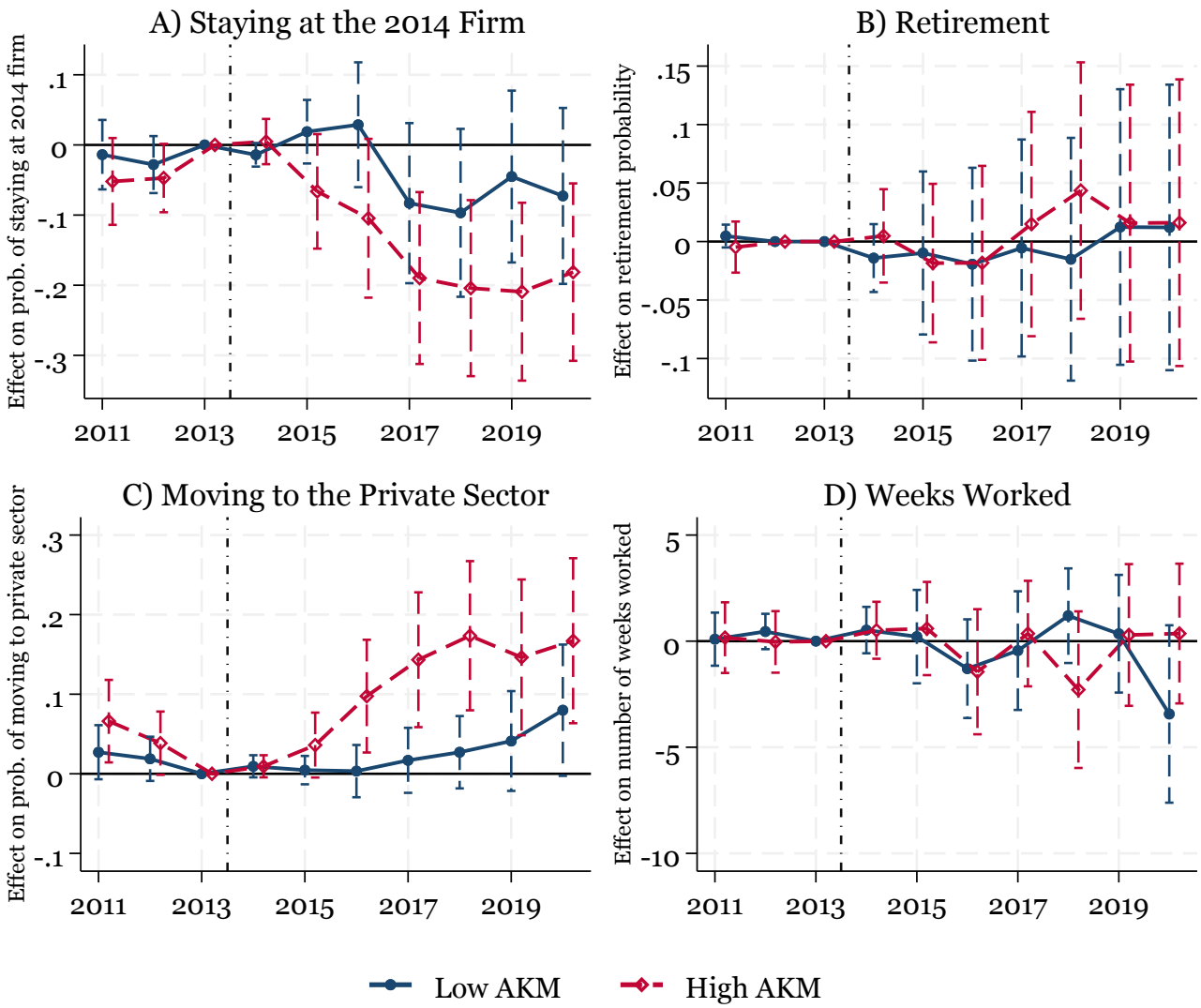
Notes: Event study coefficients resulting from the estimation of Equation 1 on the matched sample of top public managers described in Section 3. Part A: The outcome is an indicator variable equal to one if the worker stays at the 2014 employer and zero otherwise. Part B: The outcome is an indicator variable equal to one if the worker is retired in that year. Part C: The outcome is an indicator variable equal to one if the worker is employed in the private sector, conditional on being employed. Part D: The outcome is the number of weeks worked in that year, conditional on being employed. Standard errors clustered at the worker level. The vertical dashed lines are 95% confidence intervals.

Figure 2. The Effects of the 2014 Salary Cap on Public Managers: Earnings



Notes: Event study coefficients resulting from the estimation of Equation 1 on the matched sample of top public managers described in Section 3. Part A: The outcome is the (log) weekly wage of a worker in that year (missing if the worker is not in employment). Part B: The outcome is total labor earnings (in thousand euros, 2010 prices) of a worker in that year and is equal to zero if the worker is not employed. For these outcomes, the sample excludes six treated managers with a large wage jump between 2013 and 2014 (wage below €150,000 in 2013 and above €240,000 in 2014). The baseline results in Figure 1 are identical when these six managers are excluded. Standard errors clustered at the worker level. The vertical dashed lines are 95% confidence intervals.

Figure 3. The Effects of the 2014 Salary Cap on Public Managers: High vs. Low AKM



Notes: Event study coefficients resulting from the estimation of Equation 1 on the matched sample of top public managers described in Section 3, separately for treated managers with above-median AKM worker fixed effect (dashed lines) and below-median AKM worker fixed effect (solid lines). See Appendix C for details on the estimation of the AKM worker fixed effects. The matched control group remains the same as in the baseline analysis. Part A: The outcome is an indicator variable equal to one if the worker stays at the 2014 employer and zero otherwise. Part B: The outcome is an indicator variable equal to one if the worker is retired in that year. Part C: The outcome is an indicator variable equal to one if the worker is employed in the private sector, conditional on being employed. Part D: The outcome is the number of weeks worked in that year, conditional on being employed. Standard errors clustered at the worker level. The vertical dashed lines are 95% confidence intervals.

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Table 1. Descriptive Statistics for Public Sector Workers in 2014

	All public			Public-in-private		
	(1)	(2)	(3)	(4)	(5)	(6)
	Total	Wage (€) $\in [150k, 240k)$	Wage (€) $\geq 240k$	Total	Wage (€) $\in [150k, 240k)$	Wage (€) $\geq 240k$
Annual wage (€)	31,635	179,544	287,382	30,945	180,603	293,292
	(19,591)	(22,636)	(80,178)	(27,330)	(23,263)	(87,604)
Female	0.57	0.28	0.17	0.29	0.22	0.09
	(0.50)	(0.45)	(0.37)	(0.45)	(0.41)	(0.29)
Age	49.09	57.47	59.02	45.68	54.57	57.48
	(9.50)	(6.57)	(6.36)	(10.67)	(5.90)	(5.60)
Temporary contract	0.05	0.03	0.03	0.12	0.03	0.07
	(0.21)	(0.16)	(0.18)	(0.33)	(0.18)	(0.25)
Part-time status	0.05	0.00	0.01	0.06	0.00	0.00
	(0.22)	(0.05)	(0.10)	(0.24)	(0.04)	(0.00)
Private job before 2014	0.04	0.01	0.03	0.09	0.03	0.05
	(0.19)	(0.11)	(0.17)	(0.28)	(0.16)	(0.23)
Labor market experience	25.62	31.03	32.71	22.59	29.07	32.14
	(10.64)	(9.00)	(9.48)	(12.36)	(8.48)	(9.02)
N. Observations	3,159,828	7,333	657	240,907	1,389	219

Notes: Descriptive statistics for public sector workers in 2014. Columns 1-3 refer to the whole public sector, Columns 4-6 refer to public-in-private workers as described in Section 2.2. Columns 1 and 4 show statistics for all workers, Columns 2 and 5 for workers earning between €150,000 and €240,000 in 2014 and Columns 3 and 6 for workers earning above the €240,000 cap in 2014. "Annual wage" is measured in euros. "Female", "Temporary contract", "Part-time status" and "Private job before 2014" are all indicator variables. "Age" and "Labor market experience" are measured in years. Standard deviations in parentheses.

Table 2. Employment Status for Top Public Managers After 2014

	Wage (€) $\in [150k, 240k)$	Wage (€) $\geq 240k$
	(1)	(2)
Stay in public	881	87
	0.63	*0.40*
Retirement	336	91
	0.24	*0.41*
Non-employment	106	14
	0.08	*0.06*
Move to private	66	27
	0.05	*0.13*
Total	1,389	219

Notes: Employment status for public-in-private top managers after 2014, separately for workers earning between €150,000 and €240,000 in 2014 (Column 1) and workers earning above €240,000 in 2014 (Column 2). "Stay in public" denotes managers who remain in the public sector between 2014 and 2020. The other indicators denote whether a manager retired ("Retirement"), is not observed anymore in the INPS data ("Non-employment", which can denote either unemployment or self-employment) or moved to a private job ("Move to private"). Shares are denoted in italics.

