# Self-Reinforcing Glass Ceilings*

Carlos F. Avenancio-León Alessio Piccolo Leslie Sheng Shen

After the gender pay gap narrows, how do labor markets readjust? We leverage deregulation events to show how reductions in the gender pay gap catalyze labor market responses that perpetuate gender inequities. When the pay gap narrows in a specific sector, women are relatively more likely to seek jobs in that sector, while men readjust their search to less-equitable sectors. These compositional effects decrease female participation in less-equitable sectors, which typically offer higher wages, reinforcing gender stereotypes and social norms that contribute to the glass ceiling. These dynamics shed light on the determinants of persistent gender inequities, gender sorting, and limits to Becker's theory of discrimination, and underscore the need for reforms that are cross-sectoral and comprehensive to effectively achieve meaningful reductions in gender inequities across the labor market.

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# 1 Introduction

Gender gaps in labor outcomes are remarkably persistent. Despite convergence in education and work experience (Goldin 2014), women still earn, on average, 20 percent less than men. There is also a pronounced gender gap in the types of work women and men do. Not only are women underrepresented in high-paying industries (Bureau of Labor Statistics 2017), but there is also substantial gender sorting across industries, with men more likely than women to sort into higher-paying sectors and firms over their life cycle (Goldin, Kerr, Olivetti, and Barth 2017; Barth, Kerr, and Olivetti 2021; Lagaras, Marchica, Simintzi, and Tsoutsoura 2023).

Several factors have been raised in the literature as important determinants of this persistence, including gender differences in demand for time flexibility (Bertrand, Goldin, and Katz 2010; Goldin 2014; Wasserman 2023), negotiation behavior (Card, Cardoso, and Kline 2016; Säve-Söderbergh 2019), career costs associated with having children (Adda, Dustmann, and Stevens 2017; Kleven, Landais, and Søgaard 2019), and willingness to commute (Petrongolo and Ronchi 2020; Le Barbanchon, Rathelot, and Roulet 2021). There is also evidence that systemic discrimination against women by employers persists (Weber and Zulehner 2014; Kline, Rose, and Walters 2022; Benson, Li, and Shue 2024). The above determinants not only give men a relative advantage in the workplace but are also difficult to address – especially all at once. Rather than focusing on a specific determinant, we approach the analysis of persistence from a different, less explored perspective: We ask how labor markets respond when factors behind the pay gap subside and the gap narrows, and whether this response can itself perpetuate gender inequities. Understanding this response can reveal critical fault lines that inform policy design aimed at promoting gender equality in the workplace.

One such instance when the gender gap narrows is when market frictions that allow inefficient work arrangements and uneven rent-sharing to survive in equilibrium subside. This often occurs when moving away from regulatory protectionism (Rose 1987; Hendricks, Feuille, and Szerszen 1980; Card 1986), which "can create rents over which workers and firms may negotiate" (Rose 1987), and sustain gender inequities (e.g., Becker 1957; Black and Strahan 2001). In this paper, we analyze deregulation events that unevenly impact the pay gap levels across sectors to examine how labor markets respond to the narrowing of the gender pay gap across sectors. We show that this response can counteract the reductions in the gender pay gap and contribute to the persistence of gender inequality. This labor market response operates through the way workers respond to changes in the relative degree of gender equity across sectors: when the gender pay gap narrows in a particular sector, women are more likely to seek jobs there, while men readjust their search toward less equitable sectors. These compositional effects reduce female participation in less equitable sectors, which typically also pay higher wages, reinforcing gender stereotypes and social norms that contribute to the glass ceiling. Through

these effects, the same forces that reduce gender inequities at the bottom of the pay distribution contribute to their persistence at the top.

We illustrate this mechanism in a simple framework of occupational choices in a two-sector economy. In the model, deregulation leads to narrowing of the gender gap through increased competitive pressure: competitive pressure decreases the rents that could be disproportionally shared with certain groups of workers (Becker 1957; Black and Strahan 2001; Weber and Zulehner 2014) or allow inefficient work arrangements favoring those groups (e.g., long hours limiting flexibility, like in Goldin 2006, 2014; Bertrand et al. 2010) to survive in equilibrium.

We use the model to examine how equilibrium outcomes change when the gender pay gap narrows in one sector in response to increased competitive pressure within the sector. A key insight is that, from an equitability perspective, there is excess sorting along gender lines when the competitive pressure originates in lower-paying sectors. This is because the marginal workers who move across sectors in search of better job prospects fail to internalize a negative externality that is associated with their choices: their movement further entrenches male dominance in higher-paying sectors, widening sectoral gender gaps and reinforcing gender stereotypes and glass ceilings. In contrast, when competitive pressures originate in higher-paying sectors, sectoral gender gaps decline, and reinforcement of gender stereotypes does not take place.

The insight that reducing gender inequities in a single sector is less effective in addressing overall labor market gaps in a multisector economy is critical, as it underscores the limitations of any single-sector policy responses or market improvements – whether through competition,[1] job flexibility, or family-friendly policies – in closing the gender gap. The persistence of gender inequities across multiple sectors highlights the need for comprehensive, cross-sectoral policy implementation to achieve meaningful progress. And when targeting gender inequities broadly at a cross-sectoral level is infeasible, interventions targeting sectors at the top of the income distribution can be more effective, as they would not trigger the self-reinforcing mechanisms we document in this paper.

To empirically evaluate this self-reinforcing mechanism, our strategy needs to identify variation that disrupts the equilibrium pay gaps across sectors. We use deregulation events that generate variation in the relative levels of pay gaps across sectors; in particular, we use banking deregulation events, which relaxed regulation-induced financial constraints, as our key source of variation.[2] We establish theoretically and then document empirically that sectors with low

[1]Fostering competition in every sector is inherently challenging. Recent studies have documented an increase in monopsony power in U.S. local labor markets (Stansbury and Summers 2020; Berger, Herkenhoff, and Mongey 2022).

[2]For details on U.S. bank deregulation, see King and Levine (1993), Demirgüc-Kunt and Maksimovic (1998), Rajan and Zingales (1998), Beck and Levine (2004), Jayaratne and Strahan (1996), Cetorelli and Strahan (2006), Beck, Levine, and Levkov (2010), among others.

pay gaps are consistently lower-paying and more capital-intensive than sectors with high pay gaps. This relationship between sectoral capital-intensity and pay gaps is overlooked yet robust and important, as it makes deregulation events fall unevenly across sectors: Because of the heterogeneity in capital intensity, the relaxation of firm-level credit constraints (which prevents competitive pressure from fully unleashing in the first place) stimulates more competitive pressure and gap reductions in the more capital-intensive sectors and, thus, along the pay and pay gap distributions.

To map to our framework's two-sector structure, we validate that these shocks increase competitive pressure unevenly: they promote expansion in more capital-intensive sectors relative to those that rely more on intangible forms of capital. We then present our analysis in three steps. First, we show that the gender pay gap decreases in response to deregulation at the lower end of the pay gap distribution, which consists predominantly of occupations in more capital-intensive sectors. Second, we find that this gender gap reduction is counterbalanced by increased gender sorting across sectors with high and low gender pay gaps, consistent with our theoretical model. Finally, using survey data on sexism and gender roles, we show that these compositional effects reinforce the glass ceiling by cementing negative stereotypes about the role of women in the workforce.

To evaluate the effects of bank deregulation on wages across multiple industries, we categorize industries based on their preexisting gender pay gap. Because pay for men and women converged significantly during the 1980s (Blau and Kahn 1997), we fix pay-gap levels by industry prior to 1980 and classify industries into high-, medium-, and low-pay-gap sectors according to their pre-1980 pay-gap levels. As previously mentioned, we then document that low-pay-gap sectors are more capital-intensive, while high-pay-gap sectors consistently have a materially higher share of assets that are intangible, which are harder to borrow against and thus limit the effects of deregulation. We validate that deregulation affected these industries differently: low-pay-gap sectors responded by increasing borrowing and demand for labor, whereas high-pay-gap sectors showed no change in borrowing behavior or labor demand.

Following deregulation, we find that while relative wages for women remained unchanged in high-pay-gap sectors, they increased by 5% in low-pay-gap sectors, controlling for Mincerian traits. These results are robust to alternative methods of industry categorization. This increase in relative pay in low-pay-gap sectors, compared to high-pay-gap sectors, alters the opportunity cost for women relative to men. *At the margin*, this creates incentives for women to select into more equitable but lower-paying sectors, while men are incentivized to select into less equitable but higher-paying ones. Indeed, we document that following bank deregulation, the sectoral gender gap – measured by differences in participation in low-pay-gap/lower-paying sectors and high-pay-gap/higher-paying sectors – widened. This sorting behavior contributes to the

persistence of the gender pay gap by perpetuating gender imbalances across industries along the pay distribution.

Lastly, we show that this sectoral gap has downstream implications: the resulting gender sorting patterns may reinforce traditional gender roles in the long run. Both men and women may interpret the differences in sorting and the resulting gender imbalance through a gendered lens, concluding that women are less suited to certain jobs, that career pursuits are less important for women, or that women have a comparative advantage in staying at home. We directly test for changes in gender norms by analyzing how bank deregulation, through shifts in sectoral composition, affects measures of sexism derived from the General Social Survey (GSS) data. We find that, following deregulation, attitudes toward women in the workplace deteriorated, particularly among men and individuals (men as well as women) with children.

Our findings contribute to the understanding of the persistence and evolution of the gender pay gap by highlighting the influence of labor market forces and the limits to competition and by reexamining gender sorting.

**Market-driven persistence.** Gender inequities in the labor market have been large and persistent. Although the pay gap between men and women has narrowed, especially during the 1980s, women still earn, on average, 20 percent less than men (Blau and Kahn 1997). Moreover, this narrowing primarily took place at the bottom and middle of the wage distribution, rather than at the top, and progress slowed in the subsequent decades (Blau and Kahn 1997, 2017). Previous studies in this area emphasize several factors: the lack of temporal flexibility in the structure of jobs in the labor market (Goldin 2014), cultural differences that translate into differences in choices (Goldin 2006), and gender disparities in bargaining power (Babcock and Laschever 2003; Card et al. 2016; Säve-Söderbergh 2019). The self-reinforcing channel we present complements these mechanisms and highlights the challenges in closing the gender pay gap: as gender inequities transition from wage gaps into sectoral gaps and accentuate gender norms, progress in a narrow setting may obscure receding conditions that perpetuate inequities in the broader labor market.

**Persistence of gender inequities despite competition.** Becker (1957) argued that taste-based discrimination increases hiring costs for firms. Increased product market competition would reduce taste-based discrimination, as discriminatory firms would be at a disadvantage compared to less discriminatory, more profitable competitors. Subsequent empirical work has found evidence supporting this view (Black and Strahan 2001; Levine, Levkov, and Rubinstein 2008). Our results emphasize that increases in competition within a single sector are insufficient to reduce gender inequities in the broader labor market in the presence of other less-competitive

sectors: reductions in the gender pay gap within a single sector are transformed into wider gender sectoral gaps and the reinforcement of gender norms, perpetuating overall gender inequities in the labor market.

**Determinants of gender sorting.** We also contribute to the literature on the determinants of gender sorting into specific firms, occupations, or industries. While previous studies have documented the differences in earnings between women and men over the life cycle (Goldin et al. 2017; Barth et al. 2021), the determinants explaining the relationship between gender sorting and lower pay are less well understood. One approach to assessing this relationship is to evaluate whether external conditions force women to sort into lower-paying firms (e.g., flexible hours, Goldin 2014; home production, Albanesi and Olivetti 2009). However, evidence also shows that job pay decreases concurrently with increased female participation (Levanon, England, and Allison 2009). Gender norms may also contribute to gendered patterns in labor participation (Crawford and MacLeod 1990; Ceci, Williams, and Barnett 2009; Bottia, Stearns, Mickelson, Moller, and Valentino 2015; Bertrand, Kamenica, and Pan 2015; Charles, Guryan, and Pan 2018; Mertz, Ronchi, and Salvestrini 2024). The self-reinforcing mechanism highlighted in this paper addresses this issue by showing how the uneven closing of the pay gap across sectors can lead to gender sorting and reinforce gender norms.

The paper is structured as follows. Section 2 lays out a model framework to organize and interpret our empirical results. Section 3 describes the data, while Section 4 discusses the empirical strategy. Section 5 shows "first-stage" effects – that is, that our identifying variation had uneven direct effects on and across sectors. Section 6 documents cross-sectoral effects on the gender pay gap and on gender sorting. Finally, Section 7 explores how the cross-sectoral effects on the gender pay gap and gender sorting lead to an accentuation of gender norms. Section 8 concludes.

# 2 Theoretical Framework

## 2.1 Model Setup

The model consists of a mass $2m > 0$ of workers (indexed by $i$) and two productive sectors ($s \in \{\ell, h\}$), each populated by a unit mass of firms (indexed by $js$). The sequence of events is as follows: (i) Workers choose which of the two sectors to work in, (ii) firms make their production plans, and (iii) product prices and wages adjust to balance supply and demand in each market and sector.

Half of the worker population is labeled blue, and the other half red. Within each group, workers differ in the disutility $c_i$ they incur from entering sector $h$, where $c_i$ is a positive

continuous random variable with cumulative distribution function $F(\cdot)$, identical across labels. For simplicity, we assume $c_i \sim U(0, m)$ for both groups. In the empirical analyses, (a) blue represents males and red represents females, though the model can apply to other forms of discrimination, so we keep the red and blue labels for generality, and (b) $h$ can be regarded as occupations that, for example, require more cognitive work, so $c_i$ can be interpreted as the cost of training or applying for these types of jobs compared to those offered in sector $\ell$.

Each worker $i$ is endowed with one unit of labor supply, and chooses which sector to seek employment. $i$'s expected payoff from entering sector $s$ is

$$U_i = \mathbb{E}[w_i|\theta_i, s] - e_i c_i, \tag{1}$$

where $\theta_i \in \{R, B\}$ is $i$'s label ($R$ for red, and $B$ for blue), $e_i \in \{0, 1\}$ denotes choice of sector, with $e_i = 1$ if $i$ enters sector $h$, and 0 otherwise.

The expectation in Eqn. (1) reflects the fact that if worker $i$ is blue, their wage depends on whether they land a job at a "biased" firm (more on this shortly). Worker $i$ can always choose not to work, in which case their expected wage is $\overline{u}$, which represents $i$'s outside option. We use $\beta_s$ to denote the mass of blue workers who seek jobs in sector $s$, and $\rho_s$ for the mass of red workers in $s$.

Blue and red workers have the same productivity and share the same distribution for $c_i$, so the labels should be irrelevant to payoffs. However, a fraction $\chi_s$ of the firms in sector $s$ is "biased", in that they have a preference for blue workers. Biased firms prefer to hire blue workers, and pay them a premium $\alpha$ above the equilibrium wage $w_s$.[3] A blue worker hired by a biased firm receives a wage $(1 + \alpha)w_s$, while *all* other workers receive the equilibrium wage $w_s$.

Within each sector, firms compete to sell a homogeneous product to consumers. Each unit of output requires one unit of labor and sells at the equilibrium price $p_s$. We conjecture (and later verify) that, in equilibrium, biased firms manage to hire only blue workers, as there are enough of them in each sector. We can then write firm $j$'s expected profit from producing $q_{js} \in [0, \infty)$ as

$$\Pi_{js} = p_s q_{js} - w_s(1 + \iota_{js}\alpha)q_{js} - \kappa_s q_{js}^2, \tag{2}$$

where $\iota_{js}$ is an indicator function that is equal to 1 if firm $js$ is biased, and 0 otherwise. $\kappa_s \in [0, \infty)$ is the unit cost of capital in sector $s$, and $q_{js}^2$ is the capital needed to produce $q_{js}$ units of output. The quadratic specification captures decreasing returns to scale, which means that producing more becomes increasingly more costly as $q_{js}$ goes up.

[3]The assumption that biased firms only hire blue workers simplifies the exposition but is not necessary for our results. The same qualitative results hold if biased firms also hire a mix of blue and red workers but pay wage premia only to blue workers.

Let $D(p_s)$ denote the product demand in sector $s$, where $D(\cdot)$ is a continuous and decreasing function. To simplify the exposition, we assume $D(0) < \frac{m}{2}$ and $\chi_s \leq \frac{1}{2}$. These conditions ensure that labor demand is always met and that, in equilibrium, the conjecture that $b$ firms only hire blue workers holds.[4] The assumption $D(0) < \frac{m}{2}$ also implies that we have $w_\ell = \overline{u}$ in equilibrium: since there is more labor supply than labor demand in sector $\ell$, firms can pay workers their reservation utility in that sector. So, $\ell$ represents occupations with low skill requirements, for which the labor supply is sufficiently elastic. By contrast, workers have to pay a cost to enter sector $h$, so they will require a premium ($w_h \geq \overline{u}$) to do so in equilibrium.

An equilibrium is a collection of firms' production choices $q_{js}$, workers' occupational choices $e_i$, and equilibrium prices and wages, that is, $\{\{q_{js}\}, \{e_i\}, (p_h, p_\ell), (w_h, w_\ell)\}$, for $i \in [0, 2m]$, $j \in [0, 1]$, and $s \in \{\ell, h\}$, that jointly satisfy market clearing and sequential rationality. We restrict our attention to stable equilibria (in a standard, tâtonnement sense (see, e.g., Bénabou and Tirole 2006)).

**Note on "biased" firms.** There are two different ways to interpret the biased firms in our model. In the first interpretation, the people making hiring decisions in biased firms prefer to interact with blue workers, leading them to favor blue workers in their hiring and pay decisions (consistent with taste-based discrimination (Becker 1957; Black and Strahan 2001; Weber and Zulehner 2014; Pikulina and Ferreira 2023)). In the second interpretation, biased firms feature inefficient non-wage (dis)amenities (e.g., long hours limiting flexibility, like in Goldin 2006, 2014; Bertrand et al. 2010) that are relatively costlier for red workers. As a result, blue workers are more suited to work for these firms and can extract a wage premium. Both discrimination and inflexible work arrangements are relevant interpretations for the dynamics of gender during the period analyzed in our empirical analysis.[5]

## 2.2 Equilibrium Analysis

The first step in characterizing the equilibrium is to describe how firms and workers make their choices for fixed values of prices, wages, and relative shares of blue and red workers in each

[4] In equilibrium, firms produce less than $D(0)$, so $D(0) < \frac{m}{2}$ ensures that there are enough blue workers in sector $\ell$ to satisfy $\chi_\ell q_{b\ell} \leq \beta_\ell$. By a similar logic, $D(0) < \frac{m}{2}$ and $\chi_h < 1/2$ together ensure that $\chi_h q_{bh} \leq \beta_h$ holds. If we had $\chi_s q_{bs} > \beta_s$, the expression for $\Pi_{js}$ would be different, since the biased firms may be forced to hire both types of workers, but our qualitative results would continue to hold.

[5] If we assume that firms commit to supply functions – that is, how much they will produce for any given product price $p_s$ and wage $w_s$ (rather than correctly anticipating their equilibrium values and committing to a specific production level $q_{js}$) – the model also accommodates a third interpretation: decision makers in biased firms incorrectly believe that red workers have lower productivity, leading them to prefer hiring blue workers and paying them wage premia. Under this alternative specification, the equilibrium prices and wages are the same as in our model (as market clearing prices and wages remain the same), so all our results carry through.

sector.

Since firms take prices and wages as given, each type makes the same choices in equilibrium. Thus, we can substitute the $j$ subscript with $b$ and $n$, where $b$ denotes biased firms and $n$ denotes non-biased ones. Given a product price $p_s$ and wage $w_s$, firm $js$ chooses its production to maximize profit as defined in Eqn. (2). Its optimal production choice $q^*_{js}$ can be written as:

$$q^*_{js} = \max\left\{\left[p_s - w_s(1 + \iota_{js}\alpha)\right]\frac{1}{2\kappa_s}, 0\right\}. \tag{3}$$

The expression for $q^*_{js}$ calls for two important remarks. First, biased firms produce less than non-biased ones because they pay higher wages and, thus, have higher production costs. Second, for the same reason, their production is less sensitive to changes in $\kappa_s$: the more efficient, non-biased firms operate at larger scales, so they benefit more when capital becomes cheaper.

Workers choose which sectors to work in, anticipating the relative shares of $b$ and $n$ firms that populate each sector in equilibrium. Worker $i$ prefers to seek a job in sector $h$ over sector $\ell$ if the expected wage differential is larger than the disutility $c_i$. That implies

$$\mathbb{E}[w_i|\theta_i, h] - \mathbb{E}[w_i|\theta_i, \ell] \geq c_i. \tag{4}$$

Inequality (4) implicitly defines a marginal type for each group of workers (the value of $c_i$ for which the inequality holds strictly), which we denote by $c_\theta$. In equilibrium, the mass of blue workers seeking jobs in $h$ ($\beta_h$) is equal to the mass of those with $c_i \leq c_B$, which is $mF(c_B)$. Similarly, the mass of red workers $\rho_h$ is equal to $mF(c_R)$. Since reds never receive any wage premia, while blues receive premia only if they work for a biased firm, we can write the marginal types as:

$$c_B = w_h\left\{1 + \alpha\frac{\chi_h q_{bh}}{\beta_h}\right\} - w_\ell\left\{1 + \alpha\frac{\chi_\ell q_{b\ell}}{m - \beta_h}\right\}; \quad c_R = w_h - w_\ell. \tag{5}$$

The probability that a blue worker in sector $h$ lands a job in a $b$-firm is $\frac{\chi_h q_{bh}}{\beta_h}$, as there are more blue workers than biased firms ($\chi_h q_{bh} \leq \beta_h$), so only a fraction can work for a biased firm in equilibrium. The corresponding probability in sector $\ell$ is $\frac{\chi_\ell q_{b\ell}}{m-\beta_h}$. The mass of red workers choosing to work in $h$ depends solely on the wage difference between sectors, $w_h - w_\ell$. In contrast, the mass of blue workers also depends on the relative size of biased firms in each sector, as the more biased firms produce in a given sector, the easier it is to get the wage premium $\alpha$ in that sector.

Given the optimal production and occupational choices, market clearing pins down the equilibrium prices and wages. Since each unit of production requires one unit of labor, the

demand and supply of goods and the demand and supply of labor are all interconnected in equilibrium. We can write the market clearing conditions for the two sectors as

$$D(p_h) = \int_0^1 q_{jh}^* \, dj \leq \beta_h + \rho_h; \quad D(p_\ell) = \int_0^1 q_{j\ell}^* \, dj \leq 2m - (\beta_h + \rho_h). \tag{6}$$

An equilibrium of the game is a collection of choices, wages, and product prices that jointly satisfy equations (3), (5), and (6). Proposition 1 shows that one such collection always exists, and describes some of the key properties of the equilibrium.

**Proposition 1 (Closing the gap from the bottom).** *An equilibrium always exists. In equilibrium, the $h$ sector pays higher wages (that is, $w_h \geq w_\ell = \overline{u}$), and when the cost of capital in $\ell$ decreases:*

1. *Production in $\ell$ is reallocated toward non-biased firms, that is, $\frac{\chi_\ell q_{b\ell}}{D(p_\ell)}$ decreases with $\kappa_\ell$.*
2. *The fraction of the workforce in $\ell$ that receives a wage premium decreases.*
3. *In the limit where the product market demand is inelastic, more blue workers and fewer red workers enter sector $h$, that is, $\beta_h$ increases and $\rho_h$ decreases.*

Due to decreasing returns to scale, expanding production requires increasingly more capital as $q_{js}$ increases. Even biased firms, which pay higher wages and, thus, have higher production costs, may still survive in equilibrium (i.e., set $q_{js} > 0$), as non-biased firms may be unwilling to meet the entire product market demand on their own. This effect is less pronounced when capital is cheaper, as expanding production is less costly. Consequently, production in $\ell$ is reallocated away from biased firms when $\kappa_\ell$ decreases.

As production reallocates away from biased firms, the fraction of workers receiving a wage premium decreases. So, the relative wages of red and blue workers that work in sector $\ell$ converge, since a smaller share of the workforce earns wage premia. In absolute terms, however, biased firms may produce more or less than before, depending on the net effect of two opposing forces. On the one hand, output production is now cheaper for all firms, incentivizing higher production across the board. On the other hand, non-biased firms are more sensitive to changes in $\kappa_\ell$ (see our discussion of Eqn. 3), which means that their production increases relatively more when $\kappa_\ell$ decreases. The increase in $q_{n\ell}$ drives the product price $p_\ell$ down, making it harder for less efficient, biased firms to produce.

If product demand is sufficiently inelastic, aggregate production doesn't change much when $\kappa_\ell$ declines, so the increase in $q_{n\ell}$ must come at the expense of $q_{b\ell}$. In this case, biased firms in $\ell$ produce less and, thus, hire fewer workers as $\kappa_\ell$ decreases. All else equal, $\ell$ becomes less attractive for blue workers, since landing a job at a biased firm is now less likely in this sector. This effect leads to more blue workers seeking jobs in $h$, which drives the unbiased wage $w_h$ down. In response to the decrease in $w_h$, some red workers leave $h$ to seek jobs in $\ell$.

For simplicity, we have described the case where the cost of capital declines and, thus, competition intensifies only in the $\ell$ sector. In Appendix A.4, we show that the insights described here are robust to the case where the cost of capital decreases in *both* sectors, but the decline is more pronounced in the $\ell$ sector. It is worth mentioning that the unbiased wage in the $h$ sector, $w_h$, may increase when both $\kappa_h$ and $\kappa_\ell$ decrease: the inflow of blue workers who move from $\ell$ to $h$ seeking better chances to land jobs at biased firms may not be enough to satisfy the increased labor demand in $h$, in which case $w_h$ increases to attract also more red workers. Yet, the group difference in participation in $h$, that is, $\beta_h - \rho_h$, still increases: blue workers are still relatively more eager to enter $h$, since they respond to both the increase in $w_h$ and the relatively better chances of landing jobs at biased firms in $h$ compared to $\ell$.

Lastly, the model generates a cross-sectoral correlation between cost of capital, wages, and wage gaps, which we will evaluate and exploit in our empirical analysis. In the model, the $\ell$ sector always pays lower wages, but the relative equitability of the two sectors (i.e., the relative share of biased firms) depends on the parameters. Proposition 2 describe conditions such that sector $\ell$ features *both* lower wages and lower wage gaps than $h$ in equilibrium.

**Proposition 2** (**Sectoral Equivalence: more capital intensive = lower wages = lower pay gaps**). *In the limit where the product market demand is inelastic, if the cost of capital in sector $\ell$ is sufficiently smaller than in sector $h$, a smaller fraction of the workforce receives a wage premium in $\ell$ compared to $h$.*

If capital is sufficiently cheaper in sector $\ell$, the competitive pressure is larger in this sector so that, if the product demand is sufficiently inelastic, biased firms produce and hire less in sector $\ell$ than in sector $h$. The gap in expected wages for blue and red workers is then smaller in $\ell$, so that this sector features, at the same time, lower wages and lower wage gaps.

## 2.3 Effects on Gender Norms

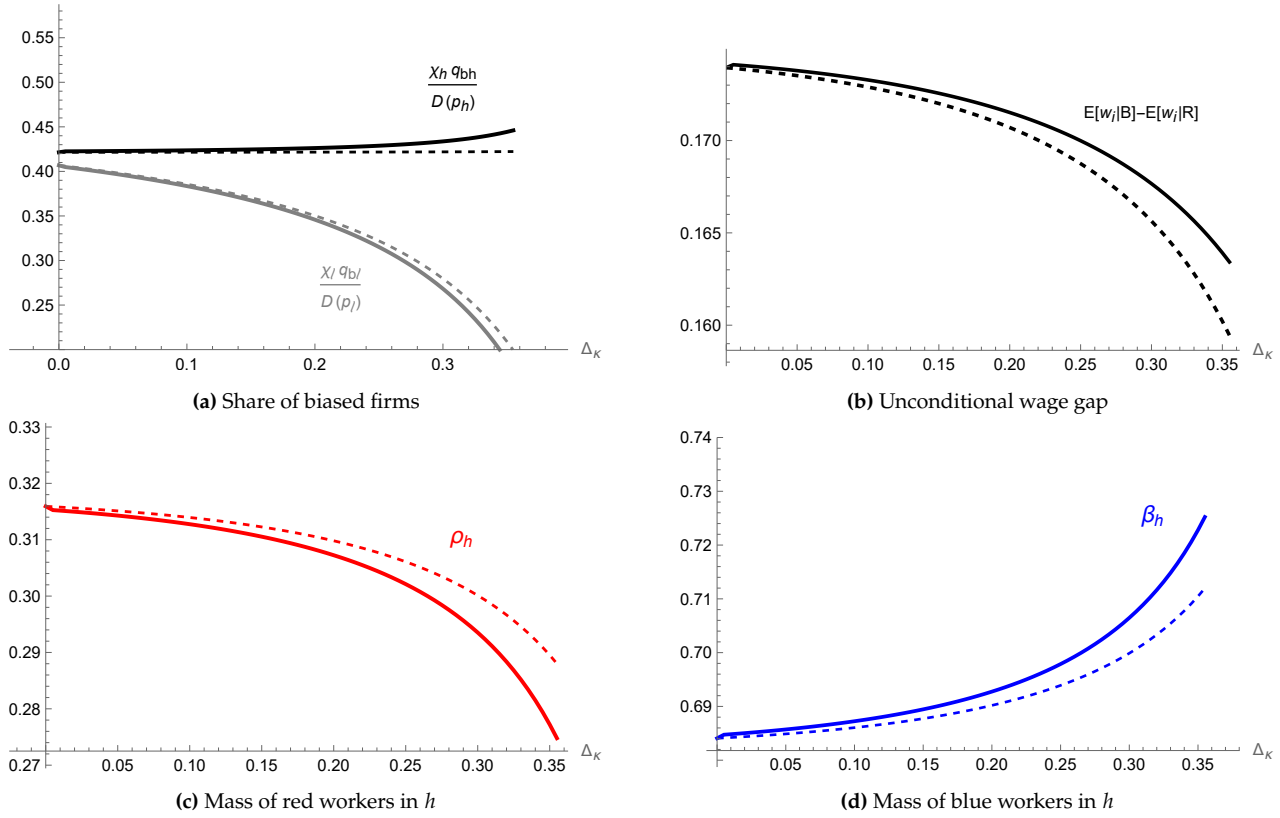
A simple way to incorporate gender norms into our framework is to assume that the game described in Section 2.1 is played over two consecutive periods $t \in \{1, 2\}$. The economy remains the same in each period, except that the proportion of biased firms in $t = 2$ depends on the compositional effects of changes in the economic environment at $t = 1$.

Formally, we assume:

$$\chi_s' = \max\{\chi_s + \gamma(d\beta_s - d\rho_s), 0\}, \tag{7}$$

where the prime denotes equilibrium outcomes in period $t = 2$, and $d\beta_s$ and $d\rho_s$ represent the equilibrium effect of a change in parameters on the first-period outcomes $\beta_s$ and $\rho_s$.

