PAYING OUTSOURCED LABOR: DIRECT EVIDENCE FROM LINKED TEMP AGENCY-WORKER-CLIENT DATA

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Abstract—We estimate how much firms differentiate pay premia between regular and outsourced workers in temp agency work arrangements. We leverage unique Argentinian administrative data that feature links between user firms (the workplaces where temp workers perform their labor) and temp agencies (their formal employers). We estimate that a high-wage user firm that pays a regular worker a 10% premium pays a temp worker on average only a 4.9% premium, compared to what these workers would earn in a low-wage user firm in their respective work arrangements. This 49% pass-through constitutes the midpoint between the benchmarks for insiders (one) and the competitive spot-labor market (zero).

I. Introduction

WE shed direct light on wage setting for outsourced workers. We study employment mediated by temporary employment agencies ("temp agencies"), where the workplace is at a user firm even though the temp agency serves as the formal employer. Temp agency work is a facet of outsourcing and, more broadly, nonstandard work arrangements, which have been associated with lower wages and increased inequality (Weil, 2014). Specifically, we focus on firms' wage policies in the form of pay premia (defined as firm fixed effects in Abowd, Kramarz, & Margolis, 1999, henceforth AKM, specifications). The between-firm wage dispersion arising from pay premia constitutes a deviation from the law of one price that would arise in spot labor markets (see, e.g., Slichter, 1950; Lester, 1967). These premia can arise in imperfectly competitive labor markets through bargaining, search frictions, or monopsony (see, e.g., Mortensen, 2003; Hornstein, Krusell, & Violante, 2011; Card et al., 2018). A long-standing hypothesis is that nonstandard work arrangements—and specifically, outsourced, temp agency work—erode such pay premia by operating closer to a spot labor market or by lowering workers' bargaining power.[1] However, forces such as equity concerns (Card et al., 2012; Breza, Kaur, & Shamdasani, 2017; Dube, Giuliano, &

Leonard, 2019; Saez, Schoefer, & Seim, 2019) or the imperfect observability of effort (Akerlof & Yellen, 1986; Katz, 1986) may lead firms to extend firm-specific pay premia even to outsourced labor.

User firms' wage setting for outsourced labor compared to regular workers has so far largely escaped measurement because typical datasets exclusively associate outsourced workers with their formal employer, in our case the temp agency, rather than the workplace, the user firm. This is true for surveys (Abraham & Amaya, 2018; Abraham et al., 2018; Katz & Krueger, 2019a, 2019b), and the challenge extends to typical administrative matched employer-employee datasets, which generally do not show links between temp agency workers and user firms (Goldschmidt & Schmieder, 2017, constitute an exemption because they circumvent the missing link problem by studying outsourcing events of clusters of workers in low-skilled service occupations). We illustrate this issue in figure 1.

Our paper overcomes this fundamental measurement challenge by drawing on unique administrative data on the universe of workers in temporary work arrangements that contain information on both their temp agency and user firms. This linkage permits us to directly study the differentiation of pay premia between regular and temp agency workers within a workplace.

Our research design identifies pay premia through wage changes that accompany worker moves across employers (Abowd et al., 1999). Such workplace pay premia for regular workers are associated with higher productivity (as documented by, e.g., Card et al., 2018) and can hence be interpreted as facets of rent sharing that are directly observable in matched employer-employee data. We also document that worker tenure is longer in firms with higher AKM firm effects, consistent with jobs with higher AKM firm effects having higher rents. We ask whether these pay premia, whatever their source, are shared with outsourced labor.[2]

In a first step, we compare cross-sectional dispersion measures of workplace-level pay premia separately for regular and temp agency workers. The competitive benchmark for temp workers and the associated law of one price would imply little dispersion among temp workers. Though somewhat smaller compared with regular work arrangements, the

[1] For instance, Katz (2017) describes this view as follows: "When janitors work at Goldman Sachs as Goldman Sachs employees, they tend to share in the firm's huge productivity benefits and huge rents. But if they work for Joe's Janitorial Services, they no longer share in those rents." Similarly, Autor (2008) argues that labor market intermediaries more broadly and specifically including temp agencies "share a common function, which is to redress—and in some cases exploit—a set of endemic departures of labor market operation from the efficient neoclassical benchmark." Empirically, Abraham (2020), Dube and Kaplan (2010), and Goldschmidt and Schmieder

(2017) present evidence on the wage penalty associated with nonstandard work arrangements and outsourcing.

[2] Our work thus complements growing evidence documenting that firms may not set pay premia policies equally for all worker types. Using an AKM approach, Card, Cardoso, and Kline (2015) link the gender pay gap with differential rent sharing in Portugal. Gerard et al. (2021) link the racial wage gap with AKM premia differentials and sorting across employers in Brazil. Daruich, Di Addario, and Saggio (forthcoming) document differential rent sharing with workers on fixed-term contracts and open-ended contracts in Italy.

FIGURE 1.—MEASUREMENT CHALLENGES: REGULAR AND TEMP AGENCY WORK ARRANGEMENTS

(a) Regular Work Arrangements

(b) Temp Agency Work Arrangements

(c) Measurement of Temp Agency Work Arrangements in Typical Matched Employer-Employee Data

