J. Finan. Intermediation 55 (2023) 101031

Contents lists available at ScienceDirect

Journal of Financial Intermediation

journal homepage: www.elsevier.com/locate/jfi

Purpose, profit and social pressure☆

Fenghua Song [a,d,*], Anjan Thakor [b,c,d], Robert Quinn [e]

[a] Smeal College of Business, Pennsylvania State University, United States
[b] Olin Business School, Washington University, St. Louis, United States
[c] ECGI, Belgium
[d] Finance Theory Group (FTG), United States
[e] Ross School of Business, University of Michigan, United States

ARTICLE INFO

JEL classification:
D02
D21
D23
D64

Keywords:
Higher purpose, Incentives, Labor market matching, Organizational performance

ABSTRACT

We develop a model in which there are firms and employees who care about profit-sacrificing higher purpose (HP) and those who do not. Firms and employees search for each other in the labor market. Each firm chooses its HP investment. When there is no social pressure on firms to adopt a purpose, HP dissipates agency frictions, lowers wage costs, yet elicits higher employee effort in firms that intrinsically value the purpose. However, social pressure to invest in HP can distort the HP investments of *all* firms and reduce welfare by making all agents worse off. Applications of these results to banking are discussed.

1. Introduction

In sharp contrast to the prescription in Friedman (1970)'s article, "A Friedman Doctrine: The Social Responsibility of Business is to Increase its Profits", many are now advocating that firms should focus instead on attending to goals with broader social welfare implications (e.g., Campbell (2007), Hart and Zingales (2017), and Serafeim (2020)). Possibly in response, profit-centered firms have begun the pursuit of organizational higher purpose ("HP" henceforth), defined as a contribution goal that transcends the usual business goals but is intrinsically a part of the organization's business (e.g., Allen et al. (2022), Hedblom et al. (2019), Henderson and Van den Steen (2015), and Quinn and Thakor (2018, 2020)). It is essentially a goal that justifies *why* the firm exists as a contributor to the greater good. That is, why does it have the mission that it has? For example, DTE Energy, an electric utility company, clarifies its HP as being "a force for growth and prosperity" by "improving lives and creating opportunity, partnering with communities for growth, and exhibiting leadership toward cleaner energy and environmental stewardship".[1] Marzetti, a food company, states its HP as "nourishing growth in all we do". The Development Bank of Singapore defines its higher purpose as "making banking joyful", and has invested significantly in developing apps for customers to implement this purpose (see Quinn and Thakor (2019)). Koetter et al. (2020) provide interesting evidence that banks engage in corporate recovery lending to firms impacted adversely by regional macro shocks, which is an example of how bank lending can serve a higher purpose. See also Bunderson and Thakor (2022). Motivated by these examples, we analyze how the pursuit of HP affects contracting in organizations, wages, employee effort and organizational output. Our main focus is on how these outcomes are affected by social pressure to invest in HP.

An important reason why examining these aspects of HP is compelling is that HP has been endorsed by prominent leaders and regulators, but academic research on it seems to be lagging these developments. For example, in his 2018 letter to shareholders, Larry Fink of BlackRock stated, "Without a sense of purpose, no company, either public or private, can achieve its full potential". As Thakor (2022) points out, others have proposed that firms take on as their objective function Enlightened Shareholder Value (ESV) which includes stakeholders besides shareholders. In fact, legal scholars have gone so far as to discuss how Rule 14a-8, the SEC shareholder proposal rule, can be used by shareholders to put forth proposals for voting that would

☆ ECGI Working Paper No. 881/2023. For their helpful comments to previous versions of the paper, we thank an anonymous referee, *JFI* editors as well as numerous discussants and participants in seminars at Goethe University, Washington University in St. Louis, the SHoF-ECGI Conference (Stockholm), the Second Marstrand Finance Conference (Gothenburg), the Association of Management Meetings (Boston), the CEO Summit at the Center for Higher Ambition Leadership (Boston), and the University of Michigan POS Seminar.

* Corresponding author.
E-mail addresses: song@psu.edu (F. Song), thakor@wustl.edu (A. Thakor), requinn@umich.edu (R. Quinn).

[1] Quinn and Thakor (2018, 2019) discuss DTE Energy and its HP.

https://doi.org/10.1016/j.jfi.2023.101031
Received 18 February 2023; Received in revised form 18 April 2023; Accepted 19 April 2023
Available online 4 May 2023
1042-9573/

expand the fiduciary responsibility of directors to include stakeholders besides shareholders (see Fisch (2022)).

While different firms pursue different HPs, some have greater support among social influence groups and activists. These groups will want more firms to adopt their preferred HPs. Examples are contributions to reducing global warming, cleaning up oceans, reducing racial inequalities, etc. Some firms may *authentically* wish to pursue one of these HPs, but not all.[2] If social pressure takes the form of (pecuniary or non-pecuniary) penalties on firms not adopting the HP preferred by influence groups, then sufficiently high pressure forces firms that do not believe in the HP to adopt it. In some cases, the penalties may take the form of customer boycotts of the firm's products. In other cases, it may be social ostracization of the CEO or a besmirching of the CEO's reputation. The specific form of the penalty does not matter for our results, but just that it is large.

These developments raise several questions. First, how does HP affect organizational performance? Second, what happens if a particular HP becomes preferred by powerful influence groups and there are social sanctions against firms that do not adopt it? That is, how does the pressure to "do good" influence firm behavior? The intended goal of social pressure is to force firms to adopt HP, but how effective is it in forcing firms that do not intrinsically value that HP ("treatment group") to actually adopt it? More interestingly, how will the pressure on the treatment group affect firms that intrinsically value that HP in the first place ("control group")? Can the pressure on the treatment group *transmit* to firms in the control group – those that are not targets of the pressure – (unintendedly) distorting their HP investments as well? What is the overall welfare impact? These questions cut to the heart of the theory of the firm, corporate governance and what the firm's objective function should be. We develop a model to address these question.

Model Sketch: Firms hire employees who provide privately costly effort to produce output. One type of firms (type 1) care about both profits and the firm's articulated HP, consistent with studies in which some firms are motivated by more than profit (e.g., Allen et al. (2022), Besley and Ghatak (2005), Henderson and Van den Steen (2015), and Oehmke and Opp (2022)). The other type of firms (type 0) care only about profits. There are two corresponding types of employees: those who also care about the firm's HP and whether they are personally "connected" to the HP (type 1), and those who care only about monetary compensations (type 0). Investing in the HP requires the firm to divert part of its revenue, so it is financially costly. How much to divert is a choice variable. Firms and employees, knowing their types privately, search for each other in the labor market and negotiate wage contracts through Nash bargaining. Wages depend, in part, on the firm's HP investment.

A type-1 employee derives utility from both his wage and the firm's HP pursuit, but the latter utility is enjoyed only if the employee's job is connected to the firm's HP, i.e., the employee is made to understand how his assigned job contributes to the HP and how the HP connects to the purpose he values. The cost of making this connection varies by firm type. A type-1 firm that authentically values the HP has a lower cost of connecting the employee to the HP than a type-0 firm that does not value the HP. Type-1 firms seek to hire like-minded type-1 employees who will value the HP when connected to it. Type-0 firms are content to hire type-0 employees.

We model "firms" as abstract entities that contract with employees to produce output. These could be firms of any sort, including banks. While we do not explicitly model deposit-taking and lending, the implications of our analysis carry over to such specific models as well; see Allen et al. (2022) and Bunderson and Thakor (2022).

Results Preview: There are three results. First, absent social pressure to invest in HP, type-1 firms invest in the HP and type-0 firms avoid investing. The resulting equilibrium separation enables each type of firm to operate in its own labor submarket, matching with like-minded employees who attach the same value to the HP as the firm does. There is thus an efficient firm–employee matching. Firms that authentically value the HP experience lower wages yet higher employee effort, consistent with the stylized facts (e.g., Gartenberg et al. (2019) and Hedblom et al. (2019)). This is because when an employee cares about the firm's HP and is connected to it, his marginal return on effort consists not only of a higher expected wage but also higher expected utility from the HP.

Second, our main result is that, these benefits notwithstanding, social pressure to invest in a "preferred" purpose may lead to various distortions. When the pressure is moderate, type-1 firms *overinvest* in the HP, relative to first-best (obtained when the pressure does not exist or is low), in order to separate from type-0 firms which now have increasing incentives to also invest in the HP due to the rising pressure. Most surprisingly, when the pressure is sufficiently high, all firms invest in the HP, but type-1 firms invest *less* than first-best. The intuition is that type-0 firms' now high-pressure-induced strong incentives to mimic type-1 firms make the cost of separation (via overinvestment in the HP) so high for type-1 firms that they eventually give up separation. Therefore, compelling firms that do not intrinsically value the HP to invest in it ends up disrupting efficient matching between like-minded firms and employees, since it is no longer possible for employees to distinguish between type-0 and type-1 firms. Each type of firm ends up facing a mixed pool of employees including those who care about the HP and those who do not. Consequently, type-1 firms optimally *underinvest* in the HP. This leads to an unambiguously Pareto dominated outcome in that *all* agents are worse off with social pressure to invest than without. The distortion arises because social pressure not only forces firms that do not value the HP to "waste" resources to invest in it, but the pressure on these firms ultimately transmits to firms and employees that authentically value the HP by distorting their matching in the labor market.

Third, we extend our base model – in which the value of the HP derives only from the utility it generates for the firm and its employees – to the case with an additional social welfare spillover benefit that does not accrue to the firm or its employees. We show that with moderate social pressure, the "overinvestment" in HP by a type-1 firm relative to its *private optimum* (our second result) may now actually be socially optimal. This is because with no or low pressure, type-1 firms do not need to signal their type (our first result), and hence invest less in HP than the social optimum as they do not internalize the HP's social benefit beyond the firm boundaries. This suggests a possible role for "regulating" HP, i.e., when there are social benefits of HP that firms and their employees do not internalize, there may be a role for regulations to exert *moderate* pressure on firms to invest in HP.

After deriving these results, we discuss the implications of our analysis, particularly for banking. We believe that, due to their central role in the allocation of credit in the economy, banks have a variety of different HPs they can choose from. For example, addressing climate change could be one HP that may involve both *ex ante* measures – through credit extension to facilitate the development and adoption of "clean" or "green" technologies – and *ex post* measures like corporate recovery lending after natural disasters. We have more to say about this in Section 5.3. Perhaps because of the wide range of HP choices available to banks and their critical position in the economy, relative to main street firms, banks are especially vulnerable to the pressure to facilitate the pursuit of "socially preferred" agendas, from containing climate change to increasing credit availability to selected borrower groups or industries. In some cases, this social pressure may even be manifested in regulatory changes, with the tools of macroprudential regulation being used to induce banks to behave in a particular way, which then influences the firms they lend to. What our analysis highlights is that while the voluntary embrace of one of these agendas as a higher purpose that the bank chooses to pursue may be welfare

[2] 4Ocean states its HP as ending the crisis of ocean being polluted by plastic garbage. This may not be an HP that authentically appeals to all firms.

enhancing, mandating it through social pressure or regulation may decrease welfare.