The parameter $\gamma > 0$ captures how discrimination depends on the relative composition of the workforce in each sector. If sector $s$ becomes more blue-dominated after a shock in $t = 1$ (i.e., if $d\beta_s > d\rho_s$), more firms in the sector become biased in $t = 2$. The interpretation is




**(a)** Share of biased firms

**(b)** Unconditional wage gap

**(c)** Mass of red workers in $h$

**(d)** Mass of blue workers in $h$

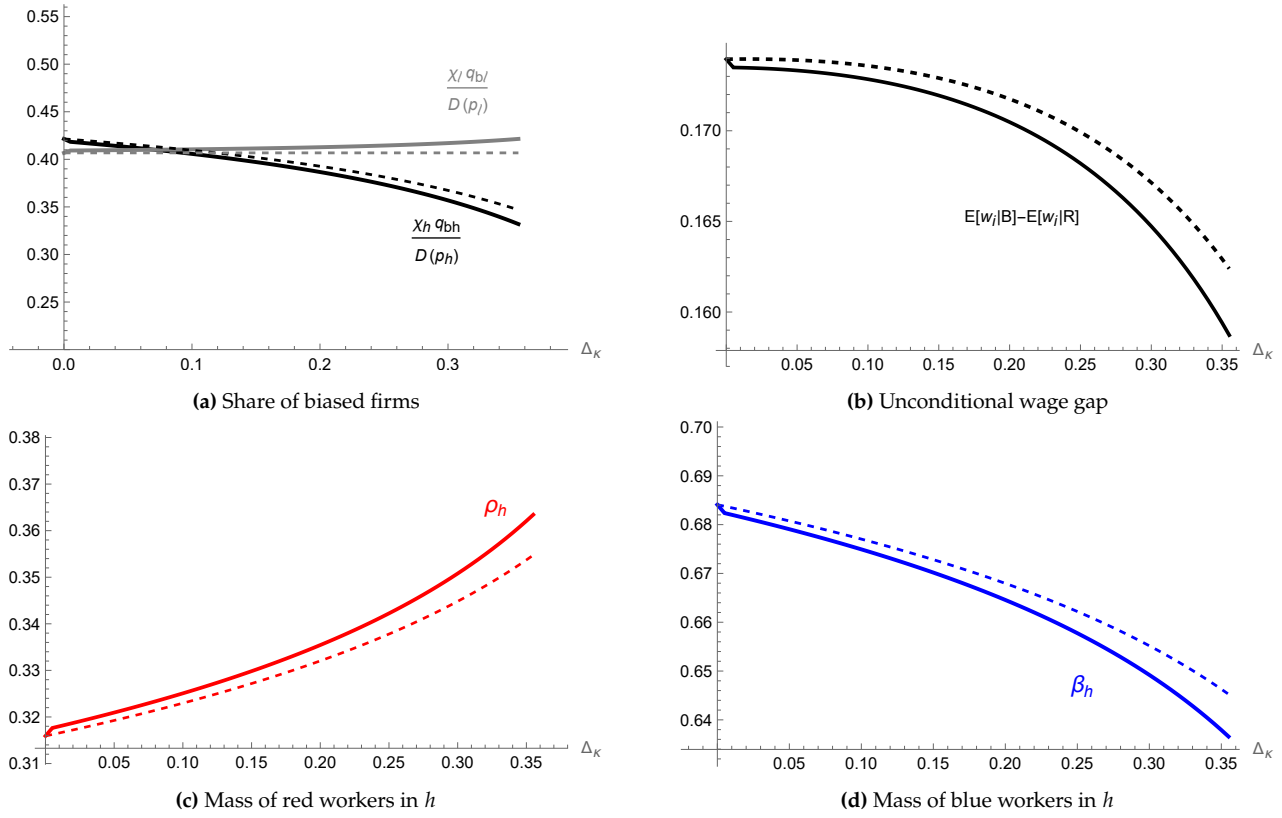
**Figure 1. (Closing the Gap from the Bottom.)** This figure plots some of the equilibrium outcomes against $\Delta_\kappa$, where $\kappa_\ell = 0.5 - \Delta_\kappa$. Solid lines represent second-period outcomes, and dashed lines represent first-period outcomes. In Panel (a), black lines correspond to sector $h$, and gray lines to sector $\ell$. The parameter values are: $\kappa_h = 0.7$, $D(p_s) = 1 - 0.1 * p_s$, $\alpha = 0.3$, $\overline{u} = 1$, $m = 2$, $\chi_h = \chi_\ell = 0.5$, $\gamma = 10$.

that the preference for blue workers becomes more common as the sector becomes more blue-dominated, as both taste-based discrimination against reds and the non-wage (dis)amenities (e.g., long hours limiting flexibility) that favor blues become more common within the sector.

Firms and workers re-optimize in each period, with the only parameters differing across periods being $\chi_h$ and $\chi_\ell$. Given these values, the equilibrium remains the same as that described in the previous section. However, the comparative statics with the respect to the model's parameters are now richer, as the fraction of biased firms $\chi'_s$ depends on the sorting of blues and reds in sector $s$ in the first period, which, as previously discussed, responds to changes in the parameters.

Figure 1 illustrates how the equilibrium changes as capital becomes cheaper, intensifying competition in sector $\ell$. We plot the equilibrium outcomes for each period against the drop in $\kappa_\ell$, denoted by $\Delta_\kappa$. The dashed lines represent the first-period outcomes (where only $\kappa_\ell$ changes), and the solid lines describe the second-period outcomes (where $\chi_h$ and $\chi_\ell$ also change to $\chi'_h$ and $\chi'_\ell$).

As $\Delta_\kappa$ increases, competition intensifies in sector $\ell$, leading biased firms to significantly




**(a)** Share of biased firms

**(b)** Unconditional wage gap

**(c)** Mass of red workers in $h$

**(d)** Mass of blue workers in $h$

**Figure 2. (Closing the Gap from the Top.)** This figure plots some of the equilibrium outcomes against $\Delta_\kappa$, where $\kappa_h = 0.7 - \Delta_\kappa$. Solid lines represent second-period outcomes, and dashed lines represent first-period outcomes. In Panel (a), black lines correspond to sector $h$, and gray lines to sector $\ell$. The other parameter values are the same as in Figure 1.

reduce their production. The unconditional difference in expected wages, $\mathbb{E}[w_i|B] - \mathbb{E}[w_i|R]$ (i.e., before $c_i$ is realized and worker $i$ chooses a sector to enter), decreases, as far fewer blue workers in $\ell$ receive a wage premium. However, the convergence in expected wages provides only a partial view of the equilibrium effects. Since landing a job at a biased firm in $\ell$ becomes more difficult, blue workers become increasingly more likely to seek employment in sector $h$. The inflow of blue workers into $h$ crowds out the marginal red workers in that sector, since it leads to a drop in the unbiased wage $w_h$. As a result, red workers are unambiguously worse off: fewer of them enter the higher-paying sector, and those who remain receive lower wages. The second-period outcomes reflect the reinforcing of gender norms: the first-period increase in the sectoral gap is such that $\chi'_h > \chi_h$, and $\chi'_\ell < \chi_\ell$. These effects further reduce the presence of red workers in sector $h$ in the second period, leaving more of them stuck in low-paying jobs.

## 2.4 Closing the Gap from the Top

Since the existence of biased firms affects the equilibrium, the reinforcing of gender norms we described above can be understood as an (intertemporal) externality, from the marginal workers

who move across sectors in the first period to the broader economy in the second period. For the red workers, who are discriminated against, this externality is negative: the increase in the fraction of biased firms in $h$ attracts even more blue workers to enter this sector at time $t = 2$, further compressing the unbiased wage $w_h$ and pushing more reds out of the high-paying sector.

A natural question is how these results change when the competitive pressure originates at the top of the wage distribution, that is, in the high-paying sector $h$, rather than at the bottom of the wage distribution, that is, in the low-paying sector $\ell$. Proposition 3 describes the sectoral gap implications when the competitive pressure originates in the $h$ sector.

**Proposition 3** (**Closing the gap from the top**). *In the limit where the product market demand is inelastic, when the cost of capital in sector h decreases, fewer blue workers and more red workers enter h in equilibrium, that is, $\beta_h$ decreases and $\rho_h$ increases.*

Similar to Proposition 1, when capital becomes cheaper in $h$, the sector's production is reallocated toward the more efficient, non-biased firms. If the product demand is sufficiently inelastic, the increase in $q_{nh}$ must come at the expense of $q_{bh}$, so biased firms in $h$ produce less and, thus, hire fewer workers as $\kappa_h$ decreases. Blue workers now find $h$ *less* attractive, so more of them seek jobs in $\ell$. Their moving reduces labor supply in $h$, pushing the unbiased wage $w_h$ up. In response to the increase in $w_h$, some red workers leave $\ell$ to seek jobs in $h$.

Figure 2 illustrates how the equilibrium changes when competition intensifies in sector $h$, and the implications for gender norms in the context of the two-period model we introduced in Section 2.3. We plot the equilibrium outcomes for each period against $\Delta_\kappa$, which here denotes the drop in $\kappa_h$. Like before, the dashed lines represent the first-period outcomes (where only $\kappa_h$ changes), and the solid lines describe the second-period outcomes (where both $\chi_h$ and $\chi_\ell$ also change, as specified in Eqn. 7). Since, when $\kappa_h$ decreases, more blue workers move to the low-paying sector and more reds move to the high-paying one, the compositional effects here generate a *positive* externality to the red workers: since $\chi'_h < \chi_h$ in this case, there are fewer biased firms in $h$ at $t = 2$. As a consequence, more blue workers leave and more reds move to $h$ also in that period.

The main insight from this subsection is that when the gender gap narrows at the top of the income distribution (i.e., in high-paying sectors), rather than at the bottom, the sectoral gap closes, and thus gender norms do not intensify or even soften. This contrasts with the case of the gender gap narrowing at the bottom of the distribution (i.e., in low-paying sectors) where, as a consequence, the sectoral gap increases and gender norms accentuate.

## 2.5 From Theory to Empirics

The model has three main empirical implications that we can take to the data.

**Empirical Predictions.** *When competitive pressure intensifies in a given sector:*

*P1. The relative wages of women and men converge within the sector. The convergence is driven mostly by a reduction of expected wages for men, because fewer of them receive a wage premium.*

*P2. Women are more likely to seek or remain in jobs in that sector, while men tend to seek jobs in other sectors that still offer wage premia.*

*P3. The belief that women are more suited to work in that sector, compared to other sectors, is reinforced. When the competitive pressure originates in low-paying sectors, this reinforcement translates into an accentuation of gender norms.*

To test these implications, we need to empirically map two important elements of the model: (1) changes in competitive pressure that vary unevenly across sectors; and (2) a categorization of sectors based on their equitability, since the model predicts that men are more likely to seek jobs in less equitable sectors after the shock.

# 3 Data

Our main data comes from the March Supplement of the Current Population Survey (CPS) for the years 1976–2014.[6] We restrict our sample to working-age full-time full-year workers in the private sector. To ensure that our estimates are not driven by industrial organization changes within the finance industry (Black and Strahan 2001), we exclude individuals working in the Finance, Insurance, and Real Estate (FIRE) industries. Our primary outcome variable of interest is individual hourly wage.[7] The CPS also contains individual demographic information such as race, gender, age, and educational attainment, as well as detailed information on employment, including occupation and industry, and prior-year industry. We use the latter to construct measures of sector-to-sector transitions. The CPS incorporates probability sampling weights for each individual, which indicate their representativeness in the population. We use these sampling weights in all our specifications.

We supplement the CPS data with the Compustat data to evaluate effects at the firm level including borrowing, investment (including tangible assets and R&D spending), and measures

[6] We start the analysis in 1976 because, in the CPS data, states can only be identified separately beginning with the 1977 survey (which covers data from 1976), similar to Beck et al. (2010). In Section 6.3, as a robustness check, we conduct our analysis using an expanded dataset that starts in 1968.

[7] We use the log transformation of this outcome as our dependent variable.

of profitability per employee (to assess efficient use of labor). We also use the GSS data to construct indexes of sexism following Charles, Guryan, and Pan (2018), which are used to evaluate the effects of bank deregulation on changes in gender norms in Section 7.[8]

## 3.1 Summary Statistics

**Employment Summary Statistics.** Appendix Table (B.1.A) presents summary statistics on characteristics of male and female workers across all industries (columns 1–2) and then (in columns 3–6) separately for industries at the bottom and top 25% of the pay gap distribution, as measured in the first five years of our sample (1976–1980). We refer to industries in these categories as low- and high-pay-gap sectors, respectively – we will offer more detail on this categorization in Sections 4.2 and 4.3. Appendix Table (B.2) lists examples of low- and high-pay-gap sectors.

*Hourly wage.* Hourly wages are $5.43 lower for women than for men in high-pay-gap sectors on average, while the difference is only $0.99 in low-pay-gap sectors. This translates into a difference of −33 and −8.5% in hourly wage between women and men in the high- and low-pay-gap sectors, respectively. Overall, women earn $3 dollars (22%) less than men for each hour of work. In Figure (3.A), we present trends in the average (log) wage for low- and high-pay-gap sectors and, in Appendix Figure (B.2.B), we show the difference in median (log) wage between low- and high-pay-gap sectors separated by men and women. At every point in time, the high-pay-gap sectors were also the higher-paying sectors.

*Demographics.* Years of education for women are similar between the high- and low-pay-gap sectors, at around 13.4 years of schooling. Male workers in high-pay-gap sectors have an additional 1.4 years of schooling on average. Age of workers is similar across sectors and across genders, ranging from 39.7 to 40.9 years. Men tend to have 0.6–0.7 more years of experience than women across all industries.

*Labor force participation.* Female labor force participation is visibly higher in low-pay-gap sectors at 41.9%, while high-pay-gap sectors have a higher female participation rate (38.3%) than the average rate (34.9%) in the full sample (which also contains the medium-pay-gap sectors). The differences in female participation between the low- and high-pay-gap sectors are stable over time, as shown in Appendix Figure (B.2.A).

**Firm Summary Statistics.** In Appendix Table (B.1.B), we present summary statistics on characteristics of public firms across all industries (column 1) and in low- and high-pay-gap sectors (column 2 and 3, respectively). Compared to firms in high-pay-gap sectors, those in low-pay-gap sectors have slightly higher assets (a statistically insignificant difference of 3%), more workers,

[8] In Appendix D, we also evaluate women's vulnerability to reversing treatment, using data from the FDIC call reports on mergers.

and higher revenues and income by worker. High-pay-gap sectors have lower book leverage (48 vs. 54%), higher Tobin's Q (1.09 vs. 0.92), and lower levels of tangibility (0.22 vs. 0.55).[9]

Consistent with Proposition 2 in Section 2, low-pay-gap sectors are more reliant on external financing and more capital-intensive than high-pay-gap sectors. In Appendix Table (B.3), we compute debt-to-asset ratios (for secured debt, debt notes, and long-term debts) and leverage by sector. Low-pay-gap sectors are consistently more reliant on debt than high-pay-gap sectors, regardless of the debt instrument: the former industries are twice as likely to use secured debt, debt notes, and long-term debt, and leverage in low-pay-gap sectors is 7.4% higher. Low-pay-gap sectors are also more capital-intensive throughout our estimation period. In Figure (3), we plot total assets, total plant and equipment, and total tangibility per employee by sector. Across all instruments, low-pay-gap sectors exhibit higher capital intensity than high-pay-gap sectors throughout the sample period. The difference in reliance on external financing and capital is important, as we will discuss in Section 5.

# 4 Empirical Methodology

To test the empirical predictions from our model, we evaluate how changes in market conditions that reduce the gender pay gap in one sector alter the sorting of workers across sectors with varying levels of equitability and how this channel, in turn, influences the cross-sectoral dynamics of gender inequities in labor markets. This requires identifying an event that differentially affected the pay gaps across industrial sectors that vary in their (ex-ante) equitability. In particular, two elements from the model require empirical mapping: (1) a change in conditions that affects sectors unevenly, and (2) a categorization of sectors according to their equitability.

We exploit the temporal and spatial variation in U.S. bank deregulation as an exogenous shock and document its uneven penetration across sectors. We categorize industrial sectors according to their presample gender gaps, and show that this categorization is stable, with conceptually similar alternative categorizations yielding consistent results. Below, we first provide a brief background on U.S. bank deregulation, conduct a balance test on the treated and control groups, and present predictions tests showing that the deregulation events do not overlap with state-level major labor regulation and state-level political ideology. This is followed by a discussion of our empirical approach, including the methodology for categorizing industries into sectors according to their preexisting levels of equitability and an evaluation of the validity of our identification strategy.

[9] Asset tangibility is defined as the ratio of tangible assets to total assets.

## 4.1 Intrastate and Interstate Banking Deregulation & Balance Analysis

The events of U.S. bank deregulation during the 1970s–90s are well-documented, starting with Jayaratne and Strahan (1996). There were two major waves of deregulation in the banking industry. The first involved the removal of restrictions on branching within states, which occurred mostly between 1970 and 1994. In line with the literature, we refer to this event as intrastate bank deregulation, or simply branch deregulation. The second event comprised the removal of restrictions on cross-state ownership of banks.[10] Following Maine's lead, all states except Hawaii started allowing the entry of out-of-state bank holding companies through legislative changes between 1978 and 1992. We refer to this event as interstate bank deregulation. Importantly, the timing of intrastate and interstate deregulation differ both across and within states.

Existing work has shown that bank deregulation led to increased competition among lenders and improved efficiency in the banking industry, which facilitated firm borrowing and investment by easing financial constraints (see, e.g., Jayaratne and Strahan 1996; Black and Strahan 2002; Rice and Strahan 2010; Jiang, Levine, Lin, and Wei 2020). Building on this foundation, we exploit the cross-state, cross-time variations in credit availability resulting from banking deregulation to examine the causal effects of the relaxation in credit constraints on cross-sectoral dynamics of the gender pay gap. Before delving into this analysis, we first assess the exogeneity of the timing of deregulation events and confirm that the treatment and control states are balanced in observable characteristics of interest.

**Deregulation in Historical Context.** Viewed from the perspective of 2025, the motivations surrounding banking regulation appear inherently partisan. The response to the financial crisis and the Great Recession was marked by divided debates, especially regarding the extent and scope of regulatory measures.[11] Empirically, highly partisan policies run the risk of overlapping with other highly partisan policies.

Before the Great Recession, however, major banking legislation in the United States often passed with broad bipartisan support. The Riegle-Neal Interstate Banking and Branching Efficiency Act of 1994, which allowed states to enact legislation allowing interstate banking, was passed by a vote of 94–4 in the Senate (the House approved it by a voice vote). The

[10]The Douglas Amendment to the 1956 Bank Holding Company Act effectively prohibited bank holding companies from acquiring banks outside the state(s) where their headquarter(s) resided, unless the state(s) actively permitted such acquisitions.

[11]For instance, the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 – which, among other things, created the Consumer Financial Protection Bureau (CFPB) – passed with 57 Democratic votes but only 3 Republican ones. Conversely, the Economic Growth, Regulatory Relief, and Consumer Protection Act of 2018, which rolled back parts of Dodd-Frank, passed with 50 Republican votes while just 17 Democratic Senators supported the measure.

Bipartisan consensus in banking was not specific to banking deregulation. For example, the Bank Holding Company Act (1970) passed the Senate 77–1, the Competitive Equality Banking Act (1987) passed 96-2, and the Financial Institutions Reform, Recovery, and Enforcement Act (1989) passed 91–8. Other major measures, such as the Federal Deposit Insurance Corporation Improvement Act of 1991 (68–15, with 35 Democrats and 32 Republicans in favor) and the Gramm-Leach-Bliley Act of 1999, (90–8), further underscore this pattern. In general, bipartisan consensus on regulating financial institutions and ensuring a stable and competitive banking environment was once the norm.

If major banking deregulation reforms received bipartisan support, why were banks historically so heavily regulated in the U.S.? In the case of branch deregulation, banks were state-charted, which allowed states to generate substantial revenue through the issuance of charters (Kroszner and Strahan 2014; Sylla, Legler, and Wallis 1987). More broadly, bank regulation was shaped by deep-rooted historical attitudes towards banks in the U.S. Early banks, including the First and Second Bank of the United States, were widely perceived as elitist and unaccountable, including by U.S. Presidents, fueling public distrust. Banks were often blamed for economic crises, such as the Panic of 1837, which led to widespread unemployment and bankruptcies. In the late nineteenth century, populist movements further amplified anti-banking sentiment, portraying banks as exploitative entities that imposed high interest rates and engaged in unfair lending practices. These historical perceptions against banks and the banking system prompted calls for regulatory measures aimed at curbing their power.[12] However, following the Great Depression, the views on what is effective bank regulation changed drastically, laying the foundation for changes over the decades to come.

**Balance.** Jayaratne and Strahan (1996) and Kroszner and Strahan (1999) provide detailed analyses of the potential political and economic factors influencing the timing of the deregulation events. They point out that the timing was unlikely to be driven by shifts in political control of state governments, concurrent grow-oriented policies, or technological changes that might have spurred future growth. Moreover, the timing of intrastate and interstate deregulation differed both across and within states; leveraging these differences in parallel helps mitigate concerns that concurrent policy changes could contaminate the empirical analysis.

To address these concerns further, we test whether the timing of deregulation may have been related to changes in firms, workers, or labor markets of interest. To that end, we study differences in the characteristics of firms (tangibility, riskiness, Tobins' Q, leverage), male and female workers (hours worked, education, experience), and labor markets (workers' age, share engaged in routine/nonroutine manual or cognitive work, and the share of Black or female

[12]For a broader review, see, for example, Klebaner (2005); Eichengreen (2018).

workers) between states about to undergo bank deregulation (treatment group) and states where deregulation legislation had not passed and would not pass in the following year (control group).

Appendix Figure (C.3) Panel A illustrates these differences for intrastate deregulation, and Panel B illustrates those for interstate deregulation. Most characteristics between the two groups of states are not statistically different at the five percent level, with differences that are economically small in magnitude and precisely estimated. We also show in Appendix Figure (C.4) that differences in average yearly trends of these characteristics are not different across both groups of states.

The characteristic that varies the most between both groups of states is the percentage of the workforce that is Black. States deregulating intrastate branching have, on average, 0.6% more Black workers than the non-deregulating states (with the average workforce share of Black workers in deregulating states at 6%), while states deregulating interstate branching have 0.006% fewer Black workers (with average workforce share of 7.5%). However, both estimates are highly imprecise. Similarly, the workforce share of nonroutine manual workers shows marginal difference between deregulating and non-deregulating states. For intrastate deregulation, the difference is 1.5% (with an average share 26.5% in deregulating states), while for interstate deregulation, the difference is 2.1% (with an average share of 26.4% in deregulating states). When we look at trends for each of these factors, there are no differences between treatment and control states.

**Lack of Overlap with Labor Regulation and Political Ideology.** Even after considering the *sui generis* nature of U.S. banking's historical context and the absence of a relationship between firm and worker characteristics and the timing of banking deregulation, concerns about potential overlap between labor regulation and banking deregulation, even if coincidental, may linger. A review of Congressional Hearing Records for the Riegle-Neal Interstate Banking Act reveals no mentions of labor organizations, workers, or unions, nor any references to labor policy, minimum wage, or right-to-work laws. This is, however, anecdotal. A similar concern can be raised about the political ideology of the states in contrast to the historical bipartisanship at the federal level. To address potential confounding effects of labor regulation changes or state-specific political ideology around the time of banking deregulation, we conduct predictive tests. Specifically, we assess whether changes in state minimum wages, right-to-work laws, gubernatorial ideology, and state-level voters' ideology predict the passage of interstate bank deregulation within a five-year window before and after the deregulation event. The results, shown in Appendix Figure (C.5), indicate that these factors do not systematically predict the timing of deregulation.

In summary, banking deregulation has a *sui generis* historical context, was not driven by motivations related to partisan ideologies or labor-market policies, and occurred in labor markets where observable characteristics of firms, workers, and labor markets are largely similar between the treatment and control groups – all of which mitigate concerns about unobservable differences confounding our estimation results.

## 4.2 Empirical Specification & Sectoral Categorization

To estimate the causal effect of uneven changes in competitive pressure on the cross-sector dynamics of the gender pay gap, we employ a generalized difference-in-differences design, exploiting cross-state and cross-year variation in the timing of intrastate and interstate banking deregulation. Specifically, we estimate the differential labor market outcomes for female workers relative to male workers across industrial sectors of varying levels of preexisting equitability in response to banking deregulation.

To proxy for each sector's preexisting equitability, we categorize industries into sectors according to their pay gap levels during the first five years of CPS data (1976–1980), which precedes our estimation sample period.[13] Using the 1990 Census Industry Codes (CIC), we classify industries into high-, medium-, and low-pay-gap sectors based on the distribution of pay gaps in the preperiod. High-pay-gap sectors are defined as those in the top quartile of distribution; low-pay-gap sectors are those in the bottom quartile; the medium-pay-gap sectors are those in between. We discuss the stability of this categorization in Section 4.3.

Let $\Omega = \{High, Medium, Low\}$ denote the high-, medium-, and low-pay-gap sectors, and let $I_j^k$ be a dummy variable indicating whether industry $j$ belongs to classification $k \in \Omega$. Our primary empirical specification is as follows:

$$\begin{aligned} Y_{ijst} \quad = \quad & \alpha + \sum_{k\in\Omega} \beta_k D_{st} \times I_j^k + \sum_{k\in\Omega} \gamma_k D_{st} \times I_j^k \times F_i + \sum_{k\in\Omega} \delta_k I_j^k \times F_i \\ & + \sum_{k\in\Omega} \zeta_k I_j^k + \pi X_{ijst} + \mu_{s,t,female} + \epsilon_{ijst}, \end{aligned} \tag{8}$$

where $D_{st}$ is a dummy variable denoting whether deregulation has taken place in state $s$ and relative time $t$, $F_i$ indicates whether individual $i$ is female, $X_{ijst}$ is a vector of demographic controls including Mincerian traits (education, experience, and experience squared) × gender. $\mu_{s,t,female}$ are state-time-gender fixed effects. To account for gender differences across the life-cycle and effects by race, we also include specifications with age × gender, race × gender, and marital status × gender interactions as controls. The single order $F_i$ term is absorbed by the fixed effects.

[13] The estimation sample spans the years 1981 to 2014. The choice of the preperiod is driven by both data limitations and the importance of the 1980s for understanding the evolution of the pay gap (Blau and Kahn 1997).

A substantial body of research has highlighted the potential for TWFE estimators to be biased in staggered-DID settings (e.g., Sun and Abraham 2020; Goodman-Bacon 2021; Callaway and Sant'Anna 2021). Bias in TWFE occurs due to time-varying treatment heterogeneity or effects that strengthen over time since treatment. We address this concern in three different ways. First, we provide event studies of our main results following the bias-robust estimator proposed by Callaway and Sant'Anna (2021), which only requires the assumption of post-treatment parallel trends. Second, we provide additional results where we saturate Eqn. (8) with state-time-gender fixed effects. This specification retains the efficiency of TWFE, but since it uses relative time, it maps into the canonical DiD setting where variation is provided at the female $\times$ sector classification level, and thus assuage concerns about negatively (or unintuitively) weighting events in the estimation (Goodman-Bacon 2021). This saturated specification is valuable, as it allows us to provide an extensive set of robustness specifications assessing the importance of many sensible covariates. Third, we also provide evidence that potential deviations from treatment homogeneity are not likely to be significant for this analysis, by showing that alternative treatments with different implementation timings provide extremely similar results along a wide variety of analyses and specifications. For transparency purposes, we provide TWFE estimates in the first column of all of our tables, but we emphasize that is not our primary empirical specification, and that it is included for completeness.

## 4.3 Stability of Categorization of Industries into Sectors

Our empirical analysis embeds the assumption that the rank of sectors by equitability is stable prior to 1980. We conduct four tests to assess the stability of the equitability categorization. First, because legislative changes leading to interstate deregulation took place after our categorization period (1976–1980) for all states except Maine (which occurred in 1978), we repeat our interstate deregulation analysis excluding Maine and find that our industry categorization remains stable (see Appendix E). Second, we note that intrastate deregulation occurred before our categorization period in 17 states, raising the concern that our industry categorization is contaminated by intrastate deregulation. To address this, we conduct our intrastate deregulation analysis excluding these 17 states. We show that our categorization of industry equitability is not sensitive to this exclusion, confirming that the categorization is not driven by the treatment (see Appendix E). Third, we show that alternative categorization methods, including categorizing using the 1968–1972 CPS data, yield the same results (see Appendix H). Fourth, in all subsequent analyses, we present results using both interstate and intrastate bank deregulation and show that the estimates are nearly identical.

### 4.4 Validation of Parallel Trends

A key assumption underlying our estimation is that of parallel trends between the treated and control groups. We assess the validity of this assumption in two ways. First, we examine differences in pre-period trends between the treatment and control groups. Appendix Figure (C.4) illustrates the differences in average yearly trends of a wide range of characteristics between states that are about to undergo bank deregulation and states where deregulation legislation had not passed and would not pass in the following year. Panel A shows the estimates for intrastate deregulation, and Panel B for interstate deregulation. All average trends between the two groups are not statistically different at the five percent level. The differences are economically small in magnitude and precisely estimated, including the differences in workforce shares of Black workers and the differences in workforce shares of nonroutine manual workers. This evidence supports the parallel trends assumption.

We further assess the parallel trends assumption by observing the behavior of outcomes of interest around deregulation years in an event study. In Figures (4) and (5), we show that "first-stage" effects on borrowing and subsequent wage changes in low-pay-gap sectors occurred immediately after deregulation, with no pretrend. In the subsequent section, we conduct similar event studies for all the other outcomes and show that there are no pretrends. In addition, in Figure (6), we plot the difference between the raw fraction of workers in high- and low-pay-gap sectors by gender 10 years before and 10 years after intrastate deregulation. The fractional difference is computed by assigning $-1$ to workers in low-pay-gap sectors, 1 to workers in high-pay-gap sectors, and 0 otherwise, and then taking the average of the indicators by gender in each period, using CPS data. The plot shows that labor participation changed sharply across sectors after the passage of deregulation, with no evidence of leading trends. We further validate these patterns in event studies that evaluate relative female participation. As shown in Figure (7), there are no signs of pretrends.

## 5 First Stage Results: Uneven Competitive Pressure Across Sectors

### 5.1 Cross-Sectoral Differences in Borrowing

To establish that bank deregulation exerts uneven competitive pressure across sectors, we document a new stylized fact on the relationship between asset tangibility and the gender pay gap: High-pay-gap sectors tend to have less tangible assets, and vice versa for low-pay-gap sectors. This is consistent with Proposition 2 of our framework in Section 2. The tangibility of

assets affects firm borrowing and, thus, the intensity of treatment.[14]

In Figure (3.B), we plot asset tangibility per employee for the low-pay-gap and high-pay-gap sectors. Low-pay-gap sectors tend to have a significantly higher share of tangible assets, while high-pay-gap sectors have a higher share of intangible assets. We also observe that high-pay-gap sectors are relatively less capital intensive, having fewer physical assets and fewer total assets on a per-worker basis (Panel C and D of Figure 3).

Given the differences in pledgeability between tangible and intangible assets, bank deregulation could lead to differential firm borrowing behavior between high-asset-tangibility and low-asset-tangibility industries. While bank deregulation increases access to credit in general, it should have a greater effect on borrowing in sectors with more tangible assets (that is, those with a lower pay gap), as the higher pledgeability of tangible assets enhances borrowing capacity. By contrast, borrowing in sectors with more intangible assets (that is, those with a higher pay gap) may not be affected as much, as intangible assets are harder to post as collateral.

We verify whether banking deregulation differentially affected firm borrowing between the low-pay-gap and high-pay-gap sectors by examining the effects on firm overall debt growth and long-term debt growth. Table (1) shows the results on the effects of bank deregulation on firm borrowing changes for sectors that had higher or lower gender pay gap before the deregulation, as specified in Eqn. (8). Results show that debt and long-term debt increased in low-pay-gap sectors in response to deregulation. Specifically, intrastate deregulation increased overall debt and long-term debt growth by around 5 log points in these sectors. On the other hand, there was no significant growth in debt in high-pay-gap sectors. Figure (4) shows that this differential effect on borrowing took place after deregulation.

## 5.2 Labor Composition Across Low- and High-Pay Gap Sectors

Next, we show that low-pay-gap sectors increase their labor share of workers after deregulation, which we interpret as evidence of increased competitive pressure in those industries.