(d) Measurement of Temp Agency Work Arrangements in Argentinian Matched Employer-Employee Data (**Dual Registration**)
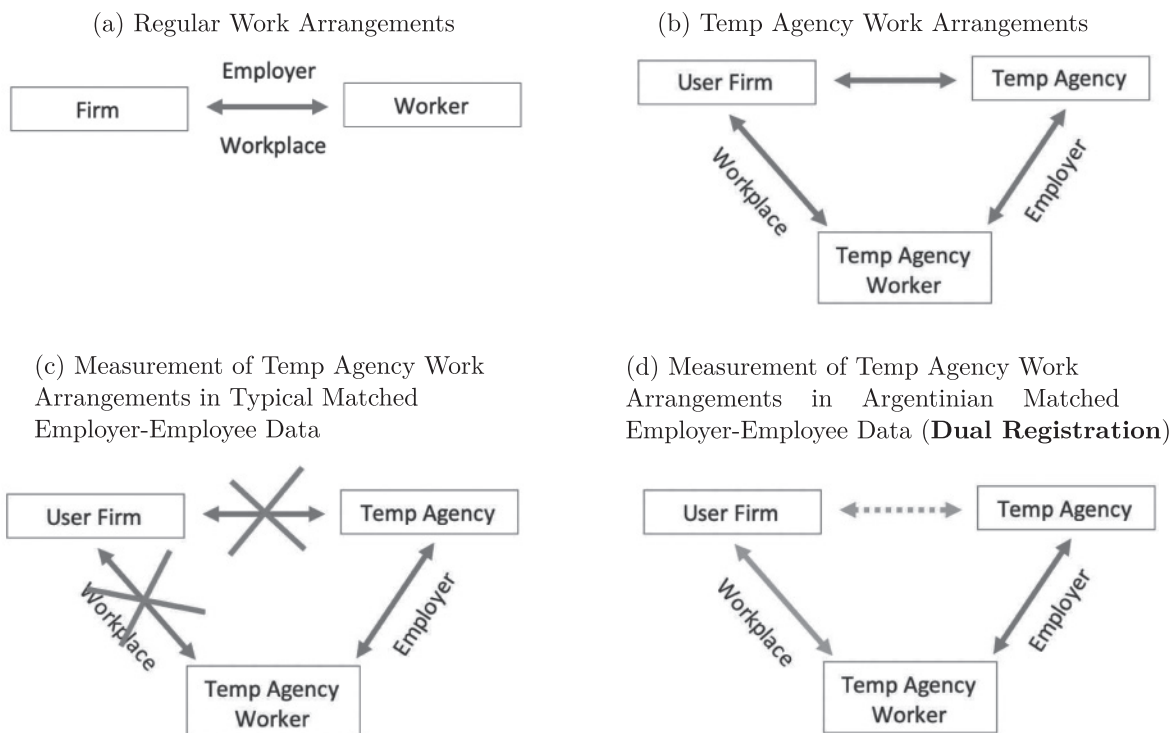
The figure illustrates regular and temp agency work arrangements and their measurement in administrative data. Panel A plots regular work arrangements in which employer and workplace typically coincide. Panel B illustrates the case of temp agency work arrangements in which a temp agency serves as the employer while the user firm is the actual workplace. The links between user firms are generally not observed in matched employer-employee datasets (panel C), because no direct contractual links exist between the user firm and the temp agency worker. Panel D illustrates the case of Argentinian matched employer-employee data, which allow us to observe links between user firms and temp agency workers because of dual registration.

dispersion of pay premia of temp agency workers is substantial. User firm pay premia for temp workers have a standard deviation of 17.2 log points, which rises to 20.7 log points in regular work arrangements for the same sample of user firms. Hence, the large degree of wage dispersion that characterizes regular work arrangements extends to the market for temporary agency work, even though this market is plausibly less subject to standard labor search frictions (consistent with Hornstein, Krusell, & Violante, 2011).

In a second step, we compare workplace pay premia estimates (AKM firm effects) for temp agency and regular work arrangements within firms. We therefore measure the degree to which high-wage firms for regular work arrangements are also high-wage firms for outsourced labor. Here a view of temp workers as insiders in wage setting would predict a slope of one. By contrast, either the competitive spot labor market benchmark or the treatment of temp workers as a separate class of workers would predict a flat line. We find a reduced-form slope of 0.490 for temp agency work arrangements and quantitatively similar results when correcting for measurement error. Normalizing the firm effects for both work arrangements to zero for the lowest wage user firms, our estimates thus imply that temp agency workers receive 49% of the workplace-specific pay premia earned by regular workers in user firms—a substantial markdown and the half point between the benchmark for insiders (one) and the competi-

tive spot-labor market (zero).[3] This pass-through, of around one-half, is present even in low-tenure industries, where regular workers are more comparable to temp workers, and in firms less or more subject to wage floors from the national minimum wage or collectively bargaining.

We discuss interpretations and implications of our findings in the conclusion section.

II. Institutions and Data

A. Temporary Work Agencies and Regulation

The Argentinian labor market for temporary work shares characteristics with those of other countries along various dimensions. First, temp agencies in Argentina pay below-average wages (Beccaria & Maurizio, 2017). Second, their business model and regulatory environment are similar to those of temp agencies in OECD countries (OECD/IDB EPL Database, 2015). For example, Argentinian law (Decreto 1694/2006) mandates that temp agency workers should be treated no worse than regular workers in the same capacity, similar to provisions in the European Union's Temporary

[3] Alternatively, if we assume that the premium is positive (rather than zero) in low-wage firms, temp workers' share of regular workers' pay premia would be even lower.

Agency Work Directive 2008. Finally, about 1.7% of employees were employed through a temp agency in 2005,[4] compared with 0.9% in temp agencies and 1.4% through contract firms in the United States (calculations based on February 2005 CPS; see table 2 in Katz & Krueger, 2019a).

Temp workers' labor earnings and payroll taxes are paid by the temp agency (typically monthly, the frequency at which we see administrative earnings). We draw on a representative labor force survey (Encuesta Permanente de Hogares) to compare weekly hours of work of temp agency and regular workers and find that they are similar; if anything, temporary workers appear to work slightly more hours (36.18 hrs/week, standard deviation [SD] 12.15, versus 34.61 hrs/week, SD 13.16, respectively; see appendix figure A1, panel B). As in many countries, a number of formal regulations exist for temp agency pay. De jure, the temp agency ought to pay the worker the wage specified by the collective bargaining agreement corresponding to the actual job, or the wage effectively paid in the user company. An open question is the degree to which such common regulations are binding and complied with, or whether firms find ways to circumvent the policies. For example, temp wage penalties and associated cost savings may point to imperfect compliance. In our study, partial compliance may be a formal institutional factor that contributes to similar pay policies across types within a firm, although we cannot definitely distinguish this channel from others, as we discuss in section V.

B.   Wage Setting in Argentina

The Argentinian labor market features substantial scope for firm-level wage setting, consistent with the dispersion in between-firm wages we will document. First, the minimum wage is not very binding in Argentina, with more than 99% and 94% of formal workers having wages above the minimum wage in 2003 and 2012, respectively (Bértola & Williamson, 2017). Second, sector-wide collective bargaining agreements (CBAs) specify wage floors by occupation for all employers. Third, some firm-specific CBAs are negotiated by the trade union with large firms that must weakly deviate upwards from the sectoral agreements. Fourth, specific employers can always deviate upwards on a discretionary basis. Consistent with this scope for firm-level wage setting, although more than 80% of formal employees are covered by CBAs, in the mid-2000s, the average monthly wage in the formal sector was 23% higher than the average monthly wage stipulated by sectorwide CBAs (see Palomino & Trajtemberg, 2006).

C.   Administrative Social Security Records (SIPA)

We use monthly administrative employer-employee matched data from 1996 to 2018 from the national social

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security system (Sistema Integrado Previsional Argentino [SIPA]). Details on the sample construction are in online appendix C. The dataset (described in further detail in, e.g., Tortarolo, 2019) covers the universe of formal workers employed in all regions, industries, and types of contracts. This corresponds to more than 15 million workers and 40 million job spells. The dataset includes information on workers (gender and age) and their jobs (type of contract, part-time/full-time indicator, compensation components), as well as some characteristics of the firm (sector and province). SIPA also provides firm and worker tax identifiers and reports total wages earned in each month, which include all forms of payment that are taxable or subject to social security contributions. These measures are not top coded. We CPI deflate all payments to correspond to January 2008 Argentine pesos.