Literature: This paper is broadly related to the literature on how prosocial goals and social relationship benefits affect organizational outcomes (e.g., Allen et al. (2022), Bénabou and Tirole (2006), and List and Momeni (2021)), including corporate misconduct (Thanassoulis, 2021). In particular, Allen et al. (2022) develop a model that relies on a related idea, namely that individual agents and institutions maximize not only their own payoffs but also care about the implications of their decision for payoffs to others due to social externalities, positive spillover effects, etc., which they call "implicit benefits". They use this to analyze the consequences for forms of financing that are alternatives to the traditional formal institutions and markets. Like us, they use the idea that agents may seek to maximize something other than just personal financial payoffs, and show that this leads to higher effort and better outcomes. There are important differences between their paper and ours. First, while they focus on rationalizing alternatives to formal financial intermediation, we focus on exploring implications of the *de facto* mandate of higher purpose. Second, while they show that the HP-related implicit benefits always improve outcomes, we highlight the circumstances in which inducing more firms to adopt a higher purpose may reduce welfare.

Most closely related is the research on organizational purpose/mission, e.g., Besley and Ghatak (2005), Bunderson and Thakor (2022), Gartenberg et al. (2019), Gartenberg and Serafeim (2019), Grant et al. (2007), Hedblom et al. (2019), Henderson and Van den Steen (2015), Quinn and Thakor (2018, 2020), and Rajan et al. (2022). While some of these papers have provided valuable insights into corporate HP and also some of the stylized facts that motivate our paper, in contrast to these papers, we formally model organizational HP in an optimal contracting framework and show that social pressure on firms to embrace a preferred HP may reduce welfare. That is, imposing pressure on firms to do more good can result in less good.

Also related but less so is the literature on corporate social responsibility (CSR) (e.g., Bénabou and Tirole (2010)).[3] Our paper differs in many respects from this literature. First, CSR differs from HP in that CSR is prosocial by definition, whereas HP need not be (see Gartenberg et al. (2019)). Second, while CSR initiatives may have little connection to the firm's day-to-day business, HP is intimately related to the firm's business decisions, and hence is ineffective unless employees are connected to the purpose.

Structure: Section 2 develops the model. Section 3 analyzes the base model without social pressure on HP. Section 4 studies the welfare impact of social pressure. Section 5 examines model robustness and discusses implications, including those for banking. Section 6 concludes. Proofs are in the Appendix.

2. Model

2.1. Contracting

Agents are risk neutral and the riskless rate is zero. A firm needs an employee ("he") to produce an output $z \in \{Z, 0\}$, with $Z > 0$. Let $\Pr(z = Z) = e$, where $e \in [0, 1]$ is the privately-observed, non-contractible effort supplied by the employee at a personal cost $\frac{\psi e^2}{2}$, with $\psi > 0$. The firm can observe and contract on z. The employee, protected by limited liability, is paid a wage $w(z)$, with $w(z) \geq 0 \; \forall z \in \{Z, 0\}$, based on the realization of z. The employee's reservation utility is zero.

[3] More tangentially related is Bénabou and Tirole (2003) in which a tension between extrinsic and intrinsic motivations arises because giving high-powered incentives may convey bad news about the task or agent ability. Bolton et al. (2013) examine the impact of the organizational leader in overcoming a misalignment of incentives that inhibits coordination.

2.2. Types and HP

There are two types of firms (0 and 1). A type-0 firm is a pure profit maximizer that does not care about any HP. A type-1 firm derives utility from investing in the HP. A firm's HP investment starts with it publicly declaring a *binding* precommitment to divert a fraction $\alpha \in [0, 1]$ of its output to serving a purpose. This diversion is a subtraction from the firm's tangible output, so the output will be $(1 - \alpha)z$, but it generates for the firm a utility $\beta_o u(\alpha z)$ from the resulting HP investment, where $\beta_o \in \{0, 1\}$, $u(\cdot)$ is an increasing and concave function satisfying Inada conditions ($u'(0) = \infty$, $u'(Z) = 0$), $u(0) = 0$ and $u(x) < x$.[4] We view β_o as the strength of the firm's "authentic HP commitment". There is authentic commitment ($\beta_o = 1$) by a type-1 firm, and no authentic commitment ($\beta_o = 0$) by a type-0 firm. A firm knows its β_o privately.

There are also two types of employees, indicated by $\beta_\ell \in \{0, 1\}$: type 0 ($\beta_\ell = 0$) who do not care about any HP, and type 1 ($\beta_\ell = 1$) who value the HP. We specify below the utility a type-1 employee derives from the HP. All employees care about wealth. An employee knows his β_ℓ privately.

The labor market in which employees match with firms opens after all agents observe each firm's HP commitment α. Once matched, a firm and its prospective employee negotiate the employee's wage $w(z)$. Given the non-negativity constraint on wages and universal risk neutrality, it is clear $w(0) = 0$, so the negotiation is over $w(Z)$, which we simply denote as w. As in Diamond (1981, 1982), the resulting w will be the outcome of Nash bargaining; the bargaining weights of the firm and the employee will be specified in Section 2.3.

There are two reasons why we choose the Nash bargaining approach to determine the employee's wage, as opposed to the more standard approach in principal–agent models of specifying an exogenous reservation utility for the agent and assuming an elastic supply of agents, so that the agent will agree to work for a wage that yields an equilibrium expected utility exactly equal to the reservation utility. First, an important element of our analysis is to show how the HP adoption affects firm–employee interactions in frictional labor markets. For this, it is useful to employ classic random search models (e.g., Diamond (1981, 1982)) in which firms post vacancies, search for employees, and then contract them through Nash bargaining after matching occurs. Second, *matching* of firms that care about a particular HP with employees who also care about that HP in a setting in which neither side knows *a priori* about the counterparty's HP preference is crucial to our analysis. This matching determines *both* the magnitude and the division of the surplus generated by the hiring of the employee, i.e., the employee's reservation utility constraint is *not* exogenously fixed/binding.

After accepting w and joining the firm but *before* choosing his effort, the employee will need to be "connected" to the firm's HP. The idea is that a firm's HP is a high-level statement, and it is typically not clear to the employee how that statement relates to his job. The employee must "translate" the HP in a job-specific way to determine how the HP will motivate him and influence his work.[5] The cost of connection is 0 for a type-1 firm, while it is ∞ for a type-0 firm. Denote a firm's connection decision by $\delta \in \{1, 0\}$, where $\delta = 1$ indicates the firm "connects the people to the purpose" (Quinn and Thakor, 2018, 2019), while the firm's HP fails to connect to its employee if $\delta = 0$. The employee observes δ after agreeing on the wage contract but before choosing his effort.

A type-1 employee joining a type-1 firm derives utility, $\delta v(\alpha z)$, from the firm's HP, where $v(\cdot)$ is an increasing and concave function

[4] This implies a direct loss of $x - u(x)$ to the firm from the diversion. For the HP to have a *net* social value, there must be some other surplus generated from the HP pursuit. As described shortly, this comes in the form of the (type-1) employee's derived utility from the HP and his consequently enhanced incentive to produce a high output.

[5] See Quinn and Thakor (2018). A firm's salesperson and IT employee will operationalize its HP differently.

satisfying Inada conditions ($v'(0) = \infty$, $v'(Z) = 0$), $v(0) = 0$ and $v(x) < x$.[6] That is, conditional on being connected ($\delta = 1$), the utility the type-1 employee ($\beta_\ell = 1$) derives from the HP depends on the size of the firm's HP investment (αz). Absent the connection ($\delta = 0$), the type-1 employee derives no utility from the HP. Since a type-0 firm has a prohibitive connection cost, it never makes the connection, so it does not benefit from hiring a type-1 employee (nor does the type-1 employee). Likewise, since a type-0 employee ($\beta_\ell = 0$) does not value the HP, he derives no benefit from a type-1 firm's HP even if he joins such a firm and the firm connects him to its HP. Summarizing, we write an employee's utility from the HP as $\delta\beta_\ell v(\alpha z)$.

2.3. Matching

Firms and employees search for each other in a labor market. For type $i \in \{0,1\}$, there are F_i firms and L_i agents seeking jobs, with $F_0 + F_1 = F$ and $L_0 + L_1 = L$. Each firm hires one employee, so the firm–employee (vacancy–unemployment) ratio is $\eta_i = \frac{F_i}{L_i}$ for type i, a measure of tightness for submarket i; that market is tighter with a higher η_i. The firm–employee ratio for the whole market is $\eta = \frac{F}{L}$. Assume $\frac{F_i}{F} = \frac{L_i}{L} = \theta_i$, with $\theta_0 + \theta_1 = 1$. So, $\eta_0 = \eta_1 = \eta$,[7] i.e., the firm–employee ratio is type-independent. The probability that a type-i employee meets a type-i firm in submarket i is $m(\eta_i) = m(\eta)$, with $m' > 0$ and $m'' < 0$; $m(\eta)$ is also the probability that an arbitrary type of employee meets an arbitrary type of firm in the whole market. In submarket i, the probability that a type-i firm meets a type-i employee is $\frac{m(\eta_i)L_i}{F_i} = \frac{m(\eta)}{\eta}$, which is decreasing in η; $\frac{m(\eta)}{\eta}$ is also the probability that an arbitrary type of firm meets an arbitrary type of employee in the whole market.

Once matched, the firm and the employee negotiate the wage w, according to Nash bargaining with κ being the firm's bargaining power, and $1-\kappa$ the employee's bargaining power. We assume the (Hosios, 1990) condition holds: an agent's bargaining power is commensurate with its contribution to matching. Therefore, in each submarket i and the whole market, a firm's bargaining power equals the elasticity of $m(\eta)$ with respect to market tightness η, i.e., $\kappa = \frac{\eta m'(\eta)}{m(\eta)}$. We adopt a common meeting technology (Kiyotaki and Wright, 1993) for tractability, $m(\eta) = \frac{\lambda\eta}{1+\eta}$, where $\lambda \in [0,1]$ captures labor market efficiency, with a larger λ corresponding to higher efficiency. Thus, in each submarket i and the whole market, the probability a firm finds an employee is $\frac{m(\eta)}{\eta} = \frac{\lambda}{1+\eta}$, the firm's bargaining power is $\kappa = \frac{\eta m'(\eta)}{m(\eta)} = \frac{1}{1+\eta}$, and the employee's bargaining power is $1-\kappa = \frac{\eta}{1+\eta}$.

We have described $m(\eta)$ and κ in either submarket i (with only type-i firms and type-i employees) or the whole market (with all firms and all employees pooled). The description does not apply to type-i employees interacting with *only* type-j firms ($i \neq j$) in a "mixed" submarket, in which the probability for an employee to meet a firm is in general not $m(\eta)$.[8] However, we will see later that there are only two equilibrium situations — there is either a separating equilibrium in which type-i employees search in the submarket with only type-i firms or a pooling equilibrium in which all employees and all firms search in the same pooled market.