To examine whether the labor share of workers tilts towards low-pay-gap sectors after deregulation, we plot the difference in labor share between the high-pay-gap and low-pay-gap sectors before and after banking deregulation, as illustrated by the solid black line in Figure (6). High-pay-gap and low-pay-gap sectors are categorized based on whether their pay gap falls in the top and bottom quartile, respectively, of the pay gap distribution from 1976 to 1980. So, by construction, the share of labor in the high-pay-gap and low-pay-gap sectors each makes up 25% of the total labor market at the period of construction. Thus, the difference in labor share between high-pay-gap and low-pay-gap sectors is roughly zero before deregulation, as shown

[14]Tangibility affects firm borrowing because high and low tangibility assets differ in debt capacity. Williamson (1988) and Shleifer and Vishny (1992) stress the importance of asset redeployability, or the asset's potential for alternative uses, for debt capacity.

by the solid black line. In the years after deregulation, the difference in labor share between the high-pay-gap and low-pay-gap sectors turned negative, which indicates a change in labor share towards low-pay-gap sectors and away from high-pay-gap sectors, consistent with more pronounced expansions and competitive pressures in low-pay-gap sectors.

We confirm this is also true at the firm level by running within-firm estimations using Compustat data. Columns (1)–(3) of Table (2) show results from estimations of the differential effects of banking deregulation on firm employment between high-pay-gap and low-pay-gap sectors. Based on the estimates in column (3), employment in low-pay-gap sectors increased by 7 log points (relative to the omitted medium-pay-gap sectors) in response to banking deregulation, controlling for firm and state-time fixed effects and firm controls. These estimates are robust to alternative specifications (columns 1 and 2), and interstate deregulation as treatment.

## 5.3 Firm-level Measures of "Surplus" and Revenue per Worker

Next, we show that revenue per worker declines in low-pay-gap sectors, which we interpret as a proxy for reductions in the excess rents available to share with workers and, thus, in potential premia available to male workers ($\alpha$ in our framework). This is our second piece of evidence in support of deregulation creating more competitive pressure in low-pay-gap sectors.

We test whether banking deregulation differentially affects average revenue per employee between high-pay-gap and low-pay-gap sectors. Results are shown in columns (4)–(6) in Table (2). The estimates in columns (4)–(5) indicate that revenue per employee decreased by 12 log points in low-pay-gap sectors in response to the deregulation, controlling for firm and state-time fixed effects. Importantly, that decline is explained by the inclusion of firm controls, notably for borrowing (i.e. leverage). In contrast, relative revenue per employee increased in high-pay-gap sectors, which face less access to financing.

Revenue per employee proxies for surplus absorbed by all firm stakeholders, including creditors, employees, and the employer itself. We decompose the total surplus into components absorbed by employers, employees, or others, like creditors. We first remove potential surplus absorbed by creditors by dropping non-operating expenses from revenue. This corresponds to testing for the differential effects of banking deregulation on net income + operating expenses per employee between high-pay-gap and low-pay-gap sectors. Net income captures the surplus absorbed by the employers and does not include wages, while operating expense is driven in large part by wages – the surplus absorbed by employees. We then focus on net income solely as the dependent variable, or surplus absorbed exclusively by employers.

Columns (7)–(9) of Table (2) show the results on net income + operating expense per employee, and columns (10)–(12) show those on net income alone. Based on the results in columns (7)–(8), net income + operating expense decreased by around 13 log points in low-

pay-gap sectors in response to banking deregulation, similar to estimates where revenue per employee was the dependent variable. At the same time, columns (10)–(11) show that net income per employee decreased by a lower amount (by around 9 log points). This means that operating expenses, including wages, absorb part of the effects. The differences in outcomes between the two sets of results proxy the change in surplus absorbed by the employees. Taken together, our results show that the net relative loss absorbed by workers in low-pay-gap sectors is around $-4$ log points, which, as we will compare, is on par with the decline in wages we estimate using labor data (Table 3 and Figure 8.B).

# 6 Main Results: Uneven Competitive Pressures and Gender Inequality

In this section, we test the first two empirical predictions of our model: (i) there is a reduction in the pay gap in low-pay-gap sectors, driven by a reduction in the wages of men; and (ii) there is an effect on gender sorting patterns across sectors. We explore the effects on gender norms in Section 7.

## 6.1 Effects on Wages

The most immediate empirical prediction of our framework is that, when competitive pressure intensifies, the relative wages of women and men should converge, driven mainly by a reduction in the wages of men. Figure (5) presents event study results directly showing the dynamics of wages in low-pay-gap sectors after deregulation. Consistent with this, women's wages in low-pay-gap sectors do not change after deregulation (Panel A), while men's wages decline (Panel B), which leads to a closing of the pay gap in low-pay-gap sectors (Panel C). These event studies follow heterogeneity-robust DiD methods (Callaway and Sant'Anna 2021) to account for negative weighting issues discussed in the empirical methodology section (Section 4).

We expand on these results in Table (3), where we present the estimation results on the differential effects of banking deregulation on wages by gender in the low-pay-gap and high-pay-gap sectors based on Eqn. (8) accounting for a range of major potential confounders. Columns (1)–(5) show results using intrastate deregulation as treatment, while columns (6)–(10) show results using interstate deregulation as treatment. All specifications control for Mincerian traits (education, experience, experience squared) $\times$ gender fixed effects to account for gender differences in education and experience. We also account for gender differences across years and across states. In columns (1) and (6), we present TWFE estimates – using year $\times$ gender and state $\times$ gender fixed effects – which are efficient under treatment effect homogeneity, but have the potential to exhibit negative weighting issues if this assumption is violated. Columns (2)–(5)

and (7)–(10) use, instead, an intermediate approach where we use state × event time × gender fixed effects, which absorbs treatment at the gender level, approximating a standard DiD where variation takes place at the cross-sector level. Columns (2) and (7) show our baseline estimates with state × event time × gender fixed effects. Columns (3) and (8) additionally control for age-gender fixed effects to account for gender differences in the workplace across the life cycle. Columns (4) and (9) control for gender differences in the skill content of jobs.[15] Columns (5) and (10) add demographic × gender controls.

All our tests show a closure of the gender gap in low-pay-gap sectors that is driven by a reduction in men's wages. That reduction is between 4 and 5% in all specifications but columns (4) and (9), and it is consistent with the reductions in firm surplus we documented in Section 5.3. This means that gender differences along the life cycle or demographic characteristics are not driving this effect. Columns (4) and (9), which control for gender differences in the skill contents of jobs, do show smaller effects, but these effects still account for between 62 and 74% of the baseline effect and are both economically and statistically significant. And while we cannot fully evaluate the reduction of men's wages using a state × event time × gender specification, both heterogeneity-robust Figure (5), as well as the TWFE Columns (1) and (6), show that this reduction in the gender gap is driven by men's wages declining. This result is general: In Figure (8), we show these results are also robust to alternative industrial categorizations, each of which we discuss in more detail in Section 6.3.

In addition to results showing a closure of the gender gap in low-pay-gap sectors, all columns in Table (3) show an increase in the absolute wages in high-pay-gap sectors. In our model, wage increases in the high-pay-gap sector occur when deregulation improves access to credit in high-pay-gap sectors but significantly less so than in low-pay-gap sectors. This is driven by increases in labor demand outpacing gains in labor supply in high-pay-gap sectors. In Appendix A.4, we show simulations of the model consistent with these findings.

These differential effects in pay by gender accrue to pre-banking deregulation wage differentials between low- and high-pay-gap sectors by gender. Before banking deregulation, the average pay for men is 21% higher in high-pay-gap than in low-pay-gap sectors, controlling for education and experience. The corresponding difference for women is only 7%. A similar stylized fact is observed in Figure (B.2.B). When we incorporate the effects of bank deregulation, the difference in wages between high-pay-gap and low-pay-gap sectors amplifies to 29% for men and 11% for women.

**Reversability of treatment.** How symmetric are these effects? In Figure (8) and Appendix Section D, we also show that results are robust to a "reverse treatment." Using data from the

[15] Skill content of a job follows the routine/nonroutine, cognitive/manual classification used in Autor, Levy, and Murnane (2003).

FDIC call reports on bank mergers, we show that bank mergers, shown in the literature to reduce access to credit (Nguyen 2019), lead to a reemergence of the gender gap similar in size to the reduction we have documented in this section (Appendix Table D.4). The fact that these effects on the gender gap are symmetric highlights the potential fragility of pay convergence.

**Hours Worked.** In Appendix Table (F.7), we show results on the differential effects of banking deregulation on weekly hours worked by gender in the low-pay-gap and high-pay-gap sectors based on Eqn. (8). In terms of hours worked, low-pay-gap sectors are more time-intensive than high-pay-gap sectors. Before deregulation, women in low-pay-gap sectors worked about two hours less than men in low-pay-gap sectors but about the same as men in high-pay-gap sectors. Driven by a reduction in weekly hours for men, the gap in hours worked between men and women in low-pay-gap sectors decreases by about an hour per week. These results mirror the effects that deregulation has on wages.

## 6.2 Gender Sorting

The ensuing empirical prediction of our framework is that sectoral choices for men and women would diverge following these wage changes. To explore whether there is differential sorting by gender, we first examine the raw data averages in labor share in both high-pay-gap and low-pay-gap sectors for women and men before and after banking deregulation, as illustrated by the dotted red and blue lines, respectively, in Figure (6). The data shows that there was a sharp transition from high-pay-gap to low-pay-gap sectors for women in the years after deregulation. While some men also transitioned towards low-pay-gap sectors immediately after deregulation, the extent of the transition is more muted.

We first formally evaluate these patterns with event studies (Figure 7) tracking (i) gender differences in the likelihood of transitioning out of low-pay-gap sectors; and (ii) the fraction of all women that work in low-pay-gap sectors, following Callaway and Sant'Anna (2021). Using CPS information on an individual's prior-year and current-year industries, we measure sector-to-sector transitions using a dummy variable that takes the value 1 for individuals who moved from a low-pay-gap to a high-pay-gap sector during the previous year, and 0 otherwise. These event studies show that women become significantly less likely to transition into a high-pay-gap sector immediately following deregulation (Panel A) and that, unsurprisingly, women in low-pay-gap sectors as a percentage of total female labor participation increases (Panel B).

We further inquire about the gender sector dynamics by directly looking at the sectoral choice of workers that switch industries (Table 4) and the sectoral choice of new entrants into the labor force (Table 5). In Table (4), we identify individuals that have changed industries since their last year of work. We then estimate a version of Eqn. (8) where we compare

the sectoral choices of switchers against non-switchers. Columns (1)–(5) show results using intrastate deregulation as treatment, while columns (6)–(10) show those where the treatment is given by interstate deregulation. As before, we present TWFE estimates in columns (1) and (6). Our main estimates using state × event time × gender specifications are presented in columns (2)–(5) and (7)–(10). Columns (3) and (8) additionally control for Mincerian traits × gender controls. Columns (4) and (9) add age-gender fixed effects to account for gender differences in the workplace across the life cycle. Columns (5) and (10) account for gender differences in the skill content of jobs. The results across all specifications show that men switching industries are more likely to move into a high-pay-gap job by between 3.1 and 5.5 percentage points. While men switching jobs are more likely to move into a high-pay-gap job following deregulation, compared to men, women are less likely to move into high-pay-gap jobs by around 60% across all specifications. While estimates for intrastate deregulation are only marginally significant, estimates using interstate deregulation are statistically significant at the 5% level, and all estimates yield a similar ratio of women to men choosing a high-pay-gap job when switching industries.

New entrants display a similar pattern (Table 5). When comparing the effects of deregulation on sectoral choice for new entrants *vis-à-vis* older labor cohorts, men are significantly more likely to choose high-pay-gap jobs following deregulation across all specifications. In contrast, choice of high-pay-gap jobs is lower for women. Estimates for entry, however, do exhibit wide range: for intrastate deregulation, effects are statistically insignificant and in the order of 27 to 37% smaller than effects for men; for interstate deregulation, effects are statistically significant at the 1% level and quite large, in the order of 60 to 153% lower than effects for men.

## 6.3 Alternative Mechanisms and Categorizations

We conduct robustness analyses intended to evaluate: (a) potential alternative mechanisms driving our main results on the effects of banking deregulation on gender pay gap across sectors; and (b) results based on an alternative way of categorizing sectors.

**Alternative Mechanisms.** We analyze whether bank deregulation differentially affected labor participation and sorting across sectors between women and men by impacting household lending. In particular, we examine whether bank deregulation differentially affected labor market participation of a particular gender group by improving its (i) housing outcomes (residential choices allow moving into opportunity), (ii) transportation outcomes (easier commute allows better job prospects), and (iii) self-employment opportunities.

In Appendix Tables (G.8) and (G.9), we evaluate the differential effects of intrastate and interstate deregulation, respectively, on housing and transportation outcomes using the CPS

and Census data. In columns (1), (2), and (3), we evaluate the effect of deregulation on homeownership, likelihood of moving into a different residence, and likelihood of holding a mortgage, respectively. Panels A, B, and C report the results for workers in all industries, low-pay-gap sectors, and high-pay-gap sectors, respectively. The coefficient of interest is $Deregulation \times Female$. For all three housing outcome measures across all three panels, estimates are economically small and statistically indistinguishable from zero, which show that residential choices of female workers are not differentially affected by bank deregulation. In columns (4)–(5), we conduct a similar analysis focusing on car ownership and transportation time to work (in minutes) as measures of work commute. Across all three panels, estimates of the coefficient of interest are economically small and statistically insignificant, which indicates that transportation outcomes were not affected in a gendered way by deregulation. These two sets of results suggest that it is unlikely that differential access to credit between men and women is driving our main results.

In Appendix Table (G.10), we show results on the effects of deregulation on self-employment incorporated rates (columns 1–3), self-employment unincoporated rates (columns 4–6), and incorporation rates conditional on self-employment (columns 7–9). Panel A reports the estimates from intrastate deregulation, and Panel B shows those from interstate deregulation. The coefficient of interest is again $Deregulation \times Female$. In Panel A, we find that the effects of intrastate bank deregulation on self-employment measures by gender are not statistically significant or economically meaningful for any of the measures of self-employment. However, in Panel B, we see that the effects of interstate bank deregulation are statistically significant and larger for workers in low-pay-gap sectors (around 1% increase). Nevertheless, we do not think that the effects of interstate deregulation on self-employed incorporated rates by gender contribute to our main results in Table (3) for two reasons. First, the estimates in Table (3) are nearly identical for intrastate and interstate deregulation. If differential self-employment incorporated were a first-order driver of the main results, the effects on self-employment incorporated of intrastate and interstate deregulation should be similar, but they are not. Moreover, the effects of deregulation on self-employment incorporated are close to zero for intrastate deregulation. Second, the difference in the estimates of interstate bank deregulation on self-employment incorporated by gender between the low-pay-gap and high-pay-gap sectors are small in magnitude. If differential self-employment incorporated were a main driver of the main results, it must be the case that self-employment incorporated affects the main results differently in low-pay-gap and high-pay-gap sectors.

While our results control for gender differences in education and experience, there might be gender differences in unobservable skills that propel changes in sorting after bank deregulation. *Prima facie,* there is indirect evidence challenging part of this conjecture: the initial changes in

sorting patterns and relative wages in low-pay-gap sectors were sharp (Figures 5, 6, and 7), so gender differences in retooling following deregulation are an unlikely driver of this sorting, since investments in skills tend to occur with a time lag. We control for this directly by adding skill content × gender controls to our main specifications, where the skill content of a job follows the routine/nonroutine, cognitive/manual classification used in Autor et al. (2003). The results for both gender sorting and wages remain largely unchanged when we add controls for gender differences in the skill content of a worker's occupation (see columns 4 and 9 of Tables 3 and 7, and columns 5 and 10 of Table 4).

**Alternative Categorizations.** In Section 5, we showed a close relationship between the gender pay gap and a sector's level of asset tangibility. Since we aim to study the transformation of gender inequities, we have decided to, conceptually, focus on divergent sectoral responses to deregulation along their preexisting gender pay gap levels. Nevertheless, it is reasonable to wonder if results would, to some extent, be robust to categorizing industries by their preexisting levels of asset tangibility. To that end, we categorize industries into low and high asset tangibility sectors based on the difference in the mean asset tangibility share in each industry during the pre-period of 1976–1980. The high-asset-tangibility sectors contain industries that belong to the top 25% of the asset tangibility distribution, and the low-asset-tangibility sectors contain those industries in the bottom 25% of the distribution. In Appendix Table (H.11), we show that our main results hold if we categorize industries by asset tangibility.

We also show robustness to categorizing industries by using 1968–1972 as the categorization period instead of 1976–1980. One reason the main analysis in the text starts in 1976 is that states in the CPS data can only be identified separately starting in the 1977 survey. Less precise state identifiers exist, however, for earlier years. Using these imprecise identifiers we can repeat Table (3) using data starting in 1968, which is the earliest year where workers can be classified into full-time full-year status. The results are presented in Appendix Table (H.12) and show there are no meaningful deviations from our main results.

# 7 Downstream Effects: Shaping Gender Norms

Previous work has documented that gender norms may lower women's wages and their labor market participation (Bertrand et al. 2015; Charles et al. 2018) and affect women's career choices (Crawford and MacLeod 1990; Ceci et al. 2009; Bottia et al. 2015; Mertz et al. 2024). Integration of men and women in traditionally male environments can make men's attitudes about women more egalitarian (Dahl, Kotsadam, and Rooth 2021), but only while integration lasts. In contrast, differences in sorting and opportunity cost, real and perceived, could have the opposite effect and create ripe conditions for the creation and reinforcement of gender norms. Workers,

spouses, and observers may interpret the gender differences in pay and sorting – that we document in this paper – through gendered lens and assume biased views (or confirm prior biases) about women and their role in the workplace. For example, they may regard women as less suitable for some jobs, as having a comparative advantage for staying at home, or think that a woman's career should be subordinated to her husband's career. We test for such changes in views using data from the GSS.

## 7.1 Empirical Specification and Variable Measures

Uneven competitive pressure should accentuate gender norms more in locations with a strong presence of both low-pay-gap and high-pay-gap sectors, compared to locations where only one type of sector exists. That is, the gendered dynamics we document should be more pronounced in locations with a bimodal sectoral structure, as such a structure allows more opportunities to switch between low-pay-gap and high-pay-gap sectors.

To test for this, we estimate the following specification using the GSS:

$$Sexism_{irt} = \alpha + \beta_1 Spread_r \times DP_{rt} + \beta_2 DP_{rt} + \delta_r + \gamma_t + \varepsilon_{irt}, \tag{9}$$

where $Sexism$ is a measure of workplace sexism, $Spread$ is a measure of the spread (or the degree of polarization) of available sectoral choices for workers, $DP$ measures the degree of bank deregulation in the region adapted for the geographic design of the GSS, and $\delta_r$ and $\gamma_t$ denote year and region fixed effects, respectively. The coefficient of interest is $\beta_1$. We explain each of these measures below.

**Measure of Workplace Sexism.** Our measure of workplace sexism follows Charles et al. (2018). The GSS asks its respondents about their attitudes on women's role in the workplace, family, and society. We focus on responses to the three questions pertaining to beliefs about the role of women in the workplace: "Should women work?"; "Wife should help husbands career first."; "Better for man to work, women tend home." Respondents either approve/agree or disapprove/disagree with a given statement. For each question, we assign a value of one when the response reflects biased views against women and zero otherwise. To generate a standardized measure of sexism in the workplace, we then subtract, from individual responses to each question, the average response of the entire population in 1977, a pre-treatment period, and divide this difference by the standard deviation of the initial response of the entire population in 1977, following Charles et al. (2018). The standardized measure reflects where each individual belief stands in the spectrum of workplace sexism relative to the pre-treatment average.

**Measure of Sectoral Spread.** As we argued in our theoretical framework, uneven changes in competitive pressure can reinforce gender norms through the gendered labor market dynamics we have documented, that is, the gendered sorting across high- and low-pay-gap sectors they induce. Through this mechanism, the public's views on gender roles should be affected more acutely in areas where the gendered sectoral composition is more pronounced and sorting is most likely to occur. When sectoral composition in an area is characterized by a fifty-fifty split between jobs in low-pay-gap and high-pay-gap sectors, the opportunity to move from one sector to another is at its zenith. By comparison, in areas with only one of these two sectors, the differential opportunity cost is zero, as there is no de facto choice to be made. In short, higher sectoral spread accentuates the dynamics of sorting, and lower sectoral spread mitigates them. We proceed to formalize this notion in a measure that quantifies the degree of sectoral spread within a geographic area.

To construct our sectoral spread, we measure sectoral distance of each industry to the median-pay-gap sector as follows. If an industry belongs to the high-pay-gap sectors, it is assigned a value of 1. If an industry belongs to the low-pay-gap sectors, it is assigned a value of $-1$. Industries between the 25th and 75th percentiles, those in the median-pay-gap sectors, are assigned a value of 0. Because the discrete value assigned to each industry represents its sectoral distance to the median-pay-gap sector, we can express the spread between industries as a composite of distances between any two industries. For any two industries, the longest possible sectoral distance is 2 (i.e., if one industry belongs the low-pay-gap sector and the other to the high-pay-gap sector). The spread is the expected value over all pairwise combinations of workers.

Formally, for every worker in a region, the overall sectoral spread is the average pairwise sectoral distance between the industries of every two workers ($i$ and $i'$) in a given region $r$:

$$Spread_r = \frac{1}{N^2} * \sum_{\forall i,i' \in r}^{N} |x_i - x_{i'}|, \tag{10}$$

where $x_i \in \{-1, 0, 1\}$ is the value of the industry in which worker $i$ belongs, and $N$ is the number of workers in region $r$.

As the spread increases, the margin for gendered dynamics to occur increases, which would lead to an environment more susceptible to the creation and reinforcement of gender norms.

**Measure of Deregulation Penetration.** The GSS public data reports the geographic affiliation of the interviewees only at the region level, where the U.S. is divided into nine different regions. Since bank deregulation changes occur at the state level, we construct a penetration measure for each region-year to capture the proportion of the population affected by the new regulatory framework. That is, our measure of penetration refers to the proportion of individ-

uals in region $r$ affected by bank deregulation in each year $t$. Deregulation Penetration ($DP$) is defined as follows:

$$DP_{rt} = \sum_{s \in r} D_{st} * \frac{pop_{st}}{pop_{rt}}, \tag{11}$$

where $pop_{st}$ denotes the population count living in state $s$ in year $t$, $pop_{rt}$ denotes the total population living in region $r$ in year $t$, and, as before, $D_{st}$ is a dummy variable indicating whether deregulation has taken place in year $t$.

## 7.2 Effects of Deregulation on Gender Norms

We report the results based on Eqn. (9) in Table (6). Following bank deregulation, (a) gender bias increases in areas with a higher degree of sectoral spread between high- and low-pay-gap sectors, and (b) this increase is driven mostly by men and households with children. In column (1), we find that workplace sexism in areas with sectoral spread of 1, or a fully polarized geographical area, increased by 2.71 standard deviations relative to an area with an sectoral spread of 0, or no polarization, based on our index of workplace sexism. For households with children, workplace sexism increased by 3.27 standard deviations for areas with sectoral spread of 1 (column 2). Both estimates are large and statistically significant. For reference, the average sectoral spread in our sample is 0.75. One explanation for the stronger effects among people with children involves differential opportunity costs. As we previously documented, the differences in earnings between high-pay-gap and low-pay-gap sectors are larger for men than for women and increase following deregulation. This means that the opportunity cost of staying at home also increases for men in places with the highest sectoral spread, making households with children more likely to support gendered views about the workplace.

We also run our analysis separately for men and women in columns (3)–(6) and (7)–(10), respectively. In particular, we focus on the responses to individual questions on workplace sexism in the survey in columns (4)–(6) and (8)–(10). We find that responses by men drive the overall effect. Following bank deregulation, men are more likely to hold the view that women should not work, should prioritize their husband's careers, or should stay at home. The coefficients of interest across the three questions on workplace sexism are all large, statistically significant, and similar in magnitude. For women, the results across the three questions are more varied, revealing more complex views about the role of women in the workplace. Based on the results on the overall index of workplace sexism, we find that women's views on gender norms did not exhibit a statistically significant change following deregulation (albeit the coefficient is still positive).

# 8 Conclusion

This paper explored the self-reinforcing mechanism through which reductions in the gender gap in lower-paying sectors amplify other gender inequities. In particular, we showed labor markets restructure through workers' responses to the relative degree of discrimination across sectors in a way that leads to increasing gaps in sectoral representation, typically in the form of lower female representation in higher-paying sectors. We showed both theoretically and empirically how this mechanism takes place. Moreover, we showed that labor market responses to the narrowing of the pay gap can reinforce gender stereotypes against women. Because the same forces that reduce discrimination at the bottom of the pay distribution contribute to its persistence at the top of the earnings distribution, this process forces the closing of the gender gap to occur through women "swimming upstream" while gender norms reinforce the glass ceiling. This is consistent with historical findings documenting convergence in pay at the bottom and center of the wage distribution rather than at the top (Blau and Kahn 1997, 2017).

Our results indicate that the breath of the scope of a policy intervention that targets gender inequality in the labor market might be as important as the policy intervention itself. Broadly mandated and effectively implemented policies would allow less margin for self-reinforcing mechanisms to take place than narrow interventions. The same is true of reductions in discrimination that derive from increases in competition – broad multi-sectoral competition is critical to achieving unmitigated gains in closing the gender gap. When broad interventions are not available or are difficult to implement, an alternative approach is to ensure they target higher paying sectors. While men would still be able to sort into other less-targeted high paying sectors that still confer them with a gendered wage premium, and thus the intervention would be limited on effectiveness, targeting high paying sectors will not trigger the self-reinforcing mechanisms that we document in this paper.

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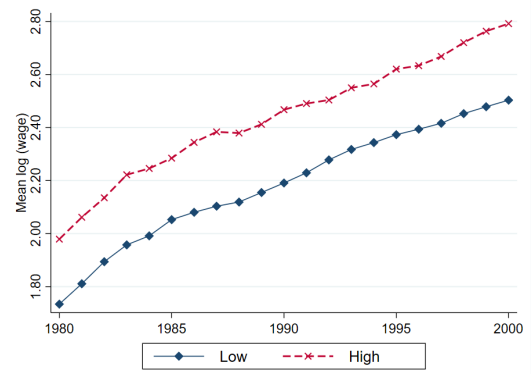
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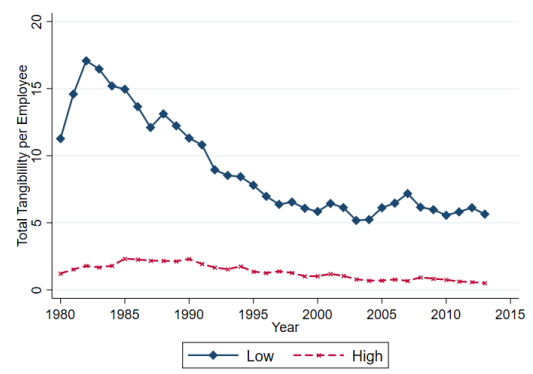
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**Figure 3.** Assets Characteristics for the Low- and High-Pay-Gap Sectors

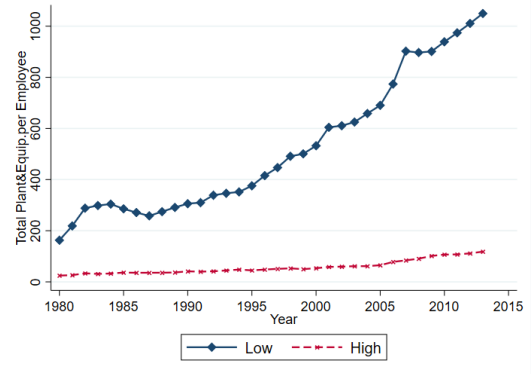
**Panel A:** Average Industry Wage



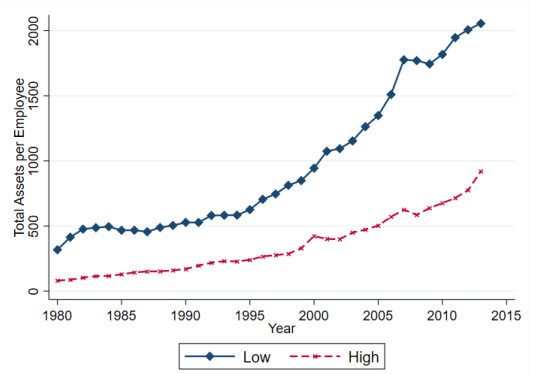

**Panel B:** Asset Tangibility per Employee




**Panel C:** Total Plant and Equipment per Employee



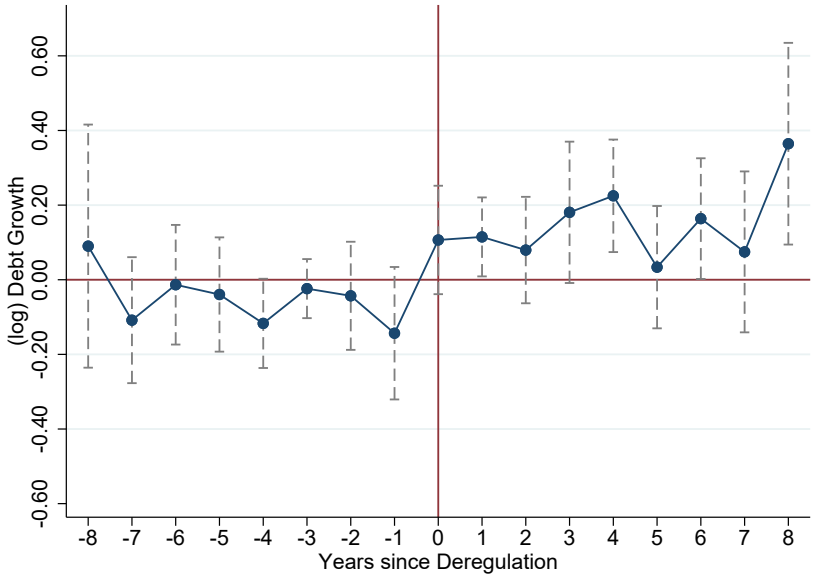

**Panel D:** Total Assets per Employee



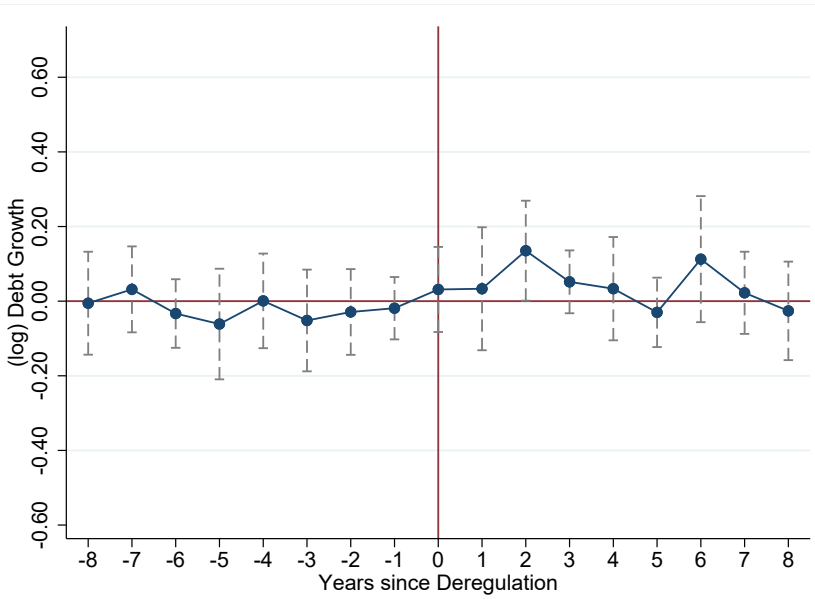

NOTES: This figure plots average wages and three measures of assets for the low-pay-gap and high-pay-gap sectors between 1980 and 2014. Panel A plots the average industry wage for the high and low-pay-gap sectors. Panel B shows total asset tangibility per employee; Panel C shows total plant and equipment per employee; and Panel D shows total assets per employee. Industries are categorized into low-pay-gap and high-pay-gap based on the difference in the mean log wage between male and female employees in each industry during 1976–1980. High-pay-gap sectors are defined as industries that belong to the top 25% of the pay gap distribution, and low-pay-gap sectors refer to those in the bottom 25% of the pay gap distribution.