Table 3. The Effects of the 2014 Salary Cap on Public Managers

	(1)	(2)	(3)	(4)
	A) Employment Outcomes			
	Staying at the 2014 Firm	Retirement	Moving to the Private Sector	Weeks Worked
Long run effect (2020)	-0.127	0.014	0.122	-1.697
	(0.053)**	(0.051)	(0.036)***	(1.521)
N. Observations	4,260	4,260	3,590	3,590
Mean outcome	0.972	0.008	0.009	51.527
Standard deviation outcome	0.166	0.088	0.097	3.351
	B) Earnings			
	(Log) Weekly Wages			Annual Labor
	All Workers	Stayers	Leavers to private	Earnings
Long run effect (2020)	-0.086	-0.104	0.000	-60,843
	(0.051)*	(0.038)***	(0.218)	(14,538)***
N. Observations	3,538	2,003	1,288	4,200
Mean outcome	8.058	8.023	8.023	165,341
Standard deviation outcome	0.208	0.166	0.166	45,163

Notes: This table reports the long-run event study coefficient (year 2020) resulting from the estimation of Equation 1 on the matched sample of top public managers described in Section 3. Panel A reports employment outcomes and Panel B reports earnings. Panel A Column 1: The outcome is an indicator variable equal to one if the worker stays at the 2014 employer and zero otherwise. Panel A Column 2: The outcome is an indicator variable equal to one if the worker is retired in that year. Panel A Column 3: The outcome is an indicator variable equal to one if the worker is employed in the private sector, conditional on being employed. Panel A Column 4: The outcome is the number of weeks worked in that year, conditional on being employed. Panel B Columns 1-3: The outcome is the (log) weekly wage of a worker in that year, separately for all managers (1), managers who stay in the public sector after 2014 (2) and managers who leave to the private sector after 2014 (3). Panel B Column 4: The outcome is total labor earnings (in thousand euros, 2010 prices) of a worker in that year and is equal to zero if the worker is not employed. For Panel B, the sample excludes six treated managers with a large wage jump between 2013 and 2014 (wage below €150,000 in 2013 and above €240,000 in 2014). The baseline results in Panel A are identical when these six managers are excluded. "Mean outcome" and "Standard deviation outcome" are the mean and standard deviation of the outcome of interest over the period 2010-2013, computed considering the control group only. Standard errors, clustered at the worker level, are shown in parentheses. * $p<0.10$, ** $p<0.05$, *** $p<0.01$.

Table 4. The Effects of the 2014 Salary Cap on Public Managers: Employment Outcomes – Robustness and Other Results

	(1) Staying at the 2014 Firm	(2) Retirement	(3) Moving to the Private Sector	(4) Weeks Worked
		A) Spillover effects		
Long run effect (2020)	-0.016	-0.006	0.015	-0.270
	(0.042)	(0.038)	(0.020)	(0.879)
N. Observations	6,220	6,220	5,524	5,524
Mean outcome	0.975	0.000	0.010	51.538
Standard deviation outcome	0.155	0.000	0.098	3.245
		B) Controls above €100,000		
Long run effect (2020)	-0.088	0.000	0.130	-1.326
	(0.052)*	(0.050)	(0.034)***	(1.589)
N. Observations	4,320	4,320	3,617	3,617
Mean outcome	0.961	0.004	0.014	51.464
Standard deviation outcome	0.193	0.068	0.117	3.170
		C) Controls above €200,00		
Long run effect (2020)	-0.079	0.021	0.098	-1.441
	(0.057)	(0.053)	(0.038)**	(1.631)
N. Observations	3,780	3,780	3,218	3,218
Mean outcome	0.961	0.010	0.013	51.454
Standard deviation outcome	0.193	0.102	0.111	3.914
		D) 1:2 Matching		
Long run effect (2020)	-0.106	0.035	0.105	-1.668
	(0.045)**	(0.044)	(0.034)***	(1.429)
N. Observations	6,360	6,360	5,349	5,349
Mean outcome	0.970	0.008	0.010	51.481
Standard deviation outcome	0.170	0.093	0.097	3.426

Continues next table.

Table 4. The Effects of the 2014 Salary Cap on Public Managers: Employment Outcomes – Robustness and Other Results (continued)

	(1) Staying at the 2014 Firm	(2) Retirement	(3) Moving to the Private Sector	(4) Weeks Worked
		E) No Matching		
Long run effect (2020)	-0.226	0.184	0.116	-3.380
	(0.039)***	(0.037)***	(0.032)***	(1.266)***
N. Observations	16,080	16,080	14,323	14,323
Mean outcome	0.962	0.004	0.014	51.238
Standard Deviation Outcome	0.192	0.064	0.117	4.351
		F) 2009 Placebo Reform		
Long run effect (2013)	0.009	-0.050	0.004	0.275
	(0.052)	(0.050)	(0.023)	(1.518)
N. Observations	3,488	3,488	3,028	3,028
Mean outcome	0.887	0.009	0.023	51.165
Standard deviation outcome	0.317	0.095	0.149	4.414
		G) Other Public Managers		
Long run effect (2020)	-0.037	-0.027	0.017	0.586
	(0.036)	(0.036)	(0.011)	(0.871)
N. Observations	6,132	6,132	4,802	4,802
Mean outcome	-	-	-	-
Standard Deviation Outcome	-	-	-	-

Notes: This table reports the long-run event study coefficients (year 2020) resulting from the estimation of Equation 1 on alternative matched samples. See Table 3 for a description of the four outcomes. Unless noted otherwise, the matching strategy is always a one-to-one matching within age*gender cells as in the baseline analysis. Panel A: each public manager earning between €200,000 and €240,000 in 2014 is matched with a public manager earning between €150,000 and €200,000 in 2014; Panels B and C: potential controls in the baseline design (public managers earning between €150,000 and €240,000 in 2014) are replaced with public managers earning between €100,000 and €240,000 in 2014 or with public managers earning between €200,000 and €240,000 in 2014, respectively. Panel D: each public manager earning between €150,000 and €240,000 in 2014 is matched with a public manager earning above €240,000 in 2014 using one-to-two (rather than one-to-one) matching within age*gender cells; Panel E: no matching is performed and all public managers earning above €240,000 in 2014 are compared with public managers earning between €150,000 and €240,000 in 2014; Panel F: placebo reform exercise, where each public manager earning above €240,000 in 2009 is matched with a public manager earning between €150,000 and €240,000 in 2009; Panel G: rest of public sector workers (not those in the public-in-private group), where each public manager earning above €240,000 in 2014 is matched with a public manager earning between €150,000 and €240,000 in 2014. "Mean outcome" and "Standard deviation outcome" are the mean and standard deviation of the outcome of interest over the period 2010-2013, computed considering the control group only. For Panel F, they refer to 2006-2008 period; for Panel G, we show no pre-period statistics as the sample starts in 2014. Standard errors, clustered at the worker level, are shown in parentheses. * $p<0.10$, ** $p<0.05$, *** $p<0.01$.

Table 5. The Effects of the 2014 Salary Cap on Public Managers: Employment Outcomes – High vs. Low AKM Managers

	(1) Staying at the 2014 Firm	(2) Retirement	(3) Moving to the Private Sector	(4) Weeks Worked
		A) High-AKM Managers		
Long Run Effect (2020)	-0.181	0.016	0.167	0.358
	(0.064)***	(0.062)	(0.053)***	(1.673)
N. Observations	3,190	3,190	2,679	2,679
Mean Outcome	0.972	0.008	0.009	51.527
Standard Deviation Outcome	0.166	0.088	0.097	3.351
		B) Low-AKM Managers		
Long Run Effect (2020)	-0.073	0.012	0.080	-3.433
	(0.064)	(0.062)	(0.042)*	(2.125)
N. Observations	3,200	3,200	2,730	2,730
Mean Outcome	0.972	0.008	0.009	51.527
Standard Deviation Outcome	0.166	0.088	0.097	3.351

Notes: This table reports the event study coefficients resulting from the estimation of Equation 1 on the matched sample of top public managers described in Section 3, separately for treated managers with above-median AKM worker fixed effect (Panel A) and below-median AKM worker fixed effect (Panel B). The matched control group remains the same as in the baseline analysis. See Table 3 for a description of the four outcomes. Standard errors, clustered at the worker level, are shown in parentheses. * $p<0.10$, ** $p<0.05$, *** $p<0.01$.

Table 6. The Effects of the 2014 Salary Cap on Public Managers: Employment Outcomes – Effects on Co-Workers in Managerial Roles

	(1) Staying at the 2014 Firm	(2) Retirement	(3) Moving to the Private Sector	(4) Weeks Worked
	A) All Co-Workers in Managerial Positions			
Long Run Effect (2020)	-0.146	-0.014	0.048	-0.815
	(0.104)	(0.060)	(0.034)	(1.200)
N. Observations	9,840	9,840	8,901	8,901
Mean Outcome	0.976	0.003	0.011	50.517
Standard Deviation Outcome	0.154	0.058	0.104	5.300
	B) High-AKM Co-Workers in Managerial Positions			
Long Run Effect (2020)	-0.242	0.064	0.067	-2.258
	(0.096)**	(0.077)	(0.055)	(1.107)*
N. Observations	7,350	7,350	6,565	6,565
Mean Outcome	0.976	0.003	0.011	50.517
Standard Deviation Outcome	0.154	0.058	0.104	5.300
	C) Low-AKM Co-Workers in Managerial Positions			
Long Run Effect (2020)	-0.057	-0.088	0.033	-0.388
	(0.116)	(0.051)*	(0.017)*	(1.033)
N. Observations	7,350	7,350	6,758	6,758
Mean Outcome	0.976	0.003	0.011	50.517
Standard Deviation Outcome	0.154	0.058	0.104	5.300

Notes: This table reports the event study coefficients resulting from the estimation of Equation 2 on the matched sample of the co-workers of treated managers who move to the private sector after the introduction of the cap (treated group) versus the co-workers of treated managers who stay at the public firm (control group), described in Section 3. The estimation is conducted for co-workers employed as managers and mid-managers. Panel A) considers all such co-workers. Panels B-C) distinguish between co-workers in managerial roles with above-median AKM worker fixed effect (Panel B) and below-median AKM worker fixed effect (Panel C). See Table 3 for a description of the four outcomes. Standard errors clustered at the firm*municipality level, are in parentheses. * $p<0.10$, ** $p<0.05$, *** $p<0.01$.

Appendix

A. Dataset

This Appendix describes how we build our dataset. As mentioned in the text, we leverage the archives of the Italian Social Security Institute (INPS) for both the public and private sectors. If a worker is employed in more than one job in a given year, we assign each worker to their "dominant" job, defined as the one with the highest annual earnings (or weeks worked, if earnings are the same across jobs).