2.4. Summary and remarks

The timeline below summarizes the model:

- Each firm publicly declares its HP commitment $\alpha \in [0,1]$.
- Firms and employees search in the labor market and bargain over the wage w.
- Firms make HP connection decisions $\delta \in \{0,1\}$.
- Employees privately exert effort $e \in [0,1]$ after observing δ.
- Output $z \in \{Z, 0\}$ is publicly realized; firms and employees get paid.

Our modeling of HP commitment as a revenue diversion is meant to capture the idea that there must be a tradeoff between profit and social impact. If the profit-maximizing action also maximizes social impact, then the analysis will be trivial because every firm will choose that action and HP pursuit will be indistinguishable from profit maximization. In many cases, the HP investment is a direct reduction of revenue/profit, mirroring precisely the way we model it. Hobby Lobby gives a 10% in-store discount to churches, schools and charities. This is closely related to the firm's HP,[9] is integrated with its day-to-day operations and has the direct effect of reducing revenue.[10] White (2016) discusses three more examples. In 2014, CVS stopped selling cigarettes, at an estimated revenue sacrifice of \$2 billion per year. Unilever announced it would source 100% of its raw materials using environmental, social and ethical principles. The food company Mars has focused on aligning its business activities with its stated purpose of "better food today, a better world tomorrow". White (2016) observes: "In all [these] three cases, we are not only seeing companies articulate a purpose that goes beyond just delivering returns to shareholders – but also making decisions that, at least in the short-term, will cost them in terms of reduced revenues and/or increased costs".

This discussion surfaces two important points. First, there is a variety of ways in which companies make HP investments that reduce revenue/profit in the short run. Second, the revenue-reducing HP investment is closely tied to the firm's stated purpose and its routine business operations, as opposed to being a broader CSR initiative divorced from its day-to-day business. Thus, by the definition of HP, each firm, given its core business, faces a natural "limit" on the kind of HP it can embrace. This means that the HP for a bank, for example, will typically differ from the HP for a food company.[11] It is therefore crucial for the firm to connect its employees to the HP, so employees are motivated at work because the firm's HP can be translated into something that holds deep meaning for them personally. This is consistent with the way we model this, and it highlights an important distinction between HP and CSR. For a firm to engage in CSR activities, it does not need to connect every employee's job to the CSR activity, since it need not be integrated into its routine decision making.

3. Baseline analysis

Each firm solves the following problem:

$$\max_{\alpha,w,\delta} \; \frac{\lambda e}{1+\eta}[(1-\alpha)Z + \beta_o u(\alpha Z) - w] \tag{1}$$

$$\text{s.t. } e[w + \delta\beta_\ell v(\alpha Z)] - \frac{\psi e^2}{2} \geq 0, \tag{2}$$

$$e \in \arg\max_{e\in[0,1]} \; e[w + \delta\beta_\ell v(\alpha Z)] - \frac{\psi e^2}{2}, \tag{3}$$

[6] Like $u(x) < x$, this ensures that output diversion to the HP does not trivially increase social surplus.

[7] Note $\eta_0 = \frac{\theta_0 F}{\theta_0 L}$ and $\eta_1 = \frac{\theta_1 F}{\theta_1 L}$; both equal $\eta = \frac{F}{L}$.

[8] This is because the firm–employee ratio in this mixed submarket, $\frac{F_j}{L_i}$, in general does not equal η.

[9] Hobby Lobby states its HP as honoring God and "…operating the company in a manner consistent with Biblical principles", serving its employees and their families, and "…investing in our community".

[10] SpaceX states its HP as helping mankind colonize other planets. It has experienced impressive revenue growth and received high valuation estimates from analysts. But its profit performance has been weak, primarily because of large reinvestments in innovation and new hardware and software, initiatives that facilitate its HP.

[11] As an example, consider the Bank of Bird-in-Hand in Pennsylvania which states its purpose as providing banking services to the underbanked Amish community (see Volz (2019)).

$$w \in \underset{w\in[0,(1-\alpha)Z]}{\arg\max}\ A_o^{\kappa} A_{\ell}^{1-\kappa}, \tag{4}$$

where $A_o \equiv e[(1-\alpha)Z + \beta_o u(\alpha Z) - w]$, $A_\ell \equiv e[w + \delta\beta_\ell v(\alpha Z)] - \frac{\psi e^2}{2}$, and $\kappa = \frac{1}{1+\eta}$.

We first explain the firm's objective function (1). The firm meets an employee with probability $\frac{m(\eta)}{\eta} = \frac{\lambda}{1+\eta}$. Conditional on matching and given employee effort e, the production yields output Z with probability e, from which the firm invests αZ in the HP and pays the employee his wage w. The firm derives utility $u(\alpha Z)$ from the HP investment only if it is type 1 ($\beta_o = 1$).[12]

The employee's participation constraint (2) ensures that he accepts the wage contract in that, given the contract and his effort choice in response (e with a cost $\frac{\psi e^2}{2}$), the employee gets at least his reservation utility of 0. To understand the left-hand side (LHS), note that conditional on successful production (with probability e), the employee receives his wage w and derives utility $v(\alpha Z)$ from the firm's HP if he is type 1 ($\beta_\ell = 1$) *and* has been connected to the HP ($\delta = 1$).

The employee's incentive compatibility constraint (3) says that the firm's expectation in offering w that the employee's corresponding choice of e will maximize his expected utility (derived from the offered wage and, if any, the HP) is validated by the employee's actual choice of e.

Lastly, w is a solution to the Nash bargaining problem in (4); the bargaining weights of the firm and the employee are κ and $1-\kappa$, respectively (Section 2.3). Through their relationship by having production commence and investing in the HP, the firm generates surplus A_o (from (1)), and the employee generates surplus A_ℓ (the LHS of (2)). They bargain over w to split the total surplus, $A_o + A_\ell = e[(1-\alpha)Z + \beta_o u(\alpha Z) + \delta\beta_\ell v(\alpha Z)] - \frac{\psi e^2}{2}$, conditional on matching.

Two comments are appropriate. First, unlike usual contracting models wherein w is directly chosen to maximize the principal's utility, here w is determined by bargaining. This is a dynamic optimization problem: the firm chooses α first, anticipating the impact of the chosen α on the surplus it will split with the employee, and hence the bargaining outcome w, which then affects e.

Second, in expressing the matching probability as $\frac{m(\eta)}{\eta}$, we have assumed, as discussed in Section 2.3, that there are only two possible matching scenarios in equilibrium (in which the firm–employee ratio is η): (i) separating, so type-i employees seek jobs only with type-i firms; and (ii) pooling, so any arbitrary employee seeks employment with any arbitrary firm. This will be verified.[13]

A firm's choice of α acts as a signal of its type. The equilibrium concept is Bayesian Perfect Nash Equilibrium (BPNE).

Proposition 1 (*Benchmark Equilibrium*). *There is a separating BPNE involving:*

1. *Firms choosing $\alpha_0^* = 0$ are identified as type 0 and those choosing $\alpha_1^* \in (0,1)$ are identified as type 1, where α_1^* is uniquely determined by*

$$u'(\alpha_1^* Z) + v'(\alpha_1^* Z) = 1. \tag{5}$$

2. *Type-0 employees seek jobs only with firms choosing α_0^*. Once matched, such firm and employee negotiate a wage $w_0^* = \frac{2(1-\kappa)}{2-\kappa}Z$, the firm does not make the HP connection ($\delta = 0$), and the employee exerts effort $e_0^* = \frac{w_0^*}{\psi}$.*
3. *Type-1 employees seek jobs only with firms choosing α_1^*. Once matched, such firm and employee negotiate a wage $w_1^* = \frac{2(1-\kappa)}{2-\kappa}[(1-\alpha_1^*)Z + u(\alpha_1^* Z)] - \frac{\kappa}{2-\kappa}v(\alpha_1^* Z)$, the firm makes the HP connection ($\delta = 1$), and the employee exerts effort $e_1^* = \frac{w_1^* + v(\alpha_1^* Z)}{\psi}$. Moreover, $w_1^* < w_0^*$, but $e_1^* > e_0^*$.*
4. *Firms with $\alpha = \alpha_1^*$ are believed to be type 1 for sure, while any firm choosing $\alpha < \alpha_1^*$ is viewed as type 0 almost surely. This BPNE survives the (Cho and Kreps, 1987) Intuitive Criterion.*

We discuss the intuition. First, (5) shows that α_1^* is chosen at the surplus maximizing first-best level: for each unit of output diverted to HP by a type-1 firm, its marginal cost (1; RHS) equals the marginal surplus increase (LHS) accruing to the firm ($u'(\alpha_1^* Z)$) and its type-1 employee ($v'(\alpha_1^* Z)$).[14] Type-1 firms can do so because they do not need to engage in costly signaling (overinvesting in α) to achieve separation from type-0 firms. By mimicking a type-1 firm, a type-0 firm can attract a type-1 employee, but this yields the type-0 firm no effort-elicitation benefit because of its inability to connect the employee to its HP. Thus, type-0 firms do not mimic type-1 firms.[15]

Second, purpose-motivated type-1 employees are paid less than type-0 employees ($w_1^* < w_0^*$), but work harder ($e_1^* > e_0^*$). HP investments increase the surplus shared between type-1 firms and employees. Since an agent's bargaining weight is type-independent,[16] type-1 employees are more motivated to work to increase the total surplus, i.e., $e_1^* > e_0^*$. Type-1 employees also derive utilities from the HP, so $w_1^* < w_0^*$. Labor market sorting obtains: type-0 employees seek jobs with type-0 firms to receiver higher wages, and type-1 employees seek jobs with type-1 firms despite lower wages because they value the HP.

4. Main analysis: Social pressure

In Section 3, the motivation for the HP pursuit comes from the value that type-1 firms and employees attach to the HP. We did not model a social benefit of the HP beyond these private benefits. But, as indicated in the Introduction, there are many examples of HPs with perceived social benefits going beyond the boundary of the firm and its employees (we examine robustness in Section 5.1 incorporating such benefits). So, there may be considerable social pressure on firms to embrace the HP, with non-compliant firms being subject to social sanctions, ostracization and other "penalties".[17] Below, we examine the implications of such pressure for HP investments (Proposition 2) and welfare (Proposition 3).

Those imposing a penalty on non-compliant firms do not engage in social welfare calculations, but merely want to change behavior. This penalty, P, is purely dissipative: it simply imposes a cost on the firm with no direct offsetting benefit to others. For simplicity, we assume P is imposed on any firm investing less in the HP than the maximum invested by others. These specifications on P, which do not qualitatively affect our analysis, are made to showcase the model's main driving force in a clean way.

[12] Conditional on $z = Z$, the type-1 firm enjoys $u(\alpha Z)$ regardless of whether it connects its employee to the HP.

