COLLECTIVE BARGAINING FOR WOMEN: HOW UNIONS CAN CREATE FEMALE-FRIENDLY JOBS*

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Abstract

We study the role of unions in improving workplaces for women. Starting in 2015, Brazil's largest trade union federation made women central to its agenda. Using a difference-in-differences design that leverages variation in union affiliation to this federation, we find that "bargaining for women" increased female-friendly amenities in collective bargaining agreements and in practice. These changes led women to queue for jobs at treated establishments and separate from them less—both revealed preference measures of firm value. We find no evidence that gains came at the expense of wages, employment, or firm profits. Better amenities instead reduced turnover and absenteeism, suggesting greater worker satisfaction and effort. Larger improvements occurred where women initially comprised a lower share of workers or union leaders. Our findings show that shifting union priorities toward women improved workplaces without meaningful trade-offs and instead benefited both workers and employers. They illustrate the potential for unions to improve workplace quality by focusing on the needs of less represented workers.

JEL Codes: J31, J33, J51, J52.

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I INTRODUCTION

Despite significant labor market progress over the past several decades, women continue to incur large earnings losses because they are in charge at home (Kleven, Landais, and Sogaard, 2019). Globally, over 30% of working women across 142 countries cite having to balance family and work as their main challenge (Ray et al., 2017). While governments and scholars alike have argued that making workplaces more female-friendly is key to reducing gender disparities in the labor market—for instance, (Goldin, 2014) argues that changing the structure of jobs may eliminate all remaining gender earnings gaps—there exists little evidence on how this change might materialize, or its consequences for workers and employers.

This paper examines the role of unions in improving workplaces for women. Given that unions negotiate pay and benefits on behalf of nearly 18% of workers worldwide, one might naturally expect them to be effective at enacting change (Visser, 2019). We therefore ask and answer two questions. First, can union advocacy improve workplaces for women? Shifting the union's priorities does not guarantee that workplaces will change. Employers might never agree to change or, even if they do agree, might only provide amenities at the expense of wages or employment. Our second question is thus how female-friendly amenities are paid for. Answering these questions has proven difficult due to both a lack of exogenous variation in union advocacy and because workplace amenities are seldom observed. Absent variation in advocacy, observed expansions of female-friendly amenities might merely reflect changes to an establishment's labor supply (which could impact amenities independently of union actions) or labor demand (which could affect worker outcomes independently of amenities). Without data on amenities, expansions of female-friendly amenities might never be observed.

To overcome these challenges, we study a natural experiment in Brazil that led its largest trade union federation (union central), the Central Unica dos Trabalhadores (CUT), to prioritize women in collective bargaining.[1] Starting in 2015, the CUT adopted a new platform to advance female-friendly amenities in collective bargaining, including expanding paid maternity leave to six months, flexible work schedules, and childcare. It additionally amplified women's voices in the union in several ways, most notably through a 50% quota for women in its state and national leadership. Because unions seldom change affiliation to their union central, and neither workers nor establishments choose their union, the reform represents a top-down shift in union priorities unrelated to shifts in an establishment's labor demand or labor supply. We use a difference-in-differences design to compare establishments negotiating with CUT-affiliated unions (treated group) to non-CUT affiliates (comparison group). The two sets of establishments closely resembled each other at baseline. Together they employed

[1]Union centrals are umbrella organizations that coordinate priorities among local unions. Over half of all formal workers in Brazil are covered by collective bargaining, and 20% of unions affiliate with CUT.

19% of formal workers in Brazil, or 11.5 million workers across 80,000 establishments.

Our analysis relies on linking three rich sources of data: (i) establishment-level amenities from the text of all collective bargaining agreements (CBAs), (ii) worker outcomes from linked employer-employee records covering the universe of formal workers in Brazil, and (iii) union leadership and union central affiliation for all unions.

First, we use a revealed preference approach to identify which amenities are valued by women and which by men assuming that workers sort to employers offering better working conditions. Employer-to-employer moves thus reveal valuable firms (Sorkin, 2018; Morchio and Moser, 2020), and correlating firm values with CBA clauses reveals valuable amenities. Women value amenities that enable balancing work with home, such as maternity protections, childcare payments, leaves, and workday reductions ("female-centric" amenities). In contrast, men value higher pay and safety-related clauses like profit sharing, hazard pay, life insurance, and safety equipment ("male-centric" amenities).[2]

Our first main result is that shifting union advocacy toward women improved female-friendly amenities on paper as well as in practice. On paper, the CUT reform increased the provision of female-centric amenities by 19%, which is a substantial gain, equivalent to moving from the average amenity count at a minority-female establishment to one where over 80% of the workforce was female. Over half the increase came from clauses governing leaves and childcare, suggesting that the reform especially benefited women of childbearing age. To assess how these contractual improvements translated into practice, we identify three dimensions of the workplace that agreements could affect: the length of paid maternity leave (leave extension clauses), job security post-maternity (job protection clauses), and the female share of managers (equal opportunity clauses). We find improvements on all three measures: the share of women taking extended maternity leaves grew by 14%, with corresponding gains in job protection post-maternity, and the female share of managers grew by 2%.

The largest gains in female-friendly amenities occurred at establishments where women were a minority among workers or union leaders. This pattern aligns with the union voice model, which predicts that prioritizing women should have the greatest impact in workplaces where they most lack representation (Freeman and Medoff, 1984). While larger gains in male-dominated establishments might suggest that employers were more willing to provide amenities when the number of beneficiaries, and, thus, costs, were low, our evidence more strongly supports the union voice hypothesis. Specifically, we also find sizable gains in amenities at establishments with many female workers (potential beneficiaries) but limited

[2] An out-of-sample sense check reveals that female amenities increase and male amenities decrease with the female share in an establishment's workforce, providing the first clue that representation may influence amenities.

female representation in the union.

Our second main result is that women valued the changes to the work environment ushered in by the CUT reform, which rules out a purely compensating differences explanation for better amenities. Women were less likely to separate from and more likely to queue for jobs at treated establishments, both revealed preference measures of firm value (Krueger and Summers (1988); Holzer, Katz, and Krueger (1991)). Female retention increased by 1.8pp and the female share of probationary workers—commonly used by employers to screen applicants—rose by 10%. Better female amenities thus attracted women to treated employers.

We next turn to asking how unions ushered the improvement in female-friendly amenities. The CUT reform introduced both a female-focused platform and a female quota in union leadership. Our third main result is that the change in bargaining priorities drove the reform's impact on amenities, rather than new women leaders. Gains were largest in workplaces where the CUT effectively transmitted its new priorities to local unions: for instance, amenities improved most at establishments located near CUT training schools, which adopted new curricula to promote the female-focused agenda. In contrast, the 50% gender quota in the CUT's state and national leadership had limited spillover effects on the gender composition of local union boards. If anything, the few union boards that gained women leaders negotiated somewhat smaller increases in amenities than unions without new women leaders. Thus, in this context, unions improved working conditions for women by shifting their bargaining agenda, even without meaningfully increasing women's presence in union leadership.

How were the union-driven improvements in female-friendly amenities paid for? Our fourth finding is that amenities improved without observed tradeoffs for workers or employers. Instead, we find suggestive evidence of productivity gains.

There is no decline in wages or employment. Compensating differences would predict that women's wages should disproportionately decline to finance the improvement in female-friendly amenities (Rosen, 1986). Men's wages could also decline. However, we detect no impact on the earnings of new or incumbent workers, male or female, and can precisely rule out even small changes. Given no wage decline, employers might instead employ fewer or cheaper workers such as men or older women. Yet we find precise null effects on both employment and worker composition. If anything, CUT-affiliated employers became more attractive to women, increasing their female share of workers. Finally, male amenities remained unchanged and male retention rose, suggesting that men valued the changes to the workplace driven by the CUT reform. Together, these findings show that prioritizing women in collective bargaining improved workplaces for women without tradeoffs for workers.

If workers did not finance the new amenities, perhaps firms did through lower profits. Both empirical and theoretical reasons point against this explanation. Empirically, there is

no treatment effect on establishment exit, which is an important margin of adjustment in Brazil.[3] For the subsample of establishments that report profits to Orbis, there is no decline in measured profits. Theoretically, the reform shifted union priorities rather than increasing the bargaining power of CUT-affiliated unions, meaning that unions were not positioned to capture a larger share of surplus for workers.[4] While greater union bargaining power typically predicts changes in employment, we find a precisely estimated zero effect.

The finding that the CUT reform improved female-friendly amenities without reducing wages, employment, or profits suggests a third possibility: that amenities raised worker productivity. We find positive effects on two observable measures of workers' effective productivity: retention and absenteeism. A simple calculation shows that women's higher retention alone could pay for the most expensive female-friendly amenity advocated by the CUT, namely, maternity leave extensions. The reform also reduced absenteeism by 4.5%. Finally, multi-establishment firms exposed to the reform were significantly more likely to expand amenities to untreated establishments negotiating with non-CUT unions compared to unexposed firms. This voluntary expansion provides suggestive evidence that employers benefited from enhancing their amenities for women.[5]

Overall, our findings show that prioritizing women in collective bargaining increased the provision of valuable amenities for women without imposing costs on workers or employers. While decisively measuring the impact on worker productivity is beyond the scope of our data, we find evidence of reduced turnover and absenteeism. Regardless of any productivity gains, however, the finding that Brazilian employers could improve female-friendly amenities at no apparent cost reveals that firms were inside their frontier provision of female-friendly amenities. The reform moved them closer to the frontier, and, in so doing, unions improved working conditions for nearly 2.5 million women in Brazil, especially those who had lacked representation the most.

Why did unions and firms initially fail to provide female-friendly amenities? Qualitative accounts suggest that unions had historically overlooked the needs of women workers, and this gender gap in voice inspired the CUT reform to begin with. The reform got unions to focus on women (Godinho Delgado, 2017). On the firm side, Section VI explores three possible reasons why employers were underproviding female-friendly amenities. While determining the exact cause is beyond the scope of this paper, the main point is that unions could improve workplaces for women simply through advocacy. Our results suggest that prioritizing the needs of previously overlooked workers can create gains for both workers and

[3] Over 8.7% of control establishments exited within two years of the reform

[4] The position of the CUT if anything weakened around the time of the reform due to the impeachment of close political ally President Dilma Rousseff between December 2015 and August 2016.

[5] Within-firm spillovers may reflect equity considerations and do not definitively prove employer benefits.

employers.

This paper contributes to a growing literature on the importance of female-friendly amenities in shaping labor market outcomes. While prior work shows that women disproportionately value amenities like flexibility (Mas and Pallais, 2017; Wiswall and Zafar, 2017; Maestas et al., 2023), and argues that amenity provision is key to reducing gender gaps (Goldin, 2014), there exists little evidence on how female-friendly amenities might expand and its impact on workers and employers. We examine the role of unions in improving amenities and ask whether their provision reduces wages (Gruber, 1994) or employment (Summers, 1989). Our results show that unions can improve female-friendly amenities and that, when they do so by prioritizing the needs of previously overlooked workers, gains need not come with tradeoffs. These findings align with evidence that better working conditions reduce worker turnover (Harju, Jäger, and Schoefer, 2021; Emanuel and Harrington, 2022; Derenoncourt and Weil, 2024) and are among the first to show that unions can drive such gains.[6]

Second, the findings advance our understanding of unions and inequality. While profit-maximizing firms care about the marginal worker, it is less clear who the union represents (Farber, 1986). Unions have long struggled to represent workers with competing interests (Hill, 1996), with varying effects across worker groups, raising wages for low-skill workers (Card, 1996; Farber et al., 2021) and black workers (Ashenfelter, 1972), but not necessarily women (DiNardo, Fortin, and Lemieux, 1996; Card, Lemieux, and Riddell, 2004; Card, Lemieux, and Riddell, 2020; Bolotnyy and Emanuel, 2022). However, since women negotiate less over pay than men (Dittrich, Knabe, and Leipold, 2014; Leibbrandt and List, 2015; Biasi and Sarsons, 2022), unions could conceivably step in on their behalf. We provide quasi-experimental evidence that unions can improve female-friendly amenities when they prioritize women—especially in workplaces where women lacked representation—demonstrating that who unions advocate for matters. Here, a top-down push to prioritize women was sufficient to drive change even without increasing female leadership in unions.

Finally, the paper makes two contributions to the revealed preference literature. We combine worker moves with rich information on amenities at the establishment level to uncover amenities disproportionately valued by women and men. The real-world decisions underlying these moves leverage a higher stakes environment than has been possible in experiments. Our findings corroborate the experimental finding that women value flexibility (Mas and Pallais, 2017; Wiswall and Zafar, 2017; Maestas et al., 2023), and introduce several new amenities to the literature, e.g., medical exams, absences, and policies for dependents.

[6]Governments or foreign buyers can also improve amenities such as paid maternity leave policies, e.g., Schönberg and Ludsteck (2014), Lalive et al. (2013), Lalive and Zweimüller (2009), and Bailey et al. (2019). Boudreau, 2023 finds that multinational companies improved safety at garment factories at no observed cost to workers or employers.

Second, we provide quasi-experimental evidence that workers seek employers who improve amenities, consistent with papers that use job transitions to infer amenity values (Sorkin, 2018; Taber and Vejlin, 2020; Lamadon, Mogstad, and Setzler, 2022).

The paper proceeds as follows. Section II describes the institutional context and CUT reform. Section III describes our approach for classifying amenities as female- or male-centric. Section IV presents the empirical strategy. Section V reports the effect of changing union priorities on female-friendly amenities and associated costs. Section VI discusses why unions and firms underprovided female-friendly amenities. Section VII concludes.