To construct our main "public-in-private" dataset, we draw from matched employer-employee data for the Italian private sector ("Uniemens" data). These archives include a group of workers employed in public companies and state subsidiaries that, for reasons related to social security contributions, feature in the private firms' data. To identify public employees in the Uniemens data, we consider the following information: i) a worker's collective bargaining agreement; ii) contribution type, which classifies special worker categories based on their social security contributions; iii) a social security code assigned by INPS ("codice statistico contributivo"); and iv) authorization code, which integrates the previous code and is specific to certain employers. Each of these variables takes a specific value to denote workers in public companies, which we use to identify public-in-private workers. To these, we add workers employed in public companies collected in the so-called "S13 List" available at the Italian National Institute of Statistics (Istat).[14]

This selection may still include workers employed in public companies listed on the stock market, which were exempt from the salary cap. We compile a list of such companies drawing from Cassa Depositi e Prestiti archives and merge it into the INPS data.[15] This

[14] See https://www.istat.it/it/archivio/190748.
[15] See https://www.cdp.it/sitointernet/it/cdp_equity_portafoglio.page.

allows us to obtain a final list of public(-in-private) employees subject to the cap from the private sector archives, amounting to roughly 240,000 workers in 2014. Of these, 219 earned above the cap in 2014 and constitute the main treated group.

Our dataset also includes employees in the broader Italian public sector, including roughly 3 million workers. These matched employer-employee data are also available at INPS ("PosPa" data) and refer to workers in central and local administration, health, defense, and education (schools and universities). As described in the main text, the PosPa data only started in 2014 and is hence not best suited for our empirical design estimating difference-in-differences around the cap's implementation.

B. Additional Analysis and Robustness Results

Table B1. Within-Industry Descriptive Statistics, Public vs. Private Top Managers

	Private (1)	Public (2)
Annual wage (€)	374,128	294,020
	(50,513)	(23,498)
Female	0.09	0.10
	(0.05)	(0.03)
Age	52.05	57.46
	(2.68)	(2.15)
Temporary contract	0.02	0.07
	(0.01)	(0.08)
Part-time status	0.00	0.00
	(0.01)	(0.00)
Labor market experience	26.65	31.33
	(2.82)	(3.22)

Notes: Descriptive statistics for managers earning more than €240,000 in 2014. Column 1 refers to private sector managers, Column 2 to public-in-private managers. Each statistic is computed within industry, then averaged across industries with weights based on industry employment distributions in the public sector. "Annual wage" is measured in euros. "Female", "Temporary contract", "Part-time status" and "Private job before 2014" are all indicator variables. "Age" and "Labor market experience" are measured in years. Standard deviations in parentheses.

Table B2. Sector Distribution of Public-in-Private Workers in 2014

	Total (1)	Wage (€) $\in [150k, 240k)$ (2)	Wage (€) $\geq 240k$ (3)
Agriculture, Forestry and Fishing	0.03	0.01	0.02
Mining	0.00	0.00	0.00
Manufacturing	0.00	0.00	0.01
Electricity, Gas, Steam and Air Conditioning	0.00	0.02	0.02
Water Supply; Sewerage, Waste Management	0.01	0.00	0.00
Construction	0.01	0.01	0.01
Wholesale and Retail Trade; Vehicles Repair	0.00	0.00	0.00
Transportation and Storage	0.01	0.09	0.16
Accommodation and Food Service Activities	0.00	0.00	0.00
Information and Communication	0.00	0.08	0.14
Financial and Insurance Activities	0.31	0.39	0.33
Real Estate Activities	0.00	0.00	0.00
Professional, Scientific and Technical Activities	0.00	0.03	0.03
Administrative and Support Service Activities	0.02	0.06	0.05
Public Administration and Defense	0.04	0.24	0.09
Education	0.00	0.00	0.00
Human Health and Social Work Activities	0.02	0.01	0.01
Arts, Entertainment and Recreation	0.07	0.02	0.02
Other Service Activities	0.32	0.05	0.10
Activities of Households as Employers	0.00	0.00	0.00
Extraterritorial Organizations and Bodies	0.00	0.00	0.00

Notes: Sector shares of public-in-private workers in 2014, separately for all workers (Column 1), workers earning between €150,000 and €240,000 in 2014 (Column 2) and workers earning above €240,000 in 2014 (Column 3).

Table B3. Sector Distribution of Other Public Employees in 2014

	Total (1)	Wage (€) $\in [150k, 240k)$ (2)	Wage (€) $\geq 240k$ (3)
Education	0.32	0.00	0.00
Health	0.22	0.10	0.10
Central administrations	0.07	0.73	0.72
Universities	0.04	0.05	0.06
Local administrations	0.21	0.07	0.03
Defense	0.10	0.01	0.02
Other	0.04	0.03	0.06

Notes: Sector shares of other public employees (excluding the public-in-private group) in 2014, separately for all workers (Column 1), workers earning between €150,000 and €240,000 in 2014 (Column 2) and workers earning above €240,000 in 2014 (Column 3).

Table B4. Balancing of Matched Samples, 2013

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Panel A)							
	Baseline		Spillovers		Controls $\geq$ €$100k$		Controls $\geq$ €$200k$	
	C	T	C	T	C	T	C	T
Annual wage (€)	178,175	273,189	165,492	217,268	133,614	273,332	208,028	272,349
	(42,704)	(93,391)	(26,695)	(184,958)	(35,539)	(93,949)	(43,855)	(96,401)
Female	0.09	0.09	0.18	0.18	0.09	0.09	0.07	0.07
	(0.29)	(0.29)	(0.38)	(0.38)	(0.29)	(0.29)	(0.26)	(0.26)
Age	56.43	56.43	54.55	54.55	56.43	56.43	56.07	56.07
	(5.28)	(5.28)	(5.32)	(5.32)	(5.56)	(5.56)	(5.00)	(5.00)
Temporary	0.04	0.07	0.02	0.04	0.03	0.07	0.04	0.07
	(0.19)	(0.25)	(0.13)	(0.19)	(0.16)	(0.25)	(0.20)	(0.25)
Part-time	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Experience	31.66	31.19	29.63	29.17	31.52	31.17	30.76	30.50
	(7.50)	(8.55)	(7.85)	(7.47)	(8.01)	(8.73)	(7.28)	(8.43)
Observations	213	213	311	311	216	216	189	189
	Panel B)							
	$1:2$ Matching		No Matching		2009 Placebo		Other Public	
	C	T	C	T	C	T	C	T
Annual wage (€)	179,275	272,360	177,006	273,299	173,282	260,928	179,984	284,426
	(39,083)	(92,823)	(93,919)	(93,732)	(44,781)	(106,095)	(23,986)	(76,128)
Female	0.09	0.09	0.22	0.09	0.11	0.11	0.20	0.20
	(0.29)	(0.29)	(0.41)	(0.29)	(0.31)	(0.31)	(0.40)	(0.40)
Age	56.38	56.38	53.57	56.48	55.24	55.24	59.78	59.78
	(5.23)	(5.24)	(5.90)	(5.60)	(6.50)	(6.50)	(6.58)	(6.58)
Temporary	0.04	0.07	0.03	0.07	0.03	0.04	0.02	0.01
	(0.19)	(0.25)	(0.17)	(0.26)	(0.18)	(0.20)	(0.13)	(0.12)
Part-time	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
	(0.05)	(0.00)	(0.05)	(0.00)	(0.00)	(0.00)	(0.05)	(0.12)
Experience	31.45	31.13	28.07	31.14	30.44	30.16	31.45	33.15
	(7.57)	(8.52)	(8.48)	(9.02)	(8.74)	(8.81)	(10.87)	(10.34)
Observations	212	424	219	1,389	249	249	440	440

Notes: Balancing properties of matched samples separately for the control (C) and treated (T) groups, statistics as of 2013. Unless noted otherwise, the matching strategy is always a one-to-one matching within age*gender cells as in the baseline analysis. Panel A Columns 1-2: baseline analysis, each public manager earning above €240,000 in 2014 is matched with a public manager earning between €150,000 and €240,000 in 2014. Panel A Columns 3-4: spillover analysis, each public manager earning between €200,000 and €240,000 in 2014 is matched with a public manager earning between €150,000 and €200,000 in 2014. Panel A Columns 5-6 and 7-8: potential controls in the baseline design (public managers earning between €150,000 and €240,000 in 2014) are replaced with public managers earning between €100,000 and €240,000 in 2014 or with public managers earning between €200,000 and €240,000 in 2014, respectively. Panel B Columns 1-2: each public manager earning between €150,000 and €240,000 in 2014 is matched with a public manager earning above €240,000 in 2014 using one-to-two (rather than one-to-one) matching within age*gender cells. Panel B Columns 3-4: no matching is performed and all public managers earning above €240,000 in 2014 are compared with public managers earning between €150,000 and €240,000 in 2014. Panel B Columns 5-6: placebo reform exercise, where each public manager earning above €240,000 in 2009 is matched with a public manager earning between €150,000 and €240,000 in 2009. Panel B Columns 7-8: rest of public sector workers (not those in the public-in-private group), where each public manager earning above €240,000 in 2014 is matched with a public manager earning between €150,000 and €240,000 in 2014. Standard deviations in parentheses. See Table 1 and text for details.