[13] Stating the maximization problem to include matching in a mixed submarket wherein type-i employees interact with only type-j firms ($i \neq j$) would introduce notational clutter that serves little useful purpose.

[14] The surplus accruing to the type-1 employee reduces the type-1 firm's wage cost, so the type-1 firm's problem effectively maximizes the net social surplus. This is verified in the proof of the proposition.

[15] This costless separation obtains due to our assumption of a prohibitive connection cost for type-0 firms. By eliminating signaling, we keep the benchmark case clean for the subsequent analysis which involves signaling.

[16] Bargaining weights for type-i firms and type-i employees are κ and $1-\kappa$, respectively, $\forall i \in \{0,1\}$ (Section 2.3).

[17] There are numerous examples of activists imposing social penalties on firms in order to change their behavior. Green groups campaigned against Indonesia-based Asia Pulp & Paper, causing it to commit to a no-deforestation policy in 2013 and pledge to restore one million hectares of Indonesia natural forest and other ecosystems. Under intense pressure from lobbyist groups, Nike agreed to set up an extensive and expensive system for monitoring and improving factory conditions in its supply chain, which then induced others in the industry to follow suit. See Gunther (2015) for a discussion of these cases.

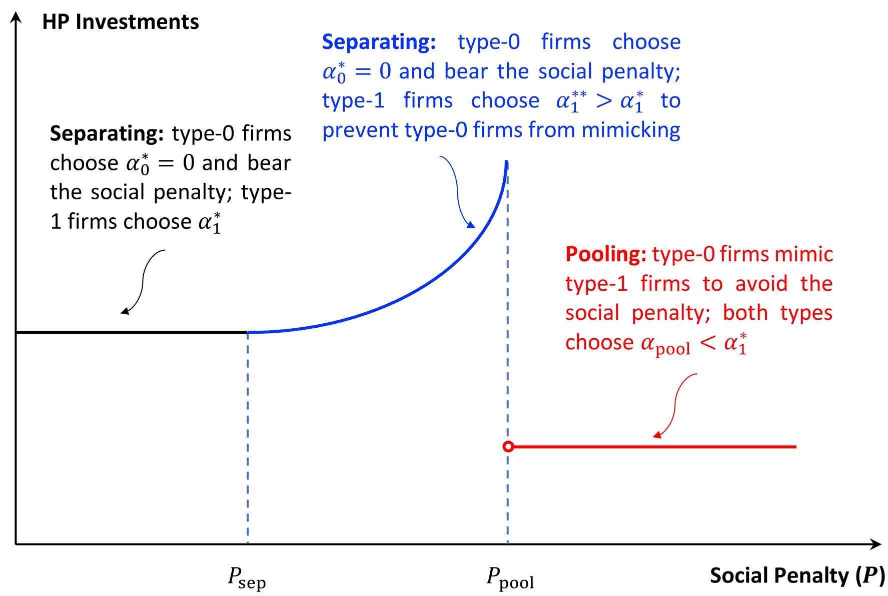

Fig. 1. HP investments under social pressure.

Proposition 2 (*Social Pressure*). *Possible equilibria depending on the magnitude of P:*

1. *There exists a cutoff P_{sep} such that when $P \le P_{\text{sep}}$, type-0 firms choose $\alpha_0^* = 0$ and type-1 firms choose $\alpha_1^* \in (0,1)$ given by (5). There is labor market sorting in that type-0 employees seek jobs only with firms choosing α_0^*, and type-1 employees seek jobs only with firms choosing α_1^*. Firms with α_1^* are believed to be type 1 almost surely, while any firm choosing $\alpha < \alpha_1^*$ is viewed as type 0 almost surely. This BPNE survives the Cho–Kreps Intuitive Criterion.*
2. *There exists another cutoff $P_{\text{pool}} > P_{\text{sep}}$, increasing with the fraction of type-0 employees ($\frac{\partial P_{\text{pool}}}{\partial \theta_0} > 0$), such that when $P \in (P_{\text{sep}}, P_{\text{pool}}]$, type-0 firms choose $\alpha_0^* = 0$ and type-1 firms choose α_1^{**}, with $\alpha_1^{**} > \alpha_1^*$ and $\frac{\partial \alpha_1^{**}}{\partial P} > 0$. Type-0 employees seek jobs only with firms choosing α_0^*, and type-1 employees seek jobs only with firms choosing α_1^{**}. Firms with α_1^{**} are believed to be type 1 almost surely, while any firm choosing $\alpha < \alpha_1^{**}$ is viewed as type 0 almost surely. This BPNE survives the Cho–Kreps Intuitive Criterion.*
3. *When $P > P_{\text{pool}}$, all firms choose an HP investment α_{pool}, with $\alpha_{\text{pool}} < \alpha_1^*$ and $\frac{\partial \alpha_{\text{pool}}}{\partial \theta_0} < 0$. There is no labor market sorting. Any firm choosing $\alpha < \alpha_{\text{pool}}$ is viewed as type 0 almost surely. This BPNE survives the Cho–Kreps Intuitive Criterion.*

Fig. 1 illustrates the proposition.

We explain the intuition. When P is low, type-0 firms prefer bearing this penalty to sacrificing revenue to invest in HP. So, type-1 firms make the first-best HP investment α_1^* without engaging in signaling. The only cost is the penalty incurred by type-0 firms. When P is intermediate, type-0 firms are tempted to mimic type-1 firms. To deter this mimicry, type-1 firms invest more than α_1^* in HP. As P increases, the temptation to mimic rises, so the overinvestment increases as well. The equilibrium is still separating, but losses are now suffered by both type-1 firms that overinvest in HP and type-0 firms that bear the penalty. When P is high, the overinvestment required to deter mimicry is too high for type-1 firms, so the equilibrium is pooling in which type-1 firms invest less than α_1^* in HP. Pooling destroys efficient firm–employee matching that separation achieves, so type-1 firms face a mixed employee pool including those who care about HP and those who do not. This reduces the marginal benefit of the HP pursuit, leading to underinvestment ($\alpha_{\text{pool}} < \alpha_1^*$).

This highlights an interesting distortion. When the penalty is sufficiently high, the immense pressure for mimicry on type-0 firms translates into a hefty signaling cost for type-1 firms. Thus, social pressure ultimately transmits to firms that are *not* targeted by the pressure, namely type-1 firms. Ironically, these firms respond to the pressure by investing *less* in the socially-preferred HP.

Two comparative statics results are worth noting. First, $\frac{\partial \alpha_{\text{pool}}}{\partial \theta_0} < 0$: with more type-0 employees, the marginal benefit of HP is lower for type-1 firms in the pooling BPNE, so they optimally further reduce HP investment. Second, $\frac{\partial P_{\text{pool}}}{\partial \theta_0} > 0$: with more type-0 employees, pooling becomes more costly for type-1 firms, so they overinvest in a wider range of penalties, $P \in (P_{\text{sep}}, P_{\text{pool}}]$, to signal their type.[18]

Next, we examine how individual agents are affected by social pressure to adopt the HP.

Proposition 3 (*Welfare Impact*). *Relative to the no-pressure case:*

1. *When $P \le P_{\text{sep}}$, type-0 firms suffer the penalty, but no other agents are affected.*
2. *When $P \in (P_{\text{sep}}, P_{\text{pool}}]$, type-0 employees are unaffected, type-0 firms suffer the penalty, and type-1 firms and employees are strictly worse off.*
3. *When $P > P_{\text{pool}}$, both types of firms and employees are strictly worse off.*

When $P \le P_{\text{sep}}$, there is separation between type-0 and type-1 firms and both types choose their first-best HP investments ($\alpha_0^* = 0$ and $\alpha_1^* \in (0,1)$, respectively). This separation also enables type-0 and type-1 employees to seek jobs with like-minded firms, obtaining the same wages as in the no-pressure case. The only welfare loss comes from the dissipative penalty borne by type-0 firms.

When $P \in (P_{\text{sep}}, P_{\text{pool}}]$, type-1 firms overinvest in HP to signal their type, so they are worse off. This overinvestment has two conflicting effects on a type-1 employee hired by a type-1 firm — it directly increases the employee's utility from the HP, but also lowers his wage. The proof of the proposition shows that the negative effect dominates. The intuition is that the type-1 firm's HP overinvestment reduces the total surplus shared between the firm and its employee. Type-0 firms

[18] The cutoff P_{sep}, given by (A.8) in the Appendix, is independent of θ_0.

still suffer the penalty, but their (type-0) employees are unaffected, receiving the same wage as in the no-pressure case.

When $P > P_{\text{pool}}$, type-1 firms are worse off because they face a mixed employee pool including those who are purpose driven and those who are not. The consequently lower effort elicitation for any HP investment causes them to underinvest in HP. The lower HP investment reduces a type-1 employee's utility if he is hired by the type-1 firm. A type-1 employee is also worse off if he ends up joining a type-0 firm because of the absence of an HP-related utility from working for that firm. The type-0 firm is worse off due to investing in the HP that yields the firm no utility. Interestingly, type-0 employees are also worse off. This is because the pooling wage, determined by incorporating the possibility of a reduced wage demand from a purpose-driven type-1 employee hired by a type-1 firm in the pooled labor market, is lower than the wage w_0^* that the type-0 employee receives in the no-pressure case with separation (Proposition 1). Therefore, social pressure to invest in HP makes *everyone strictly worse off* when this pressure is high enough.

Corollary 1 (*Optimal Penalty without External Benefits*). *Assuming a firm's HP does not generate social benefits outside the model, the socially optimal penalty is* $P = 0$.

This result follows immediately from Proposition 3. For $P \in (0, P_{\text{sep}}]$, social pressure, aiming to change behavior of type-0 firms, fails to induce HP investments from these firms, despite dissipative penalties imposed. Type-0 firms remain to avoid HP investments under higher pressure $P \in (P_{\text{sep}}, P_{\text{pool}}]$; instead, the rising pressure now starts to alter type-1 firms' behavior by forcing them to overinvest in HP. Consequently, social welfare strictly decreases over the range of penalties $P \in (0, P_{\text{pool}}]$ as P increases. For $P > P_{\text{pool}}$, the pressure does force type-0 firms to invest in HP (which generates no benefits to type-0 firms and their employees), but it also leads to underinvestment by type-1 firms.

From a welfare standpoint, this implies that it is socially inefficient to have activists impose sanctions on firms to pressure them to invest in HP when activists lack information about agent types, in which case they cannot precisely target penalties on type-0 firms. A caveat here is that potential social benefits to agents *outside the model* are excluded. Section 5.1 examines this issue.

5. Robustness and implications

5.1. Model robustness

We have assumed that the HP does not generate benefits beyond the boundary of the firm and its employees. In reality, a firm's HP pursuit may also benefit its customers, suppliers, and the community where it resides in. Suppose such benefit is $\zeta(\alpha Z)$, which is generated from the firm's (both type 0 and type 1) output diversion αZ to HP, but does not accrue to the firm and its employees. We impose the same assumptions on $\zeta(\cdot)$ as those on $u(\cdot)$ and $v(\cdot)$ (benefits of HP to type-1 firms and type-1 employees, respectively), i.e., $\zeta(\cdot)$ is an increasing and concave function satisfying Inada conditions ($\zeta'(0) = \infty$, $\zeta'(Z) = 0$), $\zeta(0) = 0$ and $\zeta(x) < x$. The last (practical) assumption says that each unit of a firm's output diversion to HP benefits agents outside the firm by less than one unit.