II INSTITUTIONAL CONTEXT

We begin by describing the collective bargaining structure in Brazil, emphasizing the distinction between unions that represent workers in collective bargaining, and union centrals, which coordinate the activities of affiliated unions. We then describe the 2015 reform enacted by Brazil's largest union central (CUT) that provides the top-down shift in union priorities toward women that we use for identification.

II.A Collective Bargaining and Union Centrals

Brazil has two types of collective bargaining agreements (CBAs): sectoral and firm-level. Sectoral CBAs are negotiated with employers' associations that represent all establishments in a given industry and geography, for example, the car manufacturers of Curitiba. Firm-level CBAs are instead negotiated with individual employers like Volkswagen. Sectoral agreements typically set general floors for wage and non-wage benefits, while firm-level agreements build on these floors to expand benefits at individual employers (Horn, 2009). Most CBAs span a duration of twelve months.[7] Our main analysis studies the impact of the CUT reform on firm-level CBAs. However, we leverage amenities contained in sectoral CBAs to identify clauses disproportionately valued by women and men (Section III.B).

Neither workers nor employers choose the union that negotiates CBAs on their behalf. Representation instead depends on two factors: industry (or category) and geography (municipality).[8] Examples of unions include the bank workers' union of São Paulo and the teachers' union of Florianopolis. A legacy of Brazil's corporatist past is that the first union approved to represent a given category of workers in a municipality holds an indefinite monopoly. Workers can therefore only influence their union's priorities from within, by voting in union elections, running for leadership, or voicing concerns to union leaders. Likewise,

[7]Some negotiations occur once every two years, which is the maximum possible duration for a CBA.

[8]Representation is sometimes based on occupation rather than industry, such as for architects, journalists, and musicians. Occupation-based unions comprise approximately 15% of all unions in Brazil and rarely overlap with industry-based negotiations.

employers cannot bypass their assigned union. Union assignment by industry and geography produces an incredibly fragmented landscape of unions in Brazil, with over six thousand active labor unions.

Neither workers nor employers can opt out of the CBAs negotiated by their union. Coverage is universal, extending to all workers regardless of union membership.[9] Union membership is therefore low (around 15%) and only comprises workers willing to pay membership dues in exchange for additional benefits like recreational facilities and private health insurance. Importantly, individual work contracts cannot derogate CBA provisions, nor can CBAs weaken benefits granted by the federal labor code. CBAs therefore build on top of these statutory guarantees.

Union priorities shape CBA negotiations. Before a CBA expires, the union organizes a General Assembly for workers to vote on the list of demands—the *pauta de reivindicações*—that they wish to prioritize in the next negotiation, which is then presented to employers. Union leaders determine which topics are up for vote into the *pauta*. Below we discuss how the CUT reform shifted *pautas* to include female-friendly amenities. In addition to setting bargaining priorities, the union also selects the bargaining team that conducts negotiations.

Brazilian unions can affiliate with union centrals (or *centrais sindicais*) which are national-level umbrella organizations operating akin to U.S. trade union federations like the AFL-CIO. While union centrals do not directly negotiate collective bargaining agreements, they play an important role in coordinating union priorities *across* worker categories and industries (Liukkunen, 2019). For instance, union centrals organize general strikes, host annual conferences of union representatives, financially support local unions, represent constituents in public forums, steer union attention toward broad topics like gender and racial equality, and lobby for political favor, among other activities.

Figure I depicts Brazil's nine union centrals. The largest of these organizations, known as the *Central Única dos Trabalhadores* (CUT), represented over 30.4% of formal workers as of 2016.[10] CUT is the largest union central in Latin America, and among the largest in the world. It has close links with Brazil's most prominent left-leaning political party, the *Partido dos Trabalhadores* (PT), or Workers' Party, with union leaders frequently transitioning into political roles within the PT and vice versa.

CUT is vertically organized into congresses and executive boards at the state and national levels. Congresses convene every three years to bring elected delegates from individual unions

[9] About 50% of workers are covered by a CBA since not every union negotiates a CBA for each municipality.

[10] The other union centrals are: *Força Sindical* (FS), *União Geral dos Trabalhadores* (UGT), *Central dos Trabalhadores e Trabalhadoras do Brasil* (CTB), *Nova Central Sindical de Trabalhadores* (NCST), *Central Geral dos Trabalhadores do Brasil* (CGTB), *Central dos Sindicatos Brasileiros* (CSB), *Intersindical - Central da Classe Trabalhadora* and *Central Sindical e Popular - Conlutas*.

together to develop a shared agenda for CUT-affiliated unions. Delegates vote on CUT's overarching priorities for the following three years, which are recorded in a book of resolutions known as the fight plan. State- and national- executive boards are elected by congresses to oversee CUT's everyday functioning. These boards manage finances, implement the fight plan, train local union leaders, and organize committees to address special topics such as gender and racial equality.[11]

II.B CUT Reform

The 2015 CUT reform adopted a female-focused agenda at CUT's 2015 state and national congresses. The reform did three things. First, it added female-friendly amenities to CUT's official list of bargaining priorities or its "fight plan". Second, the reform instituted a 50% quota for women in CUT's state and national executive boards. Finally, the reform elevated women's voices within the union through a range of other initiatives. Together these changes instituted a top-down shift in union priorities in favor of women.

Backdrop The 2015 CUT reform arose from the close relationship between the CUT and the Workers' Party (PT). In 2011, the PT implemented a 50% quota for women in leadership and its presidential candidate, Dilma Rousseff, became Brazil's first female president. These political developments within the PT intensified demands for greater gender equality even within the CUT. They precipitated an unprecedented focus on women at CUT's annual state and national congresses.

Several accounts suggest that CUT had previously overlooked the needs of women workers. Despite the existence of a vertical network of women's bodies dating back to 1994—including a national secretariat known as the *Secretaria Nacional da Mulher Trabalhadora* (SNMT) and local collectives known as *coletivos de mulheres*—these entities played a minimal role in shaping official policies for the union central (Godinho Delgado, 2017). Interviews with former CUT leaders reveal that women's demands were often dismissed as lacking appeal to the base.[12] Female leaders were also excluded from holding prominent positions on the CUT's executive board: although 30% of national board seats were reserved for women since 1994, prominent positions such as President, General Secretary, and Treasurer remained

[11] As one example, the CUT established the National Committee of Working Women (SNMT) in 1986 to campaign for universal childcare. In 2003 the SNMT was refashioned as the Department of Working Women with a broad mandate to promote gender equality within the CUT.

[12] A former president of the Bank Workers' Union of São Paulo notes of the pre-reform period: "We fought for equality of opportunity to be one of the axes of the campaign. So they say, oh, but this is a subject that... doesn't have the appeal of the base" (Martins, 2021, p. 160). A second female leader notes: "In their minds we saw problems that did not exist" (Munhoz and Silotto, 2019, p. 116). Reflecting an extreme form of dismissal, a former male CUT leader remarked of the women's agenda, "feminists are very annoying, they make politics out of spite because they do not have children" (Recoaro, 2022, p. 191).

the purview of men.

Against this backdrop, the gender quota in the PT and Dilma Rousseff's election as President galvanized internal calls for change. Vagner Freitas, then-President of the CUT, and Rosane Da Silva, head of the SNMT, authored a series of opinion pieces that urged CUT to prioritize women's needs. They argued: "the absence of women in positions of power means that issues that affect the lives of women workers are not prioritized by unions" (Freitas, 2011). The authors called on the CUT to add female-friendly amenities to its bargaining platform, and to implement a 50% quota for women in state and national leadership. The opinion pieces proved pivotal, sparking debate and ultimately securing the passage of the 2015 reform at all twenty-seven state congresses and the national congress.

The 2015 CUT reform shifted union advocacy toward women in two key ways. First, CUT added female-friendly amenities to the official list of priorities advanced for collective bargaining (its fight plan). Local unions affiliated with the CUT use the fight plan as a blueprint to develop their own agenda, termed the *pauta*, that they present to employers for negotiation.[13] For the first time, the CUT's fight plan featured a fourteen-page-long section dedicated entirely to women's issues (Figure IIa exhibits the cover). Amenities included on the platform were developed at CUT's annual meeting of women, known as the *Encontro Nacional de Mulheres*, which was itself convened for the first time in over a decade. Demands included expanding paid maternity leave from the state mandate of four months to six months, reducing work hours and introducing flexible schedules to accommodate women's household responsibilities, and employer-provided childcare. The word *mulheres* (women) appeared 203 times in the 2015 CUT fight plan, compared to 46 occurrences in 2012 and 74 in 2009.

Second, to bolster its new priorities, CUT elevated women's voices within the union in several ways. Perhaps the most publicized aspect of its strategy was a 50% quota for women on its state and national executive boards, which was ratified in 2012 and implemented in 2015. The quota enhanced a 1994 policy that had already reserved 30% of seats for women. Figure IIb shows that the quota had bite at the national level: the share of women on the CUT national board rose sharply from 35% to 50% in 2015, and remained elevated in future years.[14]

Even beyond the quota, however, the reform sparked several measures to elevate women's voices within the CUT. Roundtables, committees, and delegations were now required to in-

[13]The first female president of the bankers' union of São Paulo states: "Change begins with the *pautas*... by intervening in the *pautas* one can shift the perspective... emphasizing issues that were previously considered unimportant" (Martins, 2021, p. 177).

[14]Interestingly, rather than replacing male incumbents with women, the CUT implemented the gender quota by expanding the size of its national board from 33 to 50 representatives.

clude female representation.[15] A recurring women's meeting was established to draft female-friendly demands before each CUT congress. The CUT also strengthened the women's collectives of affiliated unions.[16] It prohibited affiliates from dissolving women's collectives amid union budget cuts in 2017, when union dues switched from being mandatory to optional.[17] Finally, women began to feature prominently among speakers at official CUT gatherings (Godinho Delgado, 2017).[18]

The CUT used a few key means to transmit its new priorities to local union leaders. First, the seven training schools that CUT operates to train union leaders introduced new curricula promoting the female-focused agenda (Franco Oliveira, 2017). Leaders often cite these schools as critical to their preparation (Martins, 2021; Silva, 2021; Recoaro, 2022).[19] Some affiliates also launched their own training on female-focused amenities.[20] Second, several unions directly incorporated the female-centric fight plan into their bargaining agendas.[21]

Importantly, the reform did not meaningfully increase female representation in union leadership. The 50% female quota only applied to CUT's state and national executive boards, which do not negotiate contracts. To examine spillovers to local union leadership, we use a DiD design to compare the gender composition of CUT-affiliated union boards to non-CUT affiliates. The reform had only a small positive effect on the female share of union boards, a 0.7pp or 2% increase over baseline (Online Appendix Figure B1). In addition, we find no impact on other measures of female representation, including the share of contracts signed by women or the share of female delegates at CUT congresses (Recoaro, 2022).

Spillovers to other union centrals in Brazil also did not materialize. The female share of national leadership in all but one union central remained stable around 2015 (Online Appendix Figure B2).[22] At *Força Sindical*, the second largest union central, the share of

[15] The Vice President of the CUT, Carmen Foro, reflected on the 2015 reform by saying: "Now there is an awareness that men cannot speak alone" (Godinho Delgado, 2017).

[16] The reform prompted some CUT-affiliated entities to revive dormant women's collectives, including two large national confederations representing municipal and health workers, and the agricultural workers' federation of Rio Grande do Sul (Silva, 2021).

[17] Union contributions became voluntary in November 2017 which is after our period of study.

[18] The first three speakers at the 2016 annual meeting of the national confederations of service workers, CONTRACS, were women who spoke at length about the confederation's planned efforts to advance female-friendly amenities. Link to video here.

[19] A survey of CUT union leaders finds that 63% learn to perform their roles in training schools.

[20] Examples include the confederation of service workers (CONTRACS), the confederation of metal workers (CNM), and the state branch of the CUT in Bahia.

[21] Four large national confederations—representing metalworkers (CNM), social security workers (CNTSS), commerce (CONTRACS), and telecommunications workers (FITRATELP)—identified the female-focused fight plan as a top priority for the CUT to enact at the 2015 national congress and incorporated it into their agendas. See *Caderno de subsidios ao debate (12o CONCUT)* here.

[22] The only possible case for spillovers is *Conlutas*, whose share of women in national leadership grew from 30% in 2014 to 50% in 2018. *Conlutas* was established as an offshoot of the CUT in 2004 and often emulates its policies. However, *Conlutas* has only 79 affiliated unions which all represent the public sector.

women on the national board declined slightly in 2017. Analyzing union records and congress proceedings reveals no evidence that other union centrals took concrete actions to advance women's issues (Online Appendix D).

In summary, the CUT reform ushered a top-down shift in union priorities toward women. This shift involved both adopting a female-focused bargaining agenda and elevating women's voices in the union central. Crucially, the reform did not increase the bargaining power of unions relative to employers. Instead, it got unions to focus on women. Any change stemming from the reform will therefore reflect this shift in priorities rather than a higher share of surplus accruing to workers (discussed in Section V.C).

III DATA AND AMENITY CLASSIFICATION

To examine the impact of the CUT reform on labor market outcomes, we need information on each negotiating union's affiliation to a union central alongside data on each establishment's wages, amenities, and employment. This section first describes our data and then outlines the data-driven approach used to classify amenities as male- or female-centric.

