Social progress and corporate culture

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Abstract

Social progress through improved treatment of minority groups (e.g., forbidding racial or sexual harassment) may or may not spread to corporate cultures through competition. We provide a theory of corporate culture, and we show that emergent, progressive corporate cultures can displace existing, regressive ones when the prevailing wage gap is large between majority and minority groups. The model provides testable predictions on racial and gender wage gaps across firms.

JEL classification: D23, J31, M14

1. Introduction

The US Equal Employment Opportunity Commission (EEOC) receives an average of 85,000 complaints of discrimination per year. Why do corporations persist in being discriminatory? Gary Becker argued that discrimination is costly for firms and economically inefficient (Becker, 1971). Kenneth Arrow extended this idea by positing that firms which failed to hire or promote workers on the basis of sex or race would lose out to non-discriminating firms in recruiting talented workers (Arrow, 1972). Discriminating firms should then be driven out of the market, which led Arrow to comment that Becker’s discrimination model “predicts the absence of the phenomenon it was designed to explain” (p. 192).

When do markets work and when do they fail in disciplining discrimination in firm cultures? Can firms with progressive cultures push out firms with regressive, discriminatory cultures or at minimum force them to change? In this paper, we propose a theory of corporate culture and apply it to answer these questions.

The persistence of the high number of EEOC complaints alone suggests that competition among firms in markets has not worked to eliminate discrimination in the workplace entirely. There has been a market failure, and at times the government has intervened. A salient example took place during the civil rights movement of the mid-1950s to late-1960s. Martin Luther King Jr. and other central figures of the campaign had realized that pressuring businesses to racially integrate was an effective strategy to propel the plight of black Americans into the national conscience (Roberts and Klibanoff, 2007). But many businesses resisted hiring black Americans. Newsweek reported at the time that “some white executives preferred talking among themselves ... than to lower class black employees” (Russell and Lamme, 2013). Ultimately,
Congress intervened by passing the Civil Rights Act of 1964, which included the establishment of the EEOC to enforce laws against workplace discrimination.

The larger societal culture at the time was such that the Civil Rights Act of 1964 could be passed by Congress. The Federal government revolutionized anti-discrimination policies that resulted in efforts toward equal employment opportunity, occupational health and safety legislation, and fringe benefits regulation. But corporate cultures were not so progressive. Following the legislation, the courts found many firms in violation of Title VII of the Civil Rights Act, which prohibits the use of sex and race in employment decisions. These legal changes stimulated firms to form human resources departments, as Dobbin and Sutton (1998) discuss in depth.

Many of these discrimination lawsuits are financially costly. Hirsh and Cha (2015) study 174 sex and race discrimination lawsuits, both individual and class action cases, between 1997 and 2008. They find that firms suffer a loss in stock market value following the announcement of a legal settlement or verdict in a Title VII case. The mean abnormal return is −1.76% within a 16-day window. In addition, legal cases threaten firms’ reputations, harm employee morale, and increase the chance of more claims of discrimination (Schlanger and Kim, 2013). That such lawsuits continue suggests that corporate culture is formed and retained at a deep level and that it is hard to change. Society can change, leading to the passage of the Civil Rights Act, for example, but corporate culture seems to be self-reinforcing and persistent.

The news is not all bad. At times firms lead the way, as in the threats of boycotting North Carolina because of the passage of a law targeting the lesbian, gay, bisexual, transgender, queer community. Chief Executive Officers of more than 100 companies called for repeal of the law (Lopez, 2009). Companies also threatened to boycott Georgia and Alabama over strict abortion laws. And there is some evidence that competition does reduce discrimination. Heyman et al. (2013) find that takeovers and product market competition do indeed have a positive impact on the relative position of Swedish female employees. Cooke et al. (2019) study a quasi-natural experiment in Portugal and find that “increased competition following the reform increases growth of the female employment share and reduces the gender pay gap for middle-managers and for medium- and high-skilled workers but not for top-managers or the unskilled” (p. 422). The authors also find that employers with low female employment shares are more likely to exit. Nevertheless, discrimination clearly persists.

This discussion raises many questions, but two in particular. First, why does market competition not drive out discriminatory firms? And second, what is the deep-seated root of prejudice inside firms that keeps discrimination alive even when the larger society changes? These questions are important for firms and society. And discrimination based on race, sex, age, national origin, or sexual orientation obviously affects employees negatively. Likewise, it negatively affects the value of the firm.

Our view is that the answers to both questions are related to corporate culture. But how is corporate culture a factor in the way firms compete in labor markets? Markets are a central object for the allocation of both resources and talent through the price system, but can they also be a mechanism for propagating progressive ideas about race and gender? Above we suggested that there was a market failure. What failed and why?

In this paper, we model firms as having organizational cultures that involve shared sets of values, norms, and customs, which the employees of those firms consider important. An organization that hires like-minded people who subscribe to the same culture can avoid clashes in interaction and communication. But the decision to exclude others who share different norms and customs denies a richer variety of views that can improve decision-making and enhance performance. In devising a corporate culture, a firm therefore faces an essential trade-off between organizational cohesion and diversity. We study this trade-off to determine whether social progress can spread to other firms via competition.

We consider corporate culture as inseparable from the culture(s) of the people who make up a firm. We define culture as the importance people assign to values, morals, norms, customs,
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traditions, symbols, and typical behavioral patterns that are shared in an organization. This importance is modeled as an expression that maps cultural components to weights between zero and one. If a custom carries a great deal of importance to a culture, it would receive a weight close to one. Conversely, if it is unimportant to the culture, it would map to a weight close to zero.

In the model, there are two types of employees: the majority and the minority. The two types are endowed with distinct cultures, placing different weights on the possible cultural components. The majority and minority may differ along any observable characteristic, such as age, gender, race, creed, political beliefs, or sexual orientation. Besides differing from the minority in culture, the majority makes up more of the employees at a firm and exclusively manages it.

We model social progress as improved minority treatment within firms. Our economic environment features a prevailing regressive firm that faces possible displacement by an emergent progressive firm. The regressive firm defies adopting the socially progressive values, whereas the progressive firm welcomes it. The two firms compete over employees in the labor market. The regressive firm represents the predominant, most profitable corporate culture prior to an exogenous progressive social change. If the progressive firm is more profitable than the regressive one, its more socially advanced corporate culture spreads through the market.

In equilibrium, the regressive firm’s majority–minority wage gap—the pay difference between its majority and minority employees—determines whether corporate cultures progress. If the minority is paid considerably less than the majority, the progressive firm’s improved working conditions give it a greater advantage at hiring less costly minority employees away. In this case, the progressive firm is more profitable, it ousts the regressive one, and a more socially tolerant corporate culture spreads through the market. In contrast, if the wage gap is narrow, the progressive firm’s advantage is weaker, it is less profitable, and the regressive corporate culture continues.

The theoretical literature on corporate culture in economics is reviewed in a survey by Benjamin Hermalin (Hermalin, 2001). This paper’s contributions are as follows. First, the manner in which corporate culture is modeled differs significantly from the previous literature. We do not list the exact elements that make up corporate culture, instead focusing on the relative weights of importance that some groups place on certain elements over others. Doing so broadens the scope of topics that our model of culture can be applied to, and it circumvents the endless debate on providing an authoritative definition of “culture.” Second, the paper answers questions that have not yet been addressed in the literature: can corporate culture adapt to social progress, and if so, under which conditions? Third, the paper supplies new empirical predictions on how wage gaps influence corporate cultural change.