D.   Administrative Worker-Client-Agency Linkage (SR)

In addition, we exploit administrative data linking the temp agency employing the worker and the user firms via tax identifiers of the temp workers, temp agencies, and clients SR, which is available since 2008. This unique data source stems from a 2006 reform of temp agency work, which required that temp agencies register temp workers with the Ministry of Labor, at a bimonthly frequency, and submit information on the worker, user company, position type, remuneration, and contract start and end dates. These filings are sworn statements and audited and hence are of administrative quality.

E.   Defining Earnings Concepts

We use SIPA, reporting the monthly nominal pretax compensation paid by formal employers, to construct our earnings measures. For temp workers, compensation is paid by the temp agency. To remove ambiguity about earnings sources (workplaces) and hours and days worked, we restrict our sample of temp workers to those providing services to a single user firm in a given month, and drop temp spells with simultaneous user firms or partial-month spells (by omitting the first and last month of employment in each job spell, as we do not observe precise start dates of the temp agency-client firm spells). We winsorize earnings at the 1% level on both sides. We also drop earnings with real income less than half the real 2008 minimum wage (in 2008, the real minimum earnings were USD 340 per month) adjusted by the average annual growth rate (1.5%) of real income for the entire sample.

III.   Wages for Temp Agency Work in Argentina

A.   Summary Statistics

In appendix tables A1 and A2, we provide descriptive evidence on the types of workers in regular and temp agency arrangements, along with the characteristics of user firms. Overall, we find that temp agency workers tend to be younger

TABLE 1.—TEMP AGENCY WORK ARRANGEMENT PAY PENALTY

	Outcome: Log Wage					
	(1)	(2)	(3)	(4)	(5)	(6)
Temp Agency Arrangement	−0.133***	−0.0745***	−0.191***	−0.193***	−0.0795***	−0.140***
	(0.000523)	(0.00132)	(0.00123)	(0.00123)	(0.000487)	(0.000485)
Year	Yes	Yes	Yes	Yes	Yes	Yes
Gender	No	Yes	Yes	Yes	No	No
Age Cubic	No	Yes	Yes	Yes	Yes	Yes
Industry FE	No	No	Yes	Yes	Yes	No
Industry-Year FE	No	No	No	Yes	No	No
Worker FE	No	No	No	No	Yes	Yes
Firm FE	No	No	No	No	No	Yes
R^2	0.011	0.070	0.352	0.355	0.897	0.922
Observations	52,167,733	49,580,782	49,561,798	49,561,794	48,463,435	48,419,633

The table reports coefficients for the temp agency arrangement pay penalty ρ in Mincer equations following regression specification (1). Standard errors clustered at the individual level reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, and * $p < 0.1$.

(mean age of 28 versus 38) and are more likely to be men (79% versus 70%). For each industry, appendix figure A1, panel A plots temp agency employment as a share of total national temp agency employment against its share in national regular employment. Deviations from the 45-degree line indicate that a firm accounts for more or less temp employment than predicted by its regular employment share. We find, for example, that manufacturing relies particularly strongly on temp agency employment, whereas education and health services and professional business services draw relatively less on such outsourced labor. Our dataset does not contain information on hours. However, we have already documented in section II that hours are, if anything, higher among temp workers, making it unlikely that differences in hours explain the lower earnings we document below.

B. Estimating the Average Temp Agency Work Pay Penalty

We next estimate the pay effect associated with temp agency work. We regress log wages earned by worker i in period t on an indicator for temp work, TempAgencyArrangement$_{it}$:

$$\ln w_{it} = \alpha_i + \psi_{J_{it}} + \rho \times \text{TempAgencyArrangement}_{it} + X'_{it}\beta + \epsilon_{it}. \quad (1)$$

As basic controls, X_{it}, we include gender and a cubic polynomial in worker's age as well as industry and year or industry-by-year effects. Because of the panel nature of the data, we can also include worker effects, α_i, which address selection based on permanent differences between workers. As a novel feature of our dataset, we also include workplace J fixed effects, $\psi_{J_{it}}$, which allows us to estimate the temp agency work penalty by comparing temp workers with regular workers in the same workplace. The coefficient of interest will capture pay premia differences between regular and temp agency work arrangements but may also pick up potential differences in hours or productivity between arrangements (the former of which we can rule out on average as we noted above). We estimate (1) based on the procedure in Correia (2016) and cluster standard errors at the worker level.

We report results for specification (1) in Table 1. Column 1 reports the raw temp effect of −0.133 (standard error [SE] 0.0005) with only year effects. This effect is reduced substantially to −0.075 (SE 0.001) once we include gender and age controls, particularly since temp agency workers tend to be younger than regular workers (see appendix tables A1 and A2). We next report specifications with industry or industry-by-year effects, which increases the temp penalty to −0.191 (SE 0.001). When we include worker effects in the next column, we find a point estimate for the penalty of −0.0795 (SE 0.0005), consistent with the previous specification's overestimation of the temp penalty due to negative worker selection. Next, we add firm effects and find a larger temp penalty of −0.140 (SE 0.0005). Overall, the estimated wage penalty of −0.140, controlling for workplace and worker effects, is similar to the estimates from the event studies of outsourcing of low-skilled service workers in Germany (−15% to −10%; see Goldschmidt and Schmieder, 2017) and for janitors and security guards in the United States (−24% to −4%; see Dube and Kaplan, 2010).

C. Estimating Workplace Premia for Regular and Temp Agency Workers

We next estimate modified AKM specifications, in which we allow for separate workplace effects for regular and temp agency workers, which we will then juxtapose in section IV. Formally, we estimate the following specification:

$$\ln w_{it} = \alpha_i + \psi^{W_{it}}_{J_{it}} + \xi^{\text{TempAgency}}_{TA_{it}} + X'_{it}\beta + \epsilon_{it}, \quad (2)$$

where α_i are worker fixed effects and $\psi^{W_{it}}_{J_{it}}$ are work-arrangement-specific workplace effects.[5] The superscript $W_{it} \in R, T$ indicates whether worker i is employed through a temp agency (T) or a regular employment relationship (R) in period t, and J_{it} denotes the workplace. In addition, we

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[5]We estimate the model simultaneously for both work arrangements; our temp agency fixed effects hence absorb, for example, average differences between the arrangements.

include temp agency effects, $\xi_{TA_{it}}^{\text{TempAgency}}$, for the temp agency TA_{it} at which a temp agency worker i is formally employed in period t. The temp agency fixed effects also absorb potential average differences between work arrangements, such as potential differences in productivity or hours. We include as control variables, X_{it}, a cubic term in worker age and year fixed effects. Intuitively, the wage changes of movers between different workplaces and work arrangements identify the fixed effects in a connected set.[6] We estimate (2) in the largest connected set, which captures 60.8% of firms and 95.9% of worker-year-spell observations.