Proposition 4 (*Optimal Penalty with External Benefits*). *Suppose a firm's HP generates social benefits beyond its boundary:*

1. *Firms' HP investments for various levels of the penalty are still given by those in Proposition 2, with the same cutoffs* P_{sep} *and* P_{pool}.
2. *The socially optimal HP investment for a type-1 firm* α_1^{social}, *which is uniquely determined by (A.16), exceeds the firm's privately optimal investment* α_1^* *given by (5). The socially optimal HP investment for a type-0 firm is* $\alpha_0^{\text{social}} = 0$.
3. *It is never socially optimal to have* $P > P_{\text{pool}}$ *or* $P \in (0, P_{\text{sep}}]$.
4. *The socially optimal penalty is either* $P = 0$ *when* $\alpha_1^{\text{social}} Z - \zeta(\alpha_1^{\text{social}} Z) > 0$ *is sufficiently large, or some* $P \in (P_{\text{sep}}, P_{\text{pool}}]$ *otherwise.*

The first result of the proposition shows that despite a social benefit beyond the firm boundaries, firms' equilibrium HP investments remain the same as in the base model without such benefit. This is because firms (and their employees) do not internalize that benefit.

For the same reason, the socially optimal HP investment for a type-1 firm exceeds its private optimum, i.e., $\alpha_1^{\text{social}} > \alpha_1^*$. But for a type-0 firm, its socially optimal HP investment remains zero (as in the base model). There are two reasons for this. First, each unit of the output diversion to HP generates less than a unit of social benefit outside the firm (recall, $\zeta(x) < x$). Second, the type-0 firm's HP investment does not generate any benefit to either the firm or its employee.

As in the base model, pooling (which occurs under high pressure $P > P_{\text{pool}}$) is never socially optimal. The reasons are as follows. First, as explained above, any HP investment by a type-0 firm in the pooling equilibrium is surplus reducing. Second, in the pooling equilibrium, type-1 firms invest even less than their privately optimum α_1^* (Proposition 2), further deviating from the social optimum α_1^{social} (which is even higher than α_1^*). The inefficiency of $P \in (0, P_{\text{sep}}]$ is clear: both type-1 and type-0 firms make the same HP investments (α_1^* and 0, respectively) with $P = 0$ as with $P \in (0, P_{\text{sep}}]$, so the dissipative penalties imposed on type-0 firms when $P \in (0, P_{\text{sep}}]$ strictly reduce surplus.

The most interesting part of the proposition is that type-1 firms' "overinvestments" in HP (relative to the private optimum α_1^*) in the signaling region with moderate pressure, $P \in (P_{\text{sep}}, P_{\text{pool}}]$, may now be socially optimal. With no or low pressure ($P \le P_{\text{sep}}$), type-1 firms do not attempt to signal their type, and hence *underinvest* in HP relative to the social optimum. When $P \in (P_{\text{sep}}, P_{\text{pool}}]$, type-0 firms' rising temptations to mimic cause type-1 firms to increase their HP investments, which effectively mitigates the underinvestment. That is, type-1 firms' private incentives to deter mimicry by type-0 firms generate public benefits that transcend the boundaries of these firms. But this is optimal only if the gap between the firm's output diversion to HP and the consequent public benefit, $\alpha_1^{\text{social}} Z - \zeta(\alpha_1^{\text{social}} Z) > 0$, is not too big. If that gap is sufficiently big, then the social surplus gain from type-1 firms' increased HP investments will not compensate for type-1 firms' increased output diversions (to HP) and the dissipative penalties imposed on type-0 firms in the signaling region, in which case it is optimal to have $P = 0$ (as in the base model).

These results suggest somehow a social planner may "regulate" HP, i.e., when to impose a penalty via regulatory fiat and when not to. First, it is never optimal to exert very high pressure on firms to invest in HP. Second, when there are large social benefits of HP that firms and their employees do not internalize, the planner may exert moderate pressure. However, when such external social benefits are not big enough, no pressure on HP investment should be exerted.

5.2. Policy implications

Our analysis has numerous implications for the manner in which societal pressure is exerted and also possibly regulations. First, consider societal pressure. When a higher purpose or social cause is deemed worthwhile because it is viewed as providing societal benefits that may not be present in the private utility maximization of all agents, it is tempting to either require it by law or have some groups exert considerable pressure on firms to comply "voluntarily". There are countless examples of this sort — pressure on institutions to adopt diversity, equity and inclusion policies in the post-2020 time period, the push for firms to help tackle the climate change by embracing ESG, initiatives to discourage banks from lending to fossil fuel companies in order to increase "green" investments, and so on. Our analysis indicates that such pressure may not be distortionary, i.e. it does not change the behavior of firms in terms of their higher purpose investments, if it is not too high, i.e., if the "social penalty" for non-compliance is modest. But, of course, to those who exert that pressure, that is unlikely to be an acceptable outcome because their goal is to change behaviors. If a modest penalty does not induce type-0 firms to make HP investments that type-1 firms are making, then the groups exerting the pressure are likely to view their efforts as fruitless. A plausible conjecture is thus that the non-compliance penalty will be ratcheted up until it changes the behavior of type-0 firms. There are two regions in our model that correspond to changed firm behavior: (i) when the penalty is intermediate, $P \in (P_{\text{sep}}, P_{\text{pool}}]$; and (ii) when the penalty is high, $P > P_{\text{pool}}$. When $P \in (P_{\text{sep}}, P_{\text{pool}}]$, type-1 firms increase their HP investments, whereas type-0 firms continue to shy away. This is distortionary in that type-1 firms are overinvesting in HP relative to the first best.

However, it is possible that this will not suffice for those pushing for change, since type-0 firms are still not investing in the HP. This implies that the non-compliance penalty may be increased further to exceed P_{pool}. In this case, the distortions are maximized, as *all* agents are strictly worse off. Thus, paradoxically, the stated goal of improving welfare causes welfare to unambiguously decline — the status quo strictly Pareto dominates the altered-behavior case.

Next, consider the case of regulation. As with the case of toxic emissions, while some firms may initially make the reduction of such emissions a higher purpose, eventually it invites regulation in this case by the Environmental Protection Agency (EPA). Our analysis highlights the (possibly unanticipated) welfare distortions from such regulations. But the analysis *understates* the possible distortions, since it assumes that the only effect of the non-compliance penalty is on HP investments, and not on core revenue-generating investments. However, in practice, distortions are also possible in core revenue-generating investments. For example, a car manufacturer pressured either by government regulators or just special interest groups to invest more in electric vehicles is likely to start cutting back on investing in improving the fuel efficiency of gasoline-powered cars.[19]

5.3. Applications to banking

The applications of our analysis to banking are numerous. We organize this discussion in three parts. First, we discuss what an adaption of the model to a bank making loans financed with deposits and equity might look like. Second, we discuss what types of HP investments banks might pursue. Third, we discuss the interaction between social pressure, bank regulation and bank behavior in the context of our model.

A Banking Model of HP: If one models a bank, a natural way to introduce HP in line with the model developed here is to assume that the bank's lending serves a higher purpose. For example, the loans may serve a specific industry whose output has significant social value. In the U.S., the Farm Credit System (FCS) was established to facilitate the extension of credit to farmers and ranchers through an extensive network of lending institutions (associations) and district banks. These are cooperatives owned by farmers and ranchers, and they do not have access to deposits like commercial banks do. However, the FCS has a funding corporation that raises financing in the capital market. This means that the associations perform all of the essential functions of a traditional bank, even though their funding model is a little different. These associations that provide loans to farmers view their higher purpose as helping to put food on the table for American households. Similar to this example, a banking model with HP would link the bank's HP to its lending and then assume that the bank finances these loans with insured deposits and equity. Such a model would enable one to ask questions related to the link between the bank's capital and its HP-related lending as well as the impact of this link on employee wages and bank stability.[20] For a start in this direction, see Bunderson and Thakor (2022) who develop a banking model with HP that has some of these elements. Their analysis reveals that higher bank capital enables the bank to design an optimal wage contract that elicits higher employee effort, leading to a reduction in the bank's failure probability *over and above* the direct effect of capital in reducing the risk of bank failure. When it is assumed that the bank's employees also care about the HP – in addition to the bank's owner-manger caring about the HP – banks that invest more in HP pay lower wages, yet elicit higher employee effort and have lower failure probabilities for *any given capital ratio*. Banks with higher capital still pay higher wages, but the effect of the bank's capital on wages becomes weaker as the bank's HP investment increases. Thus, their analysis reveals the potentially rich interaction among HP, bank capital and bank stability. Their model, however, does not have the problem of unobservable types and labor market matching of firms/banks to employees, so one cannot readily transport their results to our setting. Nonetheless, what is common is that in both cases, the HP may produce such desirable outcomes that there may be social pressure to adopt it.

Different Types of HP for Banks: There are many types of HPs banks could adopt.[21] In addition to the FCS example discussed above, consider the example of Bank of Bird-in-Hand, located in Pennsylvania. Its HP revolves around providing a variety of banking services and community support to the underbanked Amish community in Pennsylvania. In addition to the usual banking services, the bank also sponsors and invests in a host of local events and activities that facilitate community development and well-being. Another example is provided in Lo and Thakor (2023)'s review of the research on the role of financial intermediaries in the funding of biomedical innovation. They argue that banks and other financial intermediaries can play a key role in closing the funding gap (underinvestment) that plagues biomedical innovation, and that they could also contribute to a better delivery of healthcare. The HP associated with this is quite evident — the paper discusses the potentially large social welfare benefits that would be associated with finding new cures for diseases and improving healthcare outcomes.

Bank Regulation, HP and Social Pressure: Few industries attract as much attention from politicians and society at large as banking. There are numerous issues where special interest groups think that working through the banking system can influence the rest of the economy and therefore help achieve desired social outcomes. Examples are improving conditions in low-income communities, making more loans to disadvantaged borrower groups, channeling more credit to environmentally friendly industries, and so on. Thus, relative to main street firms, banks are especially vulnerable to the kind of social pressure to adopt a popular HP that we analyze. Indeed, there are many who believe that bank regulation should be used as an instrument to achieve desired social objectives. For example, there is an active debate about whether banks should be subject to higher capital requirements on "brown" loans so as to encourage them to make "green" loans. Dikau and Volz (2018) advocate that the central bank should use a variety of regulatory tools, including disclosure requirements, reserve requirements, and capital requirements, to steer banks away from brown loans to green loans. Such proposals, if implemented, may

[19] Another example is fracking. Environmental groups often put pressure on governments to ban fracking, presumably motivated by their own environmental HP agenda. But this can actually reduce social welfare by impeding an efficient reallocation of farmland; see Thakor (2023).