III.A Data Sources

Our analysis relies on linking three sources of data: (i) amenities at the establishment-level from the text of all CBAs; (ii) worker outcomes from linked employer-employee data covering the universe of formal workers; and (iii) union affiliation and leadership from the registry of unions. For information on amenities, we use CBA clauses scraped from the Ministry of Labor's *Sistema Mediador* registry, which tracks and stores every CBA signed in Brazil since 2009. To register an agreement, clauses must be classified into 137 different clause types, e.g., overtime pay, childcare assistance, profit sharing, paid leave, etc. Online Appendix Figure B3 shows a sample maternity leave clause. We extract the number of clauses of each type to measure amenities offered to workers.

For information on worker-level outcomes, we use the linked employer-employee dataset known as *Relaçao Anual de Informacões Sociais* (RAIS). These administrative data cover all formal workers in Brazil, as employers are federally mandated to annually report key details about each worker employed. For each work spell, RAIS reports average monthly earnings, leaves taken, and detailed occupation codes (at least six-digit). It also includes worker characteristics like gender, age, and education, along with establishment attributes like location (municipality) and industry classification. We link RAIS to CBAs using an establishment identifier, known as CNPJ, common to both datasets.

Due to its small size and focus on the public sector—which constitute fewer than 1% of establishments in our sample—all results are robust to excluding *Conlutas* from the analysis. Results available upon request.

For information regarding each union's affiliation to a union central and its leadership composition over time, we use the national registry of unions known as *Cadastro Nacional de Entidades Sindicais* (CNES). We infer the gender of leaders using the R package *genderBR*, which codes a name as female if most people with that name in the Brazilian census are women—and similarly for men (Meireles, 2023). Among all union leaders between 2005 and 2019, 28% are women, 67% are men, and 5% are unclassified. CBAs record the same union identifier as CNES, which we use to link contracts to unions, and, thus, to union central affiliation and board composition.

III.B Classifying Female-Centric Amenities

Matching CBAs to signing establishments in RAIS allows us to observe not only workers' wages but also a comprehensive set of amenities provided at each job. However, the data does not directly indicate whether a CBA clause is differently valued by women relative to men. We classify clauses as female-centric using two distinct approaches. Here we describe the key steps of each approach, with details in Online Appendix C.

1) Intuitive approach In the intuitive approach, we classify 20 of the 137 pre-specified clause types in *Sistema Mediador* as disproportionately valued by female workers (Table I, Column 1). They fall into four broad themes, detailed in Online Appendix Table A.1: (1) Leaves, e.g., following maternity, adoption, or miscarriage; (2) Maternity and Childcare, e.g., employment protection after maternity, childcare assistance, and policies for dependents; (3) Workplace Harassment and Discrimination, e.g., sexual harassment and equal opportunities in promotions; and (4) Flexibility and Part-Time Work, e.g., workday controls, uninterrupted shifts, and part-time contracts. Themes (1)-(3) include clauses that one could reasonably associate with women. The final theme draws from literature indicating that women value flexible work hours (Goldin and Katz, 2011; Mas and Pallais, 2017; Maestas et al., 2023).

2) Data-driven approach In the data-driven approach, we aim to identify CBA clauses that correlate with women's disproportionate desire to work at an establishment relative to men. The underlying model motivating this approach is one where workers of gender $G \in \{F, M\}$ share a common ranking over establishments $j \in \mathcal{J}$. A worker's utility from working at establishment j is rising in the wage and amenities offered to their gender. In particular, we assume that the gender-specific value of working at an establishment (denoted V_j^G) is a linear function of wages, amenities, and an unobserved component:

$$V_j^G = \alpha^G + \beta_w^G \psi_j^G + \sum_{z \in Z} \beta_z^G a(z)_j + e_j^G \tag{1}$$

where Z denotes the set of all amenities. The classification problem must then identify the set of amenities for which the difference $\beta_z^F - \beta_z^M$ is positive, which we denote "female-centric", as well as those for which this difference is negative, denoted "male-centric" amenities.[23]

This approach to identifying female- and male-centric amenities requires measuring the value of employment, wages, and amenities provided at each establishment. We estimate the value of employment at an establishment as its gender-specific PageRank value by leveraging worker flows across establishments (Sorkin, 2018; Morchio and Moser, 2020). PageRank delivers a revealed preference measure of value of working at an establishment reliant on the idea that good employers attract workers, especially from other good employers.[24] For wages, we estimate gender-specific wage premiums at an establishment (ψ_j^G) using gender-specific AKM models (Abowd, Kramarz, and Margolis, 1999). For amenities, we use the average annual count of clauses $a(z)_j$ for each of the 137 clause types $z \in Z$ in the CBAs covering establishment j.

Hence, while we measure the gender-specific value of employment and wage premiums at each establishment, we only observe a proxy for amenities without knowing which clauses are disproportionately valued by women or men. We identify these clauses by differencing the female and the male valuation of employment and estimating the following hedonic regression:

$$V_j^F - V_j^M = \alpha + \beta_w^F \psi_j^F - \beta_w^M \psi_j^M + \sum_{z \in Z} \beta_z a(z)_j + \epsilon_j \tag{2}$$

$\beta_z = \beta_z^F - \beta_z^M$ captures the value of an amenity for women relative to men. We estimate this regression using lasso to select amenities that are the most predictive of utility differences between women and men, controlling for gender-specific wage premia. The top 20 clauses with the highest values of β_z are deemed "female-centric", and the bottom 20 are deemed "male-centric." To our knowledge, this is the first time that such a rich description of the work environment can be combined with administrative data on worker flows to uncover which features of the workplace are differently valued across worker groups.[25]

Omitted variable bias While the data-driven approach is a predictive exercise, mitigating omitted variable bias is still important. For example, establishments that wish to hire women may redouble their recruitment efforts or provide other job features valued by

[23] An advantage of the data-driven approach relative to the intuitive approach is that it identifies male-centric clauses, allowing us to test for trade-offs in male amenities following the CUT reform.

[24] Appendix E describes the approach in detail and Appendix C outlines our implementation.

[25] Several papers elicit workers' willingness-to-pay for a small set of workplace attributes such as flexibility and wage growth, e.g., Mas and Pallais (2017) for workers on an online platform, and Wiswall and Zafar (2017) for NYU college students. These papers find that women value flexibility in work schedules more than men. In the same context as ours, Lagos (2024) quantifies the wage-equivalent value of broader groupings of CBA clauses, undistinguished by gender.

women beyond observed clauses. Because we do not directly observe recruitment intensity or perfectly observe the work environment, we may erroneously identify a clause covarying with unobserved features as valuable.[26] To mitigate this bias, we use amenities $a(z)_j$ from sectoral CBAs negotiated with employer associations instead of firm-level agreements negotiated with a single employer. Sectoral CBAs are less likely to be influenced by demand shocks affecting individual employers. Using sectoral CBAs for classification is also important because we use firm-level CBAs to study the CUT reform's causal effect. Separate CBAs for classification and analysis prevent a mechanical relationship between clauses identified as female-centric and those that increase after the reform. As such, women switching to treated establishments following the rise in female-centric amenities is then not a pre-determined result.

Estimation sample We estimate Equation (2) using the cross-section of establishments with available data on V_j^G, ψ_j^G, and $a(z)_j$. First, the sample is restricted to establishments for which we estimate PageRank values for both genders. These establishments belong to the largest super-connected set of employers, i.e., where each establishment both hires from and loses workers to another establishment in the set between 2009 - 2016. Second, we restrict the sample to establishments with AKM wage premiums, i.e., the largest connected set of establishments with precise estimates (average size of at least 10 workers). Third, to reduce noise in the over-year average of clause types $a(z)_j$, we include only employers covered by at least four sectoral CBAs between 2009 and 2016.

Normalization Both PageRank values and AKM wage premiums must be normalized in order to make their gender difference interpretable. For AKM premiums, we normalize ψ_j^F and ψ_j^M to the restaurant sector—a fairly competitive industry where one can reasonably assume a zero wage premium for both genders. For PageRank values, V_j^F and V_j^M are unique up to unknown multiplicative factors. Our results are robust to three alternative methods for calculating $V_j^F - V_j^M$. The first chooses the establishment with the smallest gender gap in wage premiums as the normalizing establishment, and divides the female value of all other establishments by its ratio $\frac{V_j^F}{V_j^M}$. The second assumes the same multiplicative factor for both genders, i.e., no normalization. The third method re-scales values V_j^F and V_j^M to a scale from 0 to 100. Our base method for identifying male and female-centric amenities in the data-driven classification uses a 50% random sample of establishments and the first normalization method.

Results Table I, Columns 2 and 3 report amenities identified as female and male-centric using the data-driven approach.[27] Clauses are ranked in descending order of the absolute

[26] Including ψ_j^G partly addresses this concern by accounting for recruitment efforts operating through wages.
[27] Online Appendix Tables A.2 and A.3 offer specific examples of clauses identified as female and male-centric.

value of $\hat{\beta}_z$. Clauses that are also intuitively classified as female-centric are bolded.

In line with the intuitive definition, the data-driven approach reveals that women disproportionately value clauses governing leaves (e.g., following adoption and miscarriage), childcare, and maternity (e.g., childcare assistance, maternity protections, and policies for dependents). In addition, they value 12 other provisions missing from the intuitive classification, including absences, extensions or reductions of the workday, medical exams, and health education campaigns.

The approach also yields sensible results for men. Men disproportionately value additional pay, such as clauses governing on-call pay, profit sharing, hazard pay, workday compensation, life insurance, and death or funeral assistance. They additionally value workplace safety, such as protections for injured workers, machine and equipment maintenance, and safety equipment.[28]

The fact that "female workforce" clauses appear among "male-centric" clauses reflects a limitation of our approach: it does not capture variation in clause content. "Female workforce" clauses range from clearly pro-women (e.g., free provision of sanitary pads), to clearly pro-men (e.g., forbidding women from casting concrete or installing scaffolding). Our data-driven method likely captures the latter. While using pre-specified clause types provides a simple measure of CBA content—that avoids the common pitfalls of topic models such as pre-processing, choosing the number of topics, and noise—the approach is therefore not without flaws.

Sense checks Out-of-sample sense checks indicate that both the "intuitive" and "data-driven" approaches identify clauses that women (or men) disproportionately value more than the other gender. Using firm-level CBAs signed in 2014—the year prior to the CUT reform—we find that female (male)-centric clauses increase with the share of women (men) at an establishment. Online Appendix Figure B4a shows that intuitively classified female-centric clauses increase almost linearly with this share. Online Appendix Figure B4b depicts a similar relationship for male and female-centric clauses defined using the data-driven method. Specifically, all-male workplaces offer ≈1.5 more male than female clauses, with this gap shrinking to almost zero at all-female workplaces. Interestingly, female clauses per the data-driven classification only begin to increase once women comprise the majority in an establishment (above the 50% threshold). This suggests either that women successfully advocate for these amenities once in the majority, or that establishments provide them to

[28]The clauses classified as female- or male-centric remain similar across various normalizations of PageRank values. Moreover, the classification is not driven by industry- or geography-specific amenities, since it is largely invariant to including industry- and state-fixed effects (Online Appendix Tables A.4 and A.5). The rank correlation of the coefficient β_z on the selected clauses with and without these fixed effects is positive and statistically significant (0.56 with p-value$<$ 0.01).

attract female workers—both implying higher value among women.[29]

IV EMPIRICAL STRATEGY

We employ a difference-in-differences strategy to study the impact of the CUT reform on amenities and labor market outcomes. This section first describes the analysis samples we use followed by the empirical approach and identifying assumptions.

IV.A Analysis Samples

We construct three analysis samples to study the CUT reform's effects on negotiated CBAs, establishments, and workers. Online Appendix C provides further detail.

1) Amenities sample To study the evolution of amenities, we construct a balanced panel of each pair of establishment and negotiating union, linked through coverage from firm-level collective bargaining agreements, between 2012 and 2017. Each pair can be viewed as constituting a unique worker group because each negotiating union represents a unique category of workers (usually industry) in a given geography.[30] Our analysis focuses on clauses in firm-level CBAs because most improvements in amenities and working conditions are achieved through these agreements (Horn, 2009; Liukkunen, 2019).

While not every establishment-union pair renegotiates contracts every year, we obtain a balanced panel by exploiting the fact that the coverage of old CBAs was automatically extended until a new agreement was negotiated during our study period (Lagos, 2024). Given that all CBAs had to be registered in *Sistema Mediador* beginning in 2009 and span at most 2 years, our panel paints an accurate picture of active CBAs between 2012 and 2017. Results are robust to instead using an unbalanced panel comprising only new contracts.

2) Establishment sample To study downstream effects of changing amenities on labor market outcomes, we construct a sample of establishments signing CBAs in our *amenities sample* in RAIS. Outcomes include employment, the female share of workers, and mean log wages. We impose two additional sample restrictions. First, we restrict the sample to establishments that employed both men and women in the baseline year 2014. Second, we only consider an establishment signing a contract as covered if it lies within the CBA's geographic coverage. This restriction allows us to exclude headquarters that sign contracts on behalf of subsidiaries and thus lie outside the contract's geography.

[29] In addition, the number of female clauses is strongly positively correlated with the difference between women and men's PageRank valuation of an establishment (Online Appendix Figure B5).

[30] Most signing establishments (93%) negotiate with a single union over the entire study period, meaning that employers rarely negotiate with more than one worker category.