D.   Which Firms Hire Temp Workers?

In panel A of figure 2, we plot the distribution of regular firm effects separately for those firms that ever or never hired temp workers (weighting observations by the number of workers). The histograms show that user firms' pay policies are shifted to the right, with a mean difference in the firm effect of 0.27; that is, high-paying firms are more likely to have outsourced labor. This pattern is consistent with cost-saving theories of outsourcing, by which high-wage firms seek to lower their wage bill by hiring temp workers. Alternatively, it could reflect selection by which more productive firms pay higher wages and engage in more complex modes of production. Last, it could reflect industry composition or firm size effects.

E.   Assortative Matching

We further investigate the assortative matching relating AKM worker effects for the two types of workers to firms' (regular) AKM pay premia in appendix figure A2. We find positive slopes of 0.27 for regular workers and only somewhat lower at 0.22 for temp agency workers. This assortative matching, which amplifies between-firm wage dispersion, may reflect temp agencies assigning their most productive workers to their most productive clients, or high-wage temp workers obtaining the best-paying assignments. By contrast, we do not find that high-wage firms hire from high-wage temp agencies. Here we find a flat slope of -0.007 (appendix figure A3).

F.   Between-Firm Dispersion in Pay Policies for Regular and Temp Workers

Most importantly in panel B of figure 2, we plot the distribution of workplace effects for regular and temp work arrangements in the sample of user firms. The specification does not include temp agency fixed effects, so that we can directly

compare the average workplace fixed effects in regular and temp agency work arrangements.[7] The histogram, as in panel A, weights firm observations by total worker-month observations to give equal weight to similarly sized firms irrespective of the share of regular versus temp workers.[8] The firms relying on temp labor are larger, because they make up 32.2% (1.6%) of our connected set sample of worker-month (total firms) observations. We find a downward shift in workplace effects for temp compared to regular work arrangements. The average pay premium is 17 log points lower for temp work arrangements compared with regular ones.[9]

Importantly, the dispersion of the workplace effects is nearly as high for temp agency workers' user firms as for the workplaces of regular workers—a stark rejection of the law of one price for temp agency workers. Specifically, the raw standard deviation in the pay premia is 17.2 log points for temp workers and 20.7 log points for regular workers.

We also implement a measurement error correction based on a split-sample IV procedure, leading us to scale down the standard deviation for the pay premia of temp agency workers to 15.2 and that of regular workers to 20.5 log points.[10] The large remaining degree of dispersion following this simple split-sample approach also validates our AKM fixed effect as a measure of heterogeneous firms' pay policies.

Overall, the standard deviation for temp workers is therefore around a quarter below that of regular workers, indicating that temp labor markets appear somewhat closer to—but still considerably far from—complying with the law of one price that would be predicted to prevail in a competitive spot labor market.

IV.   Do High-Wage Firms Share Pay Premia with Temp Agency Workers?

Our core specification compares the workplace pay premia earned by temp agency and regular workers in the same workplace. Their relationship could, for example, reflect the relative degree of rent sharing or the degree to which employers can differentiate the pay of outsourced labor.

A.   Strategy: Comparing Temp and Regular Pay Premia within Client Firms

Building on (2), we use the estimated workplace pay premia received by temp agency workers, ψ_J^T, and compare them

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[6]Card, Heining, and Kline (2013) suggest a test for the exogeneity of these moves based on the symmetry of wage changes of job switchers between firms ranked by coworker wages, which we leave for future research because of data access restrictions. The key test is for symmetry of temp wage changes between user firms (ranked by temp coworker wages).

[7]Here the difference may also capture average productivity or differences in hours between the two arrangements besides true temp pay penalties.

[8]Moreover, unlike below in figure 3, we do not normalize workplace fixed effects to zero for a baseline low-wage set of firms, but shift both distributions such that the mean of the regular workplace effects is zero.
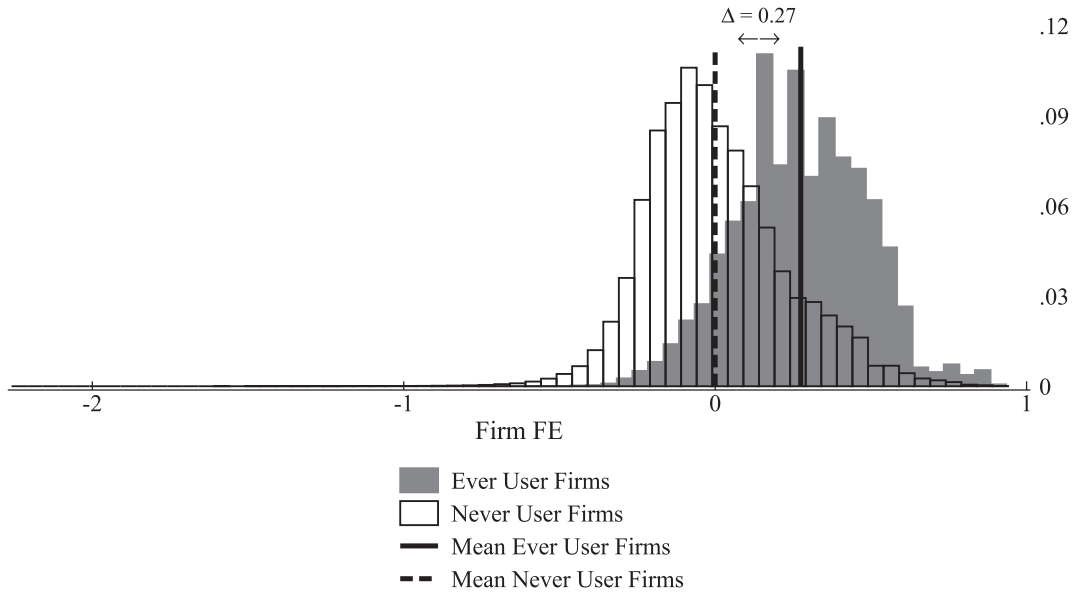
[9]Instead weighting firm observations by the number of temporary (rather than all) workers yields a weighted-mean difference of 0.13, akin to the relative wage-setting effect in the terminology of Card, Cardoso, and Kline (2016) in the context of the gender wage gap, suggesting that temporary workers are more likely to work for firms that pay them higher wages.