[20] To the extent that banks provide welfare-enhancing services and bank capital increases its survival probability, there is a HP *directly* associated with the bank being better capitalized. Borrowers do seem to recognize this link. Rauf (2023) provides evidence that banks with higher capital are able to charge higher loan commitment fees.

[21] See Thakor (2019) for more on this.

have unanticipated consequences, as our analysis has pointed out.[22] For example, a bank that makes more green loans in response to altered regulatory capital requirements may not only cut back on its brown loans but also make other portfolio adjustments to optimize its overall balance sheet managements in light of increased green lending.[23] It would be difficult for regulators to figure out how bank lending would be altered by such adjustments, since these adjustments may depend on unobserved bank-specific factors. This introduces policy-response uncertainty for regulators. It is a potentially fruitful research topic.

6. Conclusion

Defining organizational HP as a contribution goal that transcends the usual business goals and yet is an integral part of the firm's business, we have shown that an authentic HP will enhance welfare by lowering the firm's wage bill and yet eliciting higher employee effort. This notwithstanding, sufficiently high social pressure to adopt a preferred HP leads to distortions that can make all agents worse off. An attempt to promote more investments by firms in socially preferred purpose can unambiguously reduce welfare. This is particularly germane for banks which are especially vulnerable to the kind of social pressure we model. Our analysis highlights a point that possibly transcends the specifics of our model, namely that even when the unregulated, free-choice equilibrium involves welfare-enhancing actions by firms, any social pressure on firms to do more of it can backfire. This also has regulatory implications. While certain actions by *some* firms may increase social welfare, mandating these actions for all firms may not be the best regulatory response, depending on how big a social welfare benefit the HP generates that does not accrue to firms and their employees.

CRediT authorship contribution statement

Fenghua Song: Conceptualization, Methodology, Formal analysis, Writing - Original Draft, Writing - Review & Editing, Visualization. **Anjan Thakor:** Conceptualization, Methodology, Formal analysis, Writing - Original Draft, Writing - Review & Editing, Visualization. **Robert Quinn:** Conceptualization.

Data availability

No data was used for the research described in the article

Appendix. Proofs

Proof of Proposition 1. Subscript $i \in \{0,1\}$ indicates type i. We assume and verify labor market sorting: type-i employees seek jobs only with firms choosing α_i, so $\beta_o = \beta_\ell$ in the problem stated in (1)–(4). Type-1 firms choose $\delta = 1$ (zero connection cost) and type-0 firms choose $\delta = 0$ (∞ connection cost). Solving (3) yields

$$e_1 = \frac{w_1 + v(\alpha_1 Z)}{\psi}, \tag{A.1}$$

$$e_0 = \frac{w_0}{\psi}. \tag{A.2}$$

The first-order condition (FOC) to (4) is $A_o = \kappa(A_o + A_\ell)$. For type-1 firms and employees, substituting $\beta_o = \beta_\ell = 1$, $\delta = 1$, and (A.1) into the FOC yields

$$w_1 = \frac{2(1-\kappa)}{2-\kappa}[(1-\alpha_1)Z + u(\alpha_1 Z)] - \frac{\kappa}{2-\kappa} v(\alpha_1 Z). \tag{A.3}$$

For type-0 firms and employees, substituting $\beta_o = \beta_\ell = 0$, $\delta = 0$, and (A.2) into the FOC yields

$$w_0 = \frac{2(1-\kappa)}{2-\kappa}(1-\alpha_0)Z. \tag{A.4}$$

There are five remaining steps:

1. Determine $\alpha_1^* \in (0,1)$. Then, show:
2. $\alpha_0^* = 0$.
3. $w_1^* < w_0^*$, $e_1^* > e_0^*$.
4. Type-i employees seek jobs only with type-i firms.
5. The above is a BPNE surviving the Intuitive Criterion.

1. Substituting (A.1) and (A.3) into (1), we rewrite (1) as

$$\max_{\alpha_1} \frac{\lambda}{1+\eta} \frac{1}{\psi} \frac{2\kappa(1-\kappa)}{(2-\kappa)^2} [(1-\alpha_1)Z + u(\alpha_1 Z) + v(\alpha_1 Z)]^2. \tag{A.5}$$

It is straightforward to verify that the net social surplus generated through the relationship between a type-1 firm and its type-1 employee, $\frac{\lambda}{1+\eta}\left[e_1[(1-\alpha_1)Z + u(\alpha_1 Z) + v(\alpha_1 Z)] - \frac{\psi e_1^2}{2}\right]$, equals $\frac{\lambda}{1+\eta}\frac{1}{\psi}\frac{2(1-\kappa)}{(2-\kappa)^2}[(1-\alpha_1) Z + u(\alpha_1 Z) + v(\alpha_1 Z)]^2$, for which the solution for the optimal α_1 is identical to that for (A.5). The solution α_1^* is in (5).[24] Replacing α_1 in (A.1) and (A.3) with α_1^* yields e_1^* and w_1^*.

2. Suppose a type-0 firm chooses α_1^*, thereby hiring a type-1 employee. Given $\delta = 0$ by the type-0 firm, the type-1 employee exerts effort $\frac{w_1^*}{\psi}$, so the firm's payoff is $\frac{w_1^*}{\psi}[(1-\alpha_1^*)Z - w_1^*]$. Evaluate the derivative of this payoff with respect to α at $\alpha = \alpha_1^*$ by holding w_1^* fixed (because the firm mimics the type-1 firm's offered wage). This derivative is negative, so the firm will not mimic the type-1 firm. Moreover, since any $\alpha > 0$ is a waste for the type-0 firm, it chooses $\alpha_0^* = 0$.

3. w_0^* is given by (A.4), replacing α_0 with $\alpha_0^* = 0$. We have

$$\begin{aligned} w_0^* - w_1^* &= \frac{2(1-\kappa)}{2-\kappa}Z - \frac{2(1-\kappa)}{2-\kappa}[(1-\alpha_1^*)Z + u(\alpha_1^* Z)] + \frac{\kappa}{2-\kappa}v(\alpha_1^* Z) \\ &> \frac{2(1-\kappa)}{2-\kappa}Z - \frac{2(1-\kappa)}{2-\kappa}[(1-\alpha_1^*)Z + u(\alpha_1^* Z)] \\ &> 0, \end{aligned} \tag{A.6}$$

where the last inequality follows from $u(\alpha_1^* Z) < \alpha_1^* Z$. We prove $e_1^* > e_0^*$ below.

4. A type-0 employee's utility from joining a type-0 firm is $e_0^* w_0^* - \frac{\psi(e_0^*)^2}{2} = \frac{(w_0^*)^2}{2\psi}$; his utility from joining a type-1 firm is $\frac{(w_1^*)^2}{2\psi}$. Since $w_1^* < w_0^*$, he seeks a job only with type-0 firms. A type-1 employee's utility from joining a type-1 firm is $e_1^*[w_1^* + v(\alpha_1^* Z)] - \frac{\psi(e_1^*)^2}{2} = \frac{[w_1^* + v(\alpha_1^* Z)]^2}{2\psi}$; his utility from joining a type-0 firm is $\frac{(w_0^*)^2}{2\psi}$. To show he seeks a job only with a type-1 firm, we prove

$$w_0^* - w_1^* = \frac{2(1-\kappa)}{2-\kappa}[\alpha_1^* Z - u(\alpha_1^* Z)] + \frac{\kappa}{2-\kappa} v(\alpha_1^* Z) < v(\alpha_1^* Z), \tag{A.7}$$

i.e., $u(\alpha_1^* Z) + v(\alpha_1^* Z) > \alpha_1^* Z$. The right-hand side (RHS) is the output diverted to HP, and the left-hand side (LHS) is the benefit of HP. This inequality must hold for $\alpha_1^* > 0$; otherwise, type-1 firms would have chosen $\alpha_1^* = 0$. Lastly, (A.7) also validates $e_1^* = \frac{w_1^* + v(\alpha_1^* Z)}{\psi} > \frac{w_0^*}{\psi} = e_0^*$.

5. Given the out-of-equilibrium (*ooe*) beliefs stipulated in Proposition 1, it is clear no firm will deviate from its equilibrium choice of α. To see this BPNE survives the Intuitive Criterion, note that when $\alpha > \alpha_1^*$, there is no benefit to either firm type from deviating for any *ooe* beliefs,[25] so both types can be eliminated in Step One of the Intuitive

[22] The use of regulatory capital requirements for such purposes is especially tricky, since capital requirements can also affect talent allocation and innovation in banking; see Song and Thakor (2022).

[23] For recent evidence on how increasing/changing capital requirements on one form of lending can induce banks to increase other forms of lending, with implications for lending risk and welfare, see Auer et al. (2022).

[24] Existence and uniqueness of $\alpha_1^* \in (0,1)$ follow because (i) $u'(x) + v'(x)$ monotonically decrease with x; and (ii) $u'(0)+v'(0) = \infty > 1 > u'(Z)+v'(Z) = 0$, ensured by Inada conditions on $u(\cdot)$ and $v(\cdot)$.

[25] Choosing $\alpha > \alpha_1^*$ is equilibrium-dominated for type 1. For type 0, given that it will not mimic type 1 by choosing $\alpha = \alpha_1^*$, choosing $\alpha > \alpha_1^*$ is even worse.

Criterion. If $\alpha < \alpha_1^*$, then only the type-1 firm can be eliminated in Step One,[26] so it must be believed with probability one that the deviating firm is type 0. But given this belief, no firm will deviate from the equilibrium. ■

Proof of Proposition 2. Suppose type-1 firms choose α_1^* (see (5)) and type-0 firms choose $\alpha_0^* = 0$. A type-0 firm, upon meeting a type-0 employee (who exerts effort $e_0^* = \frac{w_0^*}{\psi}$), derives a utility $\frac{w_0^*}{\psi}(Z - w_0^*) - P$, where $w_0^* = \frac{2(1-\kappa)}{2-\kappa} Z$ (Proposition 1). If a type-0 firm deviates by choosing α_1^* and offering w_1^* to mimic a type-1 firm, then its utility, upon meeting a type-1 employee (who exerts effort $\frac{w_1^*}{\psi}$, given $\delta = 0$ by the type-0 firm), is $\frac{w_1^*}{\psi}[(1-\alpha_1^*)Z - w_1^*]$, where $w_1^* = \frac{2(1-\kappa)}{2-\kappa}[(1-\alpha_1^*)Z + u(\alpha_1^* Z)] - \frac{\kappa}{2-\kappa} v(\alpha_1^* Z)$ (Proposition 1). No type-0 firm will deviate if $\frac{w_0^*}{\psi}(Z - w_0^*) - P \geq \frac{w_1^*}{\psi}[(1-\alpha_1^*)Z - w_1^*]$, i.e.,[27]

$$P \leq \frac{w_0^*}{\psi}(Z - w_0^*) - \frac{w_1^*}{\psi}[(1-\alpha_1^*)Z - w_1^*] \equiv P_{\text{sep}}. \tag{A.8}$$

The separating BPNE for $P \leq P_{\text{sep}}$ survives the Intuitive Criterion because a type-1 firm never wishes to choose $\alpha > \alpha_1^*$ (first-best HP investment) and neither does a type-0 firm which is even worse off than choosing α_1^* and being viewed as type 1. So, both types can be eliminated in Step One of the Intuitive Criterion. If $\alpha < \alpha_1^*$, only type 1 can be eliminated in Step One, so any firm choosing such α is identified as type 0 with probability one in the formation of out-of-equilibrium beliefs. Consequently, no firm deviates from the equilibrium.