3) Incumbent worker sample We construct a sample of incumbent workers employed at establishments in the *establishment sample* in 2014 and track them wherever they go.

Treatment definition While the CUT reform was enacted in 2015, the gender quota was approved in 2012, allowing unions to change union central affiliation to avoid or benefit from the reform. Although unions rarely change union central affiliation, we define treatment based on 2012 affiliation to avoid bias from selection into or out of the CUT. Online Appendix Figure B6 further shows that unions representing different shares of women did not systematically switch affiliation away from or toward the CUT after its 2012 announcement of the gender quota.

Treatment is defined in the following way. In the *amenities sample*, a treated establishment-union pair is one where the negotiating union was affiliated to the CUT in 2012. In the *establishment sample*, a treated establishment is one belonging to a treated pair.[31] Finally, in the *incumbent worker sample*, a worker is treated if employed at a treated establishment in 2014, i.e., in the baseline year.

Descriptive statistics Table II provides descriptive statistics for the *amenities sample*. Column 1 describes the full sample, and Columns 2 and 3 separate information by treatment status. The sample includes over 211,000 firm-level CBAs signed by 89,897 establishment-union pairs, covering 80,131 signing establishments and 4,409 unions. On average, each pair signs new contracts in 2.4 of the 6 years from 2012-2017. Of all pairs, 21% are treated and 79% form the comparison group. The sample covers over 19% of formal employment in Brazil and 2.1% of establishments. These figures highlight that firm-level CBAs are concentrated among a select group of (larger) employers, which employ on average 143 workers compared to 16 across all establishments (Online Appendix Table A.6).[32]

Table II Panel B describes contract provisions in 2014. CBA negotiations at the pair-year observation level feature 24.7 clauses on average of which 3.2 are classified as "female-centric" per the data-driven definition (Section III.B). The average contract features 1.7 more male-centric than female-centric clauses with no statistically detectable difference by treatment status. Although the share of female-centric clauses may appear small (13%), this number may not accurately reflect their true value and importance. For example, even a single contract provision extending maternity leave by 60 days may be highly valuable. Thus, in

[31] Over 93% of establishments negotiate with a single union and 98% with all unions with the same union central affiliation. For the remaining 2% of establishments, treatment is defined as negotiating with any treated union.

[32] Compared to the average Brazilian establishment, an establishment signing firm-level CBAs is more likely to operate in manufacturing rather than commerce (difference of 16-19pp for each) and is more likely to be located in the affluent Southeast and less in the poorer Northeast region of Brazil (Online Appendix Table A.6).

addition to considering the impact of the CUT reform on contracted amenities, we will infer how valuable these changes are to women by studying revealed preference changes in sorting across establishments.

Panels C and D document establishment- and union-level characteristics in 2014. The average establishment employs over one-third women and most employ both men and women (82%). The *establishment sample*, whose establishments must additionally employ both men and women, covers 15% of the total workforce in 2014 and otherwise resembles the amenities sample in size, sector, and regional distribution (see Online Appendix Table A.6). On unions, treated unions have larger boards but a similar female share as comparison unions (around 23%). Only 17% of unions have a female president.

Treated and comparison establishments exhibit substantial overlap along several observable dimensions, including their distribution of size, geography, industry, and the female share of the workforce (Online Appendix Figure B7). Online Appendix Table A.7 explores statistical differences by treatment status. Treated establishments are larger than those in the control group but employ a similar female share. They are more likely to be located in the Northeast region (15% treated versus 11% control) and to engage in manufacturing (32% treated versus 28% control). All analyses control for differences in industry and geography through two-digit-industry-year and geography-year fixed effects.

IV.B Differences-in-Differences Design

To measure the causal effect of the CUT reform on negotiated amenities and labor market outcomes, we compare treated units (i.e., pairs, establishments, or incumbent workers) with the comparison group using a dynamic difference-in-differences specification:

$$Y_{it} = \sum_{j=2012}^{2017} \beta^{t=j}(D_i \times \delta_{t=j}) + \alpha_i + \gamma X_{it} + \varepsilon_{it} \tag{3}$$

where i indexes the unit of observation and t indexes year. The treatment indicator D_i is interacted with year fixed effects δ_t. The specification includes unit fixed effects α_i, and industry-year and geography-year fixed effects, included in the vector X_{it}.[33] Idiosyncratic errors are captured by ε_{it} and standard errors are clustered by establishment.[34]

The coefficients of interest β^t capture the effect of treatment in year t relative to the

[33]Industry corresponds with the first two digits of Brazil's CNAE codes. There are 87 unique industries, including textile production, road transportation, and construction. Geography corresponds to either states (27 in total) or microregions, which are neighboring municipalities grouped into 543 units akin to local labor markets.

[34]Clustering by establishment assumes that establishments negotiate with unions that, as of 2012, were affiliated at random with a union central. Results are unchanged when clustering by union.

baseline year, with β^{2014} normalized to zero. The identifying assumption is that outcomes would evolve in parallel at treated and comparison units absent the reform, conditional on covariates. Parallel pre-trends establish the plausibility of this assumption.

To summarize the average post-period impact of the CUT reform we also run a "pooled" version of the above regression by replacing the set of interactions of D_i with year-specific indicators δ_t with a single interaction for the post-period, $D_i \times \delta_{t \geq 2015}$. In addition, to make treatment effects in worker-level regressions interpretable as establishment-level averages, we weight each incumbent worker by the inverse of own-gender employment at their baseline employer (Jäger, Schoefer, and Heining, 2021). Finally, it is worth noting that outcomes that may change as a downstream consequence of changing amenities (e.g., wages and retention) are unscaled by the amenity change since we do not directly observe the value workers assign to said amenities.

V RESULTS: IMPACT OF THE CUT REFORM

This section presents our main results. We start by analyzing the CUT reform's effect on amenities and find disproportionate gains in female-friendly amenities on paper and in practice. Next, we investigate the impact of workplace improvements on two revealed preference measures of firm value—retention and job queues. We conclude by evaluating how female-friendly amenities were financed.

V.A Amenities: On Paper and In Practice

Negotiated amenities Table III reports the pooled DiD treatment effect on female- and male-centric clauses and Figure III presents year-specific effects.[35] Female-centric amenities evolved in parallel prior to the CUT reform, but we find a sharp treatment effect on the number (intensive margin), incidence (extensive margin), and share of female-centric clauses immediately following the reform. On the intensive margin, the number of intuitively defined female clauses grew by 0.156 (SE 0.013) or a 17% increase over baseline (Panel A), and data-driven clauses rose by 0.302 (SE 0.021) or 19%. These effects represent substantial improvements, equivalent to moving from the average baseline amenity count at a minority-female establishment to one where over 80% of the workforce was female. The reform did not merely increase the number of clause types already being provided in CBAs, for example, going from one to five maternity leave clauses, but instead introduced new female-centric amenities by raising the sum of unique clause types by 12% (Panel B). Although we find improvements on

[35] Online Appendix Figure B8 plots the raw trend of female-centric clauses in treated and comparison contracts. Online Appendix Figure B9 reports similar plots for male-centric clauses and the ratio of male-to-female clauses.

all four categories of female-friendly clauses—leaves, childcare, anti-harassment and flexibility (Columns 2-5)—clauses governing leaves and childcare accounted for most of the overall increase (76%), suggesting that the reform especially benefited women of childbearing age.

The reform also increased the provision of any female-centric amenity and female amenities as a share of all clauses. On the extensive margin, we find a 1.7pp (SE 0.003) or 5% increase in the provision of any intuitively defined female-centric clause and a 3.4pp (SE 0.003) or 9% increase in the inclusion of data-driven clauses (Panel C). The share of female-centric amenities increased by 0.5pp (SE 0.001) or 10% relative to baseline, and data-driven clauses rose by 2.1pp (SE 0.001) or 30%.[36]

In summary, the CUT reform increased the female orientation of contracts. Male-centric amenities witnessed a modest decline: while their count rose slightly, this was more than offset by the increase in female-centric clauses, resulting in a 0.3pp (SE 0.002) decline in male clauses as a share of CBA content (Column 7).[37] The extensive margin provision of male-centric amenities declined by 0.1pp (SE 0.003) relative to a baseline rate of 46%. Overall, the reform increased the ratio of female-to-male-centric clauses by 21% (Column 8).[38]

Through what mechanisms did the CUT achieve these improvements in female-friendly amenities? We examine the role of two channels: the top-down shift in priorities and appointing new women to union leadership.

Our results show that shifting priorities was key for increasing female-friendly amenities, while increasing women's direct representation in union leadership played no role. Consistent with an important role for the priority shift, the largest improvements in amenities occurred at establishments where the CUT effectively transmitted its female-focused agenda to local union leaders (Panel A, Table IV). First, amenities increased most in contracts negotiated by unions covered by one of the four national confederations that adopted the female-focused platform into their own bargaining agendas.[39] The gains negotiated by these unions were twice as large as those secured by unions affiliated with other confederations (Column 2). The CUT additionally disseminated its priorities through new training cur-

[36] Online Appendix Figure B10 shows parallel pre-trends in the evolution of data-driven female amenities at affected and unaffected establishments on the intensive, extensive, and share margins.

[37] The small increase in male amenities is unlikely to be related to the CUT reform as it appears in 2017, two years after the reform's passage, whereas the impact on female-friendly amenities occurs sharply in 2015 (Figure III). Moreover, unlike the effect on female clauses, the increase in male clauses is not robust to clustering standard errors at the union level (Online Appendix Table A.8).

[38] Results remain robust to reasonable amendments to the data-driven definition of male- and female-centric amenities, the inclusion of more granular industry-geography-year fixed effects, and conditioning on establishment-union pairs with coverage in 2014 (Online Appendix Tables A.9, A.10, A.11, and A.12).

[39] Together, these four confederations, representing metalworkers (CNM), social security (CNTSS), commerce (CONTRACS), and telecommunications workers (FITRATELP), represent over 5% of formal workers in Brazil covered by sectoral CBAs. In total, twenty confederations affiliate with the CUT.

ricula at its seven training schools. Table IV reports substantially greater improvements in female-friendly amenities in microregions with a CUT training school compared to those without one (Column 3).

By contrast, new female union leaders did not drive the reform's impact on amenities. First, amenities did not disproportionately improve in contracts negotiated by unions whose industry gained a female representative on CUT's national board (Column 4). Second, although the reform slightly increased the female share of local union boards (0.7pp or 3% increase over baseline, Online Appendix Figure B1), unions that gained female leaders negotiated slightly *smaller* improvements in amenities compared to unions without new women leaders (Column 5). Finally, we find no impact on alternate measures of female representation, including the share of contracts signed by women or the number of female delegates attending CUT congresses. Together, these results show that, in this context, unions improved working conditions for women by shifting their bargaining agenda even without meaningfully increasing women's presence in union leadership.

While the estimates so far capture the reform's average impact on amenities, we next investigate where union priorities achieved the greatest improvements. The union voice model predicts that prioritizing women should have the greatest impact in workplaces where they most lack representation either as a minority among workers or among union leaders. However, larger gains in male-dominated establishments might also suggest greater employer willingness to provide amenities when the number of beneficiaries and therefore costs are low.

To evaluate these predictions, Table V examines heterogeneity in the reform's impact on amenities by an establishment's baseline female share of workers and union leaders. The evidence more strongly supports the union voice hypothesis. Consistent with the reform especially benefiting women where they lacked representation, we find larger gains in female-friendly amenities at establishments where women constituted a smaller share of workers (Column 2; exhibiting monotonicity in Figure IV), union leaders (Column 3), and unions without a female president or vice president (Column 4). However, contrary to employers only agreeing to amenities due to low costs, we also find significant gains at establishments that employed many female workers (potential beneficiaries) but with limited female representation in the union (Online Appendix Table A.13, Column 4). The magnitude of the treatment effect for these establishments—with many female workers but few female union leaders—is two-thirds the reform's average impact on amenities.

On a final note, it is worth highlighting that CBA clauses represent equilibrium outcomes resulting from negotiations between unions and employers. Our results therefore demonstrate employers' willingness to sign off on female-friendly amenities. This willingness has four possible foundations. First, amenities on paper may never translate into practice,

which is ruled out below. Second, amenities that materialize could precipitate trade-offs for workers by reducing wages or employment, or by prompting employers to shift to a less expensive workforce comprised of men or older women. Third, the reform could create trade-offs for employers by reducing firm profits. Finally, however, providing valuable amenities could also increase the surplus within the employment relationship: valuable amenities could improve employee retention or elicit greater effort from workers such that amenities pay for themselves. The following paragraph provides evidence against the first explanation, and Section V.C investigates the remaining three.

Actual amenities To assess whether changes in contracted amenities translated into practice, we draw on the text of female-centric clauses to identify three measures of the work environment that contracts could influence: (i) the share of female managers—corresponding to equal opportunity clauses, (ii) the length of maternity leaves—corresponding to clauses extending maternity leave, and (iii) job protection following maternity leave—corresponding to job protection clauses.

Figure V reports positive effects on all three outcomes. We find a 2% increase in the share of female managers and 14% increase in the share of mothers taking leaves longer than the state mandate of 120 days. Despite longer leaves, mothers were no less likely to return to their employers following motherhood, suggesting that mothers benefited from longer periods of job protection. Together, these results indicate that the CUT reform inspired real improvements in the work environment for women.