Table B5. Balancing of Matched Sample of Co-Workers, 2013

	Co-Workers in Managerial Roles		Co-Workers in Other Roles	
	(1)	(2)	(3)	(4)
	C	T	C	T
Annual wage (€)	94,945	92,832	36,370	34,902
	(53,447)	(50,809)	(13,653)	(9,020)
Female	0.39	0.39	0.66	0.65
	(0.49)	(0.49)	(0.47)	(0.48)
Age	50.75	50.50	48.27	48.11
	(7.29)	(7.54)	(8.62)	(8.13)
Temporary	0.02	0.02	0.05	0.03
	(0.15)	(0.14)	(0.23)	(0.16)
Part-time	0.01	0.01	0.11	0.07
	(0.10)	(0.12)	(0.31)	(0.25)
Experience	24.62	24.93	25.13	25.88
	(9.64)	(10.08)	(11.23)	(9.83)
Observations	492	492	1,877	1,877

Notes: Balancing properties of the matched sample of the co-workers of treated managers who move to the private sector after the cap (treated group, Columns 2-4) and of the co-workers of treated managers who stay at the public firm (control group, Columns 1-3), described in Section 3. Statistics as of 2013, reported separately for co-workers employed as managers and mid-managers (Columns 1-2) and co-workers in other roles (white- and blue-collars, Columns 3-4). Co-workers defined as those below the cap in 2014 in the same firm*municipality as treated managers. Matching performed using a one-to-one propensity score matching within occupations, based on age, gender, tenure and wage in 2014. See Table 1 and text for details.

Table B6. The Effects of the 2014 Salary Cap on Labor Productivity Growth in Public Firms

	(1)	(2)
	Log Change in Firm Labor Productivity	
	2011-2013	2015-2018
𝟙[Firm has at least one manager above cap in 2014]	-0.140	-0.448
	(0.181)	(0.316)
N. Observations	42	44

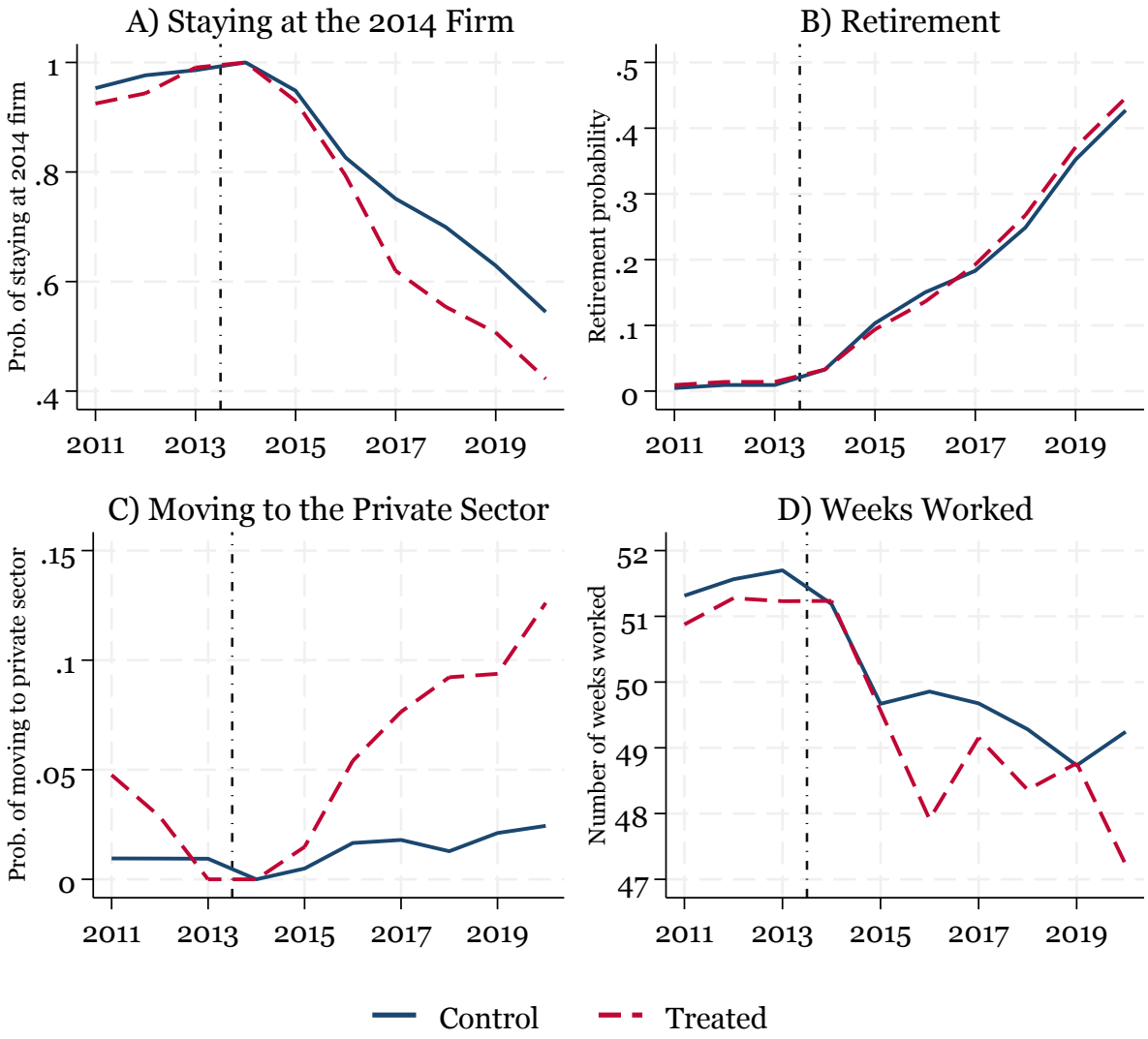
Notes: This table reports the estimation output of cross-sectional firm-level regressions run on the sample of public companies employing at least one public manager earning above €150,000 in 2014. The independent variable is an indicator function taking value of one for public firms with at least one manager earning above the cap in 2014. The outcome variable is the log change in firm value added per worker between 2011 and 2013 (before the cap's implementation, Column 1) and between 2015 and 2018 (after the cap's implementation, Column 2). The Cerved balance sheet data ends in 2018. Standard errors are shown in parentheses. A cross-sectional firm-level regression run on the same sample where the outcome is the share of managers leaving to the private sector after 2014 and the independent variable is the indicator variable used in this Table yields a (first-stage) coefficient of 0.181 (SE 0.065). * $p<0.10$, ** $p<0.05$, *** $p<0.01$.

Table B7. The Effects of the 2014 Salary Cap on Public Managers: Employment Outcomes – Effects on Co-Workers in Non-Managerial Roles

	(1) Staying at the 2014 Firm	(2) Retirement	(3) Moving to the Private Sector	(4) Weeks Worked
	A) All Co-Workers in Non-Managerial Positions			
Long Run Effect (2020)	-0.056	-0.024	0.027	-0.493
	(0.067)	(0.077)	(0.036)	(1.548)
N. Observations	37,540	37,540	34,718	34,718
Mean Outcome	0.956	0.001	0.022	48.806
Standard Deviation Outcome	0.206	0.033	0.148	7.900
	B) High-AKM Co-Workers in Non-Managerial Positions			
Long Run Effect (2020)	-0.082	0.072	0.006	-1.392
	(0.054)	(0.072)	(0.019)	(1.434)
N. Observations	28,040	28,040	25,740	25,740
Mean Outcome	0.956	0.001	0.022	48.806
Standard Deviation Outcome	0.206	0.033	0.148	7.900
	C) Low-AKM Co-Workers in Non-Managerial Positions			
Long Run Effect (2020)	-0.028	-0.116	0.045	-0.199
	(0.090)	(0.068)	(0.048)	(1.640)
N. Observations	28,050	28,050	26,112	26,112
Mean Outcome	0.956	0.001	0.022	48.806
Standard Deviation Outcome	0.206	0.033	0.148	7.900

Notes: This table reports the event study coefficients resulting from the estimation of Equation 2 on the matched sample of the co-workers of treated managers who move to the private sector after the introduction of the cap (treated group) versus the co-workers of treated managers who stay at the public firm (control group), described in Section 3. The estimation is conducted for co-workers employed in non-managerial roles (blue-collars and white-collars). Panel A) considers all such co-workers. Panels B-C) distinguish between co-workers in non-managerial roles with above-median AKM worker fixed effect (Panel B) and below-median AKM worker fixed effect (Panel C). See Table 3 for a description of the four outcomes. Standard errors clustered at the firm*municipality level, are in parentheses. * $p<0.10$, ** $p<0.05$, *** $p<0.01$.