**Figure 4.** Debt Growth in Low- and High-Pay-Gap Sectors

**Panel A:** Debt Growth – Low-Pay-Gap Sectors



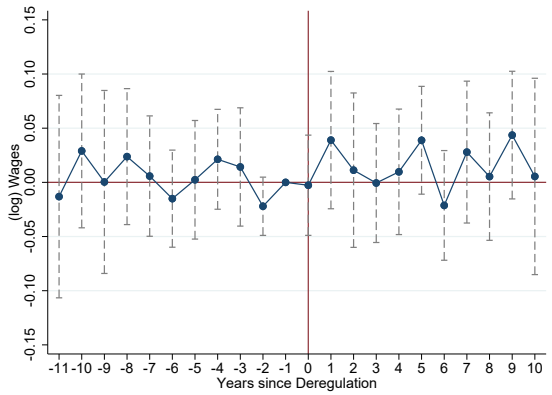

**Panel B:** Debt Growth – High-Pay-Gap Sectors



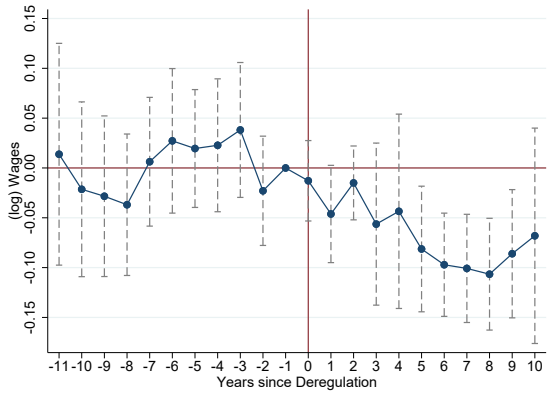

Notes: This figure plots coefficients from an event study version of Eqn. (8) following Callaway and Sant'Anna (2021). Both panels show changes in firm debt growth following deregulation. Panel A shows changes within low-pay-gap sector. Panel B shows changes within high-pay-gap sectors. Industries are categorized into low-pay-gap and high-pay-gap based on the difference in the mean log wage between male and female employees in each industry during 1976–1980. Low-pay-gap sectors refer to those in the bottom 25% of the pay gap distribution.

**Figure 5.** Gender Pay Gap in Low-Pay-Gap Sectors

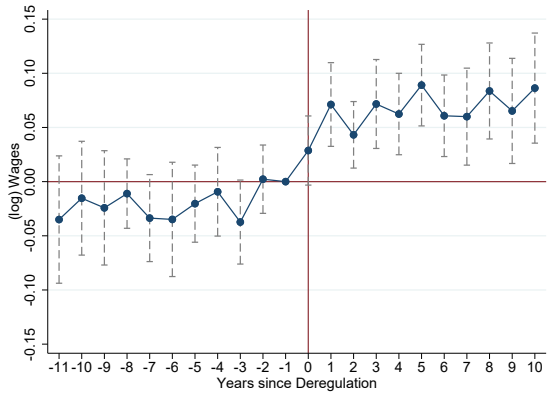
**Panel A:** Absolute Wages – Women




**Panel B:** Absolute Wages – Men

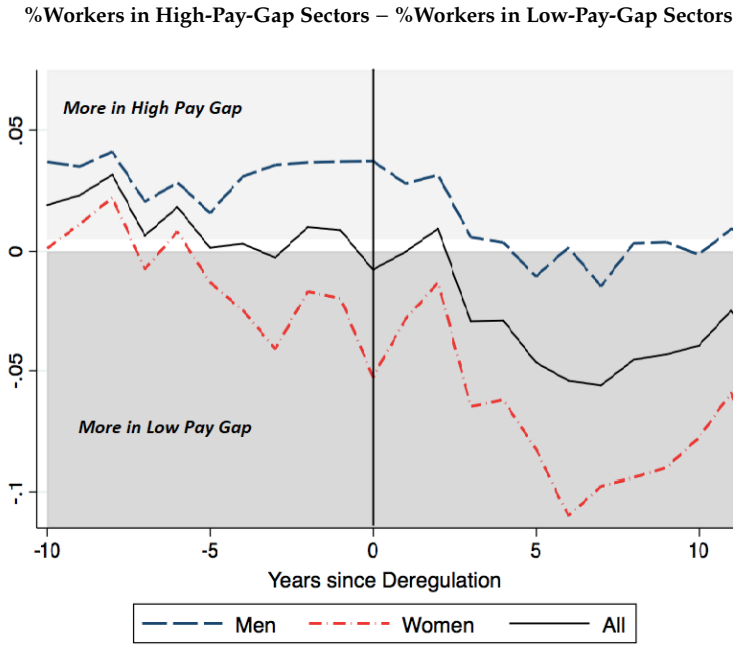



**Panel C:** Relative Wages for Women




Notes: This figure plots coefficients from an event study version of Eqn. (8) following Callaway and Sant'Anna (2021). Panels A and B show changes in the absolute wages of women and men, respectively, within low-pay-gap sectors. Panel C estimates the change in the gap under the null of no changes in women wages. All panels follow Callaway and Sant'Anna (2021). Industries are categorized into low-pay-gap and high-pay-gap based on the difference in the mean log wage between male and female employees in each industry during 1976–1980. Low-pay-gap sectors refer to those in the bottom 25% of the pay gap distribution.

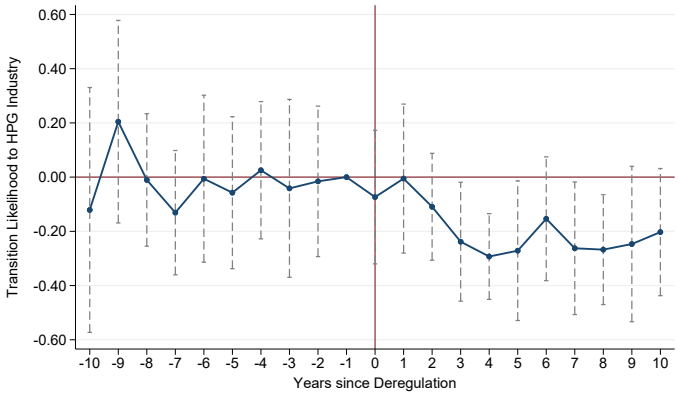
**Figure 6.** Changes in Labor Force Participation in Low and High-Pay-Gap Sectors



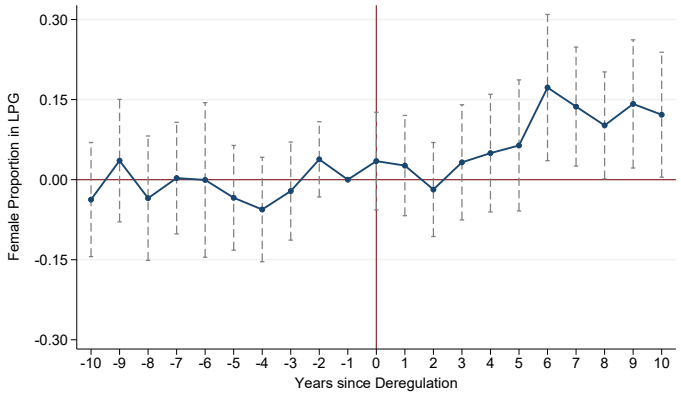

Notes: This figure plots the likelihood of working in the high- and low-pay-gap sectors 10 years before and 10 years after intrastate banking deregulation (deregulation corresponds to $t = 0$), for all workers (black line) and by gender (women in red and men in blue), using raw CPS data. Workers in low-pay-gap sectors are assigned a value of −1; workers in high-pay-gap sectors are assigned a value of 1; and workers in all other industries are assigned a value of 0. The likelihood of working in a particular industry is calculated as the average of the indicators in each period. Values greater than 0 mean higher likelihood of working in high-pay-gap sectors, and values less than 0 mean higher likelihood of working in low-pay-gap sectors. Industries are categorized into low-pay-gap and high-pay-gap based on the difference in the mean log wage between male and female employees in each industry during 1976–1980. High-pay-gap sectors are defined as industries that belong to the top 25% of the pay gap distribution, and low-pay-gap sectors refer to those in the bottom 25% of the pay gap distribution.

**Figure 7.** Changes in Female Participation in Low-Pay-Gap Sectors

**Panel A:** Female − Male Workers Transitions out of LPG into HPG



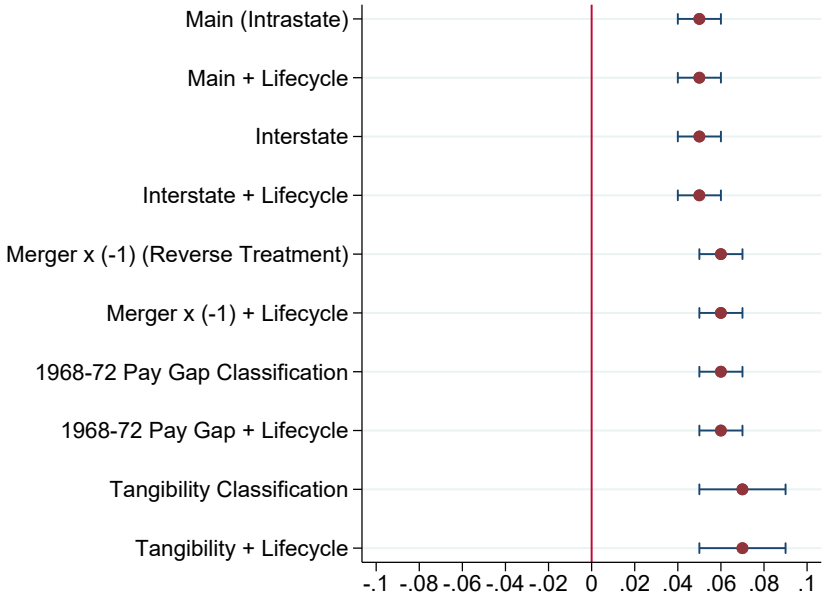

**Panel B:** Women in LPG as % of Total Female Labor Participation



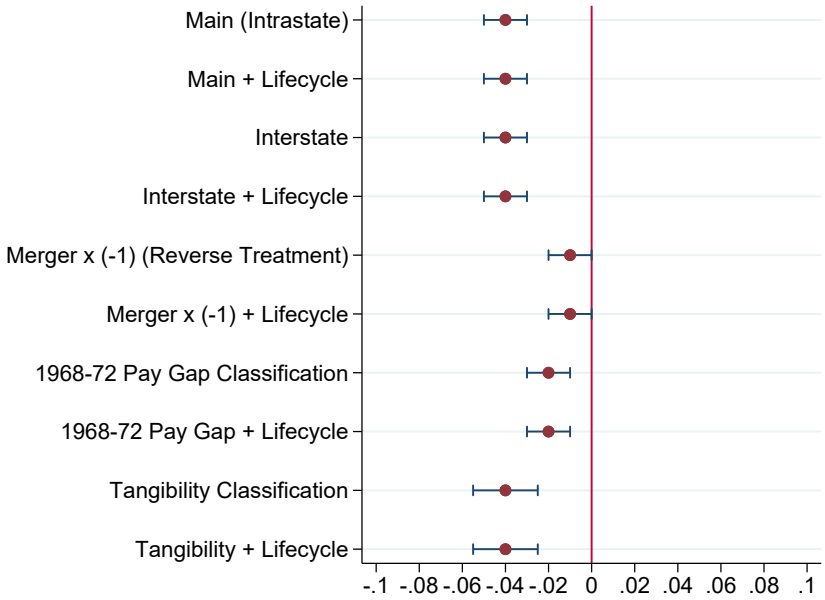

Notes: This figure plots coefficients from an event study version of Eqn. (8) following Callaway and Sant'Anna (2021). Panels A estimates the female − male gap in transitions out of low-pay-gap sectors and into high-pay-gap-industries, with negative coefficients indicating women are less likely to transition than men. Panel B shows changes in the percentage of women that work in low-pay-gap sectors *vis-à-vis* all other industries. Industries are categorized into low-pay-gap and high-pay-gap based on the difference in the mean log wage between male and female employees in each industry during 1976–1980. Low-pay-gap sectors refer to those in the bottom 25% of the pay gap distribution.

**Figure 8.** Wage Changes in Low-Pay-Gap Sectors – Robustness to Multiple Specifications

**Panel A:** Effect of Treatment on Relative Wage for Women in Low-Pay-Gap Sectors




**Panel B:** Effect of Treatment on Absolute Wages in Low-Pay-Gap Sectors




Notes: This figure summarizes coefficients from various versions of Eqn. (8) using different treatments and classifications. All specifications use (log) wage as the dependent variable and includes state fixed effects, year fixed effects, and Mincerian controls. Shown coefficients in Panel A are the interaction of female × treatment in low-pay-gap sectors. Shown coefficients in Panel B are the sum of the coefficient of treatment and treatment × low-pay-gap. Full estimation results for coefficients Main, Main + Lifecycle, Interstate, and Interstate + Lifecycle can be found in columns (1), (2), (6), and (7) of Table 3, respectively. Industries are categorized into low-pay-gap and high-pay-gap based on the difference in the mean log wage between male and female employees in each industry during 1976–1980. Low-pay-gap sectors refer to those in the bottom 25% of the pay gap distribution. For coefficients Merger and Merger + Lifecycle, which present estimates using bank mergers as a reverse treatment, we multiply coefficient estimates by −1 for presentation purposes; full estimation is shown in Table D.4. For coefficients 1968–72 Pay Gap and 1968–72 Pay Gap + Lifecycle, which present estimates using classifying industries at an earlier period, full estimation is shown in Table H.12. For coefficients Tangibility and Tangibility + Lifecycle, which present estimates using classifying industries by the tangibility of their assets rather than by its pay gap, full estimation is shown in Table H.11.

## **Table 1:** Effects of Deregulation on Firm Borrowing

| | Debt Growth | | | Long Term Debt Growth | | |
|---|---|---|---|---|---|---|
| | TWFE | *State* × *Event Time* | | TWFE | *State* × *Event Time* | |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Intrastate – High PG Sector | -0.024 | -0.022 | -0.020 | -0.027 | -0.025 | -0.025 |
| | (0.019) | (0.019) | (0.018) | (0.019) | (0.019) | (0.018) |
| Intrastate – Low PG Sector | 0.064** | 0.053* | 0.047* | 0.067*** | 0.053** | 0.050** |
| | (0.027) | (0.028) | (0.025) | (0.024) | (0.024) | (0.022) |
| Intrastate | 0.041** | | | 0.035 | | |
| | (0.020) | | | (0.021) | | |
| N | 65,379 | 65,330 | 64,283 | 65,432 | 65,383 | 64,317 |
| Interstate – High PG Sector | -0.031** | -0.018 | -0.017 | -0.040** | -0.025 | -0.023 |
| | (0.014) | (0.016) | (0.017) | (0.017) | (0.018) | (0.018) |
| Interstate – Low PG Sector | 0.012 | 0.015 | 0.006 | 0.010 | 0.004 | -0.001 |
| | (0.021) | (0.018) | (0.017) | (0.027) | (0.022) | (0.021) |
| Interstate | 0.053*** | | | 0.063** | | |
| | (0.019) | | | (0.028) | | |
| N | 65,379 | 65,330 | 64,283 | 65,432 | 65,383 | 64,317 |
| Year | Yes | N/A | N/A | Yes | N/A | N/A |
| State | Yes | N/A | N/A | Yes | N/A | N/A |
| State × Event Time | No | Yes | Yes | No | Yes | Yes |
| Firm | Yes | Yes | Yes | Yes | Yes | Yes |
| Firm Controls | No | No | Yes | No | No | Yes |

NOTES: This table reports the estimates of the effects of bank deregulation on firm debt. The dependent variable is debt growth in columns (1)–(3) and long-term debt growth in columns (4)–(6). Intrastate is a dummy variable that takes the value one for the years after intrastate deregulation and 0 otherwise. Interstate is a dummy variable that takes the value one for the years after interstate deregulation and 0 otherwise. Industries are categorized into low-pay-gap and high-pay-gap based on the difference in the mean log wage between male and female employees in each industry during 1976–1980. High-pay-gap sectors refer to industries that belong to the top 25% of the pay gap distribution, and low-pay-gap sectors refer to those in the bottom 25% of the pay gap distribution. High PG is a dummy variable that takes the value one for high-pay-gap sectors and 0 otherwise. Low PG is a dummy variable that takes the value one for low-pay-gap sectors and 0 otherwise. All specifications control for firm fixed effects. Columns (1) and (4) control for state and year fixed effects. Columns (2)–(3) and (5)–(6) control for state×year fixed effects. Columns (3) and (6) include firm controls. Errors are clustered at the state level and reported in parentheses. *,**, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

**Table 2:** Effects of Deregulation on Revenue Per Employee

| | Employment | | | Revenue Per Employee | | | Net Income+Operating Expense Per Employee | | | Net Income Per Employee | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | TWFE | *State × Event Time* | | TWFE | *State × Event Time* | | TWFE | *State × Event Time* | | TWFE | *State × Event Time* | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
| Intrastate – High PG Sector | -0.045 | -0.045 | -0.036 | 0.089*** | 0.086** | 0.122*** | 0.092*** | 0.093*** | 0.124*** | 0.066 | 0.050 | 0.092** |
| | (0.030) | (0.031) | (0.029) | (0.032) | (0.035) | (0.031) | (0.031) | (0.034) | (0.028) | (0.040) | (0.046) | (0.043) |
| Intrastate – Low PG Sector | 0.108*** | 0.082** | 0.073** | -0.122*** | -0.116*** | -0.009 | -0.132*** | -0.125*** | -0.019 | -0.108 | -0.083 | 0.054 |
| | (0.037) | (0.036) | (0.035) | (0.031) | (0.029) | (0.028) | (0.030) | (0.029) | (0.027) | (0.067) | (0.064) | (0.050) |
| Intrastate | 0.042 | | | -0.047* | | | -0.032 | | | -0.014 | | |
| | (0.027) | | | (0.024) | | | (0.022) | | | (0.037) | | |
| N | 70,899 | 70,842 | 69,570 | 70,748 | 70,690 | 69,428 | 69,576 | 69,517 | 68,309 | 52,453 | 52,369 | 51,321 |
| Interstate – High PG Sector | -0.064*** | -0.052** | -0.038 | 0.129*** | 0.116*** | 0.111*** | 0.119*** | 0.111*** | 0.104*** | 0.053** | 0.040 | 0.079** |
| | (0.024) | (0.025) | (0.024) | (0.025) | (0.028) | (0.028) | (0.024) | (0.027) | (0.026) | (0.025) | (0.030) | (0.030) |
| Interstate – Low PG Sector | 0.133*** | 0.105*** | 0.099*** | -0.127*** | -0.109*** | -0.114** | -0.158*** | -0.140** | -0.134** | -0.150** | -0.109 | -0.045 |
| | (0.031) | (0.031) | (0.034) | (0.039) | (0.040) | (0.045) | (0.048) | (0.053) | (0.052) | (0.062) | (0.068) | (0.062) |
| Interstate | 0.010 | | | -0.042* | | | -0.013 | | | 0.026 | | |
| | (0.024) | | | (0.022) | | | (0.026) | | | (0.032) | | |
| N | 70,899 | 70,842 | 69,570 | 70,748 | 70,690 | 69,428 | 69,576 | 69,517 | 68,309 | 52,453 | 52,369 | 51,321 |
| Year | Yes | N/A | N/A | Yes | N/A | N/A | Yes | N/A | N/A | Yes | N/A | N/A |
| State | Yes | N/A | N/A | Yes | N/A | N/A | Yes | N/A | N/A | Yes | N/A | N/A |
| State × Event Time | No | Yes | Yes | No | Yes | Yes | No | Yes | Yes | No | Yes | Yes |
| Firm | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Firm Controls | No | No | Yes | No | No | Yes | No | No | Yes | No | No | Yes |

Notes: This table reports the estimates of the effects of bank deregulation on employment, revenues per employee, and net income per employee by industry at the state level. The dependent variable is log(number of employees) in columns (1)–(3), log(revenue / number of employees) in columns (4)–(6), log([net income + operating expense] / number of employees) in columns (7)–(9), and log(net income / number of employees) in columns (10)–(12). Interstate is a dummy variable that takes the value one for the years after interstate deregulation and 0 otherwise. Industries are categorized into low-pay-gap and high-pay-gap based on the difference in the mean log wage between male and female employees in each industry during 1976–1980. High-pay-gap sectors refer to industries that belong to the top 25% of the pay gap distribution, and low-pay-gap sectors refer to those in the bottom 25% of the pay gap distribution. High PG is a dummy variable that takes the value one for high-pay-gap sectors and 0 otherwise. Low PG is a dummy variable that takes the value one for low-pay-gap sectors and 0 otherwise. All specifications control for firms, state, and year fixed effects. Columns (2), (5), (8), and (11) additionally control for state×year fixed effects. Errors are clustered at the state level and reported in parentheses. *,**, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

**Table 3:** Effects of Bank Deregulation on Gender Pay Gap

| | Intrastate Deregulation | | | | | Interstate Deregulation | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | TWFE | *State × Event Time × Gender* | | | | TWFE | *State × Event Time × Gender* | | | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
| Deregulation × Female – Low PG Sector | 0.050*** | 0.049*** | 0.049*** | 0.031*** | 0.043*** | 0.046*** | 0.046*** | 0.046*** | 0.034*** | 0.040*** |
| | (0.011) | (0.010) | (0.010) | (0.009) | (0.010) | (0.009) | (0.008) | (0.009) | (0.008) | (0.009) |
| Deregulation × Female – High PG Sector | 0.007 | 0.007 | 0.007 | 0.006 | 0.009 | 0.011 | 0.011 | 0.010 | 0.010 | 0.013 |
| | (0.011) | (0.011) | (0.011) | (0.011) | (0.011) | (0.010) | (0.010) | (0.010) | (0.009) | (0.010) |
| Deregulation × Female | -0.017 | | | | | -0.021** | | | | |
| | (0.011) | | | | | (0.009) | | | | |
| Deregulation – Low PG Sector | -0.000 | 0.000 | 0.000 | 0.002 | 0.007 | 0.013* | 0.014** | 0.013* | 0.010 | 0.018*** |
| | (0.012) | (0.011) | (0.011) | (0.010) | (0.011) | (0.007) | (0.007) | (0.007) | (0.006) | (0.007) |
| Deregulation – High PG Sector | 0.083*** | 0.082*** | 0.081*** | 0.063*** | 0.078*** | 0.103*** | 0.102*** | 0.101*** | 0.083*** | 0.097*** |
| | (0.008) | (0.008) | (0.008) | (0.007) | (0.007) | (0.009) | (0.009) | (0.009) | (0.008) | (0.009) |
| Deregulation | -0.038*** | | | | | -0.050*** | | | | |
| | (0.011) | | | | | (0.010) | | | | |
| Female – Low PG Sector | 0.124*** | 0.125*** | 0.125*** | 0.092*** | 0.119*** | 0.129*** | 0.129*** | 0.128*** | 0.090*** | 0.122*** |
| | (0.011) | (0.010) | (0.010) | (0.009) | (0.010) | (0.009) | (0.009) | (0.009) | (0.008) | (0.009) |
| Female – High PG Sector | -0.021* | -0.021* | -0.021* | -0.012 | -0.023** | -0.027*** | -0.026*** | -0.025*** | -0.018** | -0.028*** |
| | (0.011) | (0.010) | (0.010) | (0.010) | (0.011) | (0.010) | (0.009) | (0.009) | (0.008) | (0.009) |
| Low PG Sector | -0.185*** | -0.185*** | -0.184*** | -0.185*** | -0.177*** | -0.195*** | -0.195*** | -0.194*** | -0.191*** | -0.185*** |
| | (0.014) | (0.013) | (0.013) | (0.012) | (0.012) | (0.010) | (0.010) | (0.009) | (0.009) | (0.009) |
| High PG Sector | 0.026*** | 0.027*** | 0.027*** | 0.015** | 0.027*** | 0.018** | 0.018** | 0.018*** | 0.005 | 0.018*** |
| | (0.008) | (0.008) | (0.008) | (0.007) | (0.007) | (0.007) | (0.007) | (0.007) | (0.006) | (0.007) |
| N | 815,650 | 815,650 | 815,650 | 812,716 | 815,650 | 815,650 | 815,650 | 815,650 | 812,716 | 815,650 |
| State × Gender | Yes | N/A | N/A | N/A | N/A | Yes | N/A | N/A | N/A | N/A |
| Year × Gender | Yes | N/A | N/A | N/A | N/A | Yes | N/A | N/A | N/A | N/A |
| State × Event Time × Gender | No | Yes | Yes | Yes | Yes | No | Yes | Yes | Yes | Yes |
| Age × Gender | No | No | Yes | Yes | Yes | No | No | Yes | Yes | Yes |
| Skills × Gender | No | No | No | Yes | No | No | No | No | Yes | No |
| Marital Status × Gender | No | No | No | No | Yes | No | No | No | No | Yes |
| Race × Gender | No | No | No | No | Yes | No | No | No | No | Yes |

Notes: This table reports the difference-in-differences estimates of the effects of bank deregulation on (log) wages. Columns (1)–(5) report the effects of intrastate deregulation as the treatment, and columns (6)–(10) report the effects of interstate deregulation as the treatment. Deregulation is a dummy variable that takes the value one for the years after deregulation and 0 otherwise. Industries are categorized into low-pay-gap and high-pay-gap based on the difference in the mean log wage between male and female employees in each industry during 1976–1980. High-pay-gap sectors refer to industries that belong to the top 25% of the pay gap distribution, and low-pay-gap sectors refer to those in the bottom 25% of the pay gap distribution. High PG is a dummy variable that takes the value one for high-pay-gap sectors and 0 otherwise. Low PG is a dummy variable that takes the value one for low-pay-gap sectors and 0 otherwise. All specifications control for Mincerian traits × gender. Columns (1) and (6) include state × gender and year × gender fixed effects. Columns (2)–(5) and (7)–(10) include state × event time × gender fixed effects. Columns (3) and (8) control for age-gender fixed effects. Columns (4) and (9) account for gender differences in the skill content of jobs. Skill content of a job follows the routine/nonroutine, cognitive/manual classification used in Autor et al. (2003). Columns (5) and (10) add demographic controls × gender. Errors are clustered at the state level and reported in parentheses. *,**, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

**Table 4:** Effects of Deregulation on Switching Sectors

| *Dep. Var.:* $Y = 1(HPG) - 1(LPG)$ | Intrastate Deregulation | | | | | Interstate Deregulation | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | TWFE | *State × Event Time × Gender* | | | | TWFE | *State × Event Time × Gender* | | | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
| Deregulation × Female × Industry Switch | -0.030* | -0.033* | -0.030 | -0.032* | -0.019 | -0.034** | -0.035** | -0.035** | -0.039** | -0.037** |
| | (0.017) | (0.017) | (0.019) | (0.019) | (0.020) | (0.016) | (0.016) | (0.017) | (0.017) | (0.018) |
| Deregulation × Industry Switch | 0.051*** | 0.047*** | 0.048*** | 0.046*** | 0.031** | 0.056*** | 0.050*** | 0.055*** | 0.053*** | 0.050*** |
| | (0.013) | (0.012) | (0.012) | (0.012) | (0.013) | (0.010) | (0.010) | (0.010) | (0.010) | (0.010) |
| Deregulation × Female | 0.005 | | | | | 0.013 | | | | |
| | (0.017) | | | | | (0.015) | | | | |
| Female × Industry Switch | 0.092*** | 0.094*** | 0.090*** | 0.092*** | 0.058*** | 0.095*** | 0.096*** | 0.093*** | 0.097*** | 0.078*** |
| | (0.016) | (0.017) | (0.018) | (0.018) | (0.019) | (0.018) | (0.017) | (0.017) | (0.018) | (0.019) |
| Deregulation | 0.018 | | | | | 0.009 | | | | |
| | (0.013) | | | | | (0.013) | | | | |
| Industry Switch | -0.039*** | -0.035*** | -0.033*** | -0.030** | -0.014 | -0.043*** | -0.037*** | -0.039*** | -0.036*** | -0.035*** |
| | (0.012) | (0.012) | (0.012) | (0.012) | (0.013) | (0.012) | (0.011) | (0.011) | (0.011) | (0.011) |
| N | 998,876 | 998,876 | 998,875 | 998,875 | 994,207 | 998,876 | 998,876 | 998,875 | 998,875 | 994,208 |
| State × Gender | Yes | No | No | No | No | Yes | No | No | No | No |
| Year × Gender | Yes | No | No | No | No | Yes | No | No | No | No |
| State × Event Time × Gender | No | Yes | Yes | Yes | Yes | No | Yes | Yes | Yes | Yes |
| Age × Gender | No | No | No | Yes | Yes | No | No | No | Yes | Yes |
| Mincerian × Gender | No | No | Yes | Yes | Yes | No | No | Yes | Yes | Yes |
| Skills × Gender | No | No | No | No | Yes | No | No | No | No | Yes |

Notes: This table reports the difference-in-differences estimates of the effects of bank deregulation on workers' transitions between low- and high-pay-gap sectors. The dependent variable is a dummy that takes the value one for workers who transition from the low-pay-gap to high-pay-gap sectors or vice versa. Columns (1)–(5) report the effects of intrastate deregulation as the treatment, and columns (6)–(10) report the effects of interstate deregulation as the treatment. Deregulation is a dummy variable that takes the value one for the years after deregulation and 0 otherwise. Industries are categorized into low-pay-gap and high-pay-gap based on the difference in the mean log wage between male and female employees in each industry during 1976–1980. High-pay-gap sectors refer to industries that belong to the top 25% of the pay gap distribution, and low-pay-gap sectors refer to those in the bottom 25% of the pay gap distribution. High PG is a dummy variable that takes the value one for high-pay-gap sectors and 0 otherwise. Low PG is a dummy variable that takes the value one for low-pay-gap sectors and 0 otherwise. Columns (1) and (6) include state × gender and year × gender fixed effects. Columns (2)–(5) and (7)–(10) include state × event time × gender fixed effects. Columns (3) and (8) control for age-gender fixed effects. Columns (4) and (9) control for Mincerian traits × gender. Columns (5) and (10) account for gender differences in the skill content of jobs. Skill content of a job follows the routine/nonroutine, cognitive/manual classification used in Autor et al. (2003). Errors are clustered at the state level and reported in parentheses. *,**, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