Several papers in economics have studied corporate culture. David Kreps wrote an early work that treats corporate culture as the principles a firm has a reputation for applying when unforeseen contingencies occur (Kreps, 1990). A difficulty of this framework has been modeling “unforeseen contingencies” rigorously (see Dekel et al., 1998). In another research, Crémer (1993) treats corporate culture as a growing stock of information that lives on beyond the tenure of individual employees. Van den Steen (2010a) considers corporate culture as shared beliefs (priors). Like us, he studies the costs and benefits of employee homogeneity. Strong homogeneity makes a firm efficient in carrying out its tasks, but less willing to experiment. Van den Steen (2010b) shows how shared beliefs arise endogenously within a firm through screening, self-sorting, and joint learning.

Prat (2002) uses classical team theory (i.e., Marschak and Radner, 1972) to study whether organizations should hire people with similar or different backgrounds. This question relates to the trade-off between cohesion and diversity presented in this paper. He shows that when jobs within the team are complements, homogeneity is optimal; when they are substitutes, heterogeneity is optimal. Song and Thakor (2019) study bank culture. In their setting, bank culture offers a way to improve upon explicit contracts. A bank’s culture is the behavior it prefers loan officers to follow when extending credit: issuing loans indiscriminately to increase growth or exerting effort judiciously to discern creditworthy borrowers. Thanassoulis (2022) studies managerial ethics and its interaction with market structure. He shows that the degree of market competition influences the amount of observed misconduct.
Finally, our paper relates to Bhatt (2018), who builds on the model of cultural transmission in Harrison and Carroll (1991). As in this paper, Bhatt (2018) studies an environment in which workers are mobile between firms and are socialized into organizational cultures. In addition, like here, attention is placed on diversity of cultures within and between firms. A distinction here is the paper’s focus on corporate culture as a means of competition in the labor market and the ways by which market forces can compel corporate cultures to adapt to societal progress.

We proceed with our analysis in the following steps. We first develop a theory of corporate culture. We then use this theory to (i) understand when a demand in society for the improved treatment of a minority group can transmit to corporate cultures via market competition and (ii) present testable empirical predictions on majority–minority (e.g., racial or gender) wage gaps.

2. Model

The model takes place over one period. A prevailing, regressive firm (labeled r) and an emergent, progressive firm (labeled p) perfectly compete over employees. Employees belong to either the majority group or the minority group. The majority has decision-making authority over a firm. The initial share of the majority at a firm is \( x_0 \geq \frac{1}{2} \), whereas the minority share is \( 1 - x_0 \).

2.1 Culture

The majority and minority employees have distinct cultures. A group’s culture is the values, customs, behaviors, norms, traditions, symbols, language, etc. that are widely shared by its members. This concept of culture is consistent with that in anthropology (Tylor, 1871; Goodenough, 1957; Keesing, 1974), sociology (Williams, 1995; Macionis, 2013), and organizational behavior (Schein, 1983; Deshpande and Webster Jr, 1989; Martin, 1992).

Because our interest here is corporate culture, we focus on cultural elements that apply to a firm setting. A norm for all to arrive at the office at 6 am and leave after 8 pm could be an element of a culture. Emphasizing work–life balance, mentoring junior employees, inviting dissent in discussions or demanding obedience to authority, expecting overtime or encouraging personal time, punishing harassment or ignoring it, favoring high risk-taking or caution, obeying regulations or violating safety standards, and so on could be parts as well.

Some elements of a culture, such as the structure of compensation, are expressed using enforceable contracts, whereas others are not. The sheer act of writing contracts when possible rather than relying on informal agreements is part of a culture. So too are the language and symbols used among members of a group. One group might call each other “employees,” whereas the other insists on “team-members.” One group might expect all to communicate by email, whereas the other never uses email. One might all wear suits, whereas another wears shorts and t-shirts.

The list can continue. Any enumeration of the precise elements of a group’s culture will never be definitive, exhaustive, or satisfactory. Rather than specifying the exact components, we take as given the existence of some set of elements that make up a culture. We focus on the shared weights a group places on these elements in terms of how important they are to its culture.

If the set of cultural elements is finite, culture is represented by a vector of weights, where each weight has a value between zero and one. The weight stands for the importance of the element to the group’s culture. A higher weight indicates greater importance. A zero weight indicates no importance. As we will see later, cultural elements do not enter a person’s utility directly. A person’s culture is a primitive in the model: the person does not choose a culture but is endowed with one. That culture may have formed and evolved over many years of experiences in a chosen profession. For example, a surgeon’s cultural weights regarding bedside manner in a hospital might differ from a nurse’s. Over the period of time we consider in the model, a person’s culture is fixed.\(^4\)

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\(^4\) While a person in the model does not have utility over cultural elements per se, when we introduce a person’s utility function later, culture will affect a person’s utility indirectly. Namely, a worker’s utility will depend on having others with the same culture around (i.e., workers will have a preference for homophily). A person’s preference for associating with like-minded others arises precisely because they share the same weights of importance with the person.
Figure 1. Cultural weighting functions
The figure illustrates two examples of cultural weighting functions over a set of cultural elements. A sample of elements is provided. One function is represented by the hashed bar, whereas the other is the dotted bar. Underlying each are similar cultural density functions over a denser set of cultural elements. The first is the solid curve; the second is the dashed curve.

For mathematical convenience, we examine cultural weights that are represented by continuous densities. The cultural densities of both the majority and the minority are parameterized, share the same support, and differ from each other along a single parameter. Each density could be single-parametered, such as exponential or chi-squared. The two densities might also be multi-parametered but share all the same parameter values except one, such as normal distributions with identical variances but different means. The densities could come from the same or different family of distributions.

Let the parameter of the majority be denoted $\lambda$, whereas the parameter of the minority is $\lambda_m$. To simplify the exposition, we refer to the majority’s cultural density as $\lambda$ and the minority’s as $\lambda_m$. Figure 1 illustrates two example cultural weighting functions.

2.2 Corporate culture
The majority makes decisions at a firm. The majority has two choices: (i) worker employment and (ii) minority socialization. The employment decision determines the diversity of a firm. The socialization decision influences how closely the minority complies with the culture of the majority. Both decisions set the corporate culture.

**Diversity**
A firm chooses the majority employee share $\bar{x}$ that must be at least $\frac{1}{2}$. The diversity of a firm is

$$\Delta (\bar{x}) = \bar{x} (1 - \bar{x}).$$  \hspace{1cm} (1)

Diversity is the degree to which the majority hires people from the minority group who share a different culture. Diversity is maximized when $1 - \bar{x} = \frac{1}{2}$, which gives the minority the largest share possible. Diversity is minimized when $\bar{x} = 1$, meaning a firm is made up entirely of the majority types who share an identical culture.
Socialization

Socialization is the process by which one group learns to act consistently with the culture of another group (Bauer and Erdogan, 2011; Macionis, 2013). We treat socialization as the formal and informal ways the majority influences the minority to comply its behavior with the culture of the majority. In our setting, being socialized involves conforming behavior to “fit in,” rather than changing one’s personal values.

Socialization can include training and onboarding programs, evaluations, recognition awards, or codes of conduct. It can also be less ceremonious, such as unspoken but observed dress codes, common stories of legendary figures, tales of discharged deviants, or open-door policies. It can even be quite subtle, such as nodding to approve conforming actions, telling vile jokes, whispering uncomfortable comments about a person’s body, talking over others at meetings, or excluding groups from social events.

We model socialization as shifting the minority’s cultural density closer to the majority’s. The cultural density of the socialized minority is

$$\hat{\lambda}_m = s\lambda + (1 - s) \lambda_m,$$

(2)

where $s \in [0, 1]$ is the extent of socialization. Socialization does not alter the original culture $\lambda_m$ of the minority or change a minority employee’s type. For this reason, it does not interfere with diversity. Minority behaviors comply to coincide with the majority culture.