Figure B1. Employment Outcomes, Raw Means of Treated and Control Managers



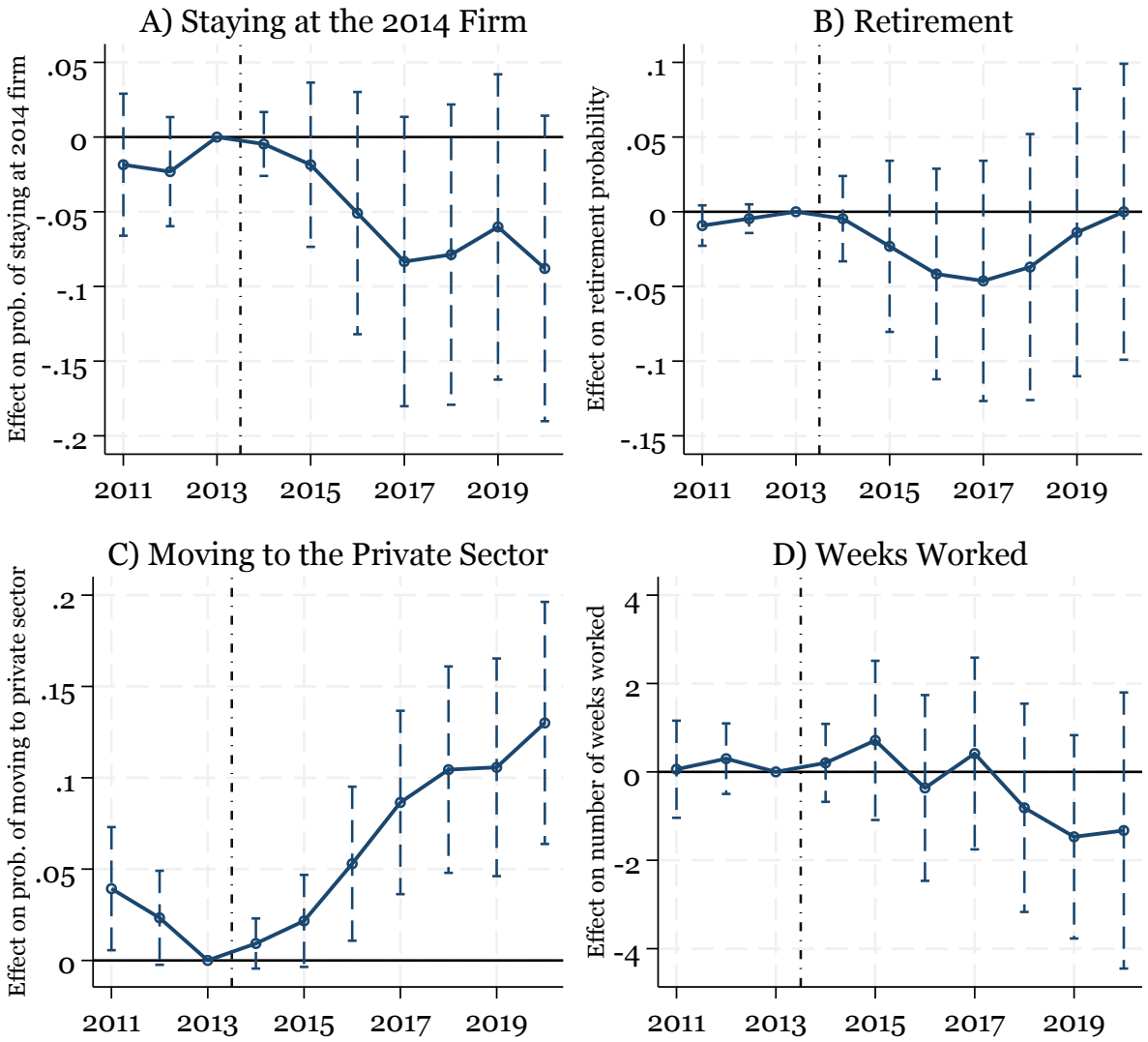
Notes: Raw means for the matched sample of top public managers described in Section 3, separately for treated managers (dashed line) and control managers (solid line). Part A: The outcome is an indicator variable equal to one if the worker stays at the 2014 employer and zero otherwise. Part B: The outcome is an indicator variable equal to one if the worker is retired in that year. Part C: The outcome is an indicator variable equal to one if the worker is employed in the private sector, conditional on being employed. Part D: The outcome is the number of weeks worked in that year, conditional on being employed.

Figure B2. Event Study Results, Spillover Effects



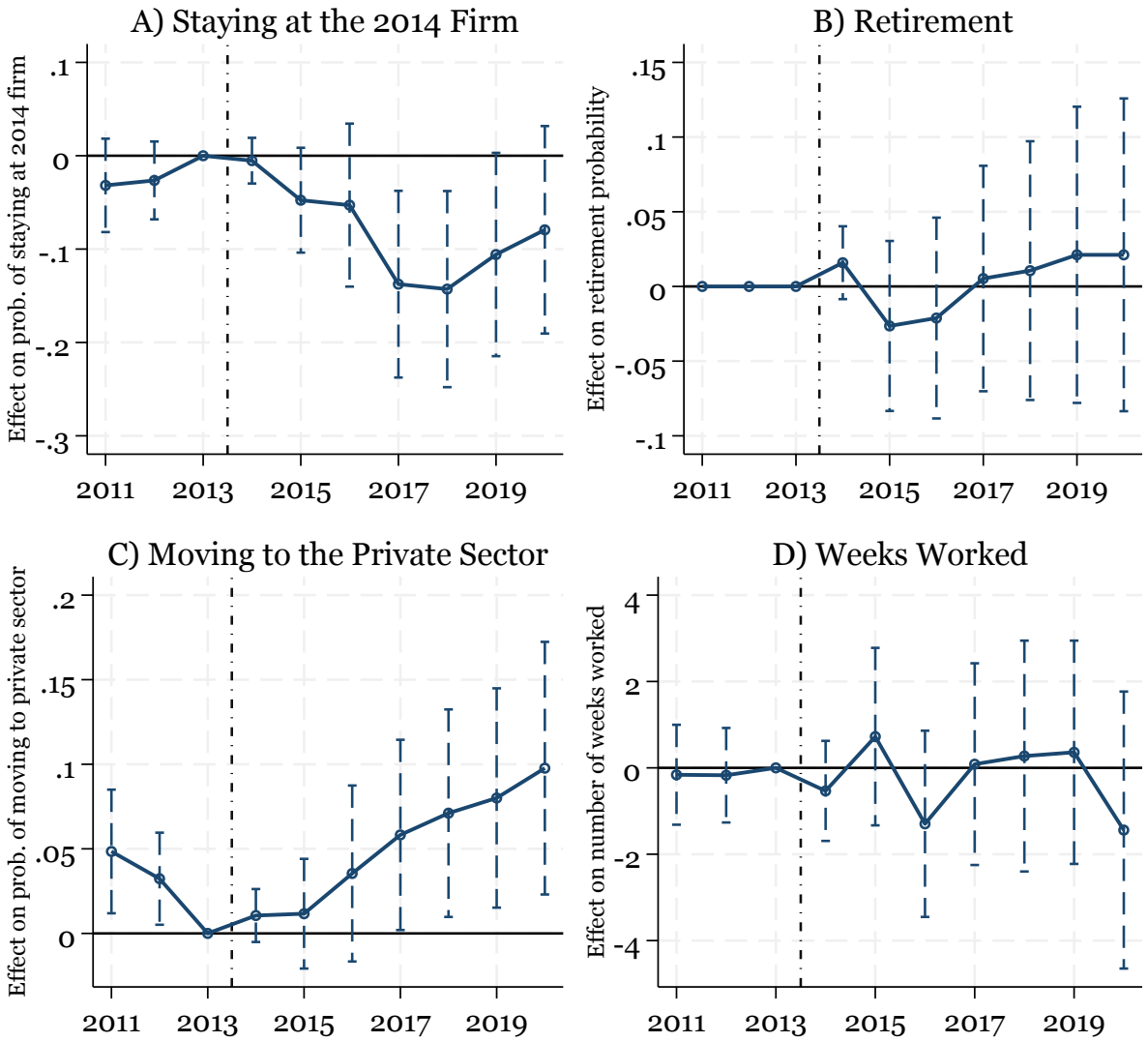
Notes: Event study coefficients resulting from the estimation of Equation 1 on a matched sample of public managers, where each public manager earning between €200,000 and €240,000 in 2014 is matched with a public manager earning between €150,000 and €200,000 in 2014 using a one-to-one matching within age*gender cells. Part A: The outcome is an indicator variable equal to one if the worker stays at the 2014 employer and zero otherwise. Part B: The outcome is an indicator variable equal to one if the worker is retired in that year. Part C: The outcome is an indicator variable equal to one if the worker is employed in the private sector, conditional on being employed. Part D: The outcome is the number of weeks worked in that year, conditional on being employed. Standard errors clustered at the worker level. The vertical dashed lines are 95% confidence intervals. See Section 4.2 for details.

Figure B3. Event Study Results, Controls Above €100,000



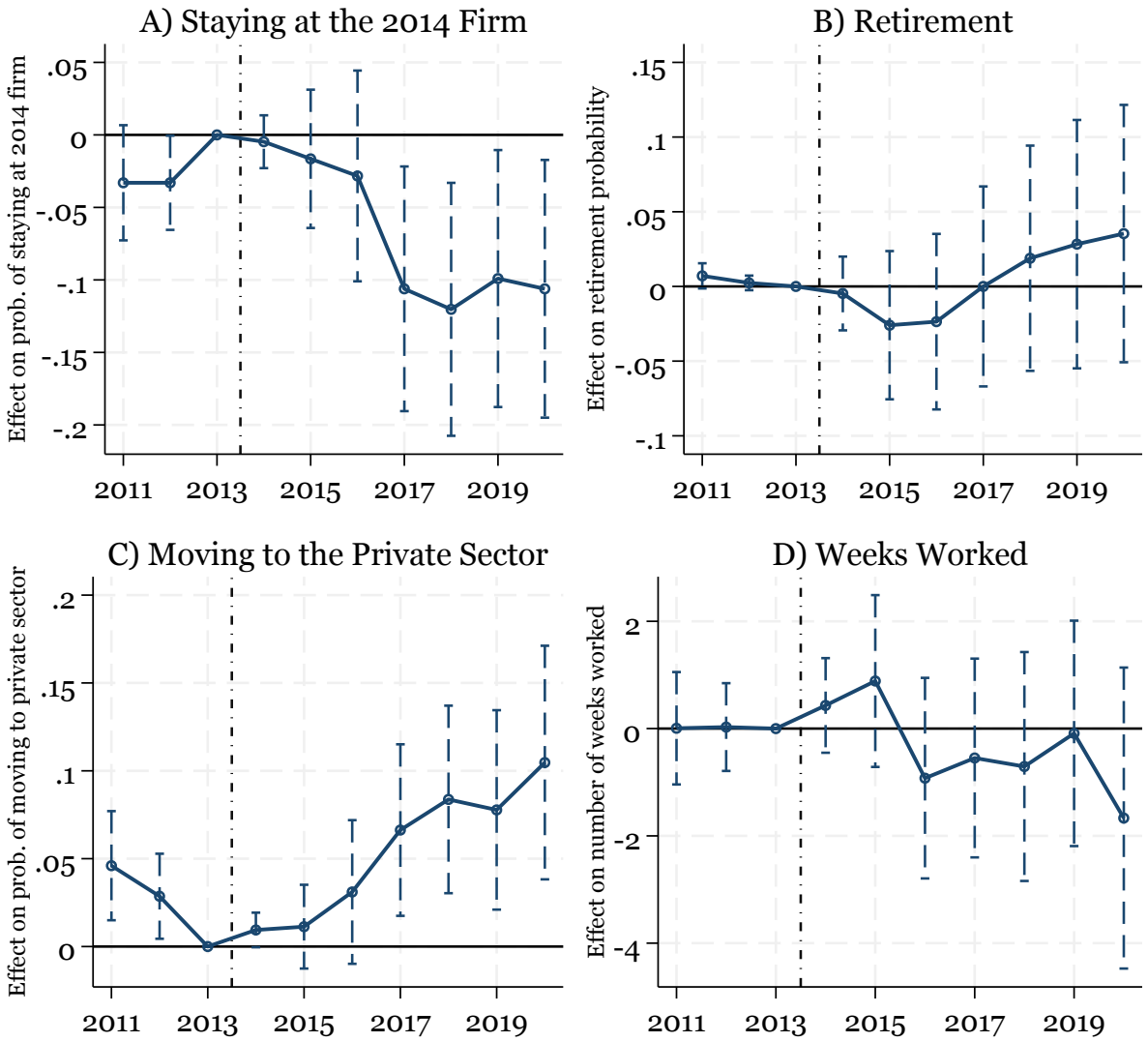
Notes: Event study coefficients resulting from the estimation of Equation 1 on a matched sample of public managers earning above versus below €240,000 in 2014 using a one-to-one matching within age*gender cells. Before the matching, we select potential controls among public managers earning more than €100,000 in 2014 rather than €150,000 as in the baseline design. Part A: The outcome is an indicator variable equal to one if the worker stays at the 2014 employer and zero otherwise. Part B: The outcome is an indicator variable equal to one if the worker is retired in that year. Part C: The outcome is an indicator variable equal to one if the worker is employed in the private sector, conditional on being employed. Part D: The outcome is the number of weeks worked in that year, conditional on being employed. Standard errors clustered at the worker level. The vertical dashed lines are 95% confidence intervals. See Section 4.2 for details.