A natural sanity check is to test whether these observed improvements in amenities occurred in workplaces that experienced the largest increase in female-friendly provisions in contracts. Figure IV shows that the impact on contracted amenities declined monotonically with the female share of the workforce, grouped into bins of 0-19%, 20-39%, 40-59%, 60-100%. Consistent with this pattern, we find the largest treatment effects on realized amenities: female managers, maternity leave extensions, and job protections for returning mothers at establishments where women comprised less than 60% of workers (Figures VIa- VIc). We find no effect at establishments with no contractual response (with female shares above 60%).

To examine whether the increase in female-centric amenities came at the expense of male-centric amenities, we identify observable male amenities. Using the data-driven approach, we note that men value safety. We find no treatment effect on safety as measured by the share of workers taking work-related injury leaves (Figure V). If anything, there is a small improvement in workplace safety, or a 3% reduction in the share of workers taking injury leave. Thus, at least on this dimension, the work environment did not deteriorate for men.

V.B Revealed preference changes in firm value

To assess whether workers valued the changes to the work environment ushered by the CUT reform, we study the reform's impact on two revealed preference measures of job quality: retention and job queues.

Retention Retention serves as a revealed preference measure of an employer's attractiveness (Krueger and Summers, 1988). Figure VIIa reports a 1.8pp (SE 0.004) increase in retention among incumbent women, which represents a 6% decline in separation rates.[40] The gender difference in this treatment effect is 0.08pp (SE 0.003), suggesting that incumbent women disproportionately valued the reform over its value for incumbent men (Table VI, Column 1). Since we find the largest improvement in amenities related to maternity leaves and childcare, we also examine retention among workers of childbearing age (20-35 years). The positive effect on retention for these workers resembles the magnitude for all workers (Figure VIIa).

However, higher retention need not indicate a higher revealed preference value of jobs at CUT-affiliated employers if it reflects fewer firings instead of fewer quits. To assess this possibility, we decompose the total treatment effect on retention into a component attributable to employer-to-employer transitions (more likely to reflect quits) versus transitions into unemployment (more likely to reflect firings). Consistent with a higher revealed preference value of CUT employers, the treatment effect on retention is driven by fewer employer-to-employer transitions rather than fewer exits into unemployment (Table VI, Column 2).[41]

If better amenities drive the improvement in retention, we would expect to find larger effects at employers that experience larger improvements in female-friendly amenities. Two findings align with this prediction. First, exploring heterogeneity by the baseline female share of workers, we find larger increases in retention at establishments with smaller female shares, which witnessed the greatest upgrades in amenities (Figure VId). Second, we find larger improvements in retention at establishments where the CUT effectively transmitted its top-down change in priorities to achieve the greatest increase in female-friendly amenities, including establishments negotiating with unions affiliated with one of the four national confederations that adopted the female-focused fight plan into their own bargaining agendas, and establishments located near CUT training schools (Table IV, Panel B).

At the same time, we find a 1.0pp increase in retention for incumbent male workers (Table VI), representing a 3% decline in separation rates relative to baseline. That men

[40] The one-year baseline retention rate among women is 68%.

[41] Specifically, incumbent women were 1.8pp more likely to stay at their baseline employer and 0.7pp more likely to be employed in the formal sector if working at a treated establishment. This difference indicates that voluntary transitions among incumbents declined by 1.1pp.

were no more likely to exit treated establishments suggests that the reform did not make them worse off. Thus, although the reform disproportionately improved working conditions for women, it did so without apparent losses for men.

Job queues Job queues constitute a second revealed preference measure of value (Holzer, Katz, and Krueger, 1991). Because we do not directly observe job applications, we use workers in the probationary period, i.e., the first three months of tenure, as a proxy measure. Brazilian labor law permits employers to terminate probationary workers without severance pay, thereby allowing employers to use such contracts to screen workers.[42]

Women's share among probationary workers increases by 0.6pp (SE 0.003) or 1.7% relative to baseline (Figure VIIb), suggesting that the reform led women to queue for jobs at treated establishments. While the estimate is precise, its magnitude is small. Three factors likely dampen the estimate of women queuing at CUT establishments. The first is our inability to directly observe changes in amenity values with which to scale the treatment effects. The second is information frictions that may prevent workers from learning of newly instituted amenities at CUT establishments. Finally, employers may screen women out at the hiring stage, such that any change in composition among probationary workers is already muted.

In summary, we find that the improvement in female-friendly amenities increased the attractiveness of CUT establishments to women. Online Appendix F uses the revealed preference changes in firm value to quantify the CUT reform's effect on worker welfare.

Robustness to concurrent shocks Brazil experienced a recession between 2014 and 2016. Our estimates of the impact of the reform may be confounded if CUT unions either represented industries differently impacted by the recession or responded differently to the recession. Several findings point against these confounds. First, the positive effect on female amenities reflects an increase in CUT contracts rather than a potential recession-induced decline in non-CUT contracts (Online Appendix Figure B8). Second, there is little reason to expect the recession to have heightened demands for female-focused amenities such as maternity leaves or childcare payments over other provisions like wage protection clauses, which do not increase. Third, we find the largest amenity gains at establishments with a small female share of workers and union leaders. This heterogeneity counters the idea that the CUT in general responded differently to the recession. Finally, all specifications control for two-digit-industry and location-specific time-varying shocks.

[42]For example, 25% of all separations occur between tenures of 3 months and 3 months and 1 day.

V.C Explanations for workplace improvements

How were the improvements in female-focused amenities paid for? There exist three possible explanations. First, better amenities could precipitate trade-offs for workers if employers offset their costs by reducing wages, as predicted by compensating differences (Rosen, 1986), or by employing fewer or less expensive workers (Summers, 1989). Second, providing better amenities could create trade-offs for employers by reducing firm profits. Lastly, valuable amenities could increase the surplus within the employment relationship by raising worker productivity or satisfaction, or by helping employers attract and retain high-quality workers. This final scenario raises the prospect of valuable amenities paying for themselves. We examine each explanation in turn below.

Trade-offs for workers Both men and women's wages could decline to finance the provision of female-friendly amenities, and compensating differences predict that women's wages should disproportionately decline. Since Brazilian law prohibits employers from reducing nominal wages without approval from the union, wage adjustments may only manifest for new workers. We therefore separately study the reform's impact on the mean log wage of established workers (with over twelve months of tenure) and new workers (with tenure below 12 months), separately by gender.

Table VII, Panel A reports results. The reform had no meaningful impact on the average log wage of any worker group—established or new, women or men. All point estimates are small and precise.[43] We rule out wage declines exceeding 1.2-1.3% for new workers, and 0.7-0.8% for established workers, at the 95% confidence level.[44] By way of benchmark, Lagos (2024) finds that workers value leave clauses, many of which are classified as female-centric, worth 7.8% of their wage on average. Finally, given similar point estimates of the reform's effect on the wages of men and women, the gender wage gap remains unchanged.

Three additional results provide evidence against the possibility that amenities were funded through wage declines. First, the zero treatment effect on wages may mask changes in composition if employers substitute toward high-quality workers. We evaluate this possibility by examining the impact on incumbent workers' wages—i.e., those employed in the baseline year—whose composition is unchanged. Table VI reports precise null effects on the wages of both incumbent men and women (Column 3). Second, for a more direct measure of union-negotiated wage changes, we extract the percentage wage adjustments negotiated in CBAs (Table VII, Column 6a). There is a small positive effect on wage adjustments of

[43] Online Appendix Figures B12a and B12b show parallel pre-trends for wage outcomes without substantial treatment effects.

[44] The negative effect on wages among new male workers is small (0.6%), significant only at the 10% level, and not robust to including fixed effects accounting for time-varying shocks in an industry and location.

0.032pp (SE 0.021), and we can rule out declines exceeding 0.009pp with 95% confidence. Third, to investigate whether wage declines occur in workplaces that experienced the greatest improvement in amenities, we explore heterogeneity by the baseline female share of workers. There is no detectable heterogeneity and we can precisely rule out small declines (Figure VIe).

Employers who do not offset the cost of amenity improvements through wages may instead lower employment (Summers, 1989). Table VII, Panel B reports the treatment effect on employment and Online Appendix Figure B12c shows parallel pre-trends. There is no statistically significant impact on either employment or hiring at treated employers, and we precisely rule out declines exceeding 1.5pp at the 95% confidence level. Female employment and hiring remain undiminished—instead, as previously noted, the growing appeal of CUT employers raised their female share of workers by 0.2pp and female share of probationary workers by 0.6pp. Turning to heterogeneity, employment does not decline in workplaces that experienced the greatest improvements in amenities (Figure VIf) and we rule out declines exceeding 0.5pp in the most impacted workplaces.

Employers may instead substitute to less expensive workers such as men or older women. However, our evidence points against these explanations. Women rise as a share of all workers. There is also no effect on the mean age, tenure, contracted hours, or years of schooling of female employees (Online Appendix Table A.14). In sum, there is no evidence that the improvements in female-friendly amenities came at the expense of wages or employment.

Trade-offs for employers Amenities could also improve by redistributing surplus from firms to workers and reducing firm profits. Both the empirical evidence and theoretical reasons point against this explanation. Table VII (Panel C) reports treatment effects on profits measured in two ways. The first is firm exit, which is an important margin of adjustment in Brazil, where 8.7% of control group establishments exited within two years of the reform. The Orbis data also directly measures profits for a subset of firms. There is no statistically significant treatment effect on either exit (point estimate -0.3pp, SE 0.3) or profit margins (point estimate 0.70pp, SE 1.17). For establishments observed in Orbis, we rule out profit declines exceeding 1.59pp at the 95% confidence level. No effect on the wage bill further evidences labor costs not reducing firm profits (Online Appendix Figure B12d).

Theoretically, profits could only decline if CUT-affiliated unions bargained away a larger share of surplus from employers. However, there is little reason to believe that the CUT reform enhanced unions' bargaining power. If anything, the position of the CUT weakened around the time of the reform, due to the impeachment of President Dilma Rousseff—a close political ally from the Workers' Party—which took place between December 2015 and August 2016. Moreover, while greater union bargaining power generally predicts changes in employment—by moving a monopsonist right along its upward-sloping labor supply curve

or a price-taking employer left along its demand curve—we find a precisely estimated zero effect on employment.

Increase surplus Providing valuable amenities for women could increase the surplus within the employment relationship by raising workers' productivity or effective productivity. For instance, amenities may allow employers to retain and attract higher quality female workers or elicit greater effort from them. Our data do not allow directly measuring worker productivity. However, earlier results showed a positive treatment effect on women's retention. A simple back-of-the-envelope calculation indicates that the resulting decline in replacement costs would fully offset the cost of the most expensive female-friendly amenity advocated by the CUT, namely, a two-month extension of paid maternity leave.[45] In addition, we find larger increases in retention for higher-quality female workers, possessing high school degrees, compared to workers without degrees (Online Appendix Figure B13). Cost savings from the reform may thus be even greater than indicated by the simple estimate if training and hiring more educated workers is more expensive.

We also examine effects on a second measure of effective productivity: absenteeism. High absenteeism plagues employers in many developing countries, particularly in manufacturing (Adhvaryu et al., 2024). The average employer in our sample lost 4.1% of annual workdays to absences. The reform reduced absenteeism by 0.19pp, representing a 4.5% decline relative to baseline (Online Appendix Table VII, Column 4c). As with retention, the largest improvements occurred in workplaces that witnessed the largest increase in amenities (Online Appendix Table A.15).

Finally, we examine whether the CUT reform led to within-firm spillovers. Employers who benefit from union-negotiated amenities in some workplaces may voluntarily expand them to other establishments covered by a different contract. Online Appendix Figure B14 shows that multi-establishment firms exposed to the reform in one location were significantly more likely to expand female-friendly amenities to untreated establishments negotiating with non-CUT unions relative to firms entirely unexposed to the reform. The magnitude of spillover effects mirrors the reform's direct impact on amenities: the share of female managers at indirectly

[45] We compare the replacement costs of workers not retained in the counterfactual to the additional costs incurred due to extended paid maternity leaves. Women are 2.3pp less likely to leave establishments that improve amenities (Figure VId). If replacement costs are two annual salaries of the lost worker (Jäger and Heining, 2022), then higher retention leads the average employer to save $3.3 \times 24 \times W$ since the fewer workers hired over a year is the geometric sum $2.3 + 2.3(0.31) + 2.3(0.31)^2 + ... \approx 3.3$ (where W is the monthly salary and 0.31 is the average annual separation rate among women in control establishments at baseline with the share of women in the workforce below 60%). On average, in these same establishments, 1.3 women take maternity leaves within any given year. Assuming that they all take the two month extension, the cost to the employer is $1.3 \times 2 \times W$. Since $3.3 \times 24 > 1.3 \times 2$, the savings from retention entirely pay for longer maternity leaves. The same holds true if we replace replacement costs with recruitment costs (equivalent to 3 instead of 24 months of salary) and triple the number of women taking leave.

exposed firms increased by 2% relative to baseline, the share of women taking extended maternity leaves grew by 8%, and retention improved 0.8pp. While such spillovers may indicate a desire for equity and consistency across establishments, they are also consistent with the idea that CUT-covered employers benefited from improving their amenities for women.[46]

VI DISCUSSION

The finding that providing valuable amenities benefited women without making workers or employers worse off suggests that Brazilian firms were initially underproviding female-friendly amenities. What explains this inefficiency in amenity provision? Does it reflect a failure of the union or a failure of the firm?