[10]Specifically, we split our worker sample into two random groups and estimate the AKM specification (2) separately. We calculate the covariance of these two sets of fixed effects by work arrangement.
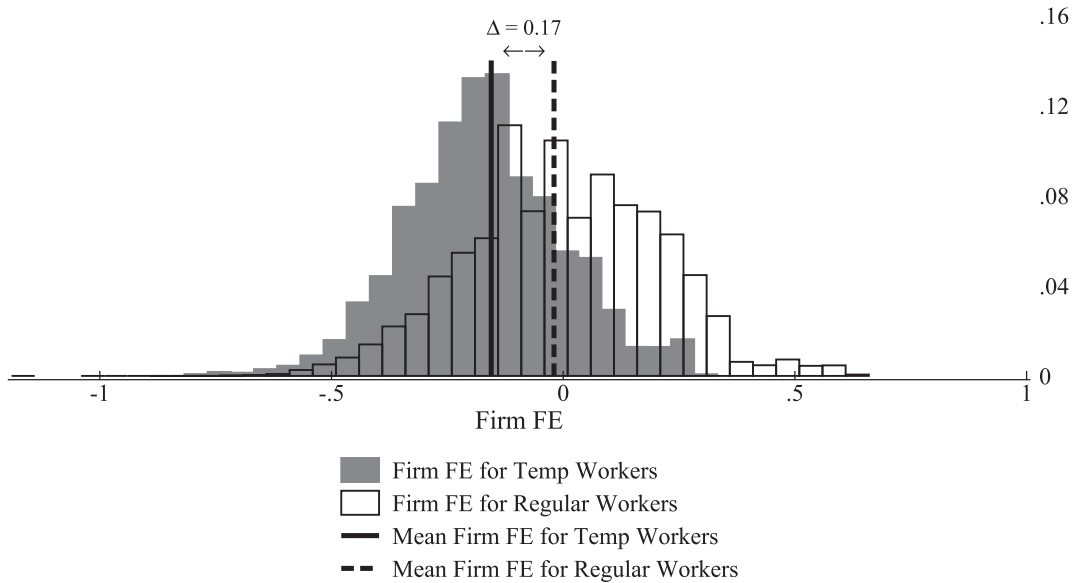
FIGURE 2.—FIRM PAY PREMIA (AKM EFFECTS) FOR USER AND NONUSER FIRMS AND BY WORK ARRANGEMENT

(a) Regular Work Arrangement Firm Effects of User and Non-User Firms

Ever User Firms
Never User Firms
Mean Ever User Firms
Mean Never User Firms

(b) Firm Effects, by Regular and Temporary Agency Work Arrangement (for Ever-User Firms)

Firm FE for Temp Workers
Firm FE for Regular Workers
Mean Firm FE for Temp Workers
Mean Firm FE for Regular Workers

The figures shows histograms of AKM workplace effects. Panel A studies selection of firms into outsourcing labor (i.e., becoming a user firm of temp agency workers). It plots the histogram of AKM firm effects for regular work arrangements, separately for firms that ever or never hired through temp agency arrangements in our observation period, normalizing the average workplace effect in the group of firms that never hired through temp agency arrangements to zero. The distribution for user firms is shifted to the right by 27 log points, indicating that firms with higher wage policies for regular workers are more likely to have outsourced labor. Panel B juxtaposes the workplace pay premia in temp agency and regular work arrangements; it draws on the sample of user firms. The specification underlying panel B does not include temp agency fixed effects to permit a comparison across work arrangements and shifts both distributions by normalizing the mean of regular work arrangement workplace effects to zero. The histograms indicate 17 log points higher workplace pay premia in regular work arrangements. Both panels weight firm observations by total worker-month observations to give equal weight to similarly sized firms irrespective of the share of regular versus temp workers.

with those of their peers in regular employment relationships at the same workplace, ψ_J^R:

$$\psi_J^T = \alpha + \gamma \psi_J^R + \nu_J. \tag{3}$$

Our coefficient of interest is γ, capturing the elasticity of temp to regular pay premia. We estimate (3) with ordinary least squares (OLS).

We normalize ψ_J^T and ψ_J^R to zero in the lowest respective vigintiles for each work arrangement. This normalization is inconsequential for our estimation of the slope, γ, and is absorbed by the intercept. However, the normalization matters when interpreting γ as the parameter governing the fraction of the percent premia earned by regular workers that temp agency workers receive on average in higher-paying firms. If, for example, workers in regular work arrangements in