**Table 5:** Effects of Deregulation on Sectoral Choice, For Young Entrants to the Labor Force

| *Dep. Var.:* $Y = 1(HPG) - 1(LPG)$ | Intrastate Deregulation | | | | Interstate Deregulation | | | |
|---|---|---|---|---|---|---|---|---|
| | TWFE | *State × Event Time × Gender* | | | TWFE | *State × Event Time × Gender* | | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Deregulation × Female × Entry | -0.041* | -0.034 | -0.032 | -0.012 | -0.065*** | -0.061*** | -0.061*** | -0.040** |
| | (0.022) | (0.022) | (0.021) | (0.020) | (0.017) | (0.018) | (0.018) | (0.016) |
| Deregulation × Entry | 0.111*** | 0.116*** | 0.051*** | 0.044*** | 0.098*** | 0.102*** | 0.040*** | 0.034*** |
| | (0.019) | (0.017) | (0.016) | (0.016) | (0.011) | (0.010) | (0.010) | (0.011) |
| Deregulation × Female | -0.000 | | | | 0.010 | | | |
| | (0.017) | | | | (0.015) | | | |
| Female × Entry | 0.110*** | 0.104*** | 0.084*** | 0.059*** | 0.147*** | 0.142*** | 0.120*** | 0.092*** |
| | (0.021) | (0.021) | (0.021) | (0.020) | (0.019) | (0.019) | (0.019) | (0.016) |
| Deregulation | 0.022* | | | | 0.006 | | | |
| | (0.012) | | | | (0.013) | | | |
| Entry | -0.180*** | -0.188*** | -0.057*** | -0.050*** | -0.179*** | -0.184*** | -0.046*** | -0.041*** |
| | (0.018) | (0.017) | (0.017) | (0.016) | (0.013) | (0.012) | (0.011) | (0.011) |
| N | 1155900 | 1155900 | 1155894 | 1150444 | 1155900 | 1155900 | 1155894 | 1150444 |
| State × Gender | Yes | No | No | No | Yes | No | No | No |
| Year × Gender | Yes | No | No | No | Yes | No | No | No |
| State × Event Time × Gender | No | Yes | Yes | Yes | No | Yes | Yes | Yes |
| Mincerian Controls | No | No | Yes | Yes | No | No | Yes | Yes |
| Skill Controls | No | No | No | Yes | No | No | No | Yes |

Notes: This table reports the difference-in-differences estimates of the effects of bank deregulation on workers' transitions between low- and high-pay-gap sectors. The dependent variable is a dummy that takes the value one for workers who transition from the low-pay-gap to high-pay-gap sectors or vice versa. Columns (1)–(5) report the effects of intrastate deregulation as the treatment, and columns (6)–(10) report the effects of interstate deregulation as the treatment. Deregulation is a dummy variable that takes the value one for the years after deregulation and 0 otherwise. Industries are categorized into low-pay-gap and high-pay-gap based on the difference in the mean log wage between male and female employees in each industry during 1976–1980. High-pay-gap sectors refer to industries that belong to the top 25% of the pay gap distribution, and low-pay-gap sectors refer to those in the bottom 25% of the pay gap distribution. High PG is a dummy variable that takes the value one for high-pay-gap sectors and 0 otherwise. Low PG is a dummy variable that takes the value one for low-pay-gap sectors and 0 otherwise. Columns (1) and (6) include state × gender and year × gender fixed effects. Columns (2)–(5) and (7)–(10) include state × event time × gender fixed effects. Columns (3) and (8) control for age-gender fixed effects. Columns (4) and (9) control for Mincerian traits × gender. Columns (5) and (10) account for gender differences in the skill content of jobs. Skill content of a job follows the routine/nonroutine, cognitive/manual classification used in Autor et al. (2003). Errors are clustered at the state level and reported in parentheses. *,**, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

## **Table 6:** Effects of Deregulation on Gender Norms

| | All | With Children | Men | | | | Women | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Workplace Sexism | Workplace Sexism | Workplace Sexism | Women Should Not Work | Husband Career First | Women Stay Home | Workplace Sexism | Women Should Not Work | Husband Career First | Women Stay Home |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
| **Panel A: Intrastate Deregulation** | | | | | | | | | | |
| Intrastate × Sectoral Spread | 2.71*** | 3.27*** | 4.36*** | 4.75** | 4.78** | 4.45* | 1.52 | 3.25*** | -0.16 | -2.72 |
| | (0.91) | (0.90) | (1.63) | (2.18) | (1.83) | (2.37) | (1.13) | (1.22) | (2.05) | (2.04) |
| Intrastate Penetration | -0.12*** | -0.08** | -0.12** | -0.09 | -0.10 | -0.12* | -0.12*** | -0.13*** | -0.11* | -0.20*** |
| | (0.03) | (0.03) | (0.05) | (0.06) | (0.07) | (0.06) | (0.04) | (0.05) | (0.07) | (0.06) |
| N | 33,786 | 24,484 | 14,745 | 8,574 | 6,604 | 12,495 | 19,041 | 11,339 | 8,707 | 16,035 |
| **Panel B: Interstate Deregulation** | | | | | | | | | | |
| Interstate × Sectoral Spread | 2.73** | 2.92*** | 3.72** | 3.19* | 5.58*** | 6.10** | 2.02** | 2.28* | 1.22 | 1.04 |
| | (1.09) | (0.99) | (1.61) | (1.80) | (1.81) | (2.63) | (0.98) | (1.19) | (2.68) | (2.71) |
| Interstate Penetration | -0.06 | -0.01 | -0.05 | -0.17** | -0.07 | -0.10 | -0.07 | -0.16** | -0.13 | -0.05 |
| | (0.04) | (0.05) | (0.05) | (0.08) | (0.09) | (0.07) | (0.05) | (0.07) | (0.08) | (0.10) |
| N | 33,786 | 24,484 | 14,745 | 8,574 | 6,604 | 12,495 | 19,041 | 11,339 | 8,707 | 16,035 |
| Year | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Region | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |

Notes: This table reports estimates of the effects of bank deregulation on gender norms at the regional level using the General Social Survey (GSS) survey data. The dependent variables are standardized measures of workplace sexism based on responses to three questions on beliefs about the role of women in the workplace: "Should women work?"; "Wife should help husbands career first."; "Better for man to work, women tend home." For each question, we assign a value of one when the response reflects biased views against women and zero otherwise. We then standardize the values by subtracting individual responses to each question by the average response of the entire population in 1977, a pre-treatment period, and dividing it by the standard deviation of the initial response of the entire population in 1977. For sectoral spread, we classify each industry by the sectoral distance of its pay gap to the median-pay-gap sector. If it belongs to the top 25th percentile in terms of the pay gap, i.e., high-pay-gap sectors, it is assigned a value of 1. If it belongs to the bottom 25th percentile, it is assigned a value of 1. Industries between the 25th and 75th percentiles, those in the median-pay-gap sectors, are given a value of 0. Sectoral spread is the expected value over pairwise combinations of workers based on Eqn. 10. Deregulation penetration is a measure of the proportion of individuals in each region-year affected by bank deregulation, calculated based on Eqn. 11. See Section 7.1 for more detailed descriptions of variable construction. All specifications control for year fixed effects and region fixed effects. Bootstrapped errors are reported in parentheses. *,**, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

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# A Proofs and Extensions

## A.1 Proof of Proposition 1

### Step One: Equilibrium existence

**Preliminaries.** We conjecture (and later verify) that there are always enough blue workers in each sector for biased firms to hire only blues. Under this conjecture, firms' optimal production choices are as described in Eqn. (3). We can then write the aggregate output in sector $s$ as

$$\int_0^1 q_{js}^* dj = (1-\chi_s)\max\left\{\frac{1}{2\kappa_s}[p_s - w_s], 0\right\} + \chi_s \max\left\{\frac{1}{2\kappa_s}[p_s - w_s(1+\alpha)], 0\right\}, \tag{12}$$

since a fraction $\chi_s$ of the firms is biased ($\iota_{js} = 1$) and pays higher wages.

If there are both blues and reds working in $s$, $w_s \geq \overline{u}$ is required to ensure the reds' participation: Since they never get any wage premium, their wage is always $w_s$, which must be greater than their outside option $\overline{u}$. If only blue types work in $s$, since $q_{ns}^* > q_{bs}^*$, some blue workers will have to work for non-biased firms and receive the unbiased wage $w_s$. So, their participation also requires $w_s \geq \overline{u}$. Hence, the unbiased wages $w_h$ and $w_\ell$ must both be at least $\overline{u}$ in equilibrium.

Let $\overline{p}$ denote the lowest price for which product market demand is zero, that is, $\overline{p}$ is such that $D(\overline{p}) = 0$ and $D(\overline{p})' < 0$. Since the demand function $D(\cdot)$ is the same across sectors, $\overline{p}$ is the same value for $h$ and $\ell$. If $\overline{p} \leq \overline{u}$, all firms in both sectors produce 0 in equilibrium, and all workers take their outside option, since the highest possible price at which firms can sell their product is not enough to pay workers their outside option.

If $\overline{p} > \overline{u}$, firms can produce and hire workers in equilibrium. So, we focus on this case in what follows. Since $\overline{u} \geq 0$, and firms can only produce if $p_s > \overline{u}$, the sum of the aggregate production in the two sectors must be smaller than $2D(0)$. Given that $D(0) < \frac{m}{2}$, which implies $2D(0) < m$, there are then always more workers than jobs in equilibrium. This also means that, in equilibrium, the unbiased wage in the $\ell$ sector must be $w_\ell = \overline{u}$, since entering that sector is costless for workers, so each individual firm can always hire enough workers at that wage.

**Market-clearing conditions.** The product market clears in $\ell$ if

$$D(p_\ell) - \int_0^1 q_{j\ell}^* dj = 0, \tag{13}$$

where

$$\int_0^1 q_{j\ell}^* dj = (1-\chi_\ell)\max\left\{\frac{1}{2\kappa_\ell}[p_\ell - \overline{u}], 0\right\} + \chi_\ell \max\left\{\frac{1}{2\kappa_\ell}[p_\ell - \overline{u}(1+\alpha)], 0\right\}. \tag{14}$$

The left-hand side of Eqn. (13) is continuous and decreasing in $p_\ell$, since $D(p_\ell)$ decreases and $\int_0^1 q_{j\ell}^* dj$ increases when $p_\ell$ increases. Since here $\overline{p} > \overline{u}$, we have $D(p_\ell) > 0$ and $\int_0^1 q_{j\ell}^* dj = 0$ for

all $p_\ell \leq \overline{u}$. So, the left-hand side of Eqn. (13) is positive for $p_\ell \leq \overline{u}$. Lastly, it is negative for all $p_\ell \geq \overline{p}$, where we have have $D(p_\ell) = 0$ and $\int_0^1 q^*_{j\ell} dj > 0$. By the Intermediate Value Theorem (IVT henceforth), a value of $p_\ell \in (\overline{u}, \overline{p})$ that satisfies market clearing in $\ell$ always exists and is unique.

Having described the equilibrium in $\ell$, we can now focus on $h$. Since workers suffer a cost from working in $h$, here we have $w_h \geq \overline{u}$ in equilibrium. Fixing $w_h$, $h$'s product market clears if

$$D(p_h) - \int_0^1 q^*_{jh} dj = 0, \tag{15}$$

where

$$\int_0^1 q^*_{jh} dj = (1 - \chi_h) \max\left\{\frac{1}{2\kappa_h}[p_h - w_h], 0\right\} - \chi_h \max\left\{\frac{1}{2\kappa_h}[p_h - w_h(1+\alpha)], 0\right\}. \tag{16}$$

If $w_h \geq \overline{p}$, demand $D(p_h)$ and supply $\int_0^1 q^*_{jh} dj$ only meet when they are both zero, which occurs iff $p_h \in (\overline{p}, w_h)$ (since $D(p_h)$ is equal to 0 for all $p_h \geq \overline{p}$, and is positive otherwise, while $\int_0^1 q^*_{jh} dj$ is equal to 0 for all $p_h \leq w_h$, and is positive otherwise). This would lead to an imbalance in the labor market: since $\overline{p} > \overline{u}$, $w_h > \overline{p}$ would imply that at least some workers (e.g., those with $c_i$ low enough that $w_h - c_i > \overline{u} = w_\ell$) would want to work for $h$, even though firms do not produce and so there are no jobs being offered in $h$. It follows that we must have $w_h < \overline{p}$ in equilibrium.

If $w_h < \overline{p}$, a similar logic as for the market clearing in $\ell$ applies. The left-hand side of Eqn. (15) is continuous and decreasing in $p_h$, since $D(p_h)$ decreases and $\int_0^1 q^*_{jh} dj$ increases when $p_h$ increases. We have $D(p_h) > 0$ and $\int_0^1 q^*_{jh} dj = 0$ for all $p_h \leq w_h$. So, the left-hand side of Eqn. (13) is positive for $p_h \leq w_h$. Lastly, it is negative for all $p_h \geq \overline{p}$, where we have have $D(p_h) = 0$ and $\int_0^1 q^*_{jh} dj > 0$. By the IVT, a value of $p_h \in (w_h, \overline{p})$ that satisfies market clearing in $h$ always exists and is unique for any $w_h < \overline{p}$.

The next step is to show that $w_h < \overline{p}$ holds at the value of $w_h$ such that the labor market also clears. The mass of workers that seek jobs in sector $h$ is $\beta_h + \rho_h$, where $\beta_h = mF(c_B)$ and $\rho_h = mF(c_R)$, and the marginal types are $c_R = w_h - \overline{u}$ and

$$c_B = c_R + w_h \alpha \min\left\{\frac{\chi_h q^*_{bh}}{\beta_h}, 1\right\} - \overline{u}\alpha \min\left\{\frac{\chi_\ell q^*_{b\ell}}{m - \beta_h}, 1\right\}. \tag{17}$$

The factors multiplying $w_h$ and $\overline{u}$ in Eqn. (17) are the probabilities that a blue worker lands a job in a biased firm in each sector.

Fixing $w_h$, an equilibrium value of $\rho_h$ (that is, $\rho_h$ such that $\rho_h = mF(w_h - \overline{u})$) always exists, it increases with $w_h$, and it is 0 when $w_h = \overline{u}$. An equilibrium value of $\beta_h$ solves

$$mF(c_B) - \beta_h = 0. \tag{18}$$

The left-hand side of Eqn. (18) is continuous in $\beta_h$. At $\beta_h = 0$, we have $c_B = c_R + w_h\alpha - \overline{u}\alpha \min\left\{\frac{\chi_\ell q^*_{b\ell}}{m}, 1\right\} > 0$, since $c_R \geq 0$, $w_h \geq \overline{u}$, and $\frac{\chi_\ell q^*_{b\ell}}{m} < 1$ (the assumption $D(0) < \frac{m}{2}$ implies that the total supply in each sector and, thus, the aggregate supply of biased firms in $\ell$, $\chi_\ell q^*_{b\ell}$, must be lower than $m$ in equilibrium). Since $c_i$ is a continuous and positive random variable, we have $F(c_B) > 0$ for any $c_B > 0$, which implies $mF(c_B) - \beta_h > 0$ at $\beta_h = 0$.

The largest possible value of $\beta_h$ is $m$ (the total mass of agents is $2m$, and only half are blue). At $\beta_h = m$, we have $c_B = w_h\left(1 + \alpha \min\left\{\frac{\chi_h q^*_{bh}}{m}, 1\right\}\right) - (1+\alpha)\overline{u} \equiv c_B(m)$. If $c_B(m)$ is larger than the largest possible realization of $c_i$, we have $F(c_B) = 1$ and, thus, $mF(c_B) - \beta_h = 0$ at $\beta_h = m$. So, $\beta_h = m$ is an equilibrium value for $\beta_h$ in this case. Otherwise, we have $F(c_B) < 1$ and $mF(c_B) - \beta_h < 0$ at $\beta_h = m$. In this case, an equilibrium value $\beta_h \in (0, m)$ such that $\beta_h - mF(c_B) = 0$ exists by the IVT, since $\beta_h - mF(c_B)$ is continuous in $\beta_h$, positive at $\beta_h = 0$, and negative at $\beta_h = m$.

Now, let $p^*_h$, $\beta^*_h$, and $\rho^*_h$ denote the values of, respectively, $p_h$, $\beta_h$, and $\rho_h$, that jointly satisfy the product-market clearing condition $D(p_h) - \int_0^1 q^*_{jh} dj = 0$ and the entry conditions $\beta_h = mF(c_B)$ and $\rho_h = mF(c_R)$, for a given value of $w_h$, and the equilibrium values of $p_\ell$ and $w_\ell$. The labor market clearing condition for sector $h$ then writes as

$$\int_0^1 q^*_{jh} dj - (\beta^*_h + \rho^*_h) \leq 0. \tag{19}$$

The left-hand side of Eqn. (19) is continuous in $w_h$ for all $w_h \in [\overline{u}, \overline{p}]$ ($q^*_{bj}$, $p^*_h$, $\beta^*_h$, and $\rho^*_h$ are all continuous in $w_h$).

At $w_h = \overline{u}$, we have $c_R = 0$, which implies $\rho_h = 0$ (since $c_i$ is positive and continuous, we have $F(x) = 0$ for any $x \leq 0$). Some blue workers may prefer to enter $h$ even at $w_h = \overline{u}$, if the probability of landing a job in a biased firm is larger there (if $\frac{\chi_h q^*_{bh}}{\beta_h} > \frac{\chi_\ell q^*_{b\ell}}{m - \beta_h}$, so that $c_B > 0$). If $\int_0^1 q^*_{jh} dj \leq \beta^*_h$ at $w_h = \overline{u}$, this wage satisfies the market-clearing condition in Eqn. (19). Otherwise, $\int_0^1 q^*_{jh} dj - \beta^*_h > 0$ at $w_h = \overline{u}$, so $w_h$ increases to attract enough workers in $h$.

At $w_h = \overline{p}$, $\int_0^1 q^*_{jh} dj$ is equal to 0, while $\beta^*_h + \rho^*_h$ is bounded away from 0, since $\overline{p} > \overline{u}$ implies $c_R > 0$ and, thus, $\rho^*_h > 0$ at $w_h = \overline{p}$. So, for $w_h$ close to $\overline{p}$, we have $\beta^*_h + \rho^*_h > \int_0^1 q^*_{jh} dj$, which satisfies Eqn. (19). The left-hand side of Eqn. (19) is thus (i) either already negative at $w_h = \overline{u}$, or (ii) is positive at $w_h = \overline{u}$ but negative as $w_h = \overline{p}$. It follows from the IVT that a value $w_h \in [\overline{u}, \overline{p})$ such that Eqn. (19) holds always exists.

Notice also that, in equilibrium, the inequality in Eqn. (19) cannot hold strict if $w_h > \overline{u}$. Otherwise, there would be more workers than jobs also in $h$, which means that firms would be able to offer a lower $w_h$ until Eqn. (19) holds strict. Therefore, we have either $\int_0^1 q^*_{jh} dj - (\beta^*_h + \rho^*_h) = 0$ and $w_h > \overline{u}$, which implies $\rho^*_h > 0$, or $\int_0^1 q^*_{jh} dj - \beta^*_h \leq 0$ and $w_h = \overline{u}$, with $\rho^*_h = 0$.

We have shown above that there always exists a collection of prices and wages $\{(p_h, p_\ell), (w_h, w_\ell)\}$ such that the market clearing conditions hold in both sectors when firms' production decisions

and workers' choices of which sector to enter are evaluated at their optimal values. Therefore, an equilibrium of the game always exists. In equilibrium, since $w_\ell = \overline{u}$, while $w_h \in [\overline{u}, \overline{p})$, the unbiased wage is always larger in $h$, at least weakly.

**Verifying the initial conjectures.** The last step is to check that the conjecture $\chi_s q^*_{bs} \leq \beta_s$ always holds in equilibrium.

We begin with the conjecture $\chi_\ell q^*_{b\ell} \leq \beta_\ell$, which corresponds to $\chi_\ell q^*_{b\ell} \leq m - \beta_h$. Suppose, by contradiction, that $\chi_\ell q^*_{b\ell} > m - \beta_h$ holds in equilibrium. First, consider equilibria where $w_h > \overline{u}$, which implies $D(p_h) = \beta_h + \rho_h$. In this case, $D(0) < \frac{m}{2}$ implies $\beta_h < \frac{m}{2}$. By a similar logic, $\chi_\ell q^*_{b\ell}$ must be lower than $\frac{m}{2}$, since $\int_0^1 q^*_{j\ell} dj < \frac{m}{2}$. It follows that the inequality $\chi_\ell q^*_{b\ell} > m - \beta_h$ cannot hold in equilibrium in this case, since the right-hand side is always larger than $\frac{m}{2}$, while the left-hand side is always smaller than $\frac{m}{2}$. Next, consider the case $w_h = \overline{u}$, which implies $D(p_h) \leq \beta_h$. If $\chi_\ell q^*_{b\ell} > m - \beta_h$, the marginal type $c_B$ writes as $c_B = \overline{u}\alpha \left( \min \left\{ \frac{\chi_h q^*_{bh}}{\beta_h}, 1 \right\} - 1 \right) < 0$, since $\chi_\ell q^*_{b\ell} > m - \beta_h$ implies $\min \left\{ \frac{\chi_\ell q^*_{b\ell}}{m - \beta_h}, 1 \right\} = 1$. However, $c_B < 0$ implies $\beta_h = 0$, which contradicts the initial conjectures that $\chi_\ell q^*_{b\ell} > m - \beta_h$ and $D(p_h) \leq \beta_h$. So, we must have $\chi_\ell q^*_{b\ell} \leq m - \beta_h$.

The condition $\chi_h q^*_{bh} > \beta_h$, leads to a similar type of contradiction. If $\chi_h q^*_{bh} > \beta_h$, all blue workers in $h$ land jobs in a biased firm. In this case, we have $c_B = c_R + \alpha \left( w_h - \overline{u} \min \left\{ \frac{\chi_\ell q^*_{b\ell}}{m - \beta_h}, 1 \right\} \right)$, which implies $\beta_h > \rho_h$, since $w_h \geq \overline{u}$ and $\frac{\chi_\ell q^*_{b\ell}}{m - \beta_h} < 1$ (which we have shown must hold in equilibrium) imply $c_B > c_R \geq 0$ here. In equilibrium, we have $\beta_h + \rho_h = D(p_h)$ if $w_h > \overline{u}$, and $\beta_h \geq D(p_h)$ if $w_h = \overline{u}$. Together with $\beta_h > \rho_h$, these imply $\beta_h > \frac{D(p_h)}{2}$. It follows that we must have $\chi_h q^*_{bh} > \beta_h > \frac{D(p_h)}{2}$. Since $\chi_h \leq \frac{1}{2}$, this would imply $q^*_{bh} > q^*_{nh}$, which is not possible in equilibrium, since non-biased firms are more efficient and, thus, always produce more than biased ones. So, we must have $\chi_h q^*_{bh} \leq \beta_h$ in equilibrium. □

### Step Two: Comparative statics

**Part 1 of Proposition 1.** We begin by showing that production is reallocated away from biased firms when $\kappa_\ell$ goes down, which means that $\frac{\chi_\ell q^*_{b\ell}}{D(p_\ell)}$ increases with $\kappa_\ell$.

As we discussed above, firms never produce when $\overline{p} \leq \overline{u}$, for any value of $\kappa_\ell$. So, we can focus on the case $\overline{p} > \overline{u}$ in what follows. In this case, we always have $p_\ell > \overline{u}$ in equilibrium (see Step One of this proof), which implies $q^*_{n\ell} > 0$, and $q^*_{b\ell} \geq 0$.

First, consider the case where $q^*_{b\ell}$ is strictly positive before and after the change in $\kappa_\ell$. Plugging the equilibrium wage $w_\ell = \overline{u}$ into the optimal production choices in Eqn. (3), we have $q^*_{n\ell} = \frac{1}{2\kappa_\ell}[p_\ell - \overline{u}]$ and $q^*_{b\ell} = \frac{1}{2\kappa_\ell}[p_\ell - (1+\alpha)\overline{u}]$. Plugging in these expressions in $\frac{\chi_\ell q^*_{b\ell}}{D(p_\ell)}$ yields

$$\frac{\chi_\ell q^*_{b\ell}}{D(p_\ell)} = \frac{\chi_\ell q^*_{b\ell}}{\chi_\ell q^*_{b\ell} + (1 - \chi_\ell) q^*_{n\ell}} = \chi_\ell \frac{p_\ell - \overline{u}(1+\alpha)}{p_\ell - \overline{u}(1 + \chi_\ell \alpha)}. \tag{20}$$

Next, we show that $p_\ell$ increases with $\kappa_\ell$, which implies that the expression in Eqn. (20) increases with $\kappa_\ell$, since

$$\frac{d\left(\frac{p_\ell-\overline{u}(1+\alpha)}{p_\ell-\overline{u}(1+\chi_\ell\alpha)}\right)}{d\kappa_\ell} = \frac{\overline{u}\alpha(1-\chi_\ell)}{[p_\ell-\overline{u}(1+\chi_\ell\alpha)]^2}\frac{dp_\ell}{d\kappa_\ell} \tag{21}$$

When $q^*_{b\ell}$ is positive, the equilibrium value for $p_\ell$ solves

$$D(p_\ell) - \frac{1}{2\kappa_\ell}[p_\ell - \overline{u}(1+\alpha\chi_\ell)] = 0. \tag{22}$$

Applying the Implicit Function Theorem on Eqn. (22), we can write

$$\frac{dp_\ell}{d\kappa_\ell} = -\frac{\frac{1}{2\kappa_\ell^2}[p_\ell - (1+\alpha\chi_\ell)\overline{u}]}{D'(p_\ell) - \frac{1}{2\kappa_\ell}} > 0, \tag{23}$$

since $D'(p_\ell) \leq 0$, and $q^*_{b\ell} > 0$ is equivalent to $p_\ell - (1+\alpha)\overline{u} > 0$, which implies $p_\ell - (1+\alpha\chi_\ell)\overline{u} > 0$. So, when $q^*_{b\ell} > 0$ holds at both $\kappa'$ and $\kappa''$, $\frac{\chi_\ell q^*_{b\ell}}{D(p_\ell)}$ decreases when $\kappa_\ell$ decreases.

Next, consider the case where $q^*_{b\ell} > 0$ holds before the shock, that is, at $\kappa_\ell = \kappa'$, but we have $q^*_{b\ell} = 0$ after $\kappa_\ell$ goes down, that is, at $\kappa_\ell = \kappa''$, where $\kappa'' < \kappa'$. In this case, $\frac{\chi_\ell q^*_{b\ell}}{D(p_\ell)}$ goes from a positive value to 0. So, also in this case, $\frac{\chi_\ell q^*_{b\ell}}{D(p_\ell)}$ decreases when $\kappa_\ell$ goes down.

Lastly, we show that, in equilibrium, $q^*_{b\ell}$ cannot go from 0 to a positive value when $\kappa_\ell$ decreases. Since $q^*_{b\ell} = \max\left\{\frac{1}{2\kappa_\ell}[p_\ell - \overline{u}(1+\alpha)], 0\right\}$, for this to be the case, we must have that $p_\ell$ increases when $\kappa_\ell$ decreases. If $p_\ell$ increases, $q^*_{n\ell}$ and, thus, the aggregate supply $\int_0^1 q^*_{j\ell}dj$ also increase when $\kappa_\ell$ goes down. However, since $D(p_\ell)$ decreases with $p_\ell$, and $D(p_\ell) = \int_0^1 q^*_{j\ell}dj$, $p_\ell$ must decrease when aggregate supply increases, which contradicts the initial conjecture. □

**Part 2 of Proposition 1.** Only biased firms pay the wage premium $\alpha$. By the product market clearing condition, and the firms' production function, the total mass of agents working in $\ell$ is $D(p_\ell)$. The fraction of the workforce that receives a wage premium is then $\frac{\chi_\ell q^*_{b\ell}}{D(p_\ell)}$, which, as we have shown before, decreases when $\kappa_\ell$ decreases. □

**Part 3 of Proposition 1.** Consider two different values of $\kappa_\ell$, $\kappa'$ and $\kappa''$, with $\kappa'' < \kappa'$. We use the notation $y(\kappa')$ and $y(\kappa'')$ to denote the equilibrium values of $y$ when $\kappa_\ell = \kappa'$ and $\kappa_\ell = \kappa''$, respectively, where $y$ represent a given outcome of the model (e.g., $q^*_{jh}$, $\rho_h$, etc.). We consider the limit where the product demand becomes inelastic, that is, the limit where, for any product prices $x$ and $y$, with $x > y$, the difference $D(x) - D(y)$ approaches 0.

***Preliminaries.*** We first describe three facts about the equilibrium that we will use in the remainder of the proof. We begin by showing that $q^*_{b\ell}$ decreases (at least weakly) after the

decrease in $\kappa_\ell$. The product market in $\ell$ must clear, that is, $\int_0^1 q_{j\ell}^* dj = D(p_\ell)$ must hold, at both $\kappa'$ and $\kappa''$. So, we can write

$$\int_0^1 q_{j\ell}^*(\kappa')dj - \int_0^1 q_{j\ell}^*(\kappa'')dj = D(p_\ell(\kappa')) - D(p_\ell(\kappa'')). \tag{24}$$

In the limit where the product market demand is inelastic, we have $\int_0^1 q_{j\ell}^*(\kappa')dj = \int_0^1 q_{j\ell}^*(\kappa'')dj$, which implies

$$\chi_\ell q_{b\ell}^*(\kappa') + (1-\chi_\ell) q_{n\ell}^*(\kappa') = \chi_\ell q_{b\ell}^*(\kappa'') + (1-\chi_\ell) q_{n\ell}^*(\kappa''). \tag{25}$$

We can rewrite Eqn. (25) as

$$\chi_\ell [q_{b\ell}^*(\kappa') - q_{b\ell}^*(\kappa'')] = (1-\chi_\ell)[q_{n\ell}^*(\kappa'') - q_{n\ell}^*(\kappa')]. \tag{26}$$

Intuitively, if the product demand is inelastic, changes in the parameters will lead to a reallocation of supply from biased to non-biased firms, but no change in total supply. In what follows, we show that $b$ firms reduce their production after the shock.

If $q_{b\ell}^* = 0$ both before and after the change in $\kappa_\ell$, there is no supply reallocation, and the change in $\kappa_\ell$ only affects $p_\ell$. So, we focus on the other cases in what follows.

First, consider the case where $q_{b\ell}^*$ is strictly positive before and after the change in $\kappa_\ell$. In this case, we have $q_{n\ell} - q_{b\ell} = \frac{\overline{u}\alpha}{2\kappa_\ell}$, which implies

$$\frac{d(q_{n\ell} - q_{b\ell})}{d\kappa_\ell} = -\frac{\overline{u}\alpha}{2\kappa_\ell^2} < 0. \tag{27}$$

It follows from $\frac{d(q_{n\ell}-q_{b\ell})}{d\kappa_\ell} < 0$ that $q_{n\ell} - q_{b\ell}$ increases when $\kappa_\ell$ decreases. So, we must have $q_{b\ell}^*(\kappa') - q_{b\ell}^*(\kappa'') > 0$ and $q_{n\ell}^*(\kappa'') - q_{n\ell}^*(\kappa') > 0$ in Eqn. (25), since $b$ firms produce less and $n$ firms produce more after $\kappa_\ell$ goes down.

If $q_{b\ell}^*(\kappa') > 0$ and $q_{b\ell}^*(\kappa'') = 0$, we also have $q_{b\ell}^*(\kappa') - q_{b\ell}^*(\kappa'') > 0$. Lastly, we have shown in the proof of Part 1 of Proposition 1 that, in equilibrium, $q_{b\ell}^*$ cannot go from 0 to a positive value when $\kappa_\ell$ decreases. So, overall, we must have that $q_{b\ell}^*$ decreases (at least weakly) after the decrease in $\kappa_\ell$.

Next, we show that $q_{bs}^*$ decreases with $w_s$. In the limit where the product market demand becomes inelastic, the market-clearing condition for the product market in sector $s$ converges to $\int_0^1 q_{js}^* dj = D$, where $D$ is the inelastic demand for the product. For a given wage $w_s$, if both biased and non-biased firms produce, the equilibrium price then converges to

$$p_s = 2D\kappa_s + w_s(1+\alpha\chi_s) \tag{28}$$

The optimal production of a biased firm is

$$q_{bs}^* = \max\left\{\frac{1}{2\kappa_s}[p_s - w_s(1+\alpha)], 0\right\}. \tag{29}$$

Plugging the expression for $p_s$ from Eqn. (28) into the expression for $q^*_{bs}$ in Eqn. (29) yields

$$q^*_{bs} = \max\left\{D - \frac{w_s}{2\kappa_s}\alpha(1-\chi_s), 0\right\}, \tag{30}$$

which implies $q^*_{bs} \geq 0$ iff $w_s \leq \frac{2D\kappa_s}{\alpha(1-\chi_s)}$, and $\frac{\partial q^*_{bs}}{\partial w_s} < 0$ for all $w_s < \frac{2D\kappa_s}{\alpha(1-\chi_s)}$.