That being said, conforming behaviors in practice might not be easy, as minority employees would still have to overcome aspects of the socialization to “bring their true selves” when interacting with majority employees to realize the benefits of diversity. Studying performance of diverse teams, Lix et al. (2022) provide supportive evidence of this ability. They find that members of high-performing, diverse teams are able to modulate their communication styles to match the changing requirements of different tasks. When engaged in tasks related to idea generation, members are more diverse in their expressions, but when tasks require more coordination, members are less diverse.

In many cases, socialization requires resources. For example, extensive informal initiation policies steal time from productive work. Large human resources departments might also be needed to resolve growing minority employee complaints about certain socialization practices. A firm’s cost of socialization is given by the function $\phi(s)$. It is continuously differentiable, strictly increasing, strictly convex, and $\phi(0) = 0$.

Corporate culture and conflict

Corporate culture is a mixture of the majority’s cultural density $\lambda$ and the socialized minority’s cultural density $\hat{\lambda}_m$. The shares of the two groups are the mixing weights:

$$\bar{\lambda} = \bar{x}\lambda + (1 - \bar{x})\hat{\lambda}_m.$$

(3)

The corporate culture $\bar{\lambda}$ is a function of both choice variables of a firm. When $\bar{x}$ or $s$ tend to 1, then $\bar{\lambda} \rightarrow \lambda$, which makes a firm’s corporate culture exactly match the majority culture.

The more the cultural densities $\lambda$ and $\hat{\lambda}_m$ differ, the more the majority and minority conflict, even after the minority’s socialization. The minority might not entirely acquiesce to behave in accordance with the majority’s culture. Residual discord can persist because the groups still place contrasting importance on the elements that make up a culture. Interaction might create a kind of intergroup “clash” (Brewer and Brown, 1998; Turner, 2005).

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5 We thank an anonymous reviewer for pointing us to this evidence. For another illustration of modulating behavior, Fried (1998) describes women at financial firms in the early 1980s who “tried very hard to play the part of, and even ‘look’ like, men as they struggled for respect and acceptance within a male-defined workplace culture.” Similar behavior to act and even sound masculine is seen today among female entrepreneurs in Silicon Valley (Tariyal, 2018; Robson, 2018) and female lawyers in the legal profession (Halberstam, 2019).

6 One could argue that in some settings, the majority is also socialized. One example is gender bias or anti-racism training. The model’s attention on social progress is improved treatment of minority groups. In the model, only the minority are socialized because it is in this area that social progress takes place.
One way to measure this conflict is to calculate the “distance” between the cultural densities. But this distance should account for the shares of the majority and minority groups. Significant discrepancies between $\lambda$ and $\hat{\lambda}_m$ would create more conflict if the minority share $1 - \hat{x}$ is larger. We measure conflict as the distance between a firm’s corporate culture $\lambda$ and a corporate culture that has no conflict. The only corporate culture in the model that has no conflict is the one that coincides with the culture of the majority, $\lambda$. Such a corporate culture is achievable either with full socialization ($s = 1$) or a complete majority ($\hat{x} = 1$).

We measure the distance between cultural densities using a simple squared difference:

$$\delta(\hat{x}, s) \equiv \frac{1}{2} (\lambda - \hat{\lambda})^2.$$  

The distance function $\delta$ captures the corporate cultural conflict at a firm. It measures the lack of cohesion among employees.

### 2.3 Firm profits

A firm makes an employment decision $\hat{x}$ and a socialization decision $s$ to maximize profits, taking the prices of majority and minority labor as fixed. A wage $w$ is paid to the majority, whereas a wage $w_m$ is paid to the minority. The profit function of a firm is

$$\pi = A + \Delta(\hat{x}) - \delta(\hat{x}, s) - \phi(s) - w\hat{x} - w_m(1 - \hat{x}),$$  

where $A$ is a positive constant that is large enough to ensure that profits are nonnegative.

Profits are increasing in diversity. Variety of views, backgrounds, or experience can enhance innovation. Østergaard et al. (2011) find a positive relation between diversity in education and gender and the likelihood of introducing a new product or service. Diversity through a variety of opinions might also produce higher-quality decisions and, in turn, better financial performance. Richard (2000) finds that racial diversity increases return on equity and productivity, as measured by net income per employee.7

Profits are decreasing in cultural conflict. Conflict in values can create animosity between groups and give one group a feeling of moral license to engage in shirking, free-riding, or theft (Kornblum, 2011). It can also ruin team member morale and hurt efficiency (Jehn et al., 1999). Cultural conflict can be a sign of cultural weakness rather than strength, which can hurt firm performance (Denison, 1984; Gordon and DiTomaso, 1992).

The profit function (5) reveals the essential trade-off between organizational diversity and cohesion. A firm can increase the majority share $\hat{x}$ for more cultural cohesion, but that worsens diversity. Alternatively, a firm can hire more minorities for greater diversity, but that raises cultural conflict. The trade-off captures both the positive and negative effects of heterogeneous work groups that the organization’s literature has documented empirically (Van Knippenberg et al., 2004; Van Knippenberg and Schippers, 2007).

### 2.4 Employee utility

Majority and minority employees make a binary choice: supply one unit of labor to the regressive firm or the progressive firm. Employee utility is firm-dependent. The preferences of the majority and minority, respectively, are

$$U_i = w_i + \hat{x}_i,$$  

$$U_{i,m} = w_{i,m} + (1 - \hat{x}_i) - v_i(s_i) + \kappa I_r(i),$$

for $i = \{r, p\}$, where, again, $r$ denotes the regressive firm and $p$ denotes the progressive firm. Utility is increasing in the wage. The second term represents a source of homophily, i.e. a tendency to

7 Notice that diversity benefits to profits are retained regardless of the extent of socialization. This relation is consistent with the aforementioned empirical work finding diversity benefits irrespective of the socialization policies adopted by the firms in their samples.
associate with others who are similar. Employees have a preference to work with those who share the same culture, which eases communication and encourages working relationships (Jackson, 1991; McPherson et al., 2001).

The third term in minority preferences is the utility or disutility from socialization. Anthropological theory argues that culture is crucial in framing a person’s experience and worldview (Goodenough, 1957; Geertz, 1973; Keesing, 1974; Frake, 1980). Because culture is so personally important, a minority employee has an emotional reaction from socialization into a different work culture (the majority’s). We call \( v(s) \) the emotion function from socialization. If \( v_i(s) > 0 \) for all \( s \), minority employees have a strict distaste for socialization and prefer not having to comply with the majority’s values, norms, language, etc. We focus on this case.\(^8\) We wait to explain the fourth term of minority preference, \( \kappa_{i,r}(i) \), until the next section, where we introduce social progress.

2.5 Social progress and firms

Social progress takes many forms. The progress we consider is the improved treatment of a minority group. Firm practices to socialize minority employees into the majority’s culture can be emotionally painful. For example, companies might pressure female employees to tolerate or adapt to a male-dominated, abusive corporate culture. The ride-hailing company Uber was known to have an unrestrained corporate culture and faced several accusations of widespread sexism, sexual harassment, and gender discrimination (Isaac, 2017). The online dating app Tinder’s corporate culture was considered aggressive and misogynistic, and the company was served with multiple sexual harassment lawsuits (Wagner, 2018; Morris, 2019).

Over time, the public might no longer tolerate painful treatment of minority employees. Other firms in the same industry might adopt more socially progressive policies to compete via a contrasting corporate culture. Lyft saw Uber’s struggles as an opportunity and positioned itself as a more inclusive, friendlier work environment (Roose, 2017). The dating app Bumble was launched as a women-led company and the “first feminist dating app” where women make the initial move (Alter, 2015; Yashari, 2015).