FIGURE 3.—FIRM-LEVEL PAY PREMIA SHARING BETWEEN WORKERS IN TEMP AGENCY AND REGULAR WORK ARRANGEMENTS

(a) Levels

(b) Changes
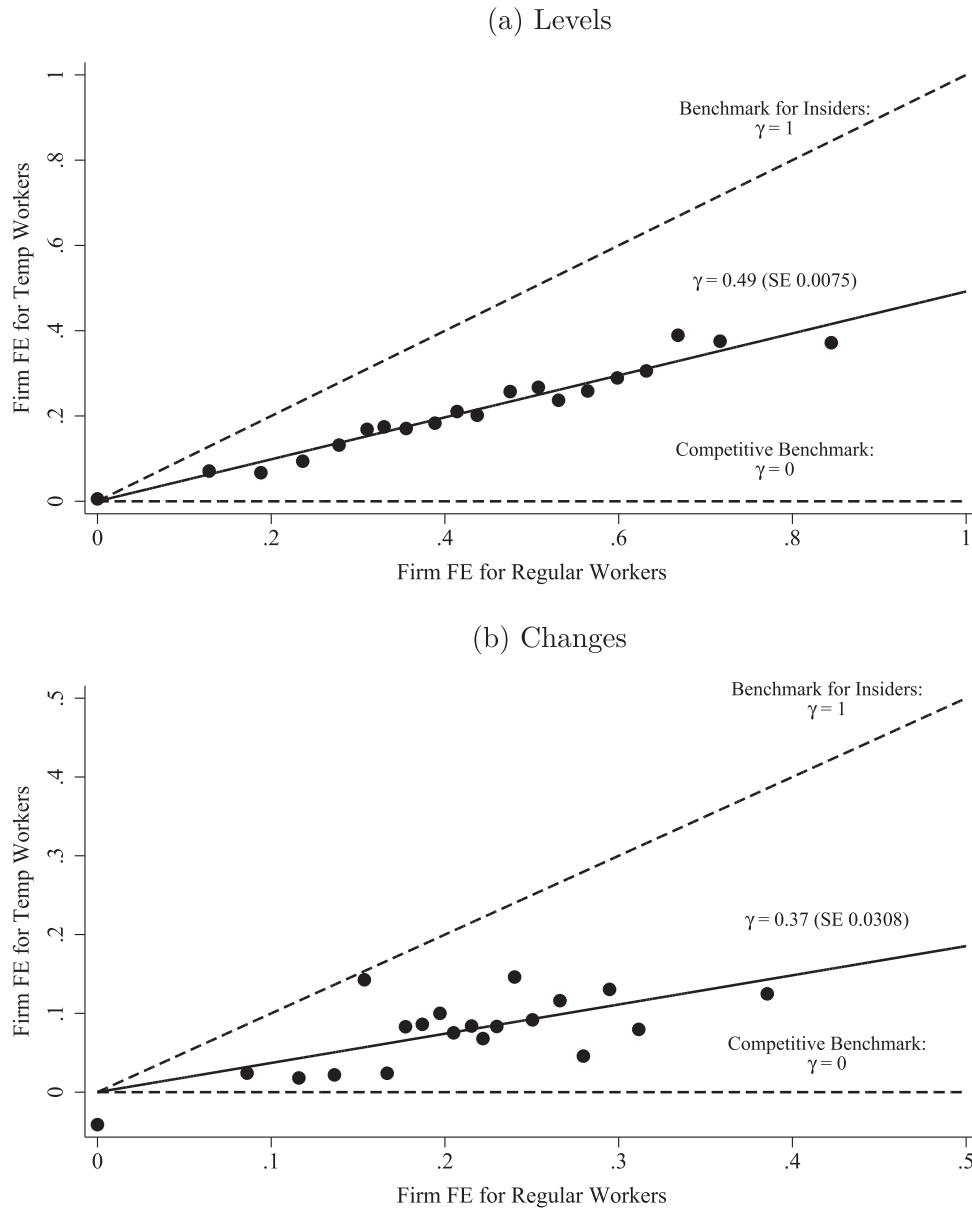
The figure shows a binned scatter plot of estimated firm effects for firms acting as user firms for temp agency workers, ψ_J^T, plotted against firm effects in regular work arrangements, ψ_J^R. Panel A does so for a cross-sectional comparison using all years (slope 0.49; SE 0.0075); panel B plots the changes in the fixed effects, splitting the data in two period windows, from 2009 to 2013 and from 2014 to 2017 (slope 0.37; SE 0.0308). For ease of visualization, we normalize the respective levels of the fixed effects in the lowest respective vingtiles to zero in panel A (and similarly the change to zero in the bottom vingtile of regular fixed effects changes in panel B). This normalization is inconsequential for our estimation of the slope, γ, and would be absorbed by the intercept in both panels. Estimated firm effects are restricted to those firms in the largest connected set that, at any point in our sampling window, served as the workplace of temp agency workers. The red regression line corresponds to the OLS regression line following specification (3).

low-paying firms do earn rents, but temp workers do not, then the estimate of γ constitutes an upper bound for the share of the premia earned by regular workers that temp workers receive on average (cf. Card, Cardoso, & Kline, 2016, for a similar argument related to gender wage gaps).

B.   *Polar Benchmarks: Law of One Price versus Insiders*

We highlight two polar benchmarks for the slope γ. First, if firms' pay policies for outsourced workers mirror those for insiders in regular work arrangements, we expect $\gamma = 1$. This benchmark arises under similar degrees of rent shar-

ing and rents to be shared, or institutional norms, formal or informal, curbing pay differentiation within the firm across work arrangements. Second, if firms pay a market price for temp agency workers, or if temp pay premia are unrelated to regular premia, we expect $\gamma = 0$.

C.   *Results*

We report binned scatter plots of ψ_J^T plotted against ψ_J^R in figure 3. Panel A does so for levels, and panel B for changes in pay premia (based on splitting our sample period in half). Here we weight firm observations by total monthly

observations. Panel A indicates that the empirical pay premia trace out a slope of $\gamma^{OLS} = 0.490$ (SE 0.0075). That is, comparing two firms, A and B, with B offering a 10% pay premium for its regular workers compared with firm A, the corresponding pay premium for temp agency workers at B versus A is predicted to be 4.9%. Hence, firms do appear to extend their pay premia to outsourced labor but only pass on half the amount.[11] Panel B broadly replicates these results by plotting the changes in the fixed effects within user firms over time, where we split the data in two period windows, from 2009 to 2013 and from 2014 to 2017. This specification holds, for instance, industry and region constant. We find a slope of 0.37 (SE 0.0308), perhaps smaller because of higher measurement error, but broadly consistent with our main results in panel A for levels.

D. Measurement Error Correction: Split Sample IV

We now probe the robustness of our findings. First, we account for the fact that measurement error may lead to a downward bias in γ^{OLS}. The effects ψ_J^R are generated regressors such that the variance of ψ_J^R captures both true variation in regular workers' pay premia across workplaces and noise due to sampling variability (Andrews et al., 2008; Kline, Saggio, & Sølvsten, 2019). To gauge the quantitative importance of measurement error, we implement a simple split-sample procedure (see, e.g., Goldschmidt & Schmieder, 2017; Gerard et al., 2021, for similar resolutions and online appendix D for more information). We find a corrected coefficient of $\gamma^{IV} = 0.493$ (SE 0.0077). Hence, the measurement error correction has essentially no effect on our findings.

E. Do High-Wage Firms Offer Better Jobs?

We additionally assess whether high-wage firms offer better jobs by studying the cross-sectional relationship between tenure and pay premia. This line of analysis follows the revealed-preference approach, whereby good jobs last longer (see, e.g., Krueger & Summers, 1988). If, for example, higher pay premia reflected only compensating differentials, workers would be indifferent between jobs with higher or lower pay premia. However, we find a strong positive relationship between tenure and pay premia, as shown in appendix figure A4, panel B. Quantitatively, a 10% higher AKM pay premium for regular workers is associated with five months longer tenure.[12] Our evidence is thus consistent with high-wage firms offering better, higher-surplus jobs and sharing

rents with their regular workers, rather than merely reflecting, for example, compensating differentials or hours differences.

F. Comparability of Temp and Regular Jobs

If pay premia accrue to new hires only once they become stably employed incumbents (as in Kline et al., 2019, who document differential rent sharing with new hires and incumbents) because of firm-specific human capital, or if pay compression operates within comparable jobs rather than across all worker types, then our pooled pay premium may downward bias the estimated slope.

To assess this concern, we separate our client firms into four-digit industries with lower (below-median) and higher (above-median) average tenure for regular workers. We construct industry leave-out means rather than potentially endogenous firm-level tenure information.[13] We report those results in figure 4, panel A, which replicates figure 3, panel A separately firms in high and for firms in low-tenure industries. We find a lower slope of 0.45 in the sample of firms with below-median tenure, compared to a slope of 0.54 in firm with above-median tenure: that is, if anything, pay premium sharing decreases when temp and regular workers become more comparable in terms of tenure.