Finally, we derive an equilibrium expression for $w_h$ as a function of $\beta_h$. In equilibrium, we either have $w_h > \overline{u}$, $\rho_h > 0$, and $D = \beta_h + \rho_h$, or $w_h = \overline{u}$, $\rho_h = 0$, and $D \leq \beta_h$. Under the assumption $c_i \sim U(0, m)$, we have $\rho_h = c_R = w_h - \overline{u}$. It follows that $w_h > \overline{u}$ implies $D = \beta_h + w_h - \overline{u}$. For a given $\beta_h$, we can then write the equilibrium value of $w_h$ as

$$w_h = \max\{D - \beta_h + \overline{u}, \overline{u}\} \tag{31}$$

***Sorting.*** Having characterized the effects of a change in $\kappa_\ell$ on the productions of biased and non-biased firms, how the production of biased firms in $h$ depends on the wage $w_h$, and having derived an equilibrium expression for $w_h$ as a function of $\beta_h$, we can now sign the relative effects of a change in $\kappa_\ell$ on $\beta_h$ and $\rho_h$. In equilibrium, the marginal red type to enter $h$ is $c_R = w_h - \overline{u}$. The marginal blue type is

$$c_B = w_h - \overline{u} + \alpha\left\{w_h \min\left\{\frac{\chi_h q^*_{bh}}{\beta_h}, 1\right\} - \overline{u}\min\left\{\frac{\chi_\ell q^*_{b\ell}}{m-\beta_h}, 1\right\}\right\}. \tag{32}$$

Under the assumption $c_i \sim U(0, m)$, we have $\beta_h = c_B$ and $\rho_h = c_R$ in equilibrium.

First, consider the case where $w_h$ does not change after the shock, that is, $w_h(\kappa') = w_h(\kappa'')$; in principle, this can occur in one of two instances: (a) $w_h(\kappa') = w_h(\kappa'') = \overline{u}$, in which case we also have $\rho_h(\kappa') = \rho_h(\kappa'') = 0$; (b) $\beta_h(\kappa') = \beta(\kappa'')$, in which case we also have $\rho_h(\kappa') = \rho_h(\kappa'')$. In either case, since $w_h$ does not change, we have $q^*_{bh}(\kappa') = q^*_{bh}(\kappa'')$.

As we have shown in Step One of this proof, we always have $\min\left\{\frac{\chi_s q^*_{bs}}{\beta_s}, 1\right\} = \frac{\chi_s q^*_{bs}}{\beta_s}$ in equilibrium. Therefore, using the expression for the marginal type in Eqn. (32), we can write the change in $\beta_h$ that follows a change in $\kappa_\ell$ as

$$\begin{aligned}\beta_h(\kappa') - \beta_h(\kappa'') = w_h(\kappa') - w_h(\kappa'') + \alpha\left\{w_h(\kappa')\frac{\chi_h q^*_{bh}(\kappa')}{\beta_h(\kappa')} - \overline{u}\frac{\chi_\ell q^*_{b\ell}(\kappa')}{m-\beta_h(\kappa')}\right\} \\ - \alpha\left\{w_h(\kappa'')\frac{\chi_h q^*_{bh}(\kappa'')}{\beta_h(\kappa'')} - \overline{u}\frac{\chi_\ell q^*_{b\ell}(\kappa'')}{m-\beta_h(\kappa'')}\right\}.\end{aligned} \tag{33}$$

In Case (a), Eqn. (33) simplifies to

$$\beta_h(\kappa') - \beta_h(\kappa'') = \alpha\overline{u}\left\{\frac{\chi_h q_{bh}}{\beta_h(\kappa')} - \frac{\chi_\ell q^*_{b\ell}(\kappa')}{m-\beta_h(\kappa')} - \left(\frac{\chi_h q_{bh}}{\beta_h(\kappa'')} - \frac{\chi_\ell q^*_{b\ell}(\kappa'')}{m-\beta_h(\kappa'')}\right)\right\}, \tag{34}$$

where $q_{bh} = q^*_{bh}(\kappa') = q^*_{bh}(\kappa'')$.

One can easily verify that Eqn. (34) never holds for $\beta_h(\kappa') > \beta_h(\kappa'')$ (given $q^*_{b\ell}(\kappa') \geq q^*_{b\ell}(\kappa'')$, for $\beta_h(\kappa') > \beta_h(\kappa'')$, the left-hand side of the equation is always positive, while the right-hand side is always negative). Hence, we cannot have that $\beta_h$ decreases after a drop in $\kappa_\ell$ when $w_h(\kappa') = w_h(\kappa'') = \overline{u}$. Intuitively, in this case, the production of biased firms does not change in sector $h$, but it decreases (at least weakly) in $\ell$. So, landing a biased job is relatively harder in $\ell$ after the shock, so this sector becomes relatively less attractive for blue workers.

In Case (b), Eqn. (33) simplifies to

$$0 = \alpha\overline{u}\left\{\frac{\chi_\ell}{m-\beta_h}(q^*_{b\ell}(\kappa'') - q^*_{b\ell}(\kappa'))\right\}. \tag{35}$$

where $\beta_h = \beta_h(\kappa') = \beta_h(\kappa'')$.

Eqn. (35) holds iff $q^*_{b\ell}(\kappa'') = q^*_{b\ell}(\kappa') = 0$. Intuitively, if biased firms did not produce already at $\kappa'$, they will continue to do so also at $\kappa''$. Therefore, the change in $\kappa_\ell$ does not affect the entry choices of blue workers ($\beta_h(\kappa') = \beta_h(\kappa'')$), since it does not alter the availability of biased jobs in sector $\ell$. Since $\beta_h$ does not change, there are also no effects on $w_h$ and, thus, on the entry choice of red workers ($\rho_h(\kappa') = \rho_h(\kappa'')$).

Next, consider the case where $w_h$ changes after the shock, that is, we either have $w_h(\kappa'') > w_h(\kappa')$ or $w_h(\kappa'') < w_h(\kappa')$. Given that $w_h$ decreases (at least weakly) with $\beta_h$ in equilibrium (see Eqn. 31), and that $\rho_h = w_h - \overline{u}$, $w_h(\kappa'') > w_h(\kappa')$ implies $\beta_h(\kappa'') < \beta_h(\kappa')$ and $\rho_h(\kappa'') > \rho_h(\kappa')$, and $w_h(\kappa'') < w_h(\kappa')$ implies $\beta_h(\kappa'') > \beta_h(\kappa')$ and $\rho_h(\kappa'') < \rho_h(\kappa')$. Next, we show that only the latter case (that is, $\beta_h(\kappa'') > \beta_h(\kappa')$ and $\rho_h(\kappa'') < \rho_h(\kappa')$) is possible in in any stable (in a standard, tâtonnement sense) equilibrium of the model.

Using the definition of the marginal blue type in Eqn. (32), and the fact that $c_b = \beta_h$, an equilibrium value of $\beta_h$ must satisfy $\Gamma(\beta_h) = 0$, where

$$\Gamma(\beta_h) = w^*_h - \overline{u} + \alpha\left\{w^*_h \min\left\{\frac{\chi_h q^*_{bh}}{\beta_h}, 1\right\} - \overline{u}\min\left\{\frac{\chi_\ell q^*_{b\ell}}{m-\beta_h}, 1\right\}\right\} - \beta_h, \tag{36}$$

with $w^*_h = \max\{D - \beta_h + \overline{u}, \overline{u}\}$ and

$$q^*_{bh} = \max\left\{D - \frac{w_h}{2\kappa_h}\alpha(1-\chi_h), 0\right\}; \quad q^*_{b\ell} = \max\left\{D - \frac{\overline{u}}{2\kappa_\ell}\alpha(1-\chi_\ell), 0\right\}.$$

Notice that $\Gamma(\beta_h)$ is a continuous function of $\beta_h$, and it satisfies

$$\Gamma(0) = w^*_h - \overline{u} + \alpha\left\{w^*_h - \overline{u}\min\left\{\frac{\chi_\ell q^*_{b\ell}}{m}, 1\right\}\right\} > 0; \quad \Gamma(m) = \alpha\overline{u}\left\{\min\left\{\frac{\chi_h q^*_{bh}}{m}, 1\right\} - 1\right\} - m < 0.$$

In any stable equilibrium, the $\Gamma(\beta_h)$ function crosses 0 from above, so that small perturbations around the equilibrium value converge back to the equilibrium. Since $\Gamma(0) > 0$ and $\Gamma(m) < 0$,

one such equilibrium always exists (by the IVT). When $\kappa_\ell$ decreases, since $q^*_{b\ell}$ decreases, the $\Gamma(\beta_h)$ function increases (shifts upward) for any $\beta_h < m - \chi_\ell q^*_{b\ell}$ (such that $\frac{\chi_\ell q^*_{b\ell}}{m-\beta_h} < 1$), and it does not change for $\beta_h \geq m - \chi_\ell q^*_{b\ell}$. It follows that the equilibrium value of $\beta_h$ (the point where $\Gamma(\beta_h)$ crosses 0) moves to the right when $\kappa_\ell$ decreases. Therefore, in any stable equilibrium of the model, we must have $\beta_h(\kappa'') \geq \beta_h(\kappa')$ and, thus, $w_h(\kappa'') \leq w_h(\kappa')$ and $\rho_h(\kappa'') \leq \rho_h(\kappa')$ when $\kappa_\ell$ decreases from $\kappa'$ to $\kappa''$. □

## A.2 Proof of Proposition 2

Consider the limit where the product demand becomes inelastic, that is, the limit where, for any product prices $x$ and $y$, with $x > y$, the difference $D(x) - D(y)$ approaches 0.

Plugging the expression for $p_s$ from Eqn. (28) into the expression for $q^*_{bs}$ in Eqn. (29) yields

$$q^*_{bs} = \max\left\{D - \frac{w_s}{2\kappa_s}\alpha(1-\chi_s), 0\right\}, \tag{37}$$

which implies $q^*_{bs} > 0$ iff $\kappa_s > \frac{w_s}{2D}\alpha(1-\chi_s)$, and $\lim_{\kappa_s \to \frac{w_s}{2D}\alpha(1-\chi_s)} q^*_{bs} = 0$.

The equilibrium wage in sector $\ell$ is $w_\ell = \overline{u}$, so we have $q^*_{b\ell} > 0$ iff $\kappa_\ell > \overline{\kappa}_\ell$, where $\overline{\kappa}_\ell \equiv \frac{\overline{u}}{2D}\alpha(1-\chi_\ell)$. First, consider the case where biased firms produce a positive quantity in sector $h$ in equilibrium ($q^*_{bh} > 0$), so that the fraction of the workforce who receive a wage premium in $h$ is $\frac{\chi_h q^*_{bh}}{D} > 0$. If $\kappa_h > \overline{\kappa}_\ell$, we can always find $\kappa_\ell \in (\overline{\kappa}_\ell, \kappa_h)$, but sufficiently close to $\overline{\kappa}_\ell$, such that $\frac{\chi_\ell q_{b\ell}}{D} > 0$ and $\frac{\chi_\ell q_{b\ell}}{D} < \frac{\chi_h q_{bh}}{D}$. If $\kappa_h < \overline{\kappa}_\ell$, we can set $\kappa_\ell < \kappa_h$, which implies $\frac{\chi_\ell q_{b\ell}}{D} = 0$ and, thus, $\frac{\chi_\ell q_{b\ell}}{D} < \frac{\chi_h q_{bh}}{D}$. Next, consider the case where $q^*_{bh} = 0$, which implies that workers do not receive wage premia in $h$ in equilibrium. In this case, we can set $\kappa_\ell < \min\{\overline{\kappa}_\ell, \kappa_h\}$, so that workers do not receive wage premia in $\ell$ either and we have $\frac{\chi_\ell q_{b\ell}}{D} = \frac{\chi_h q_{bh}}{D}$. It follows that there always exists $\kappa_\ell$ sufficiently smaller than $\kappa_h$ such that $\frac{\chi_\ell q_{b\ell}}{D}$ is smaller than $\frac{\chi_h q_{bh}}{D}$ (at least weakly) in equilibrium. □

## A.3 Proof of Proposition 3

Consider two different values of $\kappa_h$, $\kappa'$ and $\kappa''$, with $\kappa'' < \kappa'$. We use the notation $y(\kappa')$ and $y(\kappa'')$ to denote the equilibrium values of $y$ when $\kappa_h = \kappa'$ and $\kappa_h = \kappa''$, respectively, where $y$ represent a given outcome of the model (e.g., $q^*_{jh}$, $\rho_h$, etc.). We consider the limit where the product demand becomes inelastic, that is, the limit where, for any product prices $x$ and $y$, with $x > y$, the difference $D(x) - D(y)$ approaches 0. The proof of Proposition 3 follows a similar logic to that of Part 3 of Proposition 1; we use the same notation and some of the preliminary results we derived there.

First, consider the case where $w_h$ does not change after the shock, that is, $w_h(\kappa') = w_h(\kappa'')$; in principle, this can occur in one of two instances: (a) $w_h(\kappa') = w_h(\kappa'') = \overline{u}$, in which case we also have $\rho_h(\kappa') = \rho_h(\kappa'') = 0$; (b) $\beta_h(\kappa') = \beta(\kappa'')$, in which case we also have $\rho_h(\kappa') = \rho_h(\kappa'')$.

In either case, since $w_h$ does not change, and since $q^*_{bh} = \max\left\{D - \frac{w_h}{2\kappa_h}\alpha(1-\chi_h), 0\right\}$, we have $q^*_{bh}(\kappa') \geq q^*_{bh}(\kappa'')$.

As we have shown in Part 1 of Proposition 1, we always have $\min\left\{\frac{\chi_s q^*_{bs}}{\beta_s}, 1\right\} = \frac{\chi_s q^*_{bs}}{\beta_s}$ in equilibrium. Therefore, using the expression for the marginal type in Eqn. (32), we can write the change in $\beta_h$ that follows a change in $\kappa_h$ as

$$\begin{aligned}\beta_h(\kappa') - \beta_h(\kappa'') = w_h(\kappa') - w_h(\kappa'') + \alpha\left\{w_h(\kappa')\frac{\chi_h q^*_{bh}(\kappa')}{\beta_h(\kappa')} - \overline{u}\frac{\chi_\ell q_{b\ell}}{m - \beta_h(\kappa')}\right\} \\ - \alpha\left\{w_h(\kappa'')\frac{\chi_h q^*_{bh}(\kappa'')}{\beta_h(\kappa'')} - \overline{u}\frac{\chi_\ell q_{b\ell}}{m - \beta_h(\kappa'')}\right\},\end{aligned} \tag{38}$$

where $q_{b\ell} = q^*_{b\ell}(\kappa') = q^*_{b\ell}(\kappa'')$, since $q^*_{b\ell}$ is not affected by the shock.

In Case (a), Eqn. (38) simplifies to

$$\beta_h(\kappa') - \beta_h(\kappa'') = \alpha\overline{u}\left\{\frac{\chi_h q^*_{bh}(\kappa')}{\beta_h(\kappa')} - \frac{\chi_\ell q_{b\ell}}{m - \beta_h(\kappa')} - \left(\frac{\chi_h q^*_{bh}(\kappa'')}{\beta_h(\kappa'')} - \frac{\chi_\ell q_{b\ell}}{m - \beta_h(\kappa'')}\right)\right\}. \tag{39}$$

One can easily verify that Eqn. (39) never holds for $\beta_h(\kappa') < \beta_h(\kappa'')$ (given $q^*_{bh}(\kappa') \geq q^*_{bh}(\kappa'')$, for $\beta_h(\kappa') < \beta_h(\kappa'')$, the left-hand side of the equation is always negative, while the right-hand side is always positive). Hence, we cannot have that $\beta_h$ increases after a drop in $\kappa_h$ when $w_h(\kappa') = w_h(\kappa'') = \overline{u}$.

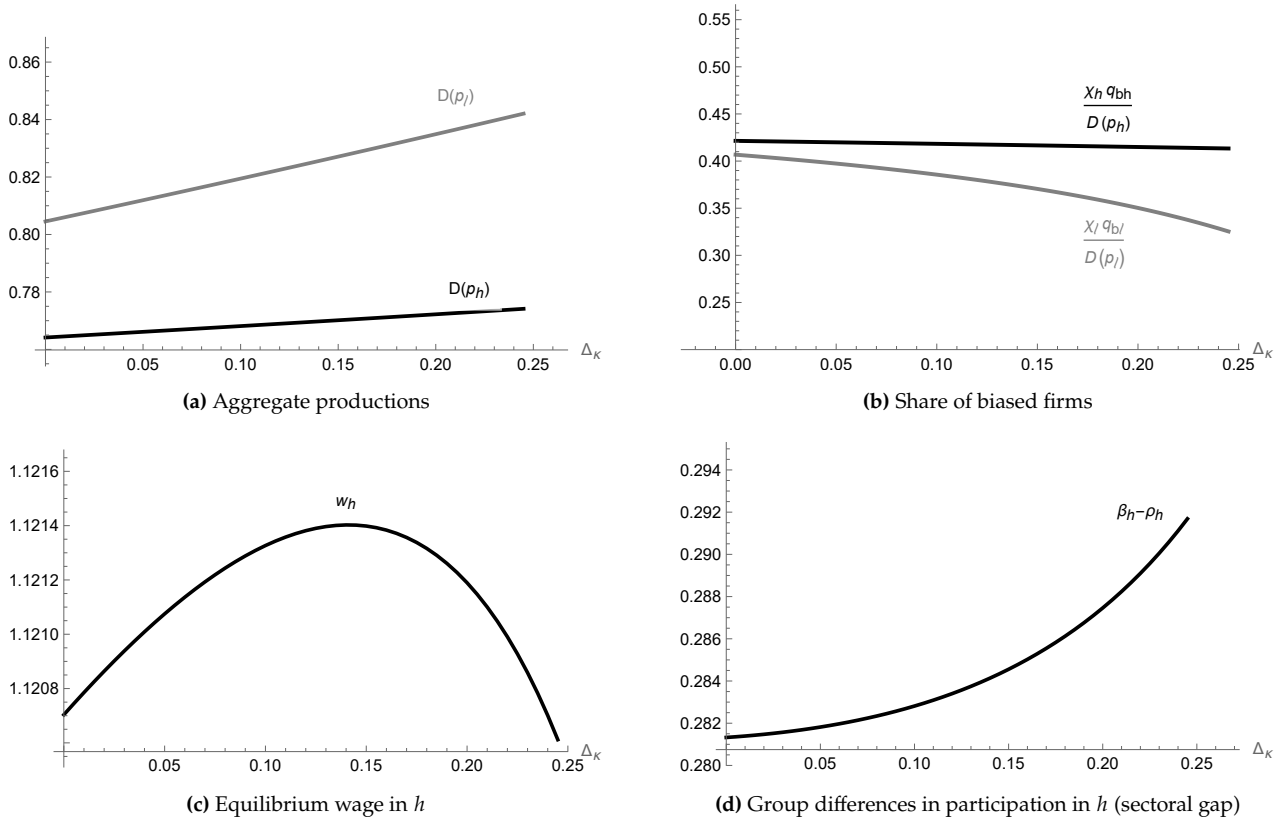
In Case (b), Eqn. (38) simplifies to

$$0 = \alpha\overline{u}\left\{\frac{\chi_h}{\beta_h}(q^*_{bh}(\kappa'') - q^*_{bh}(\kappa'))\right\}. \tag{40}$$

where $\beta_h = \beta_h(\kappa') = \beta_h(\kappa'')$. Eqn. (40) holds iff $q^*_{bh}(\kappa'') = q^*_{bh}(\kappa') = 0$.

Next, consider the case where $w_h$ changes after the shock, that is, we either have $w_h(\kappa'') > w_h(\kappa')$ or $w_h(\kappa'') < w_h(\kappa')$. Given that $w_h$ decreases (at least weakly) with $\beta_h$ in equilibrium (see Eqn. 31), and that $\rho_h = w_h - \overline{u}$, $w_h(\kappa'') > w_h(\kappa')$ implies $\beta_h(\kappa'') < \beta_h(\kappa')$ and $\rho_h(\kappa'') > \rho_h(\kappa')$, and $w_h(\kappa'') < w_h(\kappa')$ implies $\beta_h(\kappa'') > \beta_h(\kappa')$ and $\rho_h(\kappa'') < \rho_h(\kappa')$. Next, we show that only the former case (that is, $\beta_h(\kappa'') < \beta_h(\kappa')$ and $\rho_h(\kappa'') > \rho_h(\kappa')$) is possible in in any stable (in a standard, tâtonnement sense) equilibria of the model.

Recall that an equilibrium value of $\beta_h$ must satisfy $\Gamma(\beta_h) = 0$, where $\Gamma(\beta_h)$ is as defined in Eqn. (36). As discussed in Part 3 of Proposition 1, in any stable equilibrium, the $\Gamma(\beta_h)$ function crosses 0 from above. When $\kappa_h$ decreases, holding $\beta_h$ and, thus, $w_h$ fixed, $q^*_{bh}$ decreases. The $\Gamma(\beta_h)$ function then decreases (shifts downward) for any $\beta_h > \chi_h q^*_{bh}$ (such that $\frac{\chi_h q^*_{bh}}{\beta_h} < 1$), and it does not change for $\beta_h \leq \chi_h q^*_{bh}$. It follows that the equilibrium value of $\beta_h$ (the point where $\Gamma(\beta_h)$ crosses 0) moves to the left when $\kappa_h$ decreases. Therefore, in any stable equilibrium of the model, we must have $\beta_h(\kappa'') \leq \beta_h(\kappa')$ and, thus, $w_h(\kappa'') \geq w_h(\kappa')$ and $\rho_h(\kappa'') \geq \rho_h(\kappa')$, when $\kappa_h$ decreases from $\kappa'$ to $\kappa''$. □




**(a)** Aggregate productions

**(b)** Share of biased firms

**(c)** Equilibrium wage in $h$

**(d)** Group differences in participation in $h$ (sectoral gap)

**Figure IA1.** This figure plots some of the equilibrium outcomes against $\Delta_\kappa$, where $\kappa_\ell = 0.5 - \Delta_\kappa$ and $\kappa_h = 0.7 - 0.3\Delta_\kappa$. In Panels (a) and (b), black lines correspond to sector $h$, and gray lines to sector $\ell$. The other parameter values are the same as in Figure 1.

## A.4 Uneven Competitive Pressure

In this section, we briefly discuss the robustness of our main qualitative results in Proposition 1 to the case where the cost of capital decreases in *both* sectors, but the decline is more pronounced in the $\ell$ sector. To illustrate our results, we use the same numerical simulation of the model we described in Figure 1, but now consider the case where both $\kappa_h$ and $\kappa_\ell$ decrease. Figure IA1 plots the equilibrium outcomes against $\Delta_\kappa$, which parametrizes the drop in $\kappa_\ell$, while the drop in $\kappa_h$ is $0.3 \times \Delta_k$. To simplify the exposition, we describe the first-period outcomes only.

As $\Delta_\kappa$ increases, production increases and competition intensifies in both sectors, but relatively more in sector $\ell$, as the reduction in $\kappa_\ell$ is larger than that in $\kappa_h$. The aggregate production of biased firms then shrinks significantly more in $\ell$. The effects on total production and the relative share of biased firms are described in Panels (a) and (b) respectively.

Panels (c) and (d) describe the effects on the equilibrium wage $w_h$ and the sectoral gap, which is captured by the difference $\beta_h - \rho_h$ (the difference in the masses of blue and red workers that enter $h$). Since landing a job at a biased firm in $\ell$ becomes relatively more difficult, blue workers become increasingly more likely to seek employment in sector $h$. Unlike the case where only $\kappa_\ell$ decreases, however, the inflow of blue workers into $h$ here does not necessarily crowd out

the marginal red workers in that sector. The reason is that, for small values of $\Delta_\kappa$, the inflow of blue workers alone is not enough to satisfy the increased labor demand in $h$ that follows the reduction in $\kappa_h$. The equilibrium wage $w_h$ then goes up so that also some red workers are motivated to enter $h$ (recall that all the red workers with $c_i \leq w_h - \overline{u}$ enter $h$ in equilibrium, so that $\rho_h$ always increases with $w_h$). The sectoral gap, however, still increases, since blue workers are still relatively more eager to enter $h$, as they respond to both the increase in $w_h$ and in the relative chances to land a job at a biased firm in $h$ versus in $\ell$. So $\beta_h$ increases more than $\rho_h$ when $\Delta_\kappa$ increases. For larger values of $\Delta_\kappa$, the comparative statics are the same as in Figure 1, with $w_h$ decreasing and $\beta_h - \rho_h$ increasing with $\Delta_\kappa$, where the sectoral gap here widens because $\beta_h$ increases and $\rho_h$ decreases when $\Delta_\kappa$ increases.

It is worth emphasizing that, for small values of $\Delta_\kappa$, the effects of an increase in $\Delta_\kappa$ on equilibrium wages and gender sorting closely match our empirical results on the effects of the banking deregulation. After the deregulation (which here is captured by an increase in $\Delta_\kappa$, which reduces $\kappa_\ell$ and, to a lesser extent, $\kappa_h$) we see that (a) relative wages for women and men converge in low-pay-gap sectors, mostly driven by a reduction in men's wages, (b) overall wages in high-pay-gap sectors increase, and (c) men become relatively more represented in high-pay-gap sectors.

# B Additional Industry Characteristics

**Additional Industry Characteristics.** Table (B.2) lists industries exhibiting the highest and lowest pay gaps. Overall, service-oriented industries exhibit the highest pay gaps, which include Legal services, Advertising, Accounting services, Physicians, and Dentists. Agricultural and Care industries exhibit more equitable pay. Pay gaps in Physicians and Dentists offices are mostly driven by high levels of occupational segregation, where women dominate care taking activities like nursing. High-pay-gap sectors on average pay more than low-pay-gap sectors throughout the sample period (Figure 3.A). Compared to low-pay-gap sectors, average pay is around 21% higher in high-pay-gap sectors. This difference is driven almost exclusively by higher wages for men (Figure B.2.B).

# C Balance and Overlap with Other Events

## C.1 Balance in Covariates

Figure (C.3) presents differences in covariates (pertaining to both firms and workers) between states that have not been deregulated and states that will be deregulated within the next year. Differences are shown for both intrastate deregulation events and interstate deregulation events.

## C.2 Balance in Covariates' Trends

Figure (C.4) presents differences in the trend of covariates (pertaining to both firms and workers, and presented in Figure (C.3)) between states that have not been deregulated and states that will be deregulated within the next year. Differences are shown for both intrastate deregulation events and interstate deregulation events.

## C.3 Overlap with Other Events

Figure (C.5) presents estimates from prediction tests assessing whether changes in state minimum wages (Panel A), right to work laws (Panel B), gubernatorial ideology shifting from left-leaning to right-leaning (Panel C), and state-level voters ideology, normalized by standard deviation (Panel D), predict the passage of intrastate bank deregulation $h$ years before or after the deregulation event, within an event window of $h \in [-5, 5]$. Panels A, C, and D include year and state fixed effects, while Panel B includes only year fixed effects, as right-to-work laws were largely enacted outside the event window. All estimates are statistically and economically indistinguishable from zero. Labor regulation – proxied by state-level minimum wages and right-to-work laws – as well as state-level political ideology do not systematically predict the timing of deregulation.

# D Symmetry, Generalizability Across Periods, and Vulnerability

We have shown that banking deregulation increases relative wages for women in the low-paying low-pay-gap sectors. A natural ensuing question is whether these gains are permanent. More specifically, if an easing of credit access reduces the pay gap for women in some industries, do credit contractions have the opposite effect – are women's wages more vulnerable to credit contractions?

**Additional Data Sources.** For our analysis on credit contractions, we use bank mergers that led to branch closings as our treatment. We use two alternative methods to pinpoint mergers that work as credit supply shocks. For both methods we restrict to mergers occurring during the 2000s but prior to the Great Recession, in order to avoid capturing many of the mergers that occurred *because* of the recession. We use the FDIC Call Reports and Summary of Deposits to identify business combinations and branch closings.

In our first method, we select mergers with the largest transfer of branches. This is important since the credit shock should be strong enough to affect labor markets – which are typically larger than census tract. For that reason, we restrict to mergers with more than 1000 branches acquired. This leaves us with two specific mergers: the merger of Firstar Corporation with

U.S. Bancorp in 2001, and the merger of Bank of America and FleetBoston Financial in 2004. In our second method, as a form of robustness, we run our analysis using mergers that exactly conform to Nguyen (2019). Like she does, we choose mergers where both Buyer and Target held at least $10 billion in premerger assets, and the branch network of each bank overlaps in at least one Census tract.

**Empirical Specification.** Nguyen (2019) shows that post-merger branch consolidation reduces local small business lending. In contrast to bank deregulation which occurred at state level, bank mergers led to credit contraction at county levels mostly by limiting access to local branches. Since the effects stemming from bank mergers are more localized, we focus on the effects of credit contractions at the county rather than state level.

We can assess whether a reduction in credit increases the gender pay gap in low-pay-gap sectors. Let $\Omega = \{High, Medium, Low\}$ denote the classifications of industries into low-, medium-, and high- (preperiod) pay-gap sectors, and $I_j^k$ a dummy indicating whether industry $j$ falls into classification $k \in \Omega$. We now have the following specification:

$$\begin{aligned} Y_{ijct} &= \alpha + \sum_{k\in\Omega} \beta_k D_{ct} \times I_j^k + \sum_{k\in\Omega} \gamma_k D_{ct} \times I_j^k \times F_i + \sum_{k\in\Omega} \delta_k I_j^k \times F_i \\ &\quad + \sum_{k\in\Omega} \zeta_k I_j^k + \pi X_{ijst} + \mu_{t,female} + \mu_{s,female} + \epsilon_{ijst} \end{aligned} \tag{41}$$

for $D_{ct} = Post_{mt} \times Close_{cm}$, where $i$ denotes individual, $c$ denotes county, $m$ denotes merger deal and $t$ denotes time. $Post_{mt}$ equals 1 if merger $m$ precedes year $t$, $Close_{cm}$ is a dummy equal to 1 if a branch has closed in county $c$ after merger $m$.

**Effects of Bank Mergers on Gender Pay Gaps.** We intend to test whether, following weakened credit conditions and absent better job prospects for workers at high-paying high-pay-gap sectors, credit-induced relative wage gains for women in low-pay-gap sectors disappears, i.e., relative wages for women would decline. We find that is the case. Table (D.4) reports the effects of bank mergers on wages. While high- and median-pay gap sectors are largely unaffected by bank mergers, low-pay-gap sectors show a reduction in women's wages of about 3 to 4%, while wages for men increase by about 2%. Overall, the pay gap increases by about 6%. Importantly, workers in high-pay-gap sectors are unaffected. The results are robust to the inclusion of controls, including age, race, and marital status.

Jointly, our results so far show that credit expansions alter workers' calculus of industry choice in a gendered way. Our bank merger analysis highlights that this effect is not permanent. Credit contractions can erase the gains women had obtained in low-pay-gap sectors while not affecting the gains men enjoyed in high-pay-gap sectors. Consequently, the emergence of labor dynamics leaves women more vulnerable to the deterioration of economic conditions.

The vulnerability of women's wages goes hand in hand with changes in the cyclicality of women's employment. Since the 1991 recession, female employment cyclicality has started to resemble that of male employment (Albanesi 2019). Moreover, female labor participation has been associated with increases in total factor productivity, while reduced growth in female participation (which would follow declines in female wages) is connected with jobless recoveries, affecting overall economic performance (Albanesi 2019).