In our setting, the regressive and progressive firms stand for competing corporate cultures. The regressive firm represents the predominant, most profitable corporate culture prior to some exogenous, progressive social change. The regressive firm defies adopting the social progress. The progressive firm instead exemplifies the social progress. It advances its treatment of minority employees in a way the regressive firm refuses.

We model social progress as reformed socialization that gives minority employees less disutility:

**Definition 1.** Social progress is less painful socialization at the progressive firm such that

\[ 0 < v_p(s) < v_r(s) \text{ for each } s \in (0, 1]. \]

An example of social progress in the workplace is banning racial, ethnic, or sexual harassment, such as racial slurs, racially offensive gestures, sexual jokes, groping, or name-calling. A second example is a firm installing private rooms for female employees to nurse a newborn rather than preventing them from doing so at work entirely. A policy of this kind may be imperfect, so we do not force \( v_p(s) \) to be zero. The progressive firm may still restrict the use of the rooms to only early hours or at times that clients are not present. A third example is limiting employees to wear only dark colored hijabs rather than banning the head covering altogether.

Another important source of social progress in practice is the narrowing of wage gaps between majority and minority workers. While wage gap reduction is not per se in the model’s definition of social progress, we will see that the wage gap is a key element that determines whether social

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\(^8\) Technically, \( v_i(s) \) could be negative. In this situation, the minority actively wants to conform to a different culture. An example is aspiring flight attendants who want to “live the Southwest way,” which emphasizes a “desire to excel...[and] a fun-loving attitude” (Weber, 2015). The function \( v_i(s) \) might also be highly nonlinear and trace the emotional turbulence of socialization. To fit our application, we assume the case of \( v_i(s) > 0 \).
progress can bring about corporate cultural progress (i.e., the displacement of the regressive corporate culture). In addition, the advancement of corporate culture will come about in the model via competition in the labor market. But pressure from consumers in the product market might be another driver of cultural improvement. For instance, large consumer segments might only purchase from firms that share certain progressive values related to corporate social responsibility. In Appendix 2.1.1, we consider an extension of the model in which the consumer market is another catalyst of corporate cultural change.

The final piece of the model to explain is \( \kappa \mathbb{1}_r (i) \), which makes up a part of minority employee utility. This term is the minority’s relative preference for employer status. Being the established, dominant firm, the incumbent has gained a certain employer prestige, despite its unpleasant treatment of minority employees. In the financial and consulting industries, for example, a woman or ethnic minority might prefer to work for a firm like Goldman Sachs or McKinsey, rather than for an entrant, even if the person understands that those firms would treat people like them poorly. The \( \kappa \mathbb{1}_r (i) \) term, therefore, is a preference, not for being treated poorly, but for the anticipated career benefits of working for these dominant firms, in spite of their regressive cultures. Because status benefits can be conferred to both majority and minority workers, \( \kappa \) should be interpreted as the additional status gain that minority workers receive above and beyond a baseline amount that majority workers receive, which we normalize to zero.

### 3. Solution

To obtain explicit solutions, we set the cost of socialization and the firm-dependent emotion function as

\[
\phi(s) = \frac{\phi_2^2}{2} \left( \frac{1}{(1-s)^2} - 1 \right),
\]

\[
v_i(s) = v_i \left( \frac{1}{(1-s)^2} - 1 \right),
\]

for \( i \in \{r, p\} \), and with \( \phi \) and \( v_p < v_r \) being strictly positive constants. Both functions are strictly increasing and strictly convex, which makes the socialization cost increasingly expensive and the emotion from socialization increasingly painful.

#### 3.1 Labor market

Employee indifference between working at either firm defines market clearing in the majority and minority labor markets. From employee utility in equations (6) and (7), the indifference conditions for the majority and minority, respectively, are

\[
w_r + x_r = w_p + x_p,
\]

\[
w_{r,m} + 1 - x_r - v_r(s_r) + \kappa = w_{p,m} + 1 - x_p - v_p(s_p).
\]

With four unknown wages, the system in equations (8–9) is underdetermined. So that the model’s empirical predictions can later be expressed as stationary wage gaps, we subtract equation (9) from equation (8):

\[
w_{g_r} + (2 \tilde{x}_r - 1) + v_r(s_r) - \kappa = w_{g_p} + (2 \tilde{x}_p - 1) + v_p(s_p),
\]

where \( w_{g_r} \equiv w_r - w_{r,m} \) and \( w_{g_p} \equiv w_p - w_{p,m} \) are the “within-firm” majority-minority wage gaps. Because the regressive firm represents the established, pervasive corporate culture prior to social progress, we fix its wage gap \( w_{g_r} \) and let \( w_{g_p} \) be endogenous. A sticky prevailing wage gap is

9 We thank Olav Sorensen and an anonymous reviewer for this interpretation.
consistent with evidence of persistent pay differentials between genders and races (Wilson and Rodgers III, 2016; Blau and Kahn, 2017).

### 3.2 Equilibrium

An equilibrium is characterized by standard profit maximization and labor market clearing. The single novelty is that the progressive firm can displace the regressive firm. The definition of an equilibrium is:

**Definition 2.** An equilibrium is the tuple $\mathcal{E} = \{\tilde{x}_r, s_r, \tilde{x}_p, s_p, w_g\}$, where $\{\tilde{x}_r, s_r\}$ and $\{\tilde{x}_p, s_p\}$ maximize profits from Eq. (5) and $w_g$ satisfies the labor market clearing condition in Eq. (10). The progressive firm displaces the regressive firm if and only if $\pi_p > \pi_r$ in equilibrium.

When the progressive firm’s equilibrium profit exceeds the regressive firm’s, the progressive firm forces the regressive one to exit. Because the two firms represent competing corporate cultures, the regressive firm’s displacement need not necessarily represent a business shutting down. Displacement is corporate cultural progress: the supplanting of an antiquated corporate culture by a new, socially progressive one throughout the market. This occurs if and only if the new corporate culture is more profitable than the current one. If the progressive corporate culture is less profitable, it cannot spread through the market via competition alone.

So that each firm’s optimal decision for $\{\tilde{x}, s\}$ stays within zero and one, we assume:

**Assumption 1.** The interval $I \equiv \left[ \frac{2\phi}{\lambda - \lambda_m} \left( \frac{s + v_r}{v_p} \right), \min \left\{ 1, \frac{v_p}{v_r} + \frac{2\phi}{\lambda - \lambda_m} \left( \frac{s + v_r}{v_p} \right) \right\} \right]$ has positive measure and $1 - \phi (\lambda - \lambda_m) + w_g \in I$.

Finally, we emphasize that we analyze an equilibrium in which either the progressive firm displaces or does not displace the regressive firm. We do not model what transpires in the marketplace should the progressive culture oust the regressive one and no longer face competition.

### 3.3 Optimal corporate cultures

The first-order conditions for both firms with respect to $\tilde{x}$ and $s$, respectively, are

$$ (\lambda - \lambda_m)^2 (1 - s)^2 (1 - \tilde{x}) = w_g + 2 \tilde{x} - 1, \quad (11) $$

$$ (\lambda - \lambda_m)^2 (1 - s) (1 - \tilde{x})^2 = \phi'(s), \quad (12) $$

where $w_g$ is a generic majority–minority wage gap.