The union voice model provides a natural framework for interpreting our findings. The model posits that unions help workers express preferences for workplace amenities with less fear of being taken advantage of by employers (Freeman and Medoff, 1984). Unions aggregate workers' preferences and use this "inside information" and their bargaining clout to advance policies that benefit workers. However, if unions represent the median worker and women constitute the minority (Farber, 1978), or if unions are male-dominated and women mistrust them, the union may not adequately represent women's preferences. Then, even if providing valuable amenities could cost-effectively reduce turnover and absenteeism, women's lack of voice or trust in the union could yield an inefficient underprovision of female-friendly amenities before the CUT reform. The reform could deliver some "free lunch" results by elevating women's preferences where they previously lacked voice. Female-friendly amenities would improve without reducing wages, employment, or profits.

Consistent with the union voice model, female-friendly amenities disproportionately increased in workplaces where women initially constituted a minority among workers or union leaders. Rather than generating tradeoffs for workers or employers, better amenities reduced absenteeism (a proxy for effort) and raised retention (higher worker satisfaction).

Why, then, did the union and firm initially fail to provide these female-friendly amenities? On the union side, qualitative accounts suggest that the failure had roots in overlooking women's needs before the reform (Section II.B). This gender gap in voice inspired the reform to begin with, and the reform got unions to prioritize women (Godinho Delgado, 2017).

On the firm side, the underprovision of female-friendly amenities has three possible foundations. The first is the union voice model. If firms rely on unions to channel workers' needs, they may not learn which amenities enhance worker satisfaction and effort unless the

[46] In particular, spillovers in the share of female managers are difficult to attribute to equity concerns as they are likely unobserved by workers elsewhere.

union prioritizes them. By effectively channeling women's needs, the reform may have enabled firms to identify high-value amenities. A second model features firms that are slowly adapting to women's entry into the workforce. Workplaces historically designed for men may be slowly adjusting to women's needs, but, in the short-run, they may be inside their frontier provision of female-friendly amenities. Our findings reveal that unions could help accelerate this adjustment to the frontier. A final model posits that firms may have never experimented with amenities and therefore not know their value and costs. By enabling experimentation, the reform secured the expansion of female-friendly amenities over time and across employers.

Ultimately, all three explanations generate similar observable implications. Each aligns with reduced turnover and absenteeism that cover the cost of providing expensive amenities. Each also predicts the spillover of valuable amenities to the untreated establishments of exposed firms. Determining exactly why firms were underproviding female-friendly amenities is beyond the scope of this paper. However, the important point is that unions could improve workplaces for women by simply shifting advocacy toward them. When unions focused on the needs of workers who had previously been overlooked, the resulting gains came without observed costs and likely benefited both workers and employers.

VII CONCLUSION

We study the effects of a top-down shift in union priorities at Latin America's largest trade union federation, the *Central Única dos Trabalhadores* (CUT), which led its affiliated unions to adopt a female-focused bargaining agenda. Our findings reveal that shifting union priorities toward women increased female-friendly amenities without observed losses for workers or employers. Although these improvements in amenities raised the attractiveness of affected workplaces for women, as seen in higher retention and longer job queues, they did not come at the expense of wages, employment, or measured profits. Better amenities instead lowered turnover and absenteeism. These results suggest that Brazilian employers were originally underproviding female-friendly amenities.

The findings of this paper highlight an important role for collective bargaining, and shifting union priorities toward women in particular, in reducing gender inequality in the labor market. While gender gaps in most labor market outcomes have narrowed rapidly over the last century, more recently reducing inequality has proven harder (Blau and Kahn, 2006; Goldin, 2014; Blau and Kahn, 2017), potentially because workplaces remain poorly designed for women. Our findings demonstrate that union advocacy can improve working conditions for women, and that unions may prove especially effective in settings where women lack representation.

The findings also raise several new questions. First, given the importance of union priorities in shaping workplace conditions, understanding how these priorities emerge is a fruitful direction for future research. An older literature emphasizes the inherently political nature of labor unions and argues that their objectives are shaped by internal organization (Ross, 1950; Farber, 1986). Our findings make this hypothesis especially promising to revisit empirically. Second, future work could explore how union priorities shape not just workplace conditions, but also firm-level investments in technology or production processes that enhance or limit worker productivity.

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TABLES

TABLE I
Female- and Male-Centric Amenities

Intuitive definition	**Data-driven definition**		
Female clauses	Top 20 female clauses	Top 20 male clauses	Rank
Abortion leave	**Childcare assistance**	On-call pay	1
Abortion protections	Absences	Life insurance	2
Adoption leave	**Adoption leave**	Strike procedures	3
Childcare assistance	**Other: holidays and leaves**	Other: protections for injured workers	4
Equal opportunities	Seniority pay	Profit sharing	5
Female workforce	**Maternity protections**	Salary deductions	6
Maternity assistance	**Abortion protections**	**Female workforce**	7
Maternity leave	**Paid leave**	Transfers	8
Maternity protections	Night pay	Machine and equipment maintenance	9
On-call	Nonwork-related injury protections	Duration and schedule	10
Other: holidays and leaves	**Abortion leave**	Working environment conditions	11
Paid leave	**Policy for dependents**	Salary payment - means and timeframes	12
Part-time contracts	Extension/reduction of workday	Hazard pay (danger risk)	13
Paternity protections	Guarantees to union officers	Safety equipment	14
Policy for dependents	Renewal/termination of the CBA	CIPA: accident prevention committee	15
Sexual harassment	Medical exams	Other assistances	16
Special shifts	Unionization campaigns	Death/funeral assistance	17
Uninterrupted shifts	Health education campaigns	Workday compensation	18
Unpaid leave	Waiving union fees	Collective vacations	19
Workday controls	Salary adjustments/corrections	Tools and equipment	20

Notes: Table lists the clause types that were selected as "female-centric" based on intuition (column 1) and with our data-driven approach (column 2), which also allows us to define "male-centric" clauses (column 3)—refer to Section III.B for details on the data-driven approach. The clauses in column 1 are listed in alphabetical order while those selected with the data-driven approach are ranked on the basis of the coefficients β_z coming from the estimation of Equation (2). That is, the first female clause listed is the one with the highest estimate of β_z, the second is the one with the second highest value of β_z, etc. Similarly, the male clauses are ranked from the one with the lowest estimate of β_z to the one with the 20th lowest estimate. In columns 2 and 3, we highlight in bold the clauses that also belong to the intuitive definition of female-centric clauses.

TABLE II
Sample Descriptives

	All	Treated	Control
	(1)	(2)	(3)
Panel A: Sample characteristics			
Collective bargaining agreements	211,569	42,513	169,056
Establishment-union pairs	89,897	19,039	70,858
Signing establishments	80,131	18,103	62,028
Signing unions	4,409	886	3,523
Avg. years of CBA negotiation (per pair)	2.35	2.23	2.39
Panel B: CBA negotiation characteristics			
Avg. clause count	24.7	23.1	25.1
Avg. female clause count (intuitive)	1.67	1.81	1.63
Avg. female clause count (data-driven)	3.16	3.15	3.16
Avg. male clause count (data-driven)	4.87	4.59	4.94
Panel C: Establishment-level characteristics (2014, baseline)			
Avg. employment	143	198	127
Avg. share of women in workforce	0.38	0.36	0.38
Share employing both men and women	0.82	0.83	0.82
Share of single establishment firms	0.64	0.63	0.64
Panel D: Union-level characteristics (2014, baseline)			
Avg. size of union board	18.8	24.3	17.3
Avg. share of women in board	0.23	0.23	0.22
Share with female president or vice president	0.17	0.18	0.17

Notes: Table shows descriptive statistics for the sample of establishment-union pairs negotiating firm-level CBAs registered in *Sistema Mediador* between 2012 and 2017. All CBAs are valid, non-amendment, firm-level agreements that have a union counterpart with information on 2012 union central affiliation. We additionally drop contracts signed by more than one union if these unions have different CUT affiliation in 2012 (fewer than 0.33% of CBAs). On the signing establishment's side, we restrict to CBAs where the employer appears in RAIS and has active employees in 2014. Treated units are those where the union counterpart was affiliated to CUT in 2012. See Appendix C for more details. The starting sample described in Panel A has observations at the pair-year level for years when CBA negotiations occurred, i.e., the new contracts panel. Statistics in Panel B are averages across these pair-year observations. Panels C and D use unique establishment and union observations in the baseline year (2014), respectively.

TABLE III
Effect of CUT Reform on Negotiated Amenities

	Intuitive definition (female clauses)					Data-driven		
	All	Leave	Maternity	Harassment	Flexibility	Female	Male	F/(F+M+1)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Intensive margin (number of clauses)								
$D_i \times \delta_{year \geq 2015}$	0.156***	0.078***	0.042***	0.009***	0.028***	0.302***	0.130***	0.032***
	(0.013)	(0.006)	(0.004)	(0.001)	(0.008)	(0.021)	(0.029)	(0.002)
Mean outcome	0.94	0.25	0.23	0.02	0.45	1.58	2.55	0.15
Panel B: Intensive margin (sum of unique clause types)								
$D_i \times \delta_{year \geq 2015}$	0.123***	0.047***	0.042***	0.008***	0.027***	0.155***	0.067***	
	(0.010)	(0.004)	(0.004)	(0.001)	(0.004)	(0.014)	(0.017)	
Mean outcome	0.69	0.18	0.20	0.02	0.30	1.26	1.58	
Panel C: Extensive margin								
$D_i \times \delta_{year \geq 2015}$	0.017***	0.012***	0.020***	0.008***	0.022***	0.034***	-0.001	
	(0.003)	(0.002)	(0.002)	(0.001)	(0.003)	(0.003)	(0.003)	
Mean outcome	0.31	0.12	0.15	0.02	0.23	0.36	0.46	
Panel D: As a share of all clauses								
$D_i \times \delta_{year \geq 2015}$	0.005***	0.001***	0.001***	0.000***	0.003***	0.021***	-0.003**	
	(0.001)	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)	(0.002)	
Mean outcome	0.05	0.01	0.01	0.00	0.03	0.07	0.14	
Observations	600,840	600,840	600,840	600,840	600,840	600,840	600,840	600,840

Notes: Table reports the coefficients for DID regressions—see Equation (3)—estimating the effect of the CUT reform on the female-centric and male-centric amenities included in CBAs. Columns correspond to different clause groupings and each panel provides a different margin. Panel A reports effects on the total number of clauses in the grouping, an intensive margin measure of amenities. Panel B reports effects on the sum of unique clause types in the grouping, capturing changes to the *space* of female- and male-centric clauses, as opposed to their number. Panel C reports effects on an indicator for whether any clause of the corresponding grouping exists in a contract, i.e., an extensive margin measure of amenities. Panel D uses the share of clauses in the grouping among all clauses in a contract. Under each panel we report the mean of the dependent variable among the treated at baseline (2014). The sample is the filled panel of establishment-union pairs by year. All columns control for pair fixed effects, as well as time-varying state and industry fixed effects. Standard errors are clustered at the establishment level.

TABLE IV
Heterogeneity Analysis to Explore Potential Mechanisms

		Full interaction: $D_i \times \delta_{year \geq 2015} \times H_i$			
	Baseline	Prioritize fight plan	Has a CUT training school	Female leader in CUT	Union gained female leader
	(1)	(2)	(3)	(4)	(5)
Panel A: Female clauses (intensive margin)					
$D_i \times \delta_{year \geq 2015}$	0.302***	0.201***	0.230***	0.331***	0.333***
	(0.021)	(0.023)	(0.022)	(0.021)	(0.022)
$D_i \times \delta_{year \geq 2015} \times H_i$		0.311***	0.423***	-0.190***	-0.223***
		(0.048)	(0.066)	(0.061)	(0.049)
Sum of coefficients		0.512	0.653	0.141	0.110
p-value		[0.000]	[0.000]	[0.017]	[0.017]
Mean outcome	1.58	1.58	1.58	1.58	1.58
Observations	600,840	600,840	600,840	600,840	600,840
Panel B: Female retention					
$D_i \times \delta_{year \geq 2015}$	0.018***	0.014***	0.014***	0.023***	0.018***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
$D_i \times \delta_{year \geq 2015} \times H_i$		0.015**	0.024***	-0.032***	0.001
		(0.006)	(0.007)	(0.006)	(0.006)
Sum of coefficients		0.028	0.038	-0.009	0.019
p-value		[0.000]	[0.000]	[0.123]	[0.001]
Mean outcome	1.00	1.00	1.00	1.00	1.00
Observations	19,757,916	19,757,916	19,757,916	19,757,916	19,757,916

Notes: Table tests for heterogeneity in the effect of the CUT reform on female-centric clauses (data-driven approach) and female retention. The dummy to test for heterogeneity in the effects (H_i) is fully interacted with the treatment dummy (D_i) and the post-period dummy ($\delta_{year \geq 2015}$). The table only reports the coefficients that determine the treatment effect for the baseline group ($H_i = 0$) and the differential effect relative to the baseline group—with the sum of both coefficients representing the treatment effect for the group of interest ($H_i = 1$). In column (2), H_i is an indicator for whether the union assigned to the unit of observation corresponds to an industry that prioritized the female-friendly fight plan at the 2015 CUT congress. In column (3), H_i is an indicator for whether the microregion where the establishment is located has a CUT training school. In column (4), H_i is an indicator for whether the union assigned to the unit of observation corresponds to an industry that gained a female representative in the CUT national board in 2015. In column (5), H_i is an indicator for whether the union's share of women in the board increased after the reform. Panel A uses the filled panel sample, and Panel B uses the incumbent sample weighing observations by the inverse (own-gender) employment at baseline. Standard errors are clustered at the establishment level.