# E Robustness of Industry Equitability Categorization

A potential concern is that the low-pay-gap or high-pay-gap classifications are endogenous outcomes, and thus we cannot include the always-treated states in our analysis. For our main categorization, whereby industries are categorized during the 5-year window spanning 1976 to 1980, there are 17 always-treated states for intrastate deregulation and one always-treated state for interstate deregulation (Maine). (Estimates excluding Maine presented in Table (E.6)).

To mitigate this concern, we show that excluding all seventeen always-treated states does not change industry categorization. Table (E.5) shows that all high-pay-gap sectors remain classified as high-pay-gap after excluding always treated states. Only one industry classified as low-pay-gap was reclassified after excluding the always-treated states: Lumber and building material retailing (CPS ind1990 = 580) moved from the low-pay-gap category to the medium-pay-gap category. Overall, only two industries changed classification – the other being Electric light and power (CPS ind1990 = 450), which moved from the medium-pay-gap category to the high-pay-gap category.

To further mitigate any concerns, we have provided three additional sets of robustness analyses: (1) estimates from both the interstate deregulation and the intrastate deregulation for comparison; (2) estimates using a categorization whereby industries are categorized during the 5 year window spanning 1968 to 1972 (Appendix Table H.12), which reduces always-treated states to 13; and (3) categorization using industry measures of asset tangibility (Table H.11). All estimates are similar in direction, magnitude, and statistical significance.

# F Effects on Hours Worked

Table (F.7) shows results on the effects of deregulation on weekly hours worked by gender.

# G Effects on Direct Lending to Workers

## G.1 Effects of Bank Deregulation on Gender Differences in Housing and Transportation

One potential concern is that financial deregulation operates by *directly* affecting workers instead of firms. To mitigate these concerns, we estimate Eqn. (8) using household outcomes that

would directly benefit from increased access to credit: homeownership, holding a mortgage, car ownership, moving into a new dwelling (potentially triggered by relocating for a better job), and transportation time (potentially triggered by commuting to a better job). All these dimensions are potentially affected by financial constraints.

We report estimates in Tables (G.8) and (G.9). While it is not clear whether relaxing financial constraints for any of these dimensions would lead to the cross-sectoral dynamics we have documented in the paper, it is reassuring to find no economic or statistically meaningful gender differences following deregulation along any of these dimensions for both intrastate and interstate deregulation.

### G.2 Effects of Bank Deregulation on Gender Differences in Self-Employment

Another potential concern is that financial deregulation may affect self-employment opportunities for women. We can test this directly by estimating Eqn. (8) using self-employment as an outcome. Self-employment can become easier, if financial constraints are relaxed, or harder, if relaxing the financial constraints of bigger firms makes it harder for individuals to compete.

We report estimates in Table (G.10) by type of self-employment for: (1) all sectors, (2) low-pay-gap sectors only, and (3) high-pay-gap sectors only. Panel A shows estimates for intrastate deregulation, while Panel B shows effects for interstate deregulation. Intrastate deregulation does not affect gender differences in self-employment for any of the three industry categories and any type of self-employment. Interstate deregulation does not have economically meaningful effects on gender differences in unincorporated self-employment. In contrast, for incorporated self-employment, there are small but statistically significant gender differences in incorporated self-employment of between 0.69 and 1.04%. These effects are mostly driven by lower rates of incorporated self-employment among men than increases among women. Despite this, it is unlikely that these gender differences in incorporated self-employment for interstate deregulation are driving our core results, since the core results hold for both intrastate and interstate deregulation.

## H Alternative Categorizations

We repeat the main estimates of the paper (Table 3) using alternative ways of categorizing workers. In particular, we categorize industries by (i) using 1968–1972 as the categorization period instead of 1976–1980 (Table H.12), and (ii) by asset tangibility (Table H.11). Our main results do not meaningfully change if we follow an alternative categorization procedure. Further analysis on this robustness exercise is contained in Section 6.3.

# Appendix Figures and Tables

## Table B.1: Summary Statistics

### Panel A: Summary Statistics for Individuals (CPS)

| | All Industries | | Low-pay-gap Sector | | High-pay-gap Sector | |
|---|---|---|---|---|---|---|
| | Men | Women | Men | Women | Men | Women |
| Wage (hourly) | $13.65 | $10.65 | $11.61 | $10.62 | $16.54 | $11.11 |
| | ($1.97) | ($1.97) | ($1.98) | ($1.96) | ($2.54) | ($2.04) |
| Education (years) | 13.1 | 13.3 | 12.6 | 13.4 | 14.0 | 13.4 |
| | (2.9) | (2.6) | (3.2) | (2.5) | (2.7) | (2.6) |
| – HS Grad &Equiv(%) | 21.7 | 22.4 | 22.6 | 22.6 | 15.1 | 20.0 |
| | (41.3) | (41.7) | (41.8) | (41.8) | (35.8) | (40.0) |
| – College(%) | 16.6 | 18.2 | 13.7 | 18.0 | 24.8 | 19.4 |
| | (37.2) | (38.6) | (34.4) | (38.5) | (43.2) | (39.5) |
| – Post-College(%) | 4.5 | 5.0 | 4.2 | 4.6 | 7.0 | 4.4 |
| | (20.7) | (21.8) | (20.1) | (21.0) | (25.5) | (20.5) |
| Age | 40.7 | 40.2 | 40.1 | 40.2 | 40.9 | 39.7 |
| | (10.3) | (10.2) | (10.4) | (10.3) | (10.2) | (10.1) |
| Experience | 27.6 | 26.9 | 27.4 | 26.8 | 26.9 | 26.3 |
| | (10.8) | (10.8) | (11.0) | (10.8) | (10.6) | (10.8) |
| Participation(%) | 65.1 | 34.9 | 58.1 | 41.9 | 61.7 | 38.3 |

### Panel B: Summary Statistics for Public Firms

| | All Industries | Low-pay-gap Sector | High-pay-gap Sector |
|---|---|---|---|
| Revenue per Employee($) | 242.4 | 418.3 | 224.8 |
| | (1,055.8) | (1,666.7) | (852.4) |
| Net Income per Employee($) | -31.7 | -14.0 | -45.7 |
| | (873.8) | (652.7) | (925.5) |
| Net Income + Operating Expense per Employee($) | 195.7 (910.0) | 278.3 (1,344.4) | 194.3 (737.2) |
| Employees | 6.0 | 5.5 | 4.5 |
| | (20.2) | (15.0) | (17.9) |
| Total Assets($) | 1,325.8 | 1,367.3 | 1,326.4 |
| | (10,427.3) | (6,376.7) | (12,935.6) |
| Tobin's Q | 1.02 | 0.92 | 1.09 |
| | (0.45) | (0.37) | (0.49) |
| Book Leverage | 0.51 | 0.55 | 0.47 |
| | (0.68) | (1.43) | (0.30) |
| Tangibility | 0.29 | 0.55 | 0.20 |
| | (0.24) | (0.26) | (0.17) |
| Firms | 10,089 | 1,612 | 5,981 |

NOTES: This table reports summary statistics for the main analysis sample using the Current Population Survey (CPS) (Panel A) and Compustat (Panel B) from 1976–2014. The CPS main sample is restricted to working-age full-time full-year workers in the private sector excluding FIRE industries. Hourly wages are derived from annual wage income, usual weekly hours worked, and number of weeks worked. Tobin's Q, book leverage, and tangibility are defined as follows: Tobin's Q is the ratio of total assets + shares outstanding × share price − common equity to total assets; book leverage is the ratio of short-term debt + long-term debt to short-term debt + long-term debt + stockholders equity; tangibility is the ratio of Property, Plant, and Equipment to total assets. For additional details, see Section 3.

## **Table B.2:** Highest and Lowest Pay Gap Sectors

| Top 10 Industries | Bottom 10 Industries |
|---|---|
| Offices and Clinics of Dentists | Agricultural Production, Crops |
| Offices and Clinics of Physicians | Gasoline Service Stations |
| Legal Services | Grain Mill Products |
| Drug Stores | Religious Organizations |
| Computer and Data Processing Services | Nursing and Personal Care Facilities |
| Advertising | Social Services |
| Miscellaneous Fabricated Textile Products | Household Appliance Stores |
| Management and Public Relations Services | Beverage Industries |
| Miscellaneous Professional and Related Services | Oil and Gas Extraction |
| Accounting, Auditing, and Bookkeeping Services | Residential Care Facilities, without nursing |

NOTES: This table lists the top 10 and bottom 10 industries in terms of pay gap. Pay gap is the difference between the mean log wage of male and female employees by industry during the years before and after bank deregulation using CPS. The sample is restricted to industries that hired at least 100 female and 100 male employees during the sample period, which encompasses 105 industries (out of 189 total industries) in the CPS 1990 industry classification codes.

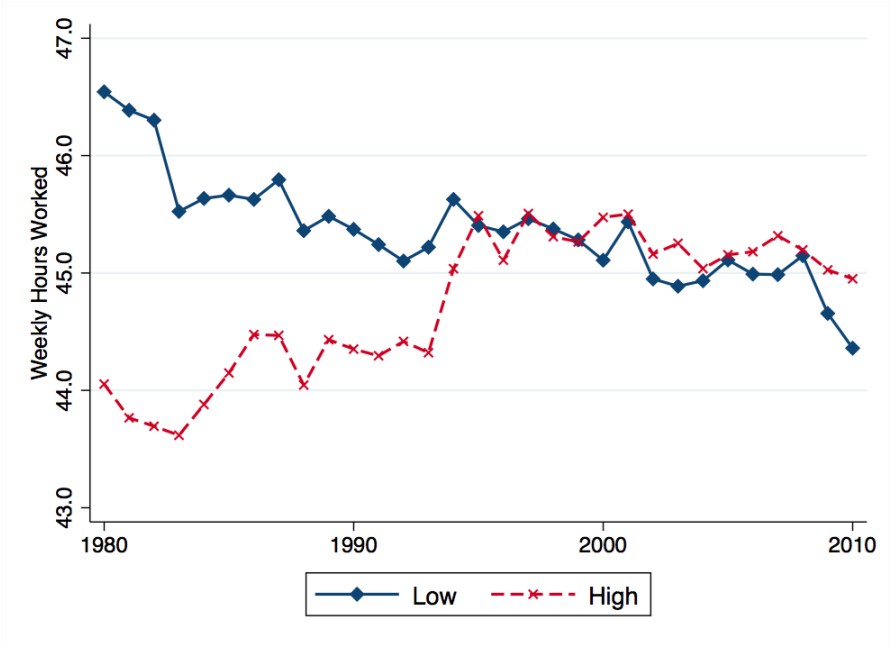
## **Table B.3:** Reliance on External Financing by Industries

| | All Industries | | Low Pay Gap Sector | | High Pay Gap Sector | |
|---|---|---|---|---|---|---|
| | Mean | sd | Mean | sd | Mean | sd |
| | Panel A: All | | | | | |
| Debt-to-Asset – Secured | 0.085 | 0.144 | 0.125 | 0.174 | 0.061 | 0.119 |
| Debt-to-Asset – Notes | 0.066 | 0.120 | 0.106 | 0.152 | 0.045 | 0.096 |
| Debt-to-Asset – Long-term | 0.163 | 0.192 | 0.236 | 0.211 | 0.123 | 0.171 |
| Leverage | 0.496 | 0.270 | 0.533 | 0.266 | 0.459 | 0.270 |
| | Panel B: Pre-Deregulation | | | | | |
| Debt-to-Asset – Secured | 0.106 | 0.152 | 0.128 | 0.174 | 0.085 | 0.127 |
| Debt-to-Asset – Notes | 0.085 | 0.127 | 0.105 | 0.148 | 0.065 | 0.105 |
| Debt-to-Asset – Long-term | 0.179 | 0.179 | 0.206 | 0.201 | 0.147 | 0.155 |
| Leverage | 0.507 | 0.252 | 0.510 | 0.282 | 0.482 | 0.238 |
| | Panel C: Post-Deregulation | | | | | |
| Debt-to-Asset – Secured | 0.082 | 0.143 | 0.124 | 0.174 | 0.059 | 0.118 |
| Debt-to-Asset – Notes | 0.064 | 0.119 | 0.106 | 0.153 | 0.043 | 0.095 |
| Debt-to-Asset – Long-term | 0.161 | 0.193 | 0.242 | 0.213 | 0.122 | 0.172 |
| Leverage | 0.495 | 0.272 | 0.538 | 0.263 | 0.457 | 0.273 |

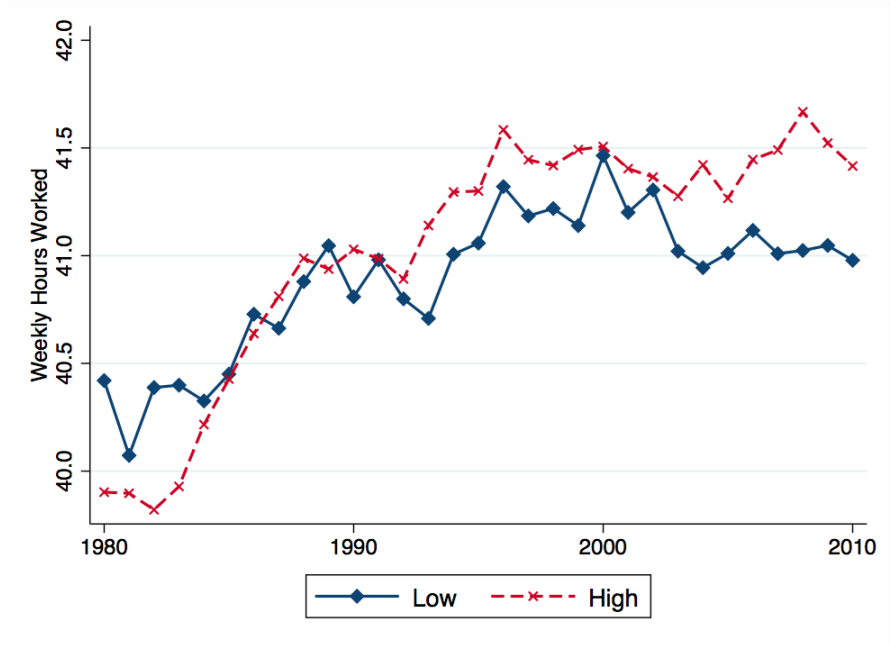
NOTES: This table reports summary statistics of debt-to-asset ratios and leverage by industry using Compustat data. Panel A reports the average and standard deviation for the entire sample period from 1976 to 2014; Panel B reports those for the period before deregulation; Panel C reports those for the period after deregulation. For details, see Section 3.

**Figure B.1** Working Hours by Gender

**Panel A:** Average Working Hours by Male Workers



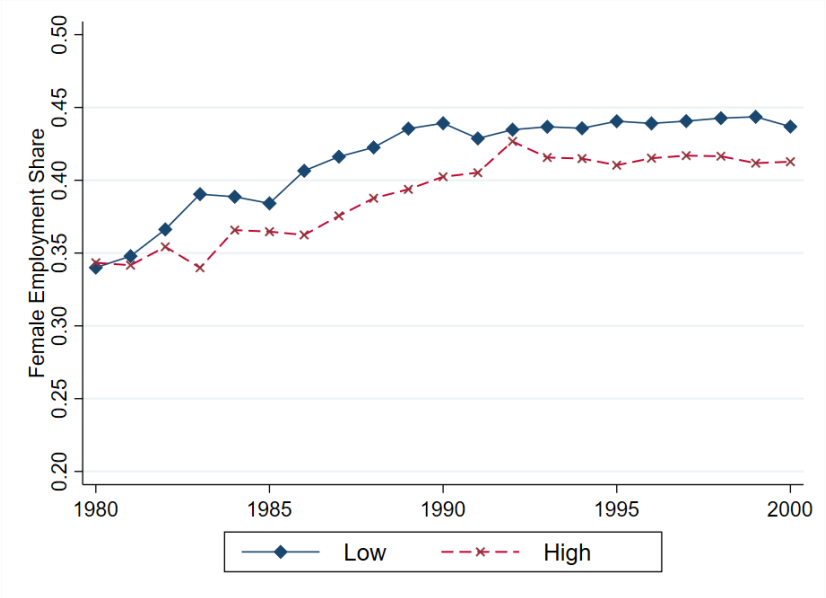

**Panel B:** Average Working Hours by Female Workers



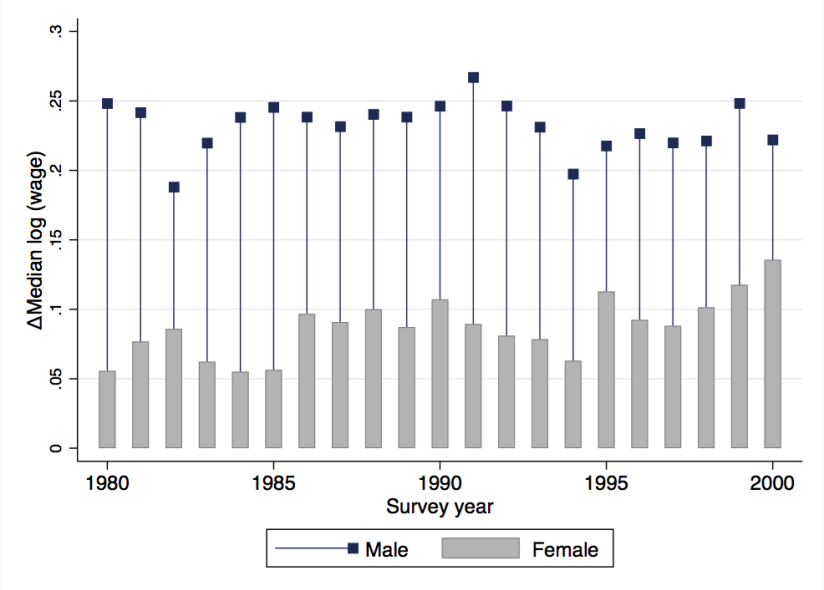

Notes: This figure plots the average weekly hours worked by gender and industry during 1980–2010 using the CPS data. The top panel plots the average weekly hours worked for full time working-age male employees in industries excluding Finance, Insurance, and Real Estate (FIRE) industries. The bottom panel plots the average weekly hours worked for female employees. Industries are categorized into low-pay-gap and high-pay-gap based on the difference in the mean log wage between male and female employees in each industry during 1976–1980. High-pay-gap sectors are defined as industries that belong to the top 25% of the pay gap distribution, and low-pay-gap sectors refer to those in the bottom 25% of the pay gap distribution.

**Figure B.2** Additional Gendered Characteristics of Low and High-Pay-Gap Sectors

**Panel A:** Female Share in Low and High-Pay-Gap Sectors



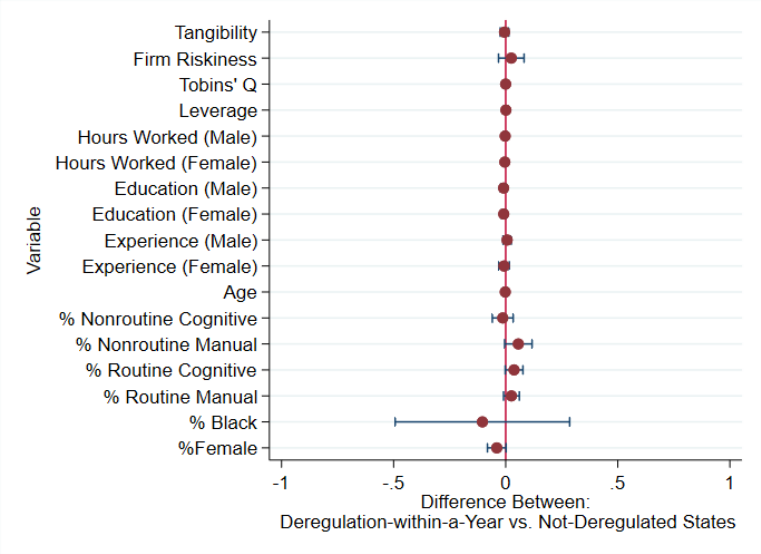

**Panel B:** Differences in Median Wage between High- and Low-Pay-Gap Sectors by Gender



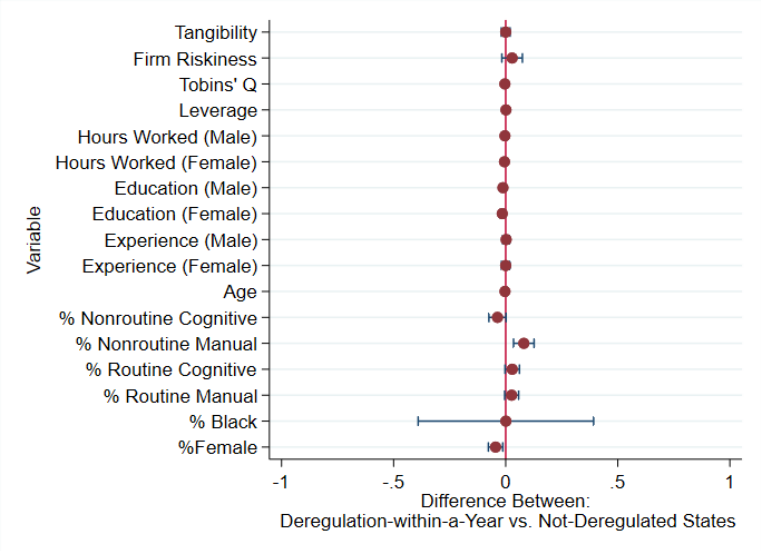

Notes: Panel A plots the share of women in low- and high-pay-gap sectors using the CPS data from 1976-2014. The sample includes full time working-age adults. Panel B plots the difference in median log wage between the high-pay-gap and low-pay-gap sectors by gender. The difference in median log wage between the two industries is computed by subtracting the median log wage of each gender in low-pay-gap sectors from that of the same gender in high-pay-gap sectors. The sample excludes individuals working in the Finance, Insurance and Real Estate (FIRE) industries. Industries are categorized into low-pay-gap and high-pay-gap based on the difference in the mean log wage between male and female employees in each industry during 1976–1980. High-pay-gap sectors are defined as industries that belong to the top 25% of the pay gap distribution, and low-pay-gap sectors refer to those in the bottom 25% of the pay gap distribution.

**Figure C.3** Balance in Covariates between Nonderegulated and Deregulated (within a year) States

**Panel A:** Intrastate Deregulation



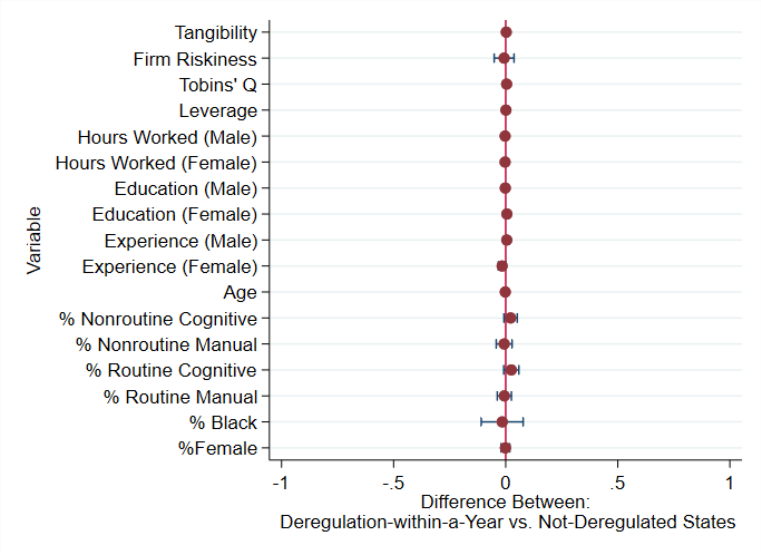

**Panel B:** Interstate Deregulation



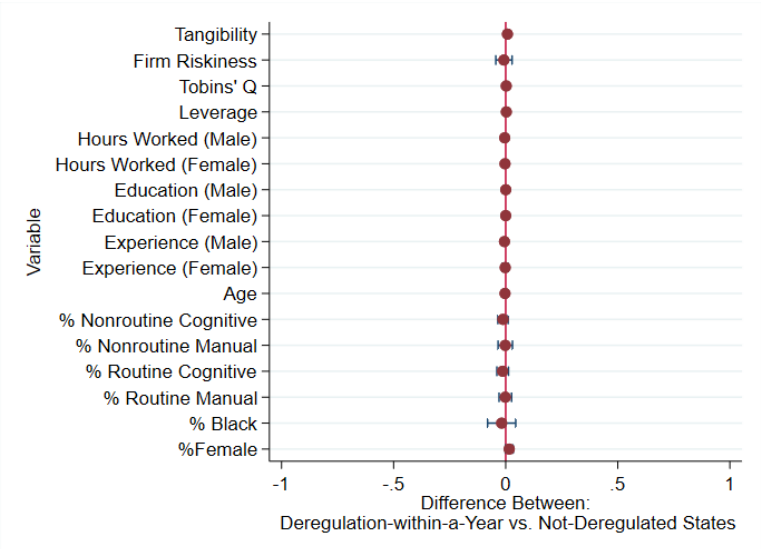

NOTES: This figure shows balance in covariates between states that have been deregulated (just before the passing of deregulation) and states that have not been deregulated. Normalized differences are computed by subtracting the average of each characteristic by deregulation status and then combining the averages. Panel A illustrates the differences in the case of intrastate deregulation, and Panel B illustrates those for interstate deregulation. Tangibility, firm riskiness (volatility of firm earnings), Tobins' q, and leverage are obtained from Compustat at the industry level and averaged by worker. Thus, they should be interpreted as workers' exposure to those industry characteristics. Data on hours worked, education, age, experience, % black, and % female are from the CPS. Occupation classifications by routine/nonroutine and cognitive/manual are based on *Dictionary of Occupational Titles* (DOT). Data cover the years 1976–2014.

**Figure C.4** Balance in Covariates' Trends between Nonderegulated and Deregulated (within a year) States

**Panel A:** Intrastate Deregulation



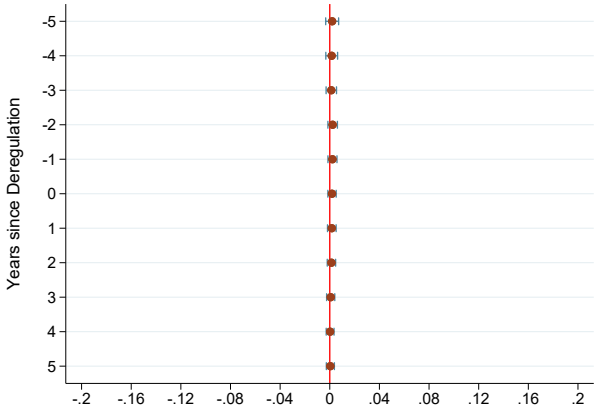

**Panel B:** Interstate Deregulation



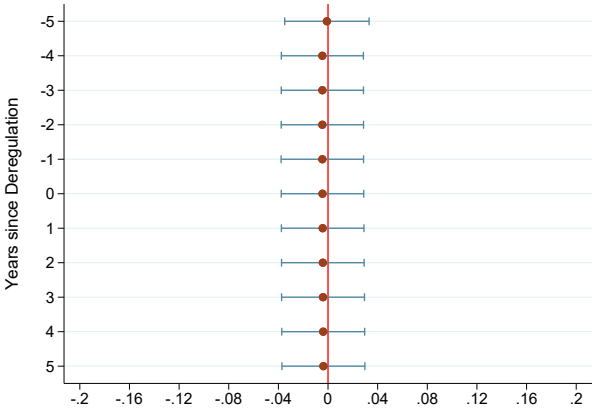

Notes: This figure shows balance in covariates between states that have been deregulated (just before the passing of deregulation) and states that have not been deregulated. Normalized differences are computed by subtracting the average of each characteristic by deregulation status and then combining the averages. Tangibility, firm riskiness (volatility of firm earnings), Tobins' q, and leverage are obtained from Compustat at the industry level and averaged by worker. Thus, they should be interpreted as workers' exposure to those industry characteristics. Data on hours worked, education, age, experience, % black, and % female are from the CPS. Occupation classifications by routine/nonroutine and cognitive/manual are based on *Dictionary of Occupational Titles* (DOT). Data cover the years 1976–2014.

**Figure C.5** Predictive Tests of
Labor Regulation and Political Ideology on Bank Deregulation

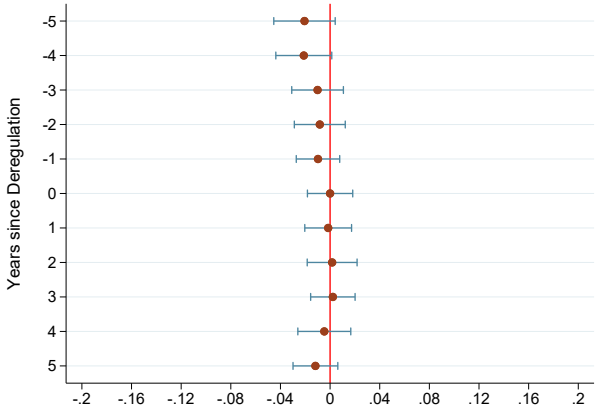
**Panel A:** Minimum Wage



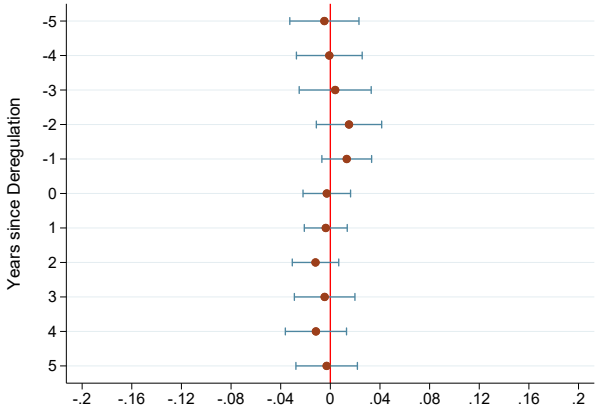

**Panel B:** Right-to-work Laws




**Panel C:** Gubernatorial Ideology




**Panel D:** Voter Ideology




Notes: This figure shows estimates from prediction tests assessing whether changes in state minimum wages (Panel A), right to work laws (Panel B), gubernatorial ideology shifting from left-leaning to right-leaning (Panel C), and state-level voter ideology, normalized by standard deviation (Panel D), predict the passage of intrastate bank deregulation $h$ years before or after the deregulation event, within an event window of $h \in [-5, 5]$. Each coefficient estimate comes from a separate regression. Panels A, C, and D include year and state fixed effects. Panel B includes only year fixed effects since right-to-work laws were largely enacted outside event window.