Figure B4. Event Study Results, Controls Above €200,000



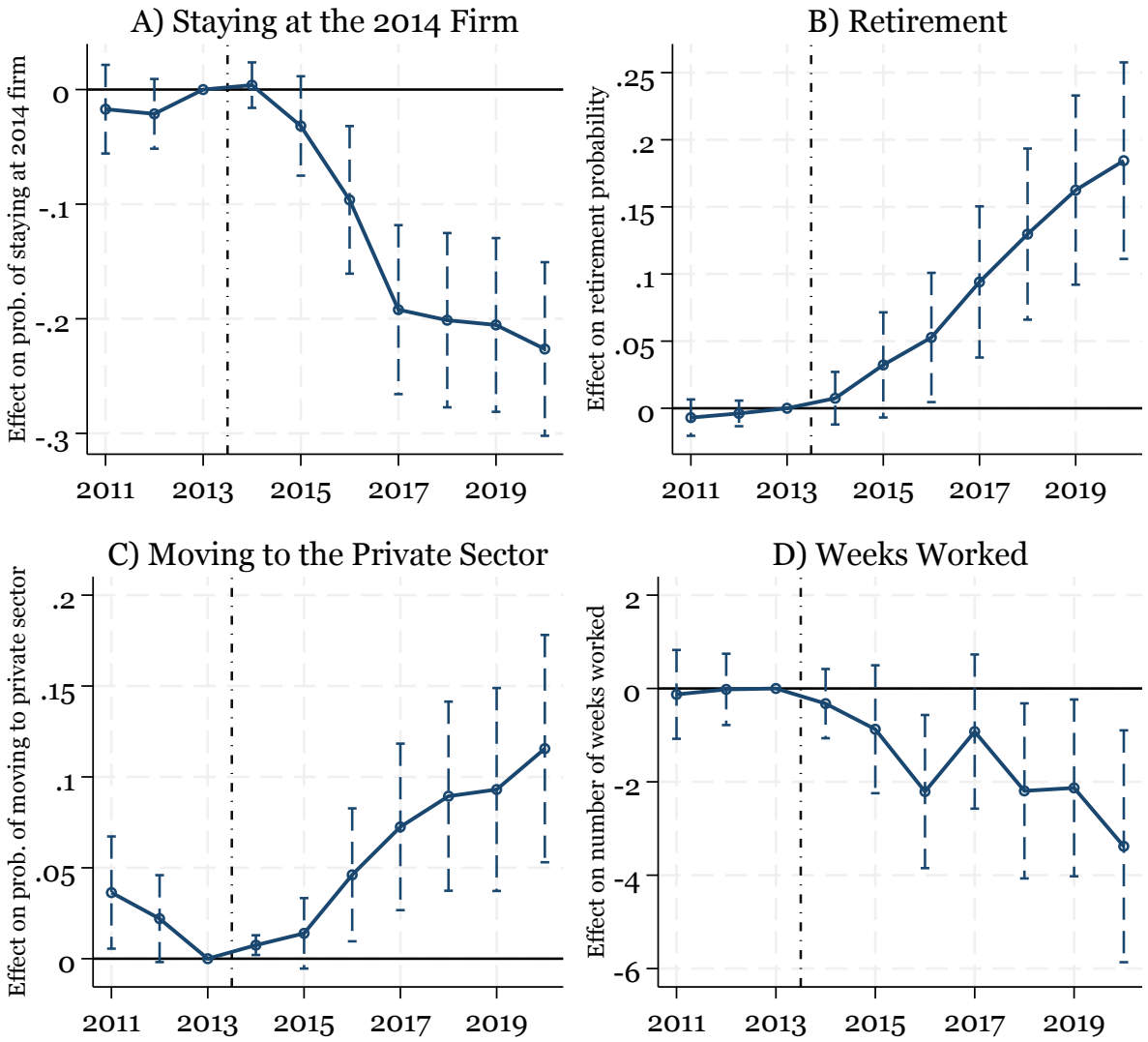
Notes: Event study coefficients resulting from the estimation of Equation 1 on a matched sample of public managers earning above versus below €240,000 in 2014 using a one-to-one matching within age*gender cells. Before the matching, we select potential controls among public managers earning more than €200,000 in 2014 rather than €150,000 as in the baseline design. Part A: The outcome is an indicator variable equal to one if the worker stays at the 2014 employer and zero otherwise. Part B: The outcome is an indicator variable equal to one if the worker is retired in that year. Part C: The outcome is an indicator variable equal to one if the worker is employed in the private sector, conditional on being employed. Part D: The outcome is the number of weeks worked in that year, conditional on being employed. Standard errors clustered at the worker level. The vertical dashed lines are 95% confidence intervals. See Section 4.2 for details.

Figure B5. Event Study Results, 1:2 Matching



Notes: Event study coefficients resulting from the estimation of Equation 1 on a matched sample of public managers earning between €150,000 and €240,000 in 2014 versus above €240,000 in 2014. We perform a one-to-two matching within age*gender cells, rather than a one-to-one as in the baseline design. Part A: The outcome is an indicator variable equal to one if the worker stays at the 2014 employer and zero otherwise. Part B: The outcome is an indicator variable equal to one if the worker is retired in that year. Part C: The outcome is an indicator variable equal to one if the worker is employed in the private sector, conditional on being employed. Part D: The outcome is the number of weeks worked in that year, conditional on being employed. Standard errors clustered at the worker level. The vertical dashed lines are 95% confidence intervals. See Section 4.2 for details.