G. Institutional Constraints: Collective Bargaining and the Minimum Wage

To assess the role of CBA wage floors or the national minimum wage, we again split up our analysis sample along the median by three four-digit-industry-level proxies reflecting the severity of these concerns. First, in figure 4, panel B, we split up firms by the average dispersion (standard deviation) in regular-worker pay premia within the industry, reflecting that potential CBA wage floors or the minimum wage bind for fewer firms. Here we find that firms with more scope for firm-level wage setting have a slightly larger slope (0.53 (SE 0.0085) compared to 0.48 (SE 0.0155) for below-median firms), suggesting that a mechanical pay premia pass-through in industries with more regulated pay is unlikely to explain our pattern of results.
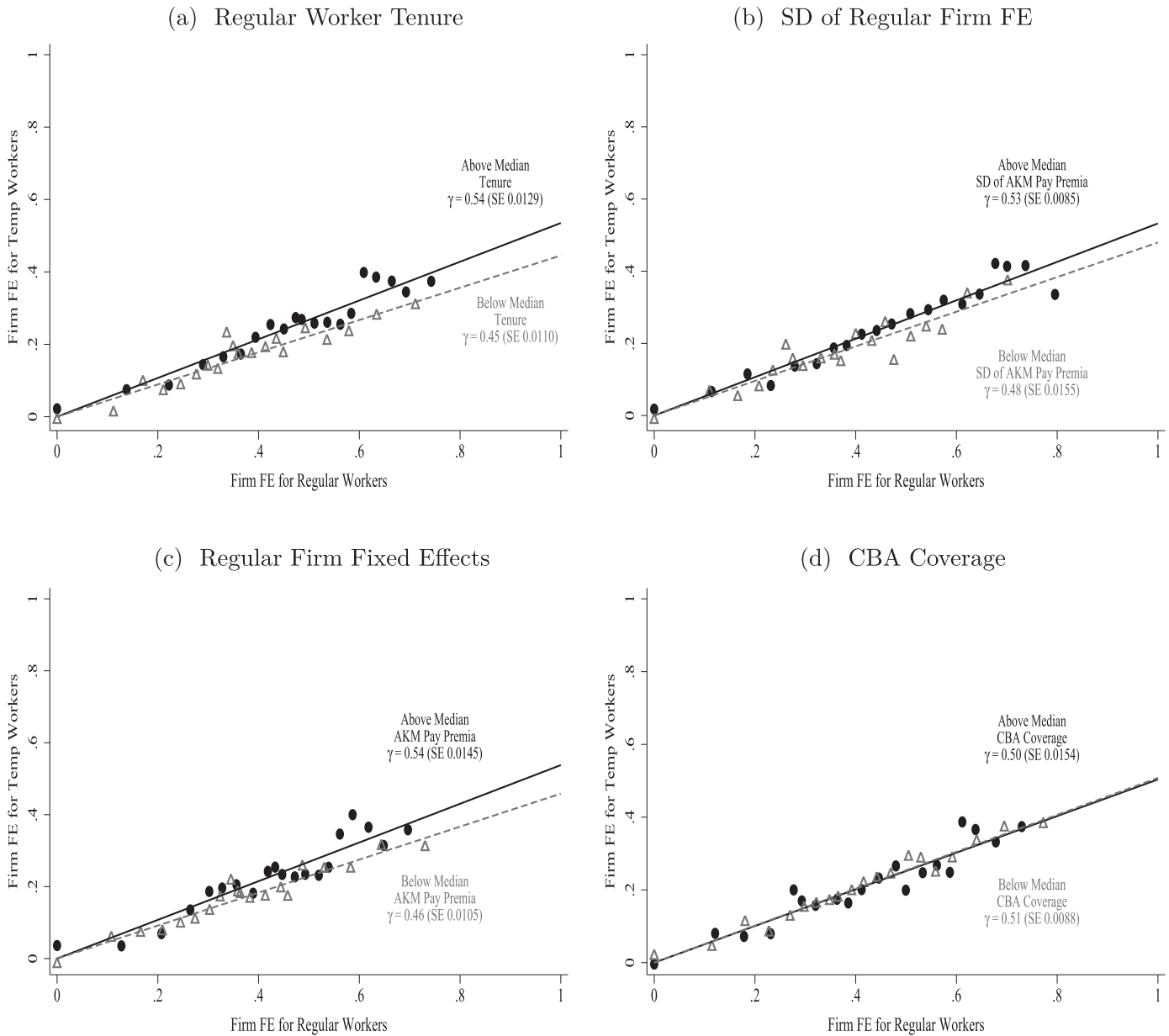
Second, in figure 4, panel C, we split firms by the average level of the AKM fixed effects. This measure proxies for the average distance from the minimum wage and for industry rents (e.g., Krueger & Summers, 1988). We find a slope of 0.46 (SE 0.0105) for the firms below the median, only slightly lower than the slope for above-median (high-wage) firms (0.54 [SE 0.0145]).

Third, as a direct measure of collective bargaining coverage, in figure 4, panel D we split the firms by the industry coverage of CBAs.[14] Here we find that firms above and below

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[11]Instead weighting firm observations by the number of temporary (rather than all) workers yields a slightly higher slope of 0.61 (SE 0.0055), suggesting that temporary workers are more likely to work for firms that share more rents with them, also consistent with our finding of a lower average pay gap in that weighting scheme summarized in footnote 8.

[12]A five-month increase corresponds to about a 10% increase in tenure, so that the elasticity of tenure to pay premia is about one, consistent with Bassier, Dube, and Naidu (2022) based on U.S. data.

[13]Our data do not contain occupation. We construct the sample and industry means again worker weighted.

[14]We construct CBA coverage as the fraction of workers whose occupation has a CBA wage floor, using SIPA worker-level flags.