Consider $P > P_{\text{sep}}$. If type-1 firms were to choose α_1^*, type-0 firms would mimic (see (A.8)). We conjecture there exists $P_{\text{pool}} > P_{\text{sep}}$, such that for $P \in (P_{\text{sep}}, P_{\text{pool}}]$ type-1 firms choose $\alpha_1^{**} > \alpha_1^*$ to deter the mimicry, while both types choose $\alpha_{\text{pool}} < \alpha_1^*$ for $P > P_{\text{pool}}$. Suppose type-1 firms choose α_1^{**}, with the corresponding wage $w_1^{**} = \frac{2(1-\kappa)}{2-\kappa}[(1-\alpha_1^{**})Z + u(\alpha_1^{**}Z)] - \frac{\kappa}{2-\kappa} v(\alpha_1^{**}Z)$. Comparing a type-0 firm's utility from mimicking, $\frac{w_1^{**}}{\psi}[(1-\alpha_1^{**})Z - w_1^{**}]$, with its utility without mimicking, $\frac{w_0^*}{\psi}(Z - w_0^*) - P$, yields α_1^{**} determined by

$$\frac{w_0^*}{\psi}(Z - w_0^*) - P = \frac{w_1^{**}}{\psi}[(1-\alpha_1^{**})Z - w_1^{**}]. \tag{A.9}$$

We show the RHS of (A.9) monotonically decreases with α_1^{**}, so α_1^{**} is unique for a given $P > P_{\text{sep}}$ and $\frac{\partial \alpha_1^{**}}{\partial P} > 0$. Note $\frac{dw_1^{**}}{d\alpha_1^{**}} = \frac{2(1-\kappa)}{2-\kappa}[u'(\alpha_1^{**}Z) - 1]Z - \frac{\kappa}{2-\kappa} v'(\alpha_1^{**}Z)Z < 0$, since $v'(\alpha_1^{**}Z) > 0$ and $u'(\alpha_1^{**}Z) < u'(\alpha_1^* Z) < 1$.[28] So, it suffices to show $(1-\alpha_1^{**})Z - w_1^{**}$ decreases with α_1^{**}. For this, note $(1-\alpha_1^{**})Z - w_1^{**} = \frac{\kappa}{2-\kappa}[(1-\alpha_1^{**})Z + v(\alpha_1^{**}Z)] - \frac{2(1-\kappa)}{2-\kappa} u(\alpha_1^{**}Z)$, which decreases with α_1^{**}, since $u'(\alpha_1^{**}Z) > 0$ and $v'(\alpha_1^{**}Z) < v'(\alpha_1^* Z) < 1$. A higher P causes α_1^{**} to further deviate from α_1^*, lowering a type-1 firm's utility. For some $P_{\text{pool}} > P_{\text{sep}}$, where P_{pool} is determined in the next step, type-1 firms prefer pooling. The separating BPNE for $P \in (P_{\text{sep}}, P_{\text{pool}}]$ survives the Intuitive Criterion for a reason similar to that for $P \leq P_{\text{sep}}$.

Lastly, we determine P_{pool}. In the conjectured pooling, type-0 firms mimic type-1 firms in HP investment (α_{pool}) and wage (w_{pool}), determined similarly as in the proof of Proposition 1. For a type-1 firm, the matched employee is type 0 with probability θ_0 (who exerts effort $\frac{w}{\psi}$) and type 1 with probability θ_1 (who exerts effort $\frac{w+v(\alpha Z)}{\psi}$). The expected employee effort is

$$e_{\text{pool}} = \frac{w + \theta_1 v(\alpha Z)}{\psi}. \tag{A.10}$$

In the pooled labor market, a type-1 firm's bargaining weight is still $\kappa = \frac{1}{1+\eta}$, so the FOC for Nash bargaining remains $A_o = \kappa(A_o + A_\ell)$, where $A_o \equiv e_{\text{pool}}[(1-\alpha)Z + \theta_1 u(\alpha Z) - w]$ and $A_\ell \equiv e_{\text{pool}}[w + \theta_1 v(\alpha Z)] - \frac{\psi e^2}{2}$. Substituting (A.10) into the FOC yields

$$w_{\text{pool}} = \frac{2(1-\kappa)}{2-\kappa}[(1-\alpha)Z + \theta_1 u(\alpha Z)] - \frac{\kappa}{2-\kappa}\theta_1 v(\alpha Z). \tag{A.11}$$

Substituting (A.10) and (A.11) into the type-1 firm's objective function, we can rewrite it as

$$\max_\alpha \ \frac{\lambda}{1+\eta}\frac{1}{\psi}\frac{2\kappa(1-\kappa)}{(2-\kappa)^2}[(1-\alpha)Z + \theta_1 u(\alpha Z) + \theta_1 v(\alpha Z)]^2. \tag{A.12}$$

Its solution α_{pool} is determined by

$$u'(\alpha_{\text{pool}}Z) + v'(\alpha_{\text{pool}}Z) = \frac{1}{1-\theta_0}. \tag{A.13}$$

Since $u'' < 0$ and $v'' < 0$, we have $\alpha_{\text{pool}} < \alpha_1^*$ (note $u'(\alpha_1^* Z) + v'(\alpha_1^* Z) = 1$; see (5)) and $\frac{\partial \alpha_{\text{pool}}}{\partial \theta_0} < 0$.

A type-1 firm's utility from pooling is $\frac{\lambda}{1+\eta}\frac{1}{\psi}\frac{2\kappa(1-\kappa)}{(2-\kappa)^2}[(1-\alpha_{\text{pool}})Z + \theta_1 u(\alpha_{\text{pool}}Z) + \theta_1 v(\alpha_{\text{pool}}Z)]^2$. If it continues to signal its type by choosing α_1^{**} (determined below), its utility is $\frac{\lambda}{1+\eta}\frac{1}{\psi}\frac{2\kappa(1-\kappa)}{(2-\kappa)^2}[(1-\alpha_1^{**})Z + u(\alpha_1^{**}Z) + v(\alpha_1^{**}Z)]^2$. The required α_1^{**} for signaling is determined by equating these two utilities:

$$(1-\alpha_{\text{pool}})Z + \theta_1 u(\alpha_{\text{pool}}Z) + \theta_1 v(\alpha_{\text{pool}}Z) = (1-\alpha_1^{**})Z + u(\alpha_1^{**}Z) + v(\alpha_1^{**}Z), \tag{A.14}$$

where α_{pool} is given by (A.13). This uniquely determines the cutoff value of α_1^{**}, above which type-1 firms prefer pooling. The penalty corresponding to that cutoff value of α_1^{**} is

$$P_{\text{pool}} \equiv \frac{w_0^*}{\psi}(Z - w_0^*) - \frac{w_1^{**}}{\psi}[(1-\alpha_1^{**})Z - w_1^{**}]. \tag{A.15}$$

This follows (A.9), except α_1^{**} in (A.15) is given by (A.14).

We show the pooling BPNE survives the Intuitive Criterion. Consider a deviation $\alpha \in (\alpha_{\text{pool}}, \alpha_1^{**}]$, where α_1^{**} is the type-1 firm's minimum choice of α to deter mimicry by a type-0 firm for a given $P > P_{\text{pool}}$. In this case, type 0 will mimic type 1, so type 1 strictly prefers α_{pool} to any α in this range. While $\alpha > \alpha_1^{**}$ deters mimicry, it is also not preferred by type 1 even if it is identified as type 1 with probability one; this has been shown in the determination of P_{pool}. Pooling at any $\alpha > \alpha_{\text{pool}}$ is suboptimal for type 0 as well. Thus, for $\alpha > \alpha_{\text{pool}}$, both types can be eliminated in Step One of the Intuitive Criterion. If $\alpha < \alpha_{\text{pool}}$, then type 1 can be eliminated in Step One, since the lower α will attract both types to deviate if the out-of-equilibrium belief corresponds to the prior, and we know that type 1 prefers α_{pool} with this belief. So, any deviation with $\alpha < \alpha_{\text{pool}}$ is believed to come from type 0 almost surely. Consequently, no firm deviates from the equilibrium. ■

Proof of Proposition 3. Results for $P \leq P_{\text{sep}}$ are clear. For $P \in (P_{\text{sep}}, P_{\text{pool}}]$, results for agents other than type-1 employees are clear. For a type-1 employee, absent social pressure, his utility from joining a type-1 firm is $\frac{[w_1^* + v(\alpha_1^* Z)]^2}{2\psi}$ (see the proof of Proposition 1). With social pressure, the corresponding utility is $\frac{[w_1^{**} + v(\alpha_1^{**}Z)]^2}{2\psi}$. We prove $w_1^{**} + v(\alpha_1^{**}Z) = \frac{2(1-\kappa)}{2-\kappa}[(1-\alpha_1^{**})Z + u(\alpha_1^{**}Z) + v(\alpha_1^{**}Z)]$ is smaller than $w_1^* + v(\alpha_1^* Z) = \frac{2(1-\kappa)}{2-\kappa}[(1-\alpha_1^*)Z + u(\alpha_1^* Z) + v(\alpha_1^* Z)]$. Differentiating $(1-\alpha)Z + u(\alpha Z) + v(\alpha Z)$ with respect to α yields $[-1 + u'(\alpha Z) + v'(\alpha Z)]Z$, which equals 0 when $\alpha = \alpha_1^*$ (note $u'(\alpha_1^* Z) + v'(\alpha_1^* Z) = 1$; see (5)), but turns negative for $\alpha > \alpha_1^*$. Since $\alpha_1^{**} > \alpha_1^*$, we have $(1-\alpha_1^{**})Z + u(\alpha_1^{**}Z) + v(\alpha_1^{**}Z) < (1-\alpha_1^*)Z + u(\alpha_1^* Z) + v(\alpha_1^* Z)$, so $w_1^{**} + v(\alpha_1^{**}Z) < w_1^* + v(\alpha_1^* Z)$.

[26] Choosing $\alpha < \alpha_1^*$ is equilibrium-dominated for type 1, but may not for type 0.