Figure B6. Event Study Results, No Matching



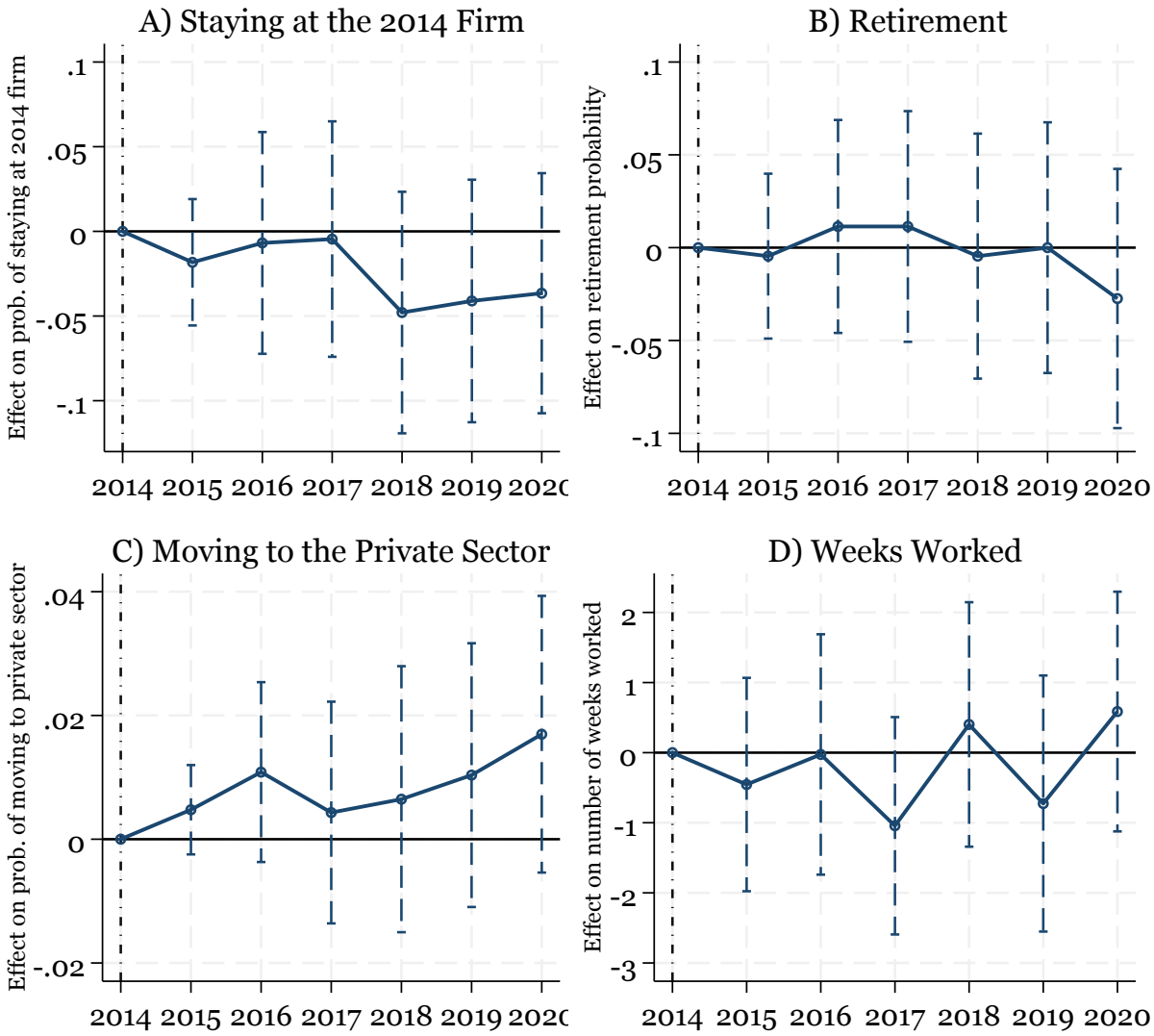
Notes: Event study coefficients resulting from the estimation of Equation 1 on a matched sample of public managers earning between €150,000 and €240,000 in 2014 versus above €240,000 in 2014. The analysis is run on the unmatched sample. Part A: The outcome is an indicator variable equal to one if the worker stays at the 2014 employer and zero otherwise. Part B: The outcome is an indicator variable equal to one if the worker is retired in that year. Part C: The outcome is an indicator variable equal to one if the worker is employed in the private sector, conditional on being employed. Part D: The outcome is the number of weeks worked in that year, conditional on being employed. Standard errors clustered at the worker level. The vertical dashed lines are 95% confidence intervals. See Section 4.2 for details.

Figure B7. Event Study Results, Placebo Reform (2009)



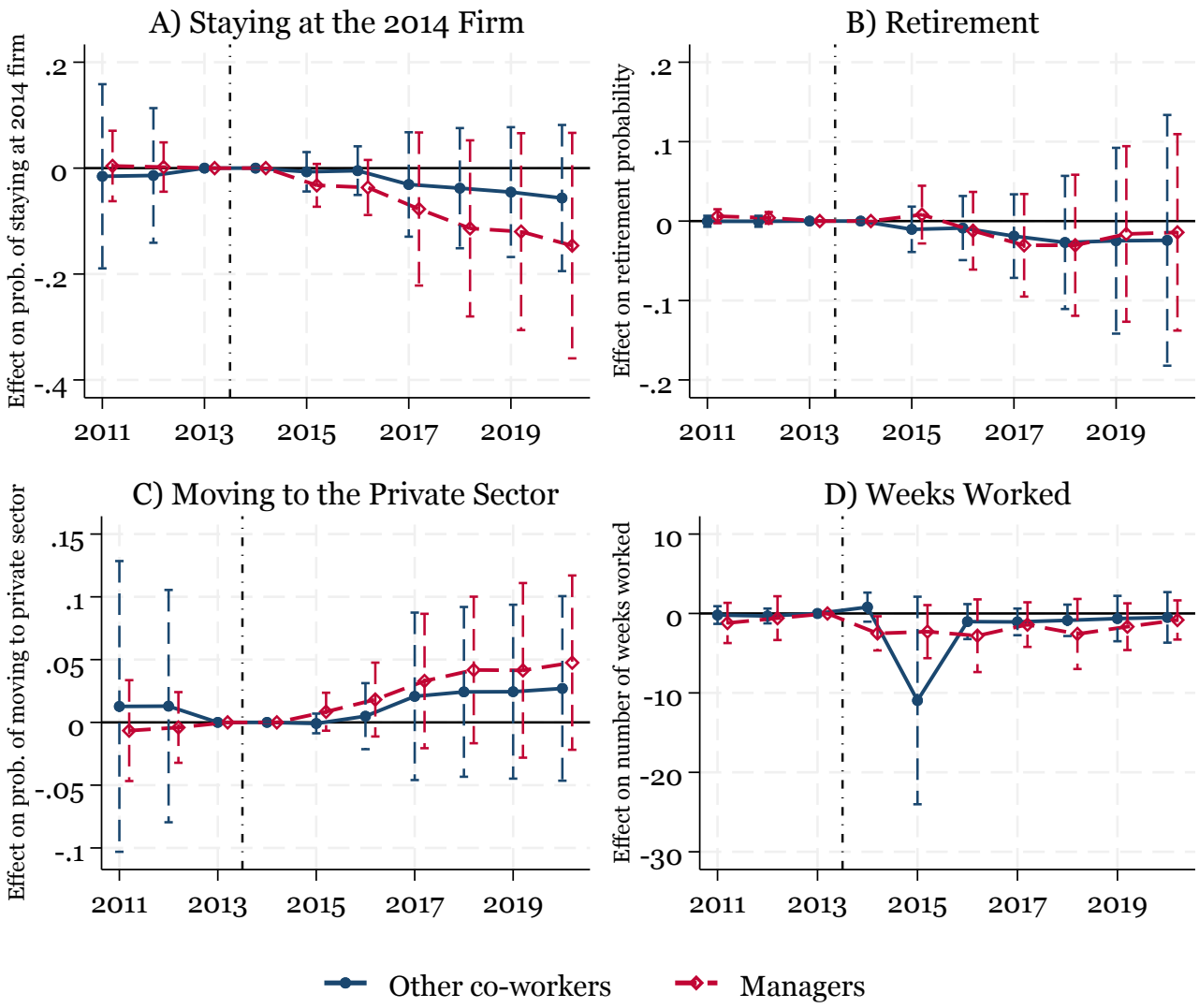
Notes: Event study coefficients resulting from the estimation of Equation 1 on a matched sample of public managers earning between €150,000 and €240,000 in 2009 versus above €240,000 in 2009 using a one-to-one matching within age*gender cells. Part A: The outcome is an indicator variable equal to one if the worker stays at the 2014 employer and zero otherwise. Part B: The outcome is an indicator variable equal to one if the worker is retired in that year. Part C: The outcome is an indicator variable equal to one if the worker is employed in the private sector, conditional on being employed. Part D: The outcome is the number of weeks worked in that year, conditional on being employed. Standard errors clustered at the worker level. The vertical dashed lines are 95% confidence intervals. See Section 4.2 and Figure 1 for details.

Figure B8. Event Study Results, Other Public Managers



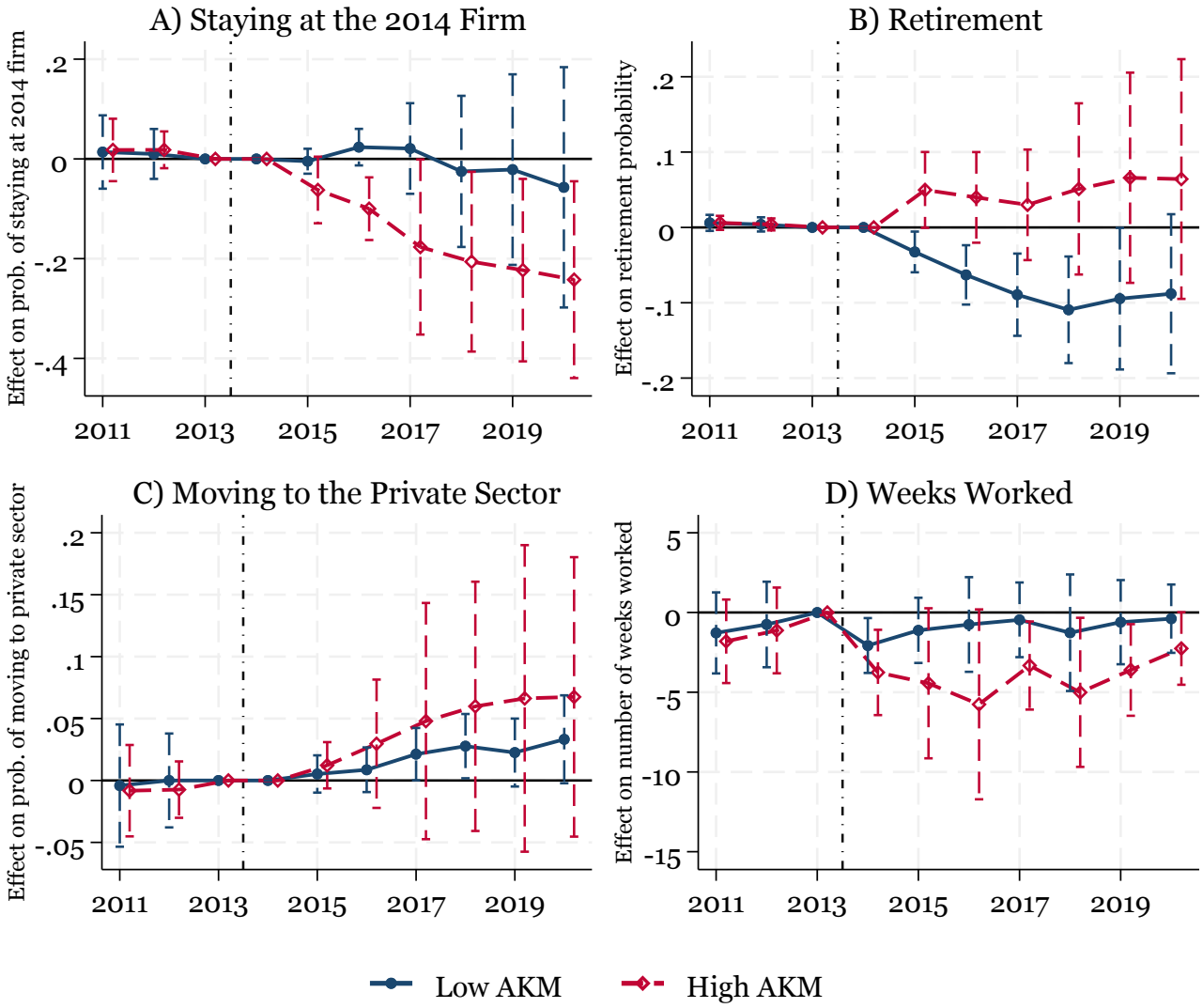
Notes: Event study coefficients resulting from the estimation of Equation 1 on a matched sample of public managers earning between €150,000 and €240,000 in 2014 versus above €240,000 in 2014 using a one-to-one matching within age*gender cells. The sample includes the rest of public managers beyond the public-in-private sample considered in the main analysis. Part A: The outcome is an indicator variable equal to one if the worker stays at the 2014 employer and zero otherwise. Part B: The outcome is an indicator variable equal to one if the worker is retired in that year. Part C: The outcome is an indicator variable equal to one if the worker is employed in the private sector, conditional on being employed. Part D: The outcome is the number of weeks worked in that year, conditional on being employed. Standard errors clustered at the worker level. The vertical dashed lines are 95% confidence intervals. See Section 4.2 and Figure 1 for details.