FIGURE 4.—INDUSTRY HETEROGENEITY IN FIRM-LEVEL PAY PREMIA SHARING BETWEEN WORKERS IN TEMP AGENCY AND REGULAR WORK ARRANGEMENTS

(a) Regular Worker Tenure

Above Median
Tenure
$\gamma = 0.54$ (SE 0.0129)

Below Median
Tenure
$\gamma = 0.45$ (SE 0.0110)

(b) SD of Regular Firm FE

Above Median
SD of AKM Pay Premia
$\gamma = 0.53$ (SE 0.0085)

Below Median
SD of AKM Pay Premia
$\gamma = 0.48$ (SE 0.0155)

(c) Regular Firm Fixed Effects

Above Median
AKM Pay Premia
$\gamma = 0.54$ (SE 0.0145)

Below Median
AKM Pay Premia
$\gamma = 0.46$ (SE 0.0105)

(d) CBA Coverage

Above Median
CBA Coverage
$\gamma = 0.50$ (SE 0.0154)

Below Median
CBA Coverage
$\gamma = 0.51$ (SE 0.0088)

This figure replicates our main result in figure 3, panel A separately for two halves of our analysis sample of temp agency user firms. For each variable, we construct a four-digit leave-out industry mean (or standard deviation), weighting firms (in the analysis sample) by the worker count (consistent with our weighting in of the pooled analysis in figure 3). We then sort our analysis sample based on the leave-out mean for each variable into one subsample above and one below median (again weighted by worker count) and estimate the specification (3) and generate the binned scatter plot in figure 3, panel A separately in each subsample. Panel A does so for regular-worker tenure (above median average tenure is 43 months, and below median average tenure is 26 months), panel B does so for the within-industry standard deviation of AKM firm fixed effects (above median average SD is 0.18, and below median average SD is 0.10), panel C for the industry average of the AKM firm fixed effect (above median average fixed effects is 0.28, and below median average fixed effects is 0.12), and panel D for the industry-level average of collective bargaining agreement coverage on the basis of worker-level (population) SIPA data (above median average share of covered workers is 0.72, and below median average share of covered workers is 0.58).

the median exhibit very similar slopes (0.50 [SE 0.0154] and 0.51 [SE 0.0088], respectively). Overall, our findings likely reflect patterns that would arise in settings with large scope for firm-level wage setting and indeed reflect sharing of firm-specific rents.

H.   Heterogeneous Temp Penalties and Sorting

Heterogeneous temp penalties across workers combined with assortative matching of temp workers to firms can lead

our specification to underestimate the relative degree of rent sharing with temp workers. Specifically, if workers with high worker fixed effects sort into firms with high regular workplace effects (sidestepping sorting of workers into temp agencies, for which we include a set of fixed effects), and if the temp penalty increases in the worker fixed effect, then our estimated slope would also capture this effect. An alternative specification with separate worker fixed effects by work arrangement would remove these confounders. Our heterogeneity cuts in figure 3 show, if anything, a smaller slope

for industries with lower regular worker pay premia or with lower tenure for regular workers. Last, in figure 4, panel B, we documented that changes in firms' wage policies result, if anything, in a lower slope.

V. Interpretation and Implications

We close with interpretations of our findings—that firms appear to pay at most half of the workplace-specific pay premia received by regular workers to temp workers—and a discussion of potential implications and limitations of our design.[15]

A. *Why Do Firms Compress Pay Premia for Temp Workers?*

One reading of the estimate is that the glass is half empty: workers in temporary work arrangements do not appear to share in a firm's rents as much as workers who are formally and directly employed at their place of work. One explanation draws on bargaining, with temp workers having lower bargaining power (analogous to the gender wage gap and rent sharing in Card et al., 2015). Relatedly, three-party bargaining or double marginalization may lead the temp agency to appropriate some of the rents. Alternatively, temp agency labor supply to specific firms may simply be more elastic (as in the model in Card et al., 2018, which gives rise to an AKM specification). The attenuated slope is also consistent with findings by Daruich et al. (forthcoming) that lower firing costs (in fixed-duration jobs) are associated with lower rent sharing.

The attenuation of pay policy premia may also contribute to the ongoing debate regarding the forces that motivate firms to outsource labor (see, e.g., Abraham & Taylor, 1996; Autor, 2003; Houseman, Kalleberg, & Erickcek, 2003; Mas & Pallais, 2020, for existing evidence). Here our findings suggest that high-wage firms can moderately cut labor costs by relying on temp workers—but to a lesser degree than the competitive benchmark would have suggested, as they still appear to pay a premium even to outsourced labor.

B. *Why Do Firms Pass on Such a Large Share of Pay Premia to Temp Workers?*

Alternatively, the glass is half full: our estimates reveal considerable evidence that pay premia are shared with temp workers, compared with the competitive spot labor market benchmark for temp agency labor with wages equalized across employers. The considerable degree of pay premia sharing is consistent with theories of fairness norms in the workplace reflected in workers' dislike for pay differences that lead to pay compression (see, e.g., Bewley, 2009; Card et al., 2012; Breza et al., 2017; Dube et al., 2019; Saez et al., 2019). Alternatively, efficiency wage theories based on moral hazard would imply that incentive compensation would pass

through into pay for both regular and temp workers performing the same job. Finally, temp agencies themselves may have incentives to increase rent sharing with temp workers. Temp agencies' revenues stem from fees charged to user firms, which are typically computed as a multiple of the temp worker's wage (e.g., about 1.5% to 2% based on conversations with leading temp agencies and thus are small relative to the average wage gap and, as proportionate fees, do not affect the log-log slope we estimate).

Viewed through the lens of labor market monopsony, the alignment of pay premia would imply that the firm-specific supply of temp labor is far from perfectly elastic and far from a competitively supplied intermediate service. Sources of imperfectly elastic supply include heterogeneity in workers' preferences for certain employers or mobility costs, factors that also plausibly guide temp labor supply. It may also reflect monopolistic behavior by the temp agency itself.

Another interpretation is partial but considerable compliance with the standard regulatory framework, which would de jure mandate firms to pay equal wages across work arrangements for the same job. It is beyond the scope of our paper to isolate the role of this channel, even though we suspect that similar forces may operate in jurisdictions with related provisions, such as in the European Union. Yet Argentina's relatively large informal sector suggests that our setting plausibly leaves some room for noncompliance compared with other countries. We also point to analogous evidence on differential rent sharing between men and women (Black & Strahan, 2001; Card et al., 2015) despite laws that purport to ban discrimination based on gender.

C. *Limitations*

Our study relies on AKM firm fixed effects to study firms' pay policies estimated separately for regular and temp work arrangements. Our preferred interpretation of such estimates concerns differential rent sharing patterns between the work arrangements. For data availability reasons, our analysis does not feature direct proxies for rents (such as labor productivity). Nor does our dataset permit us to assess the comparability of the jobs performed by regular and temp workers. Future research may estimate regular workers' workplace fixed effects for those occupations that temp workers are performing in user firms, by merging additional data. Moreover, because of data access constraints, we are unable to conduct two specification and robustness checks: an exogeneity test of movers as in Card et al. (2013), and an alternative specification with worker fixed effects separated by work arrangement.[16]

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[15]Here we also draw on interviews with temp agency representatives.

[16]We thank a reviewer for suggesting these checks. We had lost access to the administrative data after concluding the working paper and before submitting the paper (disclosed to and confirmed with editors ahead of submission). We did not regain data access and hence did not investigate those additional checks.

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