The left-hand side of equation (11) expresses the marginal benefit of a larger majority, which is a reduction in corporate cultural conflict. The marginal benefit increases for larger cultural differences, $(\lambda - \lambda_m)^2$, because the potential for conflict is greater. The benefit decreases in the extent of socialization, $s$, because a more socialized minority already lowers conflict. The right-hand side of (11) is the marginal cost of more majority. It includes the majority–minority wage gap, $w_g$, and the amount that a larger majority decreases diversity, $(2\tilde{x} - 1)$. Equation (12) equalizes the marginal benefit of socialization, which reduces conflict, with its marginal cost, $\phi'$. The socialization benefit increases with the minority share, $1 - \tilde{x}$, which makes the two firm decisions complements. The benefits of socialization are higher when there are more minority employees to apply the practices to.

Applying labor market clearing in equation (10) delivers both firms’ decisions in terms of exogenous objects. These policies determine each firm’s optimal corporate culture, $\lambda$. Proposition 1 has the results.

10 Defining the “between-firm” majority wage gap $w_p - w_r$ and minority wage gap $w_{p,m} - w_{r,m}$ so that they satisfy (8) and (9) guarantees that the majority and minority labor markets clear individually.
**Proposition 1.** (Optimal corporate cultures) The regressive firm’s optimal employment and socialization decisions are

\[ 1 - \tilde{x}_r^* = \frac{1}{2} \left( 1 - \phi (\lambda - \lambda_m) + w_g_r \right), \]

\[ s_r^* = 1 - \sqrt{\frac{\phi}{(\lambda - \lambda_m)(1 - \tilde{x}_r^*)}}, \]

whereas the progressive firm’s are

\[ 1 - \tilde{x}_p^* = \frac{1}{2} \left( \frac{v_c}{v_p} (1 - \phi (\lambda - \lambda_m) + w_g_r) - \frac{2\phi}{\lambda - \lambda_m} \left( \frac{\kappa + v_r - v_p}{v_p} \right) \right), \]

\[ s_p^* = 1 - \sqrt{\frac{\phi}{(\lambda - \lambda_m)(1 - \tilde{x}_p^*)}}. \]

**Proof.** See Appendix 1.1.

Both firms’ minority hiring decisions are a discount from one-half (the maximum minority share), and their socialization decisions are a discount from one (full socialization). Greater cultural differences between groups, \( \lambda - \lambda_m \), raises cultural conflict, which discourages minority hiring. A larger regressive firm wage gap, \( w_g_r \), makes minority employees relatively less expensive for the firm, which encourages minority hiring.

A larger prevailing wage gap, \( w_g_r \), also increases minority hiring at the progressive firm. To remain competitive for majority employees, the progressive firm’s wage gap rises with \( w_g_r \). The firm compensates minority employees by raising their sense of homophily via a larger minority share. The progressive firm also accounts for its relative minority treatment, \( v_c/v_p \), and the minority’s relative status preference to work for the incumbent firm, \( \kappa \). The firm socializes the minority less when socialization pains the minority more (higher \( v_p \)) and when the minority has a larger relative status preference.

### 3.4 Corporate cultural progress

The progressive firm displaces the regressive firm when it earns more profits in equilibrium. Substituting the optimal decisions of the two firms from Proposition 1 into the profit difference \( \pi_r - \pi_p \) generates a function \( F(w_g_r) \) that is quadratic in the regressive firm’s wage gap. When the prevailing wage gap, \( w_g_r \), is at a value for which \( F(w_g_r) < 0 \), the progressive firm earns more than the regressive one. In this case, the progressive corporate culture forces the dominant, regressive one to exit.

Conversely, at values of \( w_g_r \) for which \( F(w_g_r) > 0 \), the progressive corporate culture is not profitable enough to uproot the prevailing regressive culture. Finally, where \( F(w_g_r) = 0 \), profits of the two firms match, meaning that both corporate cultures coexist in the market. In the next proposition, we discuss the regions of \( w_g_r \) that determine corporate cultural progress.

**Proposition 2.** (Corporate cultural progress) The roots of the profit difference between the two corporate cultures, \( F(w_g_r) \), are \( w_{g_r,-} \) and \( w_{g_r,+} \). If the regressive culture’s wage gap, \( w_g_r \), is large (\( w_{g_r,-} < w_{g_{r,-}} \) or \( w_{g_r,+} > w_{g_{r,+}} \)), the progressive corporate culture displaces the regressive one. There is no displacement when the wage gap is within the narrower range \( w_{g_r} \in (w_{g_{r,-}}, w_{r,+}) \).

**Proof.** See Appendix 1.2.

*Figure 2* illustrates the function \( F \) when \( w_{g_{r,-}} < 0 < w_{g_{r,+}} \). The proposition reveals that when the magnitude of the regressive firm’s wage gap exceeds the magnitude of the function’s two roots, forced exit takes place. Extreme pay inequality between the majority and the minority
The figure plots the quadratic function $F(wg_r) = \pi_r - \pi_p$. The progressive corporate culture displaces the regressive one when $F(wg_r) < 0$. The regressive corporate culture prevails when $F(wg_r) > 0$.

gives room for a new, progressive corporate culture to push out the old one via labor market competition alone. On the other hand, corporate cultural progress does not occur when the regressive firm’s wage gap is within a tighter range. Without large pay differences between the majority and minority, the market does not adopt the social progress on its own.

From the complementarity between minority hiring and socialization, both firms broadly choose one of two strategies when competing for employees. The first strategy is to hire relatively more minorities to increase diversity and choose more socialization to reduce conflict. The second is to employ relatively less minority to reduce conflict and choose less socialization, while sacrificing diversity. When the wage gap is large, the minority are relatively less expensive to hire, so the first strategy is more profitable. Conversely, when the wage gap is small, minority are relatively more costly to hire, so the second strategy is more profitable.

From Proposition 1, the progressive firm hires more minorities than the regressive firm at an extreme wage gap. The firm’s improved working conditions offer an advantage at hiring minority employees when they are paid considerably less than the majority. At this significant pay inequality, this advantage makes the progressive firm better at implementing the more profitable first strategy. In contrast, when the wage gap is narrower, the progressive firm’s advantage is weaker, it earns less, and the regressive firm cannot be displaced.

### 3.5 Amount of progress

A natural question to ask is as follows: If the progressive corporate culture displaces the regressive one, how much does minority treatment improve? We answer this by measuring the difference in the minority emotion functions at the two firms in equilibrium. This difference captures the amount of corporate cultural progress, conditional on progress occurring. A larger reduction in the minority pain from socialization suggests a more significant improvement. The next proposition presents the amount of progress.

**Proposition 3.** (Amount of progress) *In equilibrium, if the progressive firm ousts the regressive one, the minority’s pain from socialization is reduced by its relative preference*
for status from working at the incumbent firm:

\[ v_p(s_p^*) = v_r(s_r^*) - \kappa. \]

The amount of corporate cultural progress depends entirely on the minority’s relative preference for status, \( \kappa \). The greater the minority preference to stick with the prevailing but regressive environment in exchange for status, the more the progressive firm must improve minority treatment to encourage those employees to leave that environment behind. In equilibrium, the progressive firm anchors its minority’s emotion function at the value of the regressive firm’s. From that position, the progressive firm reduces the socialization pain by the amount of the status preference in an effort to displace the dominate corporate culture. Corporate cultures improve upon the current environment’s magnitude of offensiveness, represented by \( v_r(s_r^*) \). If progress comes, the size of that progress depends on how strong the resistance was to that change, represented by \( \kappa \).