## **Table D.4:** Effects of Bank Mergers on Gender Pay Gap

| | TWFE | *County* × *Year* × *Gender* | | | |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| Merger × Female – Low PG Sector | -0.039*** | -0.040*** | -0.039*** | -0.028*** | -0.034*** |
| | (0.010) | (0.010) | (0.010) | (0.010) | (0.010) |
| Merger × Female – High PG Sector | 0.006 | 0.009 | 0.010 | 0.022** | 0.009 |
| | (0.012) | (0.011) | (0.011) | (0.009) | (0.011) |
| Merger × Female | 0.015 | | | | |
| | (0.013) | | | | |
| Merger – Low PG Sector | 0.009 | 0.010 | 0.010 | 0.003 | 0.009 |
| | (0.010) | (0.010) | (0.010) | (0.010) | (0.009) |
| Merger – High PG Sector | 0.014 | 0.012 | 0.012 | | 0.015 |
| | (0.010) | (0.011) | (0.011) | (0.011) | (0.010) |
| Merger | -0.002 | | | | |
| | (0.012) | | | | |
| Female – High PG Sector | -0.050*** | -0.051*** | -0.051*** | -0.060*** | -0.044*** |
| | (0.007) | (0.007) | (0.007) | (0.006) | (0.007) |
| Female – Low PG Sector | 0.131*** | 0.130*** | 0.129*** | 0.107*** | 0.127*** |
| | (0.004) | (0.005) | (0.005) | (0.005) | (0.004) |
| Low PG Sector | -0.040*** | -0.040*** | -0.039*** | -0.071*** | -0.041*** |
| | (0.004) | (0.004) | (0.004) | (0.004) | (0.004) |
| High PG Sector | 0.132*** | 0.132*** | 0.131*** | 0.091*** | 0.118*** |
| | (0.006) | (0.006) | (0.006) | (0.004) | (0.005) |
| N | 477,550 | 477,346 | 477,346 | 474,489 | 477,346 |
| County × Gender | Yes | N/A | N/A | N/A | N/A |
| Year × Gender | Yes | N/A | N/A | N/A | N/A |
| County × Year × Gender | No | Yes | Yes | Yes | Yes |
| Age × Gender | No | No | Yes | Yes | Yes |
| Skills × Gender | No | No | No | Yes | No |
| Marital Status × Gender | No | No | No | No | Yes |
| Race × Gender | No | No | No | No | Yes |

NOTES: This table reports the difference-in-differences estimates of the effects of bank merger on log hourly wages. Industries are categorized into low-pay-gap and high-pay-gap based on the difference in the mean log wage between male and female employees in each industry during 1976–1980. High-pay-gap sectors are defined as industries that belong to the top 25% of the pay gap distribution, and low-pay-gap sectors refer to those in the bottom 25% of the pay gap distribution. All specifications control for Mincerian traits × gender. Column (1) includes county × gender and year × gender fixed effects. Columns (2)–(5) include county × year × gender fixed effects. Column (3) controls for age-gender fixed effects. Columns (4) accounts for gender differences in the skill content of jobs. Skill content of a job follows the routine/nonroutine, cognitive/manual classification used in Autor et al. (2003). Columns (5) adds demographic controls × gender. Errors are clustered at the county level and reported in parentheses. *,**, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

**Table E.5:** Comparison of Industry Categorization using Alternative Sample — Excluding States Always-Treated for Intrastate Bank Deregulation

| # Industries in Subsample Original Categorization (1) | # Industries Unchanged After Recategorization Excluding Always Treated (2) | Match Rate(%) (3) |
|---|---|---|
| **Panel A: All Industries** | | |
| 189 | 187 | 99% |
| **Panel B: Low Pay Gap Sector** | | |
| 46 | 45 | 98% |
| **Panel C: High Pay Gap Sector** | | |
| 51 | 51 | 100% |

NOTES: The table reports the number of low and high-pay-gap sectors within a subsample excluding the 17 states that deregulated prior to 1980. Column (1) shows the number of total, low-, and high-pay-gap sectors categorized using the full sample. Column (2) shows the number of industries whose categories remain unchanged after they are recategorized into low-, medium-, and high-pay-gap sectors using the subsample. Column (3) reports the match rate between the main and sub-sample. Two industries changed categories after re-categorization: *Electric light and power* (CPS ind1990 = 450) moved from the medium-pay-gap to the high-pay-gap category, while *Lumber and building material retailing* (CPS ind1990 = 580) moved from the low-pay-gap to the medium-pay-gap category.

**Table E.6:** Effects of Interstate Bank Deregulation on Gender Pay Gap — Excluding States Always-Treated for Intrastate Bank Deregulation

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| Deregulation × Female | -0.02** | -0.02** | -0.02** | -0.02** |
| | (0.01) | (0.01) | (0.01) | (0.01) |
| Deregulation × Female – Low PG Sector | 0.05*** | 0.05*** | 0.04*** | 0.04*** |
| | (0.01) | (0.01) | (0.01) | (0.01) |
| Deregulation × Female – High PG Sector | 0.01 | 0.01 | 0.01 | 0.01 |
| | (0.01) | (0.01) | (0.01) | (0.01) |
| Deregulation | -0.05*** | -0.05*** | -0.05*** | -0.05*** |
| | (0.01) | (0.01) | (0.01) | (0.01) |
| Deregulation – Low PG Sector | 0.01* | 0.01* | 0.02** | 0.01* |
| | (0.01) | (0.01) | (0.01) | (0.01) |
| Deregulation – High PG Sector | 0.10*** | 0.10*** | 0.10*** | 0.10*** |
| | (0.01) | (0.01) | (0.01) | (0.01) |
| Female – Low PG Sector | 0.13*** | 0.13*** | 0.13*** | 0.13*** |
| | (0.01) | (0.01) | (0.01) | (0.01) |
| Female – High PG Sector | -0.03*** | -0.03*** | -0.03*** | -0.03*** |
| | (0.01) | (.01) | (.01) | (.01) |
| Low PG Sector | -0.19*** | -.19*** | -.19*** | -.19*** |
| | (0.01) | (.01) | (.01) | (.01) |
| High PG Sector | 0.02** | 0.02** | 0.02*** | 0.02** |
| | (0.01) | (0.01) | (0.01) | (0.01) |
| N | 804,878 | 804,878 | 804,878 | 804,878 |
| State × Gender | Yes | Yes | Yes | Yes |
| Year × Gender | Yes | Yes | Yes | Yes |
| Age × Gender | No | Yes | Yes | Yes |
| Marital Status × Gender | No | No | Yes | No |
| Race × Gender | No | No | No | Yes |

NOTES: This table reports the difference-in-differences estimates of the effects of bank deregulation on log hourly wages, excluding states that deregulated prior to 1980. Columns (1)–(4) report the effects of intrastate deregulation, excluding the 17 states that deregulated prior to 1980. Industries are categorized into low-pay-gap and high-pay-gap based on the difference in the mean log wage between male and female employees in each industry during 1976–1980. High-pay-gap sectors are defined as industries that belong to the top 25% of the pay gap distribution, and low-pay-gap sectors refer to those in the bottom 25% of the pay gap distribution. All specifications control for Mincerian traits×gender, and state×gender and year×gender fixed effects. Columns (3)–(4) additionally control for age×gender fixed effects. For more details, see Section 4.2. Errors are clustered at the state level and reported in parentheses. *,**, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

**Table F.7:** Effects of Bank Deregulation on Weekly Hours Worked

| | Intrastate Deregulation | | | | | Interstate Deregulation | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | TWFE | *State × Event Time × Gender* | | | | TWFE | *State × Event Time × Gender* | | | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
| Deregulation × Female – Low PG Sector | 1.000*** | 0.958*** | 0.959*** | 0.941*** | 0.917*** | 1.081*** | 1.059*** | 1.061*** | 1.043*** | 1.025*** |
| | (0.140) | (0.143) | (0.144) | (0.138) | (0.141) | (0.118) | (0.122) | (0.123) | (0.119) | (0.125) |
| Deregulation × Female – High PG Sector | 0.004 | 0.028 | 0.034 | 0.053 | 0.058 | 0.013 | 0.024 | 0.026 | 0.065 | 0.052 |
| | (0.133) | (0.133) | (0.134) | (0.125) | (0.138) | (0.103) | (0.108) | (0.109) | (0.104) | (0.111) |
| Deregulation × Female | -0.288*** | | | | | -0.303** | | | | |
| | (0.093) | | | | | (0.130) | | | | |
| Deregulation – Low PG Sector | -1.071*** | -1.037*** | -1.037*** | -0.970*** | -0.991*** | -1.304*** | -1.285*** | -1.287*** | -1.225*** | -1.249*** |
| | (0.117) | (0.118) | (0.118) | (0.111) | (0.114) | (0.104) | (0.102) | (0.103) | (0.100) | (0.100) |
| Deregulation – High PG Sector | 0.084 | 0.055 | 0.047 | -0.004 | 0.024 | 0.095 | 0.069 | 0.062 | -0.013 | 0.034 |
| | (0.113) | (0.113) | (0.113) | (0.106) | (0.121) | (0.113) | (0.115) | (0.115) | (0.106) | (0.114) |
| Deregulation | 0.193** | | | | | 0.329*** | | | | |
| | (0.091) | | | | | (0.108) | | | | |
| Female – Low PG Sector | -2.277*** | -2.233*** | -2.240*** | -1.810*** | -2.290*** | -2.271*** | -2.246*** | -2.254*** | -1.825*** | -2.311*** |
| | (0.129) | (0.134) | (0.134) | (0.124) | (0.130) | (0.116) | (0.122) | (0.123) | (0.117) | (0.120) |
| Female – High PG Sector | -0.071 | -0.090 | -0.091 | -0.037 | -0.083 | -0.080 | -0.087 | -0.086 | -0.043 | -0.076 |
| | (0.142) | (0.141) | (0.142) | (0.130) | (0.140) | (0.114) | (0.113) | (0.115) | (0.110) | (0.114) |
| Low PG Sector | 1.938*** | 1.908*** | 1.915*** | 1.577*** | 1.967*** | 2.060*** | 2.043*** | 2.052*** | 1.721*** | 2.112*** |
| | (0.111) | (0.111) | (0.110) | (0.105) | (0.107) | (0.097) | (0.096) | (0.095) | (0.094) | (0.092) |
| High PG Sector | -0.154 | -0.122 | -0.121 | -0.140* | -0.127 | -0.155 | -0.127 | -0.127 | -0.134 | -0.131 |
| | (0.095) | (0.094) | (0.095) | (0.082) | (0.094) | (0.105) | (0.103) | (0.104) | (0.097) | (0.103) |
| N | 815,650 | 815,650 | 815,650 | 812,716 | 815,650 | 815,650 | 815,650 | 815,650 | 812,716 | 815,650 |
| State × Gender | Yes | N/A | N/A | N/A | N/A | Yes | N/A | N/A | N/A | N/A |
| Year × Gender | Yes | N/A | N/A | N/A | N/A | Yes | N/A | N/A | N/A | N/A |
| State × Event Time × Gender | No | Yes | Yes | Yes | Yes | No | Yes | Yes | Yes | Yes |
| Skills × Gender | No | No | No | Yes | No | No | No | No | Yes | No |
| Marital Status × Gender | No | No | No | No | Yes | No | No | No | No | Yes |
| Race × Gender | No | No | No | No | Yes | No | No | No | No | Yes |

NOTES: This table reports the difference-in-differences estimates of the effects of bank deregulation on hours worked. Columns (1)–(5) report the effects of intrastate deregulation as the treatment, and columns (6)–(10) report the effects of interstate deregulation as the treatment. Deregulation is a dummy variable that takes the value one for the years after deregulation and 0 otherwise. Industries are categorized into low-pay-gap and high-pay-gap based on the difference in the mean log wage between male and female employees in each industry during 1976–1980. High-pay-gap sectors refer to industries that belong to the top 25% of the pay gap distribution, and low-pay-gap sectors refer to those in the bottom 25% of the pay gap distribution. High PG is a dummy variable that takes the value one for high-pay-gap sectors and 0 otherwise. Low PG is a dummy variable that takes the value one for low-pay-gap sectors and 0 otherwise. All specifications control for Mincerian traits × gender. Columns (1) and (6) include state × gender and year × gender fixed effects. Columns (2)–(5) and (7)–(10) include state × event time × gender fixed effects. Columns (3) and (8) control for age-gender fixed effects. Columns (4) and (9) account for gender differences in the skill content of jobs. Skill content of a job follows the routine/nonroutine, cognitive/manual classification used in Autor et al. (2003). Columns (5) and (10) add demographic controls × gender. Errors are clustered at the state level and reported in parentheses. *,**, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

**Table G.8:** Effects of Intrastate Bank Deregulation on Gender Differences in Housing and Transportation

| | Owns House (1) | Moved House (2) | Mortgage (3) | Owns Car (4) | Transportation Time (5) |
|---|---|---|---|---|---|
| **Panel A: All Industries** | | | | | |
| Deregulation × Female | -0.0024 | -0.0006 | -0.0014 | -0.0015 | 0.0069 |
| | (0.0068) | (0.0051) | (0.0024) | (0.0032) | (0.0063) |
| Deregulation | 0.0171* | -0.0035 | -0.0102 | 0.0153** | -0.0032 |
| | (0.0092) | (0.0065) | (0.0082) | (0.0067) | (0.0147) |
| N | 815,650 | 688,547 | 5,345,055 | 8,806,388 | 6,144,008 |
| **Panel B: Low Pay Gap Industries** | | | | | |
| Deregulation × Female | -0.0088 | 0.0015 | -0.0036 | -0.0064 | 0.0072 |
| | (0.0097) | (0.0093) | (0.0029) | (0.0042) | (0.0078) |
| Deregulation | 0.0181** | -0.0052 | -0.0085 | 0.0150** | -0.0063 |
| | (0.0090) | (0.0085) | (0.0072) | (0.0064) | (0.0119) |
| N | 207,486 | 179,480 | 1,139,255 | 1,972,398 | 1,412,705 |
| **Panel C: High Pay Gap Industries** | | | | | |
| Deregulation × Female | 0.0051 | 0.0041 | -0.0000 | -0.0003 | -0.0015 |
| | (0.0100) | (0.0107) | (0.0046) | (0.0027) | (0.0076) |
| Deregulation | 0.0063 | -0.0052 | -0.0060 | 0.0152** | 0.0099 |
| | (0.0107) | (0.0084) | (0.0092) | (0.0063) | (0.0148) |
| N | 205,400 | 172,006 | 1,279,888 | 2,058,252 | 1,421,266 |
| County × Gender | Yes | Yes | Yes | Yes | Yes |
| Year × Gender | Yes | Yes | Yes | Yes | Yes |
| Controls | Yes | Yes | Yes | Yes | Yes |
| Data | CPS | CPS | Census | Census | Census |

Notes: This table reports the difference-in-differences estimates of the effects of intrastate bank deregulation on differences in housing and transportation by gender using the CPS data from 1976–2014 and the Census data from 1980–2000. Both samples are restricted to working-age full-time full-year workers in the private sectors, excluding the FIRE industries. The dependent variables are ownership of dwelling for column (1), moving to a different house for column (2), holding a mortgage for column (3), car ownership for column (4), and transportation time for column (5). Industries are categorized into low-pay-gap and high-pay-gap based on the difference in the mean log wage between male and female employees in each industry during 1976–1980. High-pay-gap sectors are defined as industries that belong to the top 25% of the pay gap distribution, and low-pay-gap sectors refer to those in the bottom 25% of the pay gap distribution. All specifications control for Mincerian traits×gender, and state×gender and year×gender fixed effects. For more details, see Section 4.2. Errors are clustered at the state level and reported in parentheses. *,**, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

## **Table G.9:** Effects of Interstate Bank Deregulation on Gender Differences in Housing and Transportation

| | Owns House (1) | Moved House (2) | Mortgage (3) | Owns Car (4) | Transportation Time (5) |
|---|---|---|---|---|---|
| **Panel A: All Industries** | | | | | |
| Deregulation × Female | -0.0014 | -0.0000 | -0.0118 | -0.0053 | 0.0053 |
| | (0.0025) | (0.0030) | (0.0117) | (0.0072) | (0.0075) |
| Deregulation | -0.0014 | 0.0014 | -0.0135 | 0.0114* | -0.0022 |
| | (0.0067) | (0.0055) | (0.0139) | (0.0062) | (0.0048) |
| N | 5,345,055 | 8,806,388 | 6,144,008 | 815,650 | 688,547 |
| **Panel B: Low Pay Gap Industries** | | | | | |
| Deregulation × Female | -0.0074 | -0.0034 | -0.0064 | -0.0187 | -0.0053 |
| | (0.0097) | (0.0049) | (0.0189) | (0.0180) | (0.0114) |
| Deregulation | -0.0079 | -0.0011 | -0.0070 | 0.0238** | -0.0071 |
| | (0.0078) | (0.0072) | (0.0160) | (0.0093) | (0.0118) |
| N | 1,139,255 | 1,972,398 | 1,412,705 | 207,486 | 179,480 |
| **Panel C: High Pay Gap Industries** | | | | | |
| Deregulation × Female | -0.0015 | -0.0029 | -0.0155 | -0.0169 | 0.0093 |
| | (0.0041) | (0.0034) | (0.0112) | (0.0128) | (0.0146) |
| Deregulation | 0.0012 | 0.0013 | -0.0206*** | 0.0119 | -0.0084 |
| | (0.0083) | (0.0035) | (0.0040) | (0.0073) | (0.0063) |
| N | 1,279,888 | 2,058,252 | 1,421,266 | 205,400 | 172,006 |
| County × Gender | Yes | Yes | Yes | Yes | Yes |
| Year × Gender | Yes | Yes | Yes | Yes | Yes |
| Controls | Yes | Yes | Yes | Yes | Yes |
| Data | CPS | CPS | Census | Census | Census |

NOTES: This table reports the difference-in-differences estimates of the effects of interstate bank deregulation on differences in housing and transportation by gender using the CPS data from 1976–2014 and the Census data from 1980–2000. Both samples are restricted to working-age full-time full-year workers in the private sectors, excluding the FIRE industries. The dependent variables are ownership of dwelling for column (1), moving to a different house for column (2), holding a mortgage for column (3), car ownership for column (4), and transportation time for column (5). Industries are categorized into low-pay-gap and high-pay-gap based on the difference in the mean log wage between male and female employees in each industry during 1976–1980. High-pay-gap sectors are defined as industries that belong to the top 25% of the pay gap distribution, and low-pay-gap sectors refer to those in the bottom 25% of the pay gap distribution. All specifications control for Mincerian traits×gender, and state×gender and year×gender fixed effects. For more details, see Section 4.2. Errors are clustered at the state level and reported in parentheses. *,**, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

**Table G.10:** Effects of Bank Deregulation on Gender Differences in Self-Employment

| | Self-Employed Incorporated | | | Self-Employed Unincorporated | | | Incorporated\|Self-Employed | | |
|---|---|---|---|---|---|---|---|---|---|
| | All | Low Pay Gap | High Pay Gap | All | Low Pay Gap | High Pay Gap | All | Low Pay Gap | High Pay Gap |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| **Panel A: Intrastate Deregulation** | | | | | | | | | |
| Deregulation × Female | 0.0034 | 0.0029 | 0.0065 | 0.0001 | 0.0005 | 0.0004 | 0.0009 | 0.0091 | -0.0096 |
| | (0.0029) | (0.0035) | (0.0039) | (0.0006) | (0.0011) | (0.0012) | (0.0288) | (0.0443) | (0.0391) |
| Deregulation | -0.0012 | -0.0005 | -0.0027 | -0.0002 | -0.0003 | -0.0014 | -0.0041 | -0.0033 | -0.0052 |
| | (0.0043) | (0.0042) | (0.0055) | (0.0009) | (0.0009) | (0.0018) | (0.0183) | (0.0223) | (0.0186) |
| N | 1,214,036 | 290,286 | 270,618 | 1,214,036 | 290,286 | 270,618 | 51,643 | 11,219 | 17,367 |
| **Panel B: Interstate Deregulation** | | | | | | | | | |
| Deregulation × Female | 0.0069*** | 0.0104*** | 0.0081** | 0.0004 | 0.0027** | -0.0004 | 0.0019 | -0.0366 | 0.0315 |
| | (0.0016) | (0.0025) | (0.0031) | (0.0004) | (0.0012) | (0.0010) | (0.0210) | (0.0501) | (0.0574) |
| Deregulation | -0.0068*** | -0.0101*** | -0.0056 | 0.0005 | -0.0011 | 0.0012 | -0.0226* | -0.0302 | -0.0146 |
| | (0.0024) | (0.0028) | (0.0044) | (0.0005) | (0.0012) | (0.0011) | (0.0125) | (0.0407) | (0.0161) |
| N | 1,214,036 | 290,286 | 270,618 | 1,214,036 | 290,286 | 270,618 | 51,643 | 11,219 | 17,367 |
| County × Gender | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year × Gender | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |

Notes: This table reports difference-in-differences estimates of the effects of bank deregulation on the gender differences in self-employment using Current Population Survey (CPS) data. We restrict to working-age full-time full-year workers and self-employed individuals in the private sector excluding FIRE industries. The dependent variable for columns (1)–(3) is an indicator variable for self-employed incorporated status; for columns (4)–(6) is an indicator variable for self-employed unincorporated status; and for columns (7)–(9) is an indicator variable for self-employed incorporated status conditional on self-employment. Industries are categorized into low-pay-gap and high-pay-gap based on the difference in the mean log wage between male and female employees in each industry during 1976–1980. High-pay-gap sectors are defined as industries that belong to the top 25% of the pay gap distribution, and low-pay-gap sectors refer to those in the bottom 25% of the pay gap distribution. All specifications control for Mincerian traits×gender, and state×gender and year×gender fixed effects. For additional details, see Section 4.2. Errors are clustered at the state level and reported in parentheses. *,**, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

**Table H.11:** Effects of Bank Deregulation on Gender Pay Gap, — Industries Categorized by Asset Tangibility

| | Intrastate Deregulation | | | | | Interstate Deregulation | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | TWFE | *State × Year × Gender* | | | | TWFE | *State × Year × Gender* | | | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
| Deregulation × Female – Low PG Sector | 0.069*** | 0.067*** | 0.068*** | 0.068*** | 0.060*** | 0.034* | 0.031* | 0.033* | 0.039** | 0.025 |
| | (0.023) | (0.022) | (0.022) | (0.019) | (0.022) | (0.018) | (0.018) | (0.017) | (0.017) | (0.016) |
| Deregulation × Female – High PG Sector | 0.003 | 0.001 | 0.001 | 0.011 | -0.000 | 0.015 | 0.017 | 0.017 | 0.027** | 0.017 |
| | (0.016) | (0.016) | (0.016) | (0.016) | (0.016) | (0.012) | (0.012) | (0.012) | (0.012) | (0.012) |
| Deregulation × Female | -0.004 | | | | | -0.002 | | | | |
| | (0.007) | | | | | (0.008) | | | | |
| Deregulation – Low PG Sector | -0.055*** | -0.052*** | -0.052*** | -0.041** | -0.043** | -0.039*** | -0.036** | -0.037*** | -0.027** | -0.028** |
| | (0.020) | (0.019) | (0.019) | (0.017) | (0.019) | (0.014) | (0.014) | (0.014) | (0.013) | (0.012) |
| Deregulation – High PG Sector | 0.065*** | 0.068*** | 0.068*** | 0.069*** | 0.068*** | 0.054*** | 0.052*** | 0.052*** | 0.056*** | 0.051*** |
| | (0.014) | (0.014) | (0.014) | (0.014) | (0.014) | (0.008) | (0.008) | (0.008) | (0.006) | (0.007) |
| Deregulation | -0.015 | | | | | -0.016* | | | | |
| | (0.010) | | | | | (0.008) | | | | |
| Female – Low PG Sector | -0.087*** | -0.085*** | -0.085*** | -0.078*** | -0.089*** | -0.054** | -0.052** | -0.053** | -0.050** | -0.057** |
| | (0.023) | (0.022) | (0.022) | (0.019) | (0.020) | (0.023) | (0.023) | (0.023) | (0.022) | (0.022) |
| Female – High PG Sector | 0.016 | 0.017 | 0.017 | 0.009 | 0.010 | 0.005 | 0.002 | 0.003 | -0.005 | -0.006 |
| | (0.014) | (0.014) | (0.014) | (0.015) | (0.014) | (0.009) | (0.010) | (0.010) | (0.010) | (0.011) |
| Low PG Sector | -0.143*** | -0.145*** | -0.144*** | -0.123*** | -0.136*** | -0.158*** | -0.160*** | -0.159*** | -0.136*** | -0.151*** |
| | (0.021) | (0.020) | (0.020) | (0.019) | (0.019) | (0.021) | (0.021) | (0.020) | (0.019) | (0.020) |
| High PG Sector | -0.095*** | -0.097*** | -0.097*** | -0.079*** | -0.092*** | -0.081*** | -0.079*** | -0.079*** | -0.064*** | -0.074*** |
| | (0.013) | (0.013) | (0.013) | (0.012) | (0.012) | (0.010) | (0.011) | (0.011) | (0.010) | (0.011) |
| N | 867,993 | 867,993 | 867,993 | 863,476 | 867,993 | 867,993 | 867,993 | 867,993 | 863,476 | 867,993 |
| State × Gender | Yes | N/A | N/A | N/A | N/A | Yes | N/A | N/A | N/A | N/A |
| Year × Gender | Yes | N/A | N/A | N/A | N/A | Yes | N/A | N/A | N/A | N/A |
| State × Year × Gender | No | Yes | Yes | Yes | Yes | No | Yes | Yes | Yes | Yes |
| Age × Gender | No | No | Yes | Yes | Yes | No | Yes | Yes | Yes | Yes |
| Skills × Gender | No | No | No | Yes | No | No | No | No | Yes | No |
| Marital Status × Gender | No | No | No | No | Yes | No | No | No | No | Yes |
| Race × Gender | No | No | No | No | Yes | No | No | No | No | Yes |

Notes: This table reports the difference-in-differences estimates of the effects of bank deregulation on log hourly wages, when industries are categorized by their level of asset tangibility. Columns (1)–(5) report the effects of intrastate deregulation as the treatment, and columns (6)–(10) report the effects of interstate deregulation as the treatment. Deregulation is a dummy variable that takes the value one for the years after deregulation and 0 otherwise. Industries are categorized into low-asset-tangibility and high-asset-tangibility based on the difference in the mean asset tangibility share in each industry during 1976–1980. The high-asset-tangibility industries refer to industries that belong to the top 25% of the asset tangibility distribution, and the low-asset-tangibility industries refer to those in the bottom 25% of the asset tangibility distribution. High tangibility is a dummy variable that takes the value one for the high-asset-tangibility industries and 0 otherwise. Low tangibility is a dummy variable that takes the value one for the low-asset-tangibility industries and 0 otherwise. All specifications control for Mincerian traits × gender. Columns (1) and (6) include state × gender and year × gender fixed effects. Columns (2)–(5) and (7)–(10) include state × event time × gender fixed effects. Columns (3) and (8) control for age-gender fixed effects. Columns (4) and (9) account for gender differences in the skill content of jobs. Skill content of a job follows the routine/nonroutine, cognitive/manual classification used in Autor et al. (2003). Columns (5) and (10) add demographic controls × gender. Errors are clustered at the state level and reported in parentheses. *,**, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

**Table H.12:** Effects of Bank Deregulation on Gender Pay Gap
— Industries Categorized based on Pay Gaps from 1968 to 1972

| | Intrastate Deregulation | | | | | Interstate Deregulation | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | TWFE | *State × Year × Gender* | | | | TWFE | *State × Year × Gender* | | | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
| Deregulation × Female – Low PG Sector | 0.057*** | 0.054*** | 0.054*** | 0.051*** | 0.046*** | 0.052*** | 0.050*** | 0.050*** | 0.047*** | 0.041*** |
| | (0.012) | (0.011) | (0.011) | (0.011) | (0.012) | (0.013) | (0.013) | (0.013) | (0.013) | (0.013) |
| Deregulation × Female – High PG Sector | 0.012 | 0.012 | 0.011 | 0.006 | 0.011 | 0.017** | 0.016** | 0.015** | 0.012 | 0.015* |
| | (0.008) | (0.008) | (0.008) | (0.008) | (0.007) | (0.008) | (0.007) | (0.008) | (0.008) | (0.008) |
| Deregulation × Female | -0.019 | | | | | -0.015 | | | | |
| | (0.013) | | | | | (0.009) | | | | |
| Deregulation – Low PG Sector | -0.043*** | -0.040*** | -0.040*** | -0.040*** | -0.035*** | -0.032*** | -0.030*** | -0.030*** | -0.034*** | -0.024** |
| | (0.012) | (0.012) | (0.012) | (0.010) | (0.012) | (0.010) | (0.010) | (0.010) | (0.009) | (0.010) |
| Deregulation – High PG Sector | 0.052*** | 0.052*** | 0.051*** | 0.039*** | 0.048*** | 0.056*** | 0.055*** | 0.055*** | 0.042*** | 0.052*** |
| | (0.006) | (0.006) | (0.006) | (0.005) | (0.006) | (0.006) | (0.006) | (0.006) | (0.005) | (0.006) |
| Deregulation | -0.016 | | | | | -0.035*** | | | | |
| | (0.014) | | | | | (0.008) | | | | |
| Female – Low PG Sector | 0.062*** | 0.064*** | 0.064*** | 0.042*** | 0.062*** | 0.068*** | 0.069*** | 0.069*** | 0.048*** | 0.067*** |
| | (0.010) | (0.010) | (0.010) | (0.008) | (0.010) | (0.008) | (0.008) | (0.008) | (0.007) | (0.008) |
| Female – High PG Sector | -0.024** | -0.023** | -0.022** | 0.007 | -0.019** | -0.028*** | -0.027*** | -0.026*** | 0.002 | -0.023*** |
| | (0.010) | (0.009) | (0.009) | (0.009) | (0.009) | (0.007) | (0.006) | (0.006) | (0.006) | (0.006) |
| Low PG Sector | -0.112*** | -0.114*** | -0.114*** | -0.116*** | -0.108*** | -0.122*** | -0.124*** | -0.123*** | -0.122*** | -0.117*** |
| | (0.017) | (0.016) | (0.016) | (0.015) | (0.016) | (0.012) | (0.012) | (0.012) | (0.011) | (0.012) |
| High PG Sector | 0.068*** | 0.068*** | 0.068*** | 0.051*** | 0.064*** | 0.070*** | 0.069*** | 0.070*** | 0.052*** | 0.065*** |
| | (0.007) | (0.007) | (0.007) | (0.006) | (0.006) | (0.006) | (0.006) | (0.006) | (0.005) | (0.006) |
| N | 774,186 | 774,186 | 774,186 | 772,261 | 774,186 | 774,186 | 774,186 | 774,186 | 772,261 | 774,186 |
| State × Gender | Yes | N/A | N/A | N/A | N/A | Yes | N/A | N/A | N/A | N/A |
| Year × Gender | Yes | N/A | N/A | N/A | N/A | Yes | N/A | N/A | N/A | N/A |
| State × Year × Gender | No | Yes | Yes | Yes | Yes | No | Yes | Yes | Yes | Yes |
| Age × Gender | No | No | Yes | Yes | Yes | No | Yes | Yes | Yes | Yes |
| Skills × Gender | No | No | No | Yes | No | No | No | No | Yes | No |
| Marital Status × Gender | No | No | No | No | Yes | No | No | No | No | Yes |
| Race × Gender | No | No | No | No | Yes | No | No | No | No | Yes |

Notes: This table reports the difference-in-differences estimates of the effects of bank deregulation on log hourly wages when industries are categorized based on the gender pay gap during the years 1968–1972 instead of 1976–1980. Columns (1)–(5) report the effects of intrastate deregulation as the treatment, and columns (6)–(10) report the effects of interstate deregulation as the treatment. Deregulation is a dummy variable that takes the value one for the years after deregulation and 0 otherwise. Industries are categorized into low-pay-gap and high-pay-gap based on the difference in the mean log wage between male and female employees in each industry during 1968–1972. High-pay-gap sectors refer to industries that belong to the top 25% of the pay gap distribution, and low-pay-gap sectors refer to those in the bottom 25% of the pay gap distribution. High PG is a dummy variable that takes the value one for high-pay-gap sectors and 0 otherwise. Low PG is a dummy variable that takes the value one for low-pay-gap sectors and 0 otherwise. All specifications control for Mincerian traits × gender. Columns (1) and (6) include state × gender and year × gender fixed effects. Columns (2)–(5) and (7)–(10) include state × event time × gender fixed effects. Columns (3) and (8) control for age-gender fixed effects. Columns (4) and (9) account for gender differences in the skill content of jobs. Skill content of a job follows the routine/nonroutine, cognitive/manual classification used in Autor et al. (2003). Columns (5) and (10) add demographic controls × gender. Errors are clustered at the state level and reported in parentheses. *,**, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.