Figure B9. Event Study Results, Effects on Co-Workers



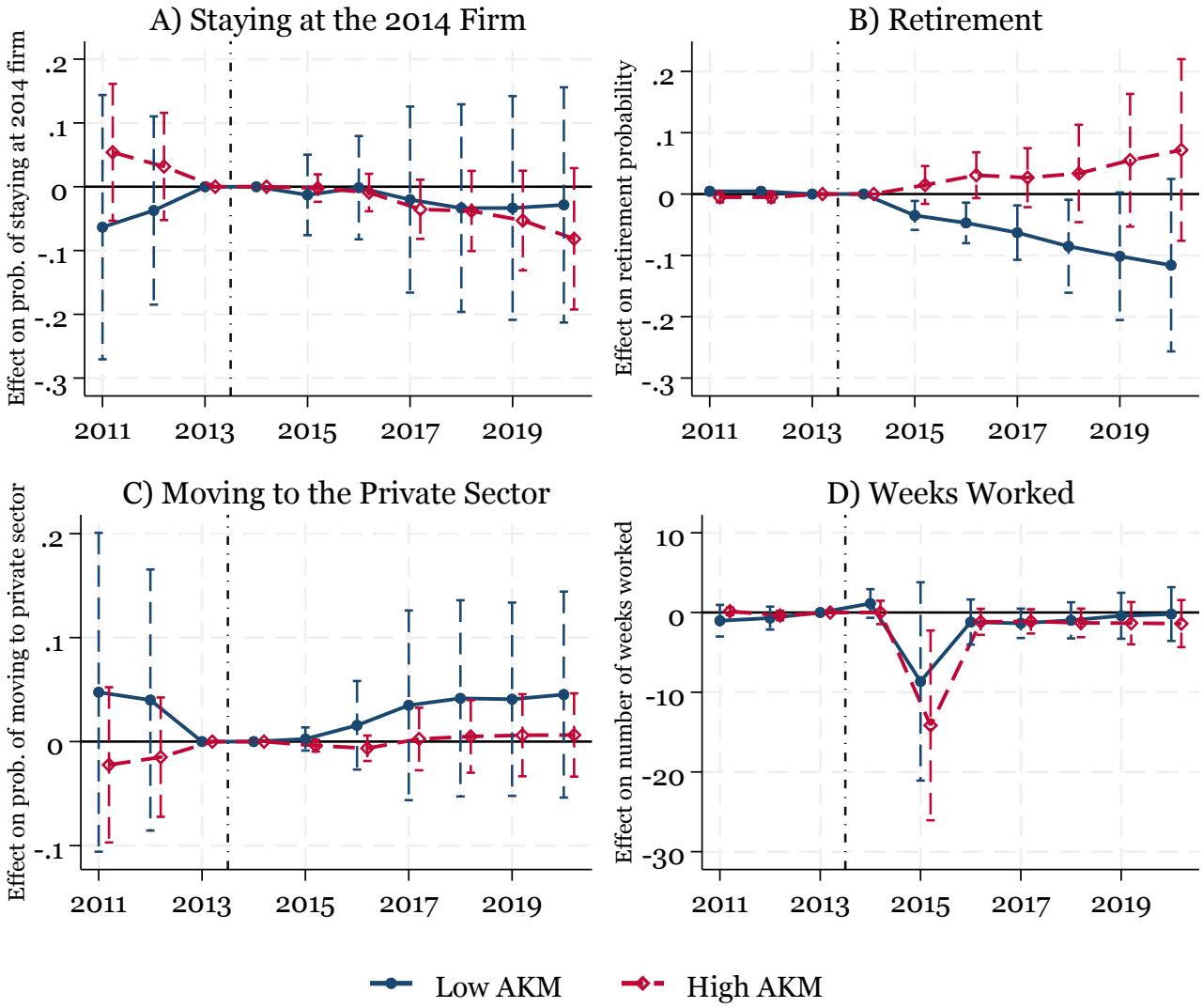
Notes: Event study coefficients resulting from the estimation of Equation 2 on the matched sample of the co-workers of treated managers who move to the private sector after the introduction of the cap (treated group) versus the co-workers of treated managers who stay at the public firm (control group), described in Section 3. The estimation is conducted separately for co-workers employed as managers and mid-managers (dashed lines) and co-workers in other positions (solid lines). Part A: The outcome is an indicator variable equal to one if the worker stays at the 2014 employer and zero otherwise. Part B: The outcome is an indicator variable equal to one if the worker is retired in that year. Part C: The outcome is an indicator variable equal to one if the worker is employed in the private sector, conditional on being employed. Part D: The outcome is the number of weeks worked in that year, conditional on being employed. Standard errors clustered at the firm*municipality level. The vertical dashed lines are 95% confidence intervals. See Section 5.2 for details.

Figure B10. Event Study Results, Effects on Co-Workers, High vs. Low AKM (Managers and Mid-Managers)



Notes: Event study coefficients resulting from the estimation of Equation 2 on the matched sample of the co-workers of treated managers who move to the private sector after the introduction of the cap (treated group) versus the co-workers of treated managers who stay at the public firm (control group), described in Section 3. The event-study plots refer to co-workers employed as managers and mid-managers, and separately for co-workers with above-median AKM worker fixed effect (dashed lines) and below-median AKM worker fixed effect (solid lines). Part A: The outcome is an indicator variable equal to one if the worker stays at the 2014 employer and zero otherwise. Part B: The outcome is an indicator variable equal to one if the worker is retired in that year. Part C: The outcome is an indicator variable equal to one if the worker is employed in the private sector, conditional on being employed. Part D: The outcome is the number of weeks worked in that year, conditional on being employed. Standard errors clustered at the firm*municipality level. The vertical dashed lines are 95% confidence intervals. See Section 5.2 for details.

Figure B11. Event Study Results, Effects on Co-Workers, High vs. Low AKM (Blue- and White-Collars)



Notes: Event study coefficients resulting from the estimation of Equation 2 on the matched sample of the co-workers of treated managers who move to the private sector after the introduction of the cap (treated group) versus the co-workers of treated managers who stay at the public firm (control group), described in Section 3. The event-study plots refer to co-workers employed as blue- and white-collars, and separately for co-workers with above-median AKM worker fixed effect (dashed lines) and below-median AKM worker fixed effect (solid lines). Part A: The outcome is an indicator variable equal to one if the worker stays at the 2014 employer and zero otherwise. Part B: The outcome is an indicator variable equal to one if the worker is retired in that year. Part C: The outcome is an indicator variable equal to one if the worker is employed in the private sector, conditional on being employed. Part D: The outcome is the number of weeks worked in that year, conditional on being employed. Standard errors clustered at the firm*municipality level. The vertical dashed lines are 95% confidence intervals. See Section 5.2 for details.

C. Computing Manager Quality

To measure manager quality, we estimate two-way AKM regressions (Abowd et al., 1999) on the universe of Italian public and private workers between 2005 and 2013. As to public workers, the estimation sample only includes public-in-private workers and not workers in the broader Italian public sector (PosPa data, see Appendix A), as we did not observe these before 2014. We retain one yearly observation for each worker as the (dominant) employer with the highest annual earnings (or weeks worked, for equal earnings). We then restrict the estimation sample to the largest connected set of firms in our data, defined by workers moving across firms (Abowd et al., 2002). We then estimate the standard AKM specification:

$$log\ w_{i,t} = \alpha_i + \varphi_{j(i,t)} + X'_{i,t}\beta + r_{i,t} \qquad (3)$$

Here, $log\ w_{i,t}$ is the logarithm of the weekly wage of a worker i in year t and $j(i,t)$ denotes the dominant employer of a worker i in year t. The vector of controls includes year-fixed effects and a cubic in worker's age. The worker-fixed effect α_i is the component of worker i's wage that she receives regardless of her employer, while φ_j denote systematic pay premia at firm j once accounting for worker selection in that firm.[16] As noted in the main text, we will proxy worker quality with the estimated AKM effects α_i, standardized between zero and one.

[16] Endogenous worker mobility—a key identification concern with AKM-type models (Card et al., 2013)—has been rebutted by recent papers using Italian data (Casarico and Lattanzio, 2023; Di Addario et al., 2023).