3.6 Likelihood of progress

We next study the likelihood of corporate cultural progress, evaluated using comparative statics. The region \( w_{g,r,+} - w_{g,r,-} \) is the range where the predominant, regressive corporate culture is shielded from displacement. Let \( \eta \) be the size of this region:

\[ \eta \equiv \frac{2v_p}{(\lambda - \lambda_m)(v_r^2 - v_p^2)} \left( 2\kappa \phi - (v_r - v_p)((\lambda - \lambda_m) - 2\phi) \right). \] (13)

The region describes the set of wage gaps that the regressive corporate culture can sustain and still prevail in the market. A smaller \( \eta \) suggests that progress is more likely, as there is a greater range for which the progressive corporate culture can become the leading one. The following lemma describes how some notable quantities affect the likelihood of progress.

**Lemma 1.** (Likelihood of progress) A stronger status preference \( \kappa \) for the incumbent firm makes corporate cultures less likely to progress. Less painful socialization at the progressive firm (lower \( v_p \)) makes progress more likely.

A greater status preference \( \kappa \) expands the regressive firm’s protected range, consistent with intuition. The greater the minority’s relative preference for status, the more difficult for the progressive firm to profitably lure minority employees away and oust the regressive firm. On the other hand, progress is more likely if the progressive firm engages in less painful socialization (lower \( v_p \)). If the progressive firm offers a greatly improved working environment relative to the regressive firm, minority employees are open to switching at a lower wage, which raises profits for the progressive firm, allowing it greater opportunity to displace the regressive firm.

3.7 Desegregated labor market

In the model, the minority and majority labor markets are segregated such that each worker type bargains with the two kinds of firms separately. In Appendix 2.1, we provide a model extension in which the labor market is desegregated such that all workers bargain with both kinds of firms at once. Desegregating the labor market makes social progress harder, in that displacing the regressive corporate culture is less likely. However, a desegregated labor market does lead to a lower wage gap between majority and minority workers. Desegregating the labor market shifts some majority employee bargaining power to minority employees, which shrinks the pay difference. As we note earlier, a smaller wage gap is another way of defining social progress. But having majority and minority employees compete for the same jobs introduces a trade-off: the minority’s emotional costs of mistreatment are “compensated” through higher minority wages, but “meaningful” change in the form of better working conditions for minority employees is less likely.
4. Testable predictions

The model makes two predictions for wage gaps. Employee pay differences are observable objects, so the predictions are readily testable. The econometrician has much freedom in the choice of the minority group and the progressive and regressive firms—or the group of firms considered regressive and progressive. Although the equilibrium of the model occurs in a single period, corporate cultural progress takes time, which means both progressive and regressive firms will coexist in the data. To select the majority and minority, the econometrician must choose an observable dimension that is broad enough—such as race, ethnicity, or gender—to obtain meaningful group shares. Group members must also share similar personal cultures, and they ought to match as closely as possible along every other dimension. For example, the wage gap between a male and female manager should be compared rather than that of a male salesperson and a female manager.

Combining the market clearing condition in equation (10) and the optimal corporate cultures in Proposition 1 gives the progressive firm’s wage gap:

\[ w_{g_p} = \left( \frac{v_r}{v_p} \right) w_{g_r} + (1 - \phi(\lambda - \lambda_m)) \left( \frac{v_r - v_p}{v_p} \right) - \frac{2\phi}{\lambda - \lambda_m} \left( \kappa + \frac{v_r - v_p}{v_p} \right) \].

The wage gap \( w_{g_p} \) adjusts with the regressive firm’s wage gap \( w_{g_r} \). Depending on the parameters, the majority–minority wage gap at the progressive firm may be higher or lower than at the regressive firm. If the regressive firm’s wage gap is large, the progressive firm must increase its wage gap to appeal to majority employees. But a larger status preference \( \kappa \) to work for the incumbent firm lowers the progressive firm’s wage gap. Equation (14) can alternatively be written as the linear relation:

\[ w_{g_p} = \alpha_{w_{g_p}} + \beta_{w_{g_p}} w_{g_r} \],

which can be tested using a linear regression and log differences between wages. The sign of the constant \( \alpha_{w_{g_p}} \) is ambiguous, but the coefficient \( \beta_{w_{g_p}} \equiv \frac{v_r}{v_p} \) must exceed one. The coefficient measures the relative mistreatment at the regressive firm. The first empirical prediction of the model is thus

\[ \beta_{w_{g_p}} > 1. \] (15)

Using the majority indifference condition in equation (8), the difference in majority pay between firms is

\[ w_p - w_r = - \left( \frac{\kappa + v_r - v_p}{v_p} \right) \left( \frac{\phi}{\lambda - \lambda_m} \right) + \frac{1}{2} \left( \frac{v_r - v_p}{v_p} \right) (1 - \phi(\lambda - \lambda_m) + w_{g_r}) \].

This relation can be expressed as

\[ w_p - w_r = \alpha_{w_p - w_r} + \beta_{w_p - w_r} w_{g_r} \],

where \( \beta_{w_p - w_r} \equiv \frac{1}{2} \left( \frac{v_r - v_p}{v_p} \right) \), which is another measure of relative mistreatment. The second testable prediction of the model is thus

\[ \beta_{w_p - w_r} > 0. \] (16)

5. Conclusion

We consider corporate culture as a deliberate choice of a firm. Firms often engage in discriminatory practices that can become intolerable to society. Whether competition alone can compel firms to adapt to progressive development in society depends on the difference in pay between the
majority and minority. Extreme differences in wages give room for an emergent, progressive corporate culture to displace a regressive, outdated one. In contrast, a narrower wage gap insulates the regressive regime, thereby straining corporate culture to advance by market competition.

The better the emergent corporate culture treats minority employees, the more likely it can oust the regressive culture. A greater preference for status in remaining with the regressive culture implies that corporate cultural progress is harder to achieve. But if the progressive culture is successful in displacing the regressive one, that stronger preference to have stayed with the old regime means greater improvement in working conditions *ex post* because the competition was fiercer to bring about the change.

Surely, the way we model social progress is simple and incomplete. In history and the world, the process is slow and imperfect. At times it may seem as if society has advanced in its treatment of certain groups, only to revert to sad, sick behavior not long after. It is just the same with progress in corporate culture. Deeply rooted tendencies of a firm that may have grown out of the values of a founder and persisted thereafter do not change rapidly. If corporate culture changes with pressure from the market, it does so in fits and starts.

**Acknowledgements**

We thank the editors, Giovanni Dosi, Glenn Carroll, and David Teece, and an anonymous reviewer for very helpful comments. We are grateful to Peter DeMarzo, Darrell Duffie, and Arvind Krishnamurthy for their discussions on this topic. We also thank Nick Barberis, Pedro Bordalo (discussant), James Choi, David Dicks (discussant), Stefano Giglio, Will Goetzmann, Paul Goldsmith-Pinkham, Denis Gromb, Brent Hickman, Jon Ingersoll, Bryan Kelly, Ye Li (discussant), Song Ma, Gregor Matvos, Tim McQuade, Paul Pfeiderer, Monika Piazzesi, Geert Rouwenhorst, Olav Sorensen, David Thesmar, John Thanassouli (discussant), Angela Zentefis, and Luigi Zingales (discussant); seminar participants at Yale SOM, Stanford GSB, The University of Texas at Austin (McCombs), and the New York Federal Reserve; and conference participants at the 2019 Midwest Finance Association Annual Meeting, the 2019 Adam Smith Workshop in Corporate Finance, the 2019 Financial Intermediation Research Society Conference, the sixth Cambridge Corporate Finance Theory Symposium, the fourth Economics of Social Sector Organizations Conference, and the 2020 Annual Finance Association Meeting for their valuable feedback and comments.

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**Appendix 1 Proofs**

This section contains the proofs of the paper.