[27] In writing this, note that the probability for the type-0 firm to meet a type-0 employee equals the probability for it to meet a type-1 employee (upon deviation): both are $\frac{m(\eta)}{\eta}$ because the firm–employee ratio in either submarket $i \in \{0,1\}$ is η. We show $P_{\text{sep}} > 0$. Since $w_1^* < w_0^*$ (Proposition 1), it suffices to show $Z - w_0^* \geq (1-\alpha_1^*)Z - w_1^*$, i.e., $\alpha_1^* Z \geq w_0^* - w_1^*$. Since $w_0^* - w_1^* < v(\alpha_1^* Z)$ (see (A.7)), a further sufficient condition is $v(\alpha_1^* Z) \leq \alpha_1^* Z$, which is true.

[28] Note $\alpha_1^{**} > \alpha_1^*$, so $u'(\alpha_1^{**}Z) < u'(\alpha_1^* Z)$. Since $u'(\alpha_1^* Z) + v'(\alpha_1^* Z) = 1$ (see (5)), we have $u'(\alpha_1^* Z) < 1$.

Consider $P > P_{\text{pool}}$. The result for type-1 firms is clear. For a type-1 employee joining a type-1 firm, his utility is $\frac{[w_{\text{pool}}+v(\alpha_{\text{pool}}Z)]^2}{2\psi}$, where $w_{\text{pool}}+v(\alpha_{\text{pool}}Z) = \frac{2(1-\kappa)}{2-\kappa}[(1-\alpha_{\text{pool}})Z+u(\alpha_{\text{pool}}Z)+v(\alpha_{\text{pool}}Z)]$. Following the proof above, we know $(1-\alpha)Z+u(\alpha Z)+v(\alpha Z)$ is maximized at $\alpha = \alpha_1^*$, so the type-1 employee is worse off given $\alpha_{\text{pool}} < \alpha_1^*$. For a type-1 employee joining a type-0 firm, his utility is even lower at $\frac{w_{\text{pool}}^2}{2\psi}$. A type-0 firm's utility is $\frac{w_{\text{pool}}}{\psi}[(1-\alpha_{\text{pool}})Z - w_{\text{pool}}]$. To show this is lower than that absent social pressure, $\frac{w_0^*}{\psi}(Z-w_0^*)$, it suffices to show $w_0^* > w_{\text{pool}}$, which is obvious. Finally, type-0 employees are also worse off: $\frac{w_{\text{pool}}^2}{2\psi} < \frac{(w_0^*)^2}{2\psi}$. ■

Proof of Proposition 4. We prove each result in order:

1. Since firms and their employees do not value $\zeta(\alpha Z)$, their optimization problems for a given P are identical to those in the base model (where $\zeta(\alpha Z) = 0$). Consequently, equilibrium outcomes for various levels of P are the same as those in Proposition 2.
2. The net social surplus generated through the relationship between a type-1 firm and its type-1 employee is $\frac{\lambda}{1+\eta}\left[e_1[(1-\alpha_1)Z + u(\alpha_1 Z)+v(\alpha_1 Z)+\zeta(\alpha_1 Z)] - \frac{\psi e_1^2}{2}\right]$. Following the same steps as in deriving (5), we show that this social surplus can be written as $\frac{\lambda}{1+\eta}\frac{1}{\psi}\frac{2(1-\kappa)}{(2-\kappa)^2}[(1-\alpha_1)Z+u(\alpha_1 Z)+v(\alpha_1 Z)][(1-\alpha_1)Z+u(\alpha_1 Z)+v(\alpha_1 Z)+(2-\kappa)\zeta(\alpha_1 Z)]$. Let $x(\alpha_1 Z) \equiv (1-\alpha_1)Z+u(\alpha_1 Z)+v(\alpha_1 Z)$. The solution α_1^{social} is given by the FOC[29]:
$$x'(\alpha_1^{\text{social}}Z)[x(\alpha_1^{\text{social}}Z)+(2-\kappa)\zeta(\alpha_1^{\text{social}}Z)] + x(\alpha_1^{\text{social}}Z)[x'(\alpha_1^{\text{social}}Z) + (2-\kappa)\zeta'(\alpha_1^{\text{social}}Z)] = 0. \quad \text{(A.16)}$$
Note that α_1^* is given by $x'(\alpha_1^* Z) = 0$, which is (5). The result $\alpha_1^{\text{social}} > \alpha_1^*$ follows from the facts that $x'(\alpha_1^{\text{social}}Z) < 0$ (from (A.16)) and $x(\cdot)$ is concave.
For a type-0 firm, output diversion of $\alpha_0 Z$ to HP generates a net social loss of $\alpha_0 Z - \zeta(\alpha_0 Z)$, which is minimized at $\alpha_0^{\text{social}} = 0$.
3. We show that the social surplus associated with $P > P_{\text{pool}}$ is strictly less than that with $P = 0$. Since $\alpha_1^{\text{social}} > \alpha_1^* > \alpha_{\text{pool}}$, a type-1 firm's HP investment with $P = 0$ (i.e., α_1^*) is closer to its social optimum α_1^{social} than its HP investment with $P > P_{\text{pool}}$ (i.e., α_{pool}). Moreover, a type-0 firm avoids HP investment with $P = 0$, which coincides with its social optimum $\alpha_0^{\text{social}} = 0$, while its HP investment with $P > P_{\text{pool}}$, $\alpha_{\text{pool}} > 0$, is strictly surplus reducing (as shown in the second step). The result that $P \in (0, P_{\text{sep}}]$ is strictly dominated by $P = 0$ is proved by the argument in the text.
4. Comparing some $P \in (P_{\text{sep}}, P_{\text{pool}}]$ with $P = 0$: (i) the social surplus generated through the relationship between a type-1 firm and its type-1 employee increases by $\Delta(P) \equiv \frac{\lambda}{1+\eta}\frac{1}{\psi}\frac{2(1-\kappa)}{(2-\kappa)^2}\Big[x(\alpha_1^{**}Z)[x(\alpha_1^{**}Z) + (2-\kappa)\zeta(\alpha_1^{**}Z)] - x(\alpha_1^* Z)[x(\alpha_1^* Z)+(2-\kappa)\zeta(\alpha_1^* Z)]\Big]$, where the derivation for the surplus and the definition for $x(\alpha Z) \equiv (1-\alpha)Z + u(\alpha Z)+v(\alpha Z)$ are in the second step, and α_1^{**} corresponding to a specific $P \in (P_{\text{sep}}, P_{\text{pool}}]$ is given by (A.9); and (ii) the social loss due to the dissipative penalty imposed on a type-0 firm is P. Thus, the net surplus change from having $P = 0$ to having $P \in (P_{\text{sep}}, P_{\text{pool}}]$ is $F_1\Delta(P) - F_0 P$, since there are F_1 type-1 firms and F_0 type-0 firms. When $P \downarrow P_{\text{sep}}$, $\Delta(P) \downarrow 0$ as $\alpha_1^{**} \downarrow \alpha_1^*$, so the surplus change is $-F_0 P < 0$: having $P = 0$ is optimal. When P increases over $(P_{\text{sep}}, P_{\text{pool}}]$, $\Delta(P)$ increases as α_1^{**} increases. It can be verified that $F_1\Delta(P) - F_0 P$ is concave in P, so the optimal P in this range, call it $\tilde{P}$, is given by $F_1\Delta'(\tilde{P}) = F_0$. In order for $\tilde{P}$ to be socially more efficient than $P = 0$, we need $\zeta(\alpha Z)$ to be sufficiently close to αZ, i.e., $\alpha_1^{\text{social}}Z - \zeta(\alpha_1^{\text{social}}Z)$ is not too large. ■

[29] Existence and uniqueness of $\alpha_1^{\text{social}} \in (0,1)$ are ensured by Inada conditions on $u(\cdot)$, $v(\cdot)$ and $\zeta(\cdot)$.

References

Allen, F., Qian, M., Xie, J., 2022. Implicit benefits and financing. J. Financ. Intermed. 52, October, 101000.
Auer, R., Matyunina, A., Ongena, S., 2022. The countercyclical capital buffer and the composition of bank lending. J. Financ. Intermed. 52, October, 100965.
Bénabou, R., Tirole, J., 2003. Intrinsic and extrinsic motivation. Rev. Econom. Stud. 70 (3), 489–520.
Bénabou, R., Tirole, J., 2006. Incentives and prosocial behavior. Amer. Econ. Rev. 96 (5), 1652–1678.
Bénabou, R., Tirole, J., 2010. Individual and corporate social responsibility. Economica 77 (305), 1–19.
Besley, T., Ghatak, M., 2005. Competition and incentives with motivated agents. Amer. Econ. Rev. 95 (3), 616–636.
Bolton, P., Brunnermeier, M.K., Veldkamp, L., 2013. Leadership, coordination, and corporate culture. Rev. Econom. Stud. 80 (2), 512–537.
Bunderson, S., Thakor, A.V., 2022. Higher purpose, banking and stability. J. Bank. Financ. 140, July, 106138.
Campbell, J.L., 2007. Why would corporations behave in socially responsible ways? An institutional theory of corporate social responsibility. Acad. Manag. Rev. 32 (3), 946–967.
Cho, I.-K., Kreps, D.M., 1987. Signaling games and stable equilibria. Q. J. Econ. 102 (2), 179–221.
Diamond, P.A., 1981. Mobility costs, frictional unemployment, and efficiency. J. Polit. Econ. 89 (4), 798–812.
Diamond, P.A., 1982. Wage determination and efficiency in search equilibrium. Rev. Econom. Stud. 49 (2), 217–227.
Dikau, S., Volz, U., 2018. Central Banking, Climate Change and Green Finance. Working Paper, Asian Development Bank Institute.
Fisch, J., 2022. Purpose Proposals. Law Series 638/2022, European Corporate Governance Institute.
Friedman, M., 1970. A friedman doctrine: The social responsibility of business is to increase its profits. New York Times Mag. 13, 32–33.
Gartenberg, C., Prat, A., Serafeim, G., 2019. Corporate purpose and financial performance. Organ. Sci. 30 (1), 1–18.
Gartenberg, C., Serafeim, G., 2019. Corporate Purpose and Firm Ownership. Working Paper, Harvard Business School.
Grant, A.M., Campbell, E.M., Chen, G., Cottone, K., Lapedis, D., Lee, K., 2007. Impact and the art of motivation maintenance: The effects of contact with beneficiaries on persistence behavior. Organ. Behav. Hum. Decis. Process. 103 (1), 53–67.
Gunther, M., 2015. Under pressure: Campaigns that persuaded companies to change the world. Guardian.
Hart, O., Zingales, L., 2017. Companies should maximize shareholder welfare not market value. J. Law Finance Account. 2, 247–274.
Hedblom, D., Hickman, B.R., List, J.A., 2019. Toward an Understanding of Corporate Social Responsibility: Theory and Field Experimental Evidence. Working Paper, National Bureau of Economic Research.
Henderson, R., Van den Steen, E., 2015. Why do firms have "purpose"? The firm's role as a carrier of identity and reputation. Amer. Econ. Rev. 105 (5), 326–330.
Hosios, A