TABLE V
Heterogeneity by Baseline Female Representation

		Full interaction: $D_i \times \delta_{year \geq 2015} \times H_i$		
	Baseline	H_i = low % women in estab.	H_i = low % women in union	H_i = no woman Pres/VP
	(1)	(2)	(3)	(4)
Panel A: Intensive margin				
$D_i \times \delta_{year \geq 2015}$	0.302***	0.140***	0.001	-0.059
	(0.021)	(0.028)	(0.038)	(0.044)
$D_i \times \delta_{year \geq 2015} \times H_i$		0.305***	0.364***	0.398***
		(0.040)	(0.041)	(0.049)
Sum of coefficients		0.445	0.364	0.339
p-value		[0.000]	[0.000]	[0.000]
Mean outcome	1.58	1.58	1.58	1.58
Panel B: As a share of all clauses				
$D_i \times \delta_{year \geq 2015}$	0.021***	0.009***	0.005***	-0.004**
	(0.001)	(0.001)	(0.002)	(0.002)
$D_i \times \delta_{year \geq 2015} \times H_i$		0.023***	0.020***	0.030***
		(0.002)	(0.002)	(0.002)
Sum of coefficients		0.032	0.025	0.025
p-value		[0.000]	[0.000]	[0.000]
Mean outcome	0.07	0.07	0.07	0.07
Observations	600,840	600,840	592,224	592,224

Notes: Table tests for heterogeneity in the effect of the CUT reform on female-centric clauses (data-driven approach) according to the baseline representation of women among workers (column 2) and within union boards (columns 3-4). The dummy to test for heterogeneity in the effects (H_i) is fully interacted with the treatment dummy (D_i) and the post-period dummy ($\delta_{year \geq 2015}$). The table only reports the coefficients that determine the treatment effect for the baseline group ($H_i = 0$) and the differential effect relative to the baseline group—with the sum of both coefficients representing the treatment effect for the group of interest ($H_i = 1$). In column (2), H_i is an indicator for whether the share of women workers is below the median across our sample in 2014 (around 1/3). In column (3), H_i is an indicator for whether the share of women in union boards is below this 1/3 threshold in 2014. In column (4), H_i is an indicator for whether there is no women president of vice-president in the local union board as of 2014. All regressions use the filled panel sample and include establishment-union pair fixed effects as well as time-varying state and industry fixed effects. Standard errors are clustered at the establishment level.

TABLE VI
Differential Effects by Gender for Incumbent Workers

	Stay at baseline employer (1)	Employed in formal sector (2)	Log wages (3)
$D_i \times \delta_{year \geq 2015}$	0.010***	0.002	-0.000
	(0.002)	(0.002)	(0.001)
$D_i \times \delta_{year \geq 2015} \times Female_i$	0.008***	0.005**	0.002
	(0.003)	(0.002)	(0.002)
Observations	55,658,850	55,658,850	46,825,585
R^2	0.56	0.32	0.87

Notes: Table reports the coefficients for the gender-pooled DID regression estimating the effect of the CUT reform on retention, formal sector employment, and wages of incumbent workers. Treatment status of incumbent workers is based on the CUT-affiliation of the union negotiating with their baseline (2014) employer. These workers are tracked wherever they go. The regression interacts treatment status with dummy variables for the post period (after 2014) and gender. Regressions include worker fixed effects, industry-year-gender fixed effects, microregion-year-gender fixed effects, and tenure-year-gender fixed effects. To make treatment effects in worker-level regressions interpretable as establishment-level averages, we weight each incumbent worker by the inverse of employment at their baseline employer. Standard errors are clustered at the establishment level.

TABLE VII
Impact of CUT Reform on Establishment-Level Outcomes

Panel A: Wages

	Mean log(w) [women; $t > 12$] (1a)	Mean log(w) [men; $t > 12$] (2a)	Mean log(w) [women; $t \leq 12$] (3a)	Mean log(w) [men; $t \leq 12$] (4a)	Mean gender wage gap (5a)	CBA wage adjustments (6a)
$D_i \times \delta_{year \geq 2015}$	-0.004	-0.003	-0.005	-0.006*	-0.001	0.032
	(0.002)	(0.002)	(0.004)	(0.003)	(0.002)	(0.021)
Mean outcome	7.460	7.627	7.174	7.311	-0.150	0.781
Observations	323,271	329,960	260,956	289,334	334,562	123,432

Panel B: Employment

	Log employment (1b)	Share women [workforce] (2b)	Share women [probation] (3b)	Log hires (4b)	Share women [hires] (5b)	Share women [separations] (6b)
$D_i \times \delta_{year \geq 2015}$	-0.002	0.002**	0.006**	-0.009	0.004*	0.004**
	(0.007)	(0.001)	(0.003)	(0.009)	(0.002)	(0.002)
Mean outcome	4.044	0.369	0.357	3.034	0.366	0.360
Observations	353,626	353,626	275,879	325,823	325,823	332,506

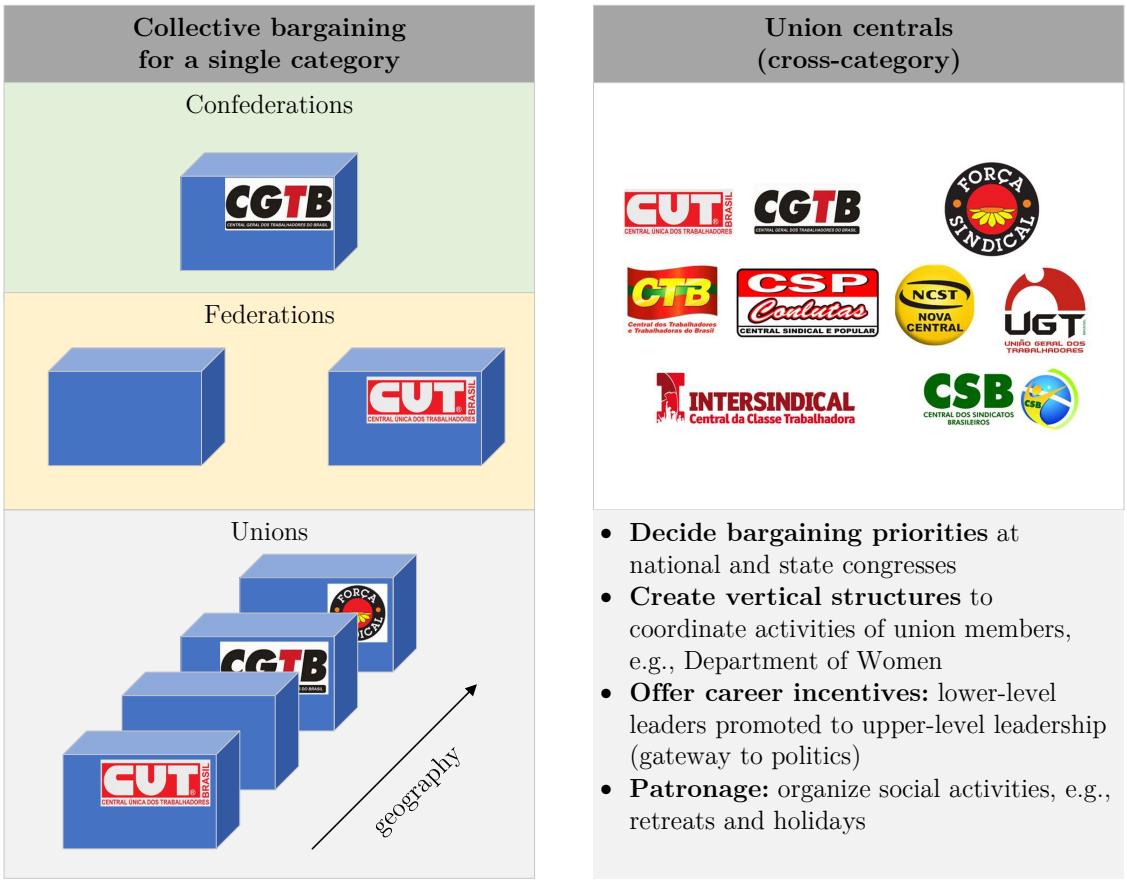
Panel C: Profits

	Log wage bill (1c)	Establishment exit (2c)	Profit margin (3c)	Absences (4c)
$D_i \times \delta_{year \geq 2015}$	-0.010	-0.003	0.702	-0.186*
	(0.008)	(0.003)	(1.167)	(0.113)
Mean outcome	11.431	0.087	7.759	4.111
Observations	351,593	61,716	2,874	335,819

Notes: Table reports the coefficients for the establishment-level DID regression from Equation (3), comparing treated to comparison establishments on wage, employment, and profit outcomes. An establishment is treated if the union with which it negotiates is affiliated to CUT in 2012. Each regression includes establishment fixed effects, industry-year fixed effects, and microregion-year fixed effects. Panel A uses workers' main spell in a given year. The terms in brackets indicate the subsample among which the mean of log wages is calculated, i.e., tenure $>$ 12 months and tenure $\leq$ 12 months for either women or men. Panel B uses all spells observed at an establishment in a given year. The terms in brackets indicate the subsample among which the share of women is calculated, i.e., among all workers, among workers in probation, among hires, and among separated workers. Panel C studies measures related to firm profits, including labor costs that affect profits. Standard errors are clustered at the establishment level.

FIGURES

FIGURE I
Workers' Bargaining Structure

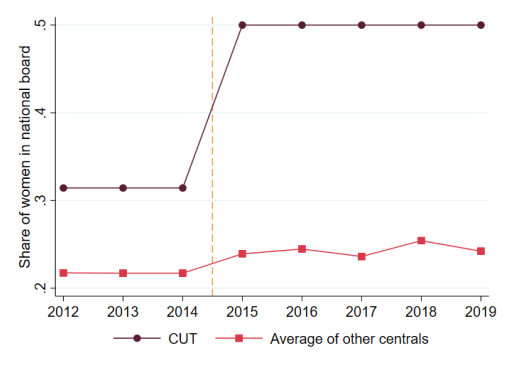


Notes: Figure depicts the organizations representing workers in collective bargaining (as blue blocks on the left panel) and the union centrals they can affiliate with (as logos on the right panel). All workers in a category-geography cell (e.g., bank workers in São Paulo) are represented by a single union. Unions can integrate geographically within the same category, forming a federation (at the state level) or a confederation (at the national level). Local unions, federations and confederations can affiliate with union centrals, which are depicted in the figure as union central logos "stamped" on the blue blocks. Union centrals are associations of unions, representing cross-category interests and operating on a nationwide level, with political objectives and coordination functions. Union centrals cannot directly participate in collective bargaining.

FIGURE II
The 2015 CUT Reform

(a) Female-centric "fight plan"

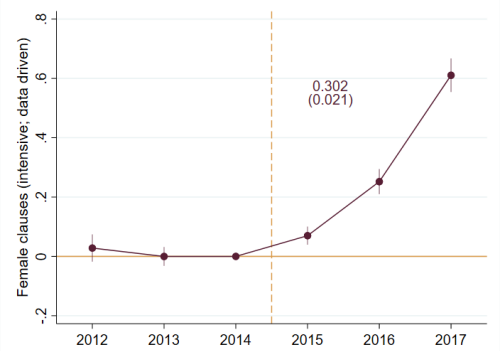
(b) Gender parity in national leadership



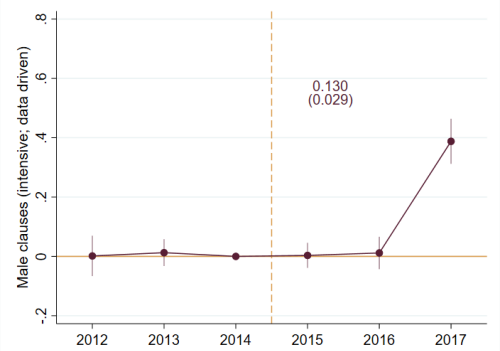
Notes: Figure IIa is the cover page of the book of resolutions (or "fight plan") developed at the 2015 meeting of CUT Women (*Encontro Nacional das Mulheres*) to detail concrete strategies for achieving parity in practice at unions within the CUT. It recommends steps for giving women more voice in all levels of the union—like representation on committees and a say in union's list of demands (or *pautas*). It also specifies amenities like maternity leave extensions and subsidized childcare to highlight during collective bargaining. This book of resolutions was subsequently adopted by delegates at the 2015 CUT National congress (full text here). The word count for *mulheres* (women) in the 2015 National Congress book of resolutions is 203, compared to only 46 occurrences in 2012 and 74 in 2009. Figure IIb plots the annual share of women on CUT's national executive committee and the average share in the other 7 union centrals (*Intersindical* is dropped due to missing information on its board). Refer to Figure B2 for the plots corresponding to each individual union central.