1.1 Proposition 1

The regressive firm’s optimality conditions are

\[
(\lambda - \lambda_m)^2 (1 - s_r)^2 (1 - \bar{x}_r) = w g_r + 2 \bar{x}_r - 1,
\]

\[
(\lambda - \lambda_m)^2 (1 - s_r) (1 - \bar{x}_r)^2 = \phi'(s_r).
\]

Substitute the labor market clearing condition from equation (10) into the first optimality condition:

\[
1 - \bar{x}_r = \frac{w g_p + 2 \bar{x}_r - 1 + v_p(s_p) - v_r(s_r) + \kappa}{(\lambda - \lambda_m)^2 (1 - s_r)^2}.
\] (A.1)

Substitute this equation into the second optimality condition:

\[
\phi'(s_r) = \frac{(w g_p + 2 \bar{x}_r - 1 + v_p(s_p) - v_r(s_r) + \kappa)^2}{(\lambda - \lambda_m)^2 (1 - s_r)^3}.
\] (A.2)

Apply this same procedure to the progressive firm:

\[
1 - \bar{x}_p = \frac{w g_r + 2 \bar{x}_r - 1 + v_r(s_r) - v_p(s_p) - \kappa}{(\lambda - \lambda_m)^2 (1 - s_p)^2},
\] (A.3)

\[
\phi'(s_p) = \frac{(w g_r + 2 \bar{x}_r - 1 + v_r(s_r) - v_p(s_p) - \kappa)^2}{(\lambda - \lambda_m)^2 (1 - s_p)^3}.
\] (A.4)

The four conditions (A.1–A.4) represent a nonlinear system of four equations with four unknowns: \{\bar{x}_r, s_r, \bar{x}_p, s_p\}. Substituting the specific functions for \phi(s) and v(s) and solving the
system delivers unique solutions for each variable. Substituting these four solutions into the labor market clearing condition of equation (10) delivers a unique solution for $w_g p$ as a function of $w_g r$, which is provided in equation (14). Substituting $w_g p(w_g r)$ into the four choice variables \{\tilde{x}_r, s_r, \tilde{x}_p, s_p\} and conducting extensive algebra gives the expressions in the proposition. By Assumption 1, $s_r, s_p \in [0, 1]$ and $1 - \tilde{x}_r, 1 - \tilde{x}_p \in [0, \frac{1}{2}]$.

1.2 Proposition 2
The profit function of each firm is

$$\pi_k = A + \tilde{x}_k (1 - \tilde{x}_k) - \frac{1}{2} (\lambda - \tilde{\lambda}_k)^2 - \phi (s_k) - w_k \tilde{x}_k - w_{k,m} (1 - \tilde{x}_k),$$

for $k \in \{r, p\}$. Some algebra gives $(\lambda - \tilde{\lambda}_k) = (\lambda - \lambda) (1 - s_k) (1 - \tilde{x}_k)$. Substituting $\phi (s_k) = \frac{\phi}{2} \left( \frac{1}{(1-s_k)^2} - 1 \right)$ and taking the difference $\pi_r - \pi_p$ gives

$$\pi_r - \pi_p = (\tilde{x}_p (1 - \tilde{x}_r) - \tilde{x}_r (1 - \tilde{x}_p)) - \frac{1}{2} (\lambda - \lambda_m)^2 (1 - s_r)^2 (1 - \tilde{x}_r)^2$$

$$+ \frac{1}{2} (\lambda - \lambda_m^2) (1 - s_p)^2 (1 - \tilde{x}_p)^2 - \frac{\phi^2}{2} \left( \frac{1}{(1-s_r)^2} - \frac{1}{(1-s_p)^2} \right)$$

$$- (w_{g,r} \tilde{x}_r - w_{g,p} \tilde{x}_p) - (w_{r,m} - w_{p,m}).$$

Use the minority labor market clearing condition in equation (9) to substitute in the minority wage gap $w_{r,m} - w_{p,m} = \tilde{x}_r - \tilde{x}_p + v_r (s_r) - v_p (s_p) - \kappa$, and use the emotion function $v_k (s_k) = v_k \left( \frac{1}{(1-s_k)^2} - 1 \right)$ to get

$$\pi_r - \pi_p = \tilde{x}_p^2 - \tilde{x}_r^2 - \frac{1}{2} (\lambda - \lambda_m)^2 \left( (1 - s_r)^2 (1 - \tilde{x}_r)^2 - (1 - s_p)^2 (1 - \tilde{x}_p)^2 \right)$$

$$- \frac{\phi^2}{2} \left( \frac{1}{(1-s_r)^2} - \frac{1}{(1-s_p)^2} \right) - (w_{g,r} \tilde{x}_r - w_{g,p} \tilde{x}_p) - \left( \frac{v_r}{(1-s_r)^2} - \frac{v_p}{(1-s_p)^2} \right)$$

$$+ (v_r - v_p) - \kappa.$$

After substituting the optimal decisions from Proposition 1 and the progressive firm’s wage gap in equation (14), the profit difference can be expressed as

$$F(w_{g,r}) \equiv \pi_r - \pi_p.$$

The function $F(w_{g,r})$ is quadratic in the regressive firm’s wage gap:

$$F(w_{g,r}) = a \times w_{g,r}^2 + b \times w_{g,r} + c,$$

where the coefficients are

$$a = \frac{v_r^2 - v_p^2}{4v_p^2},$$

$$b = \frac{\phi (\lambda - \lambda_m)^2 (v_r^2 - v_p^2) - (\lambda - \lambda_m) v_r (v_r - v_p) + 2\phi v_r (\kappa + v_r - v_p)}{2(\lambda - \lambda_m) v_p^2},$$

$$c = \frac{c_1 c_2 (v_r^2 - v_p^2)}{4(\lambda - \lambda_m)^2 v_p^2 (v_r + v_p)(v_r - v_p)},$$

and

$$d = \frac{v_r^2 - v_p^2}{4v_p^2}.$$
with

\[ c_1 = 2\phi (\kappa + v_r - v_p) - (\lambda - \lambda_m) (v_r - v_p) + \phi (\lambda - \lambda_m)^2 (v_r + v_p), \]
\[ c_2 = 2\phi (\kappa + v_r - v_p) - (\lambda - \lambda_m) (v_r - v_p) + \phi (\lambda - \lambda_m)^2 (v_r - v_p). \]

Because the function \( F(wg_r) \) is continuous, an equilibrium exists and is unique. The leading coefficient \( a < 0 \), which makes the parabola concave down. The quadratic's discriminant is

\[ \Delta = \frac{((2\phi - (\lambda - \lambda_m)) (v_r - v_p) + 2\kappa\phi)^2}{4 (\lambda - \lambda_m)^2 v_p^2} > 0, \]

so the roots of \( F(wg_r) \) are real. From the quadratic formula, those roots are

\[ wg_{r,+} = \frac{2\kappa\phi - (\lambda - \lambda_m) (v_r - v_p) + 2\phi (v_r - v_p) + \phi (\lambda - \lambda_m)^2 (v_r - v_p)}{(\lambda - \lambda_m) (v_r - v_p)}, \]
\[ wg_{r,-} = \frac{2\kappa\phi - (\lambda - \lambda_m) (v_r - v_p) + 2\phi (v_r - v_p) + \phi (\lambda - \lambda_m)^2 (v_r + v_p)}{(\lambda - \lambda_m) (v_r + v_p)}. \]

Because the parabola is concave down, \( F(wg_r) < 0 \) for \( wg_r < wg_{r,-} \) and \( wg_r > wg_{r,+} \), implying that the progressive firm's profit exceeds that of the regressive firm's over those regions. Thus, corporate cultural progress occurs for large positive (or negative) wage gaps.

**Appendix 2 Model extensions**

### 2.1 Desegregated labor market

In the main model, the minority and majority labor markets are segregated such that each worker type bargains with the two kinds of firms separately. Here, we provide a model extension in which the labor market is desegregated, such that all workers bargain with both kinds of firms at once. Integrating the labor market requires adding two more indifference conditions:

\[ w_r + x_r = w_{r,m} + 1 - x_r - v_r (s_r) + k, \quad (A.5) \]
\[ w_p + x_p = w_{p,m} + 1 - x_p - v_p (s_p). \quad (A.6) \]

Together with equations (8–9), the indifference conditions of equations (A.5–A.6) imply that the utilities associated with all worker–firm pairs equalize. The four conditions uniquely pin down the levels of majority and minority wages at the two firms. With the wage levels also come the majority–minority wage gaps, which are

\[ wg_r = \frac{2\phi}{\lambda - \lambda_m} \left( 1 + \frac{\kappa}{v_r} \right) - \frac{2\phi^2}{v_r} - \left[ 1 - \phi (\lambda - \lambda_m) \right], \quad (A.7) \]
\[ wg_p = \frac{2\phi}{\lambda - \lambda_m} - \frac{2\phi^2}{v_p} - \left[ 1 - \phi (\lambda - \lambda_m) \right]. \quad (A.8) \]

Because \( \kappa > 0 \) and \( v_p < v_r \), the wage gap at the progressive firm is unambiguously smaller than the gap at the regressive firm. Minority employees’ relative preference for status at the regressive incumbent firm permits it to sustain a larger pay gap between the majority and the minority. Furthermore, the integrated labor market implies that both majority and minority employees
compete for the same jobs. The progressive firm’s more tolerable socialization allows it to compensate minority workers relatively less because of a better working environment. But, at the same time, the integrated labor market means that majority employees lose some of their bargaining power to minority employees (who are willing to accept less in pay), which lowers the majority employee level of pay and leads to an overall shrunken wage gap at the progressive firm.

The endogenous wages can then be substituted into the progressive and regressive firms’ profit functions to determine the conditions that make corporate cultural progress possible. In the text, the regressive firm’s wage gap was the state variable that determined whether change transpired. With all wage levels now endogenous, a different parameter must be chosen to compare profit functions. A natural choice is the parameter $v_p$ associated with the pain from socialization at the progressive firm, as it influences the extent to which the progressive firm must improve minority employee treatment to displace the regressive corporate culture.

Substituting the four endogenous wages into the two firms’ choices for $\tilde{x}$ and $s$ and then substituting those choices into the profit function of equation (5) delivers each firm’s profit as an expression of the primitives of the model. Taking the difference in profits gives

$$\pi_r - \pi_p = G(v_p) \equiv \frac{Au_p^2 + Bv_p - C}{Dv_p^2}, \tag{A.9}$$

where

$$A = \kappa^2 \phi^2 - 2\kappa(\lambda - \lambda_m) \phi^3 - v_p \kappa(\lambda - \lambda_m) \phi + 2v_r \kappa \phi^2$$

$$+ (\lambda - \lambda_m)^2 \phi^4 + v_p (\lambda - \lambda_m)^2 \phi^2 - 2v_r (\lambda - \lambda_m) \phi^3,$$

$$B = 2(\lambda - \lambda_m) \phi^3 v_p^2 - (\lambda - \lambda_m)^2 \phi^2 v_r^2,$$

$$C = (\lambda - \lambda_m)^2 \phi^4 v_r^2,$$

$$D = (\lambda - \lambda_m)^2 v_r^2.$$

The coefficients $C > 0$ and $D > 0$ unambiguously. The function $G(v_p)$ has an asymptote at $v_p = 0$ and at most two real roots. Because $v_p > 0$ by assumption, we focus on the function over the positive domain. Figure A1 provides an illustration of the difference in profits. Where $G(v_p) < 0$, the progressive corporate culture displaces the regressive one. In contrast, where $G(v_p) > 0$, the regressive corporate culture prevails.

In the figure, we set the regressive socialization parameter $v_r$ such that $v_p < v_r$ over the illustrated domain. One can observe that corporate cultural progress is possible only over a small region where $v_p$ is sufficiently below $v_r$. Otherwise, the regressive firm’s profit exceeds that of the progressive firm, blocking any change.

In the main model, corporate cultural progress was possible when the wage gap was high so long as $v_p < v_r$. When labor markets are integrated, however, the value of $v_p$ must fall sufficiently below that of $v_r$ for corporate cultural progress to occur. The intuition is that the integrated labor market and the equalization of all workers’ utilities lead minority employees to receive a wage compensation at the regressive firm that makes it harder for the progressive firm to successfully compete. Desegregating the labor market has the benefit of shrinking pay gaps, but working conditions at the progressive firm now need to be sufficiently good to bring about corporate cultural change.

### 2.1.1 Consumer demand and corporate cultural change

In the main model, competition in the labor market was the only driving force of corporate cultural change. But other forces can lead to advancements in corporate culture, and one key force is the consumer market. Consumers might value firms that engage in socially progressive practices, and a preference for these practices might lead to a willingness to pay (WTP) a premium for these firms’ products. For example, Kang et al. (2012) provide evidence that consumers with higher degrees of environmental concerns indicate a greater willingness to pay premiums for guest
services at hotels that are engaged in “green” initiatives. See also Tully and Winer (2014) for a meta-analysis of research analyzing consumers’ greater WTP for socially responsible products. In this section, we extend the model with a consumer-demand component to examine its effects on corporate cultural progress.

Allowing the consumer market to influence the advancement of corporate cultural change moves into the foreground the societal progress that we have implicitly presented in the background of the main model. \(^{11}\) Now, social progress affects firms no longer only through more thoughtful socialization but also in the spending habits of their customers. We introduce this consumer component in a reduced-form way by appending the progressive firm’s profit with a fixed constant \(b > 0\). The term is meant to capture the boost in profit that the progressive firm enjoys from its consumers exhibiting a greater WTP for its products. A higher value of \(b\) represents the greater revenue from the higher consumer WTP, less any unmodeled costs of production.

To examine the effects of consumer demand on the likelihood of corporate cultural progress, we revisit \(\eta\) in equation (13), which determines the likelihood of progress. When consumers exhibit a greater WTP for the progressive firm’s products, the difference in profits, denoted \(\tilde{\Delta}(w_{g,r})\), remains a concave-down parabola with shifted roots \(\tilde{w}_{r,+}\) and \(\tilde{w}_{g,r,-}\). The difference in those roots characterizes the new region \(\tilde{\eta}\), which is defined as

\[
\tilde{\eta} \equiv \frac{2v_p}{(\lambda-\lambda_m)(v_r^2-v_p^2)} \sqrt{\Gamma},
\]

where the function \(\Gamma\) is

\[
\Gamma = \left[2\kappa \phi - (v_r-v_p)((\lambda-\lambda_m)-2\phi)\right]^2 - 4b(\lambda-\lambda_m)^2(v_r^2-v_p^2).
\]

Just as in the main model, this region describes the set of wage gaps that the regressive corporate culture can uphold and still prevail. A smaller \(\tilde{\eta}\) implies that corporate cultural progress

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\(^{11}\) We thank an anonymous reviewer for this suggestion.
is more likely. One can observe immediately that a larger $b$ shrinks the region and increases the likelihood of progress. In the main model, minority employees’ relative preference for status, represented by $\kappa$, helped sustain the incumbent regressive culture’s dominance. The power granted to the regressive culture by this status preference is now weakened. Customer preference for the progressive culture plays a role now in driving corporate cultures to advance alongside societal progress.