FIGURE III
Effect of the CUT Reform on Female- and Male-Centric Amenities

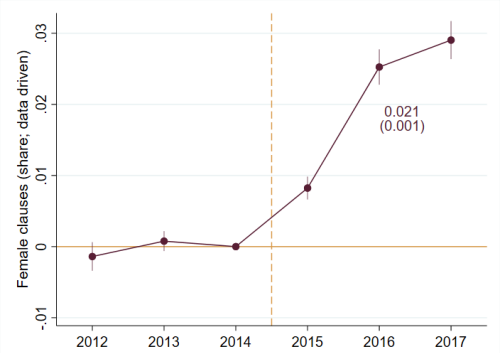
(a) Female clauses: intensive margin



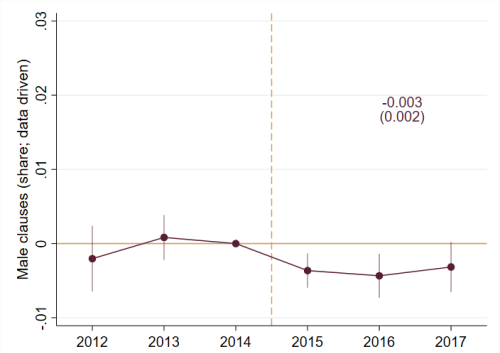
(b) Male clauses: intensive margin



(c) Female clauses: as a share of clauses



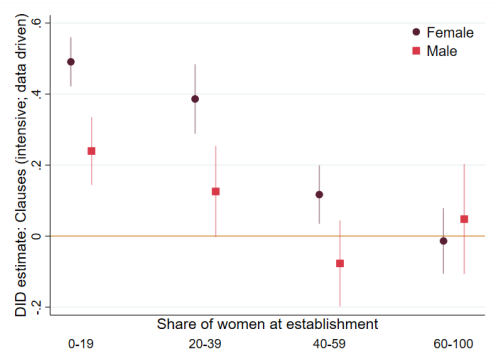
(d) Male clauses: as a share of clauses



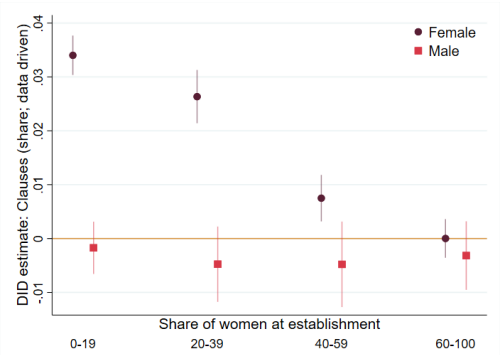
Notes: Figures show estimates of the δ_t coefficients for $t \in [2012, 2017]$ (with 2014 omitted) from the DID specification in Equation (3) on the intensive margin (top figures) and shares (bottom figures) of female-centric (left side) and male-centric (right side) clauses, defined using the data-driven method. All figures use the filled panel. Confidence intervals at a 95% level are reported. Standard errors are clustered at the establishment level.

FIGURE IV
Effect on Amenities by Share of Female Workers at Establishment

(a) Intensive margin

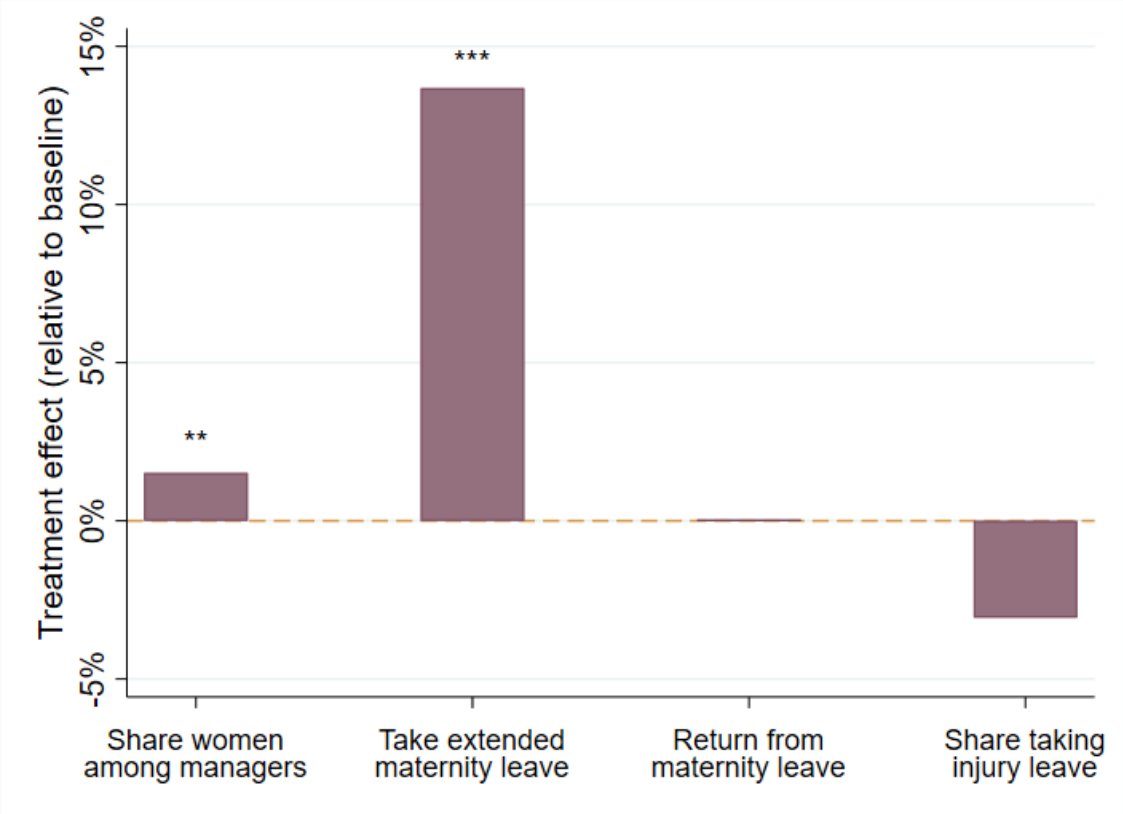


(b) As a share of all clauses



Notes: Figures show estimates of the treatment effect ($\delta_{year \geq 2015}$) from the DID specification in Equation (3) on the number of female- and male-centric clauses (data-driven approach) computed on subsamples of union-establishment pairs according to the 2014 share of female workers in the establishment. We use the filled panel. From left to right, the bins comprise 30%, 24%, 21%, and 26% of establishments. Confidence intervals at a 95% level are shown. Standard errors are clustered at the establishment level.

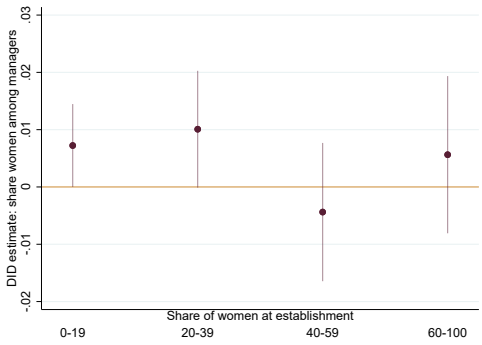
FIGURE V
Changes in Firm Environment



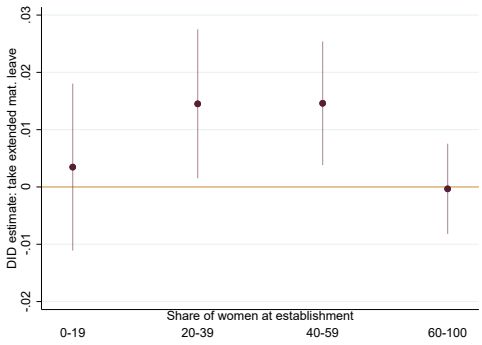
Notes: Figure reports results from four separate establishment-level DID regressions in Equation (3), with treatment effects reported relative to the mean among the treated at baseline (in percentage terms). The outcome variables are: 1) the share of women among managers; 2) the share of women on maternity leave who remain on leave longer than than the state-mandated 120 days (i.e., extended maternity leave); 3) the share of women taking maternity leave who remain employed at the employer where they took maternity leave (i.e., return from maternity leave); and 4) the share of workers taking leave due to a workplace injury. Each regression includes establishment fixed effects, industry-year fixed effects, and microregion-year fixed-effects. Standard errors are clustered by establishment, where * denotes $p < 0.10$, ** denotes $p < 0.05$, and *** denotes $p < 0.01$.

FIGURE VI
Downstream Effects by Share of Female Workers at Establishment

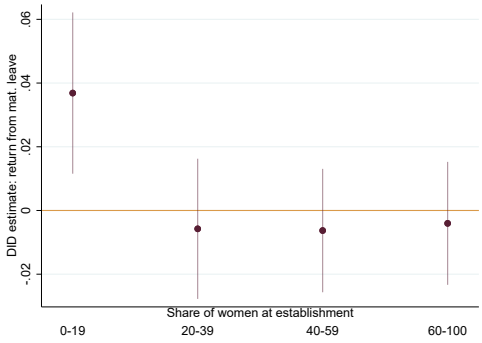
(a) Share of female managers



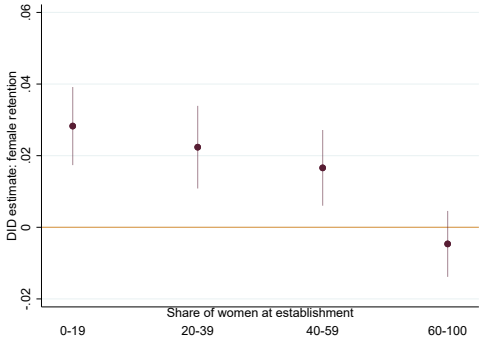
(b) Take extended maternity leave



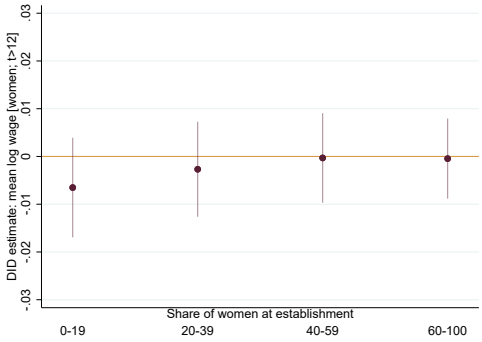
(c) Return from maternity leave



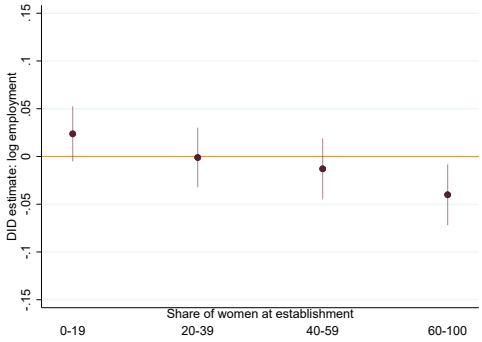
(d) Incumbent women's retention



(e) Wages: female workers



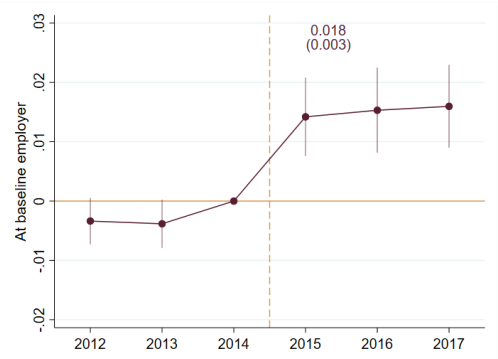
(f) Log employment



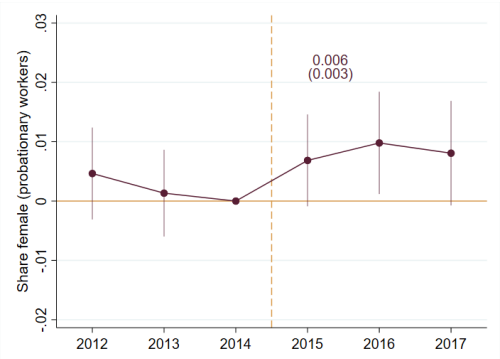
Notes: Figures show estimates of the treatment effect ($\delta_{year \geq 2015}$) from the DID specification in Equation (3) on downstream outcomes of the CUT reform computed on subsamples of establishments divided according to the 2014 share of female workers. From left to right, the bins comprise 30%, 24%, 21%, and 26% of establishments. Figure VIa reports effect on the share of women among managers. Figure VIb reports effect on the share of women on maternity leave who remain on leave longer than the state-mandated 120 days. Figure VIc reports effect on the share of women taking maternity leave who remain employed at the employer where they took maternity leave. Figure VId reports effect on remaining at the baseline employer among women in the incumbents sample (weighed by the inverse of female employment at the baseline employer). Figure VIe reports effect on the mean log wage among women with at least 1 year of tenure. Figure VIf reports effect on log employment. All figures use the establishment sample, except for Figure VId that relies on the incumbent sample. Confidence intervals at a 95% level are shown. Standard errors are clustered at the establishment level.

FIGURE VII
Revealed Preference Measures of Firm Value

(a) Incumbent women's retention



(b) Share of women among probationary workers



Notes: Figures test for revealed preference measures of whether women value the changes induced by the CUT reform in treated establishments. Figure VIIa show effects on retention from the baseline DID specification in Equation (3) among incumbent women ages 20-35, which includes worker fixed effects, industry-year fixed effects, microregion-year fixed effects, and tenure-year fixed effects. The dependent variable is an indicator for whether the worker is observed at their baseline (2014) employer in year t. To make treatment effects in worker-level regressions interpretable as establishment-level averages, we weight each incumbent worker by the inverse of (own-gender) employment at their baseline employer. Figure VIIb shows effects on the share of women among probationary workers (i.e., those whose tenure at the establishment does not exceed 3 months) using the DID specification in Equation (3) based on employment spells observed at the establishment level. Regressions include establishment fixed effects, industry-year fixed effects, and microregion-year fixed effects. Confidence intervals at a 95% level are reported. Standard errors are clustered at the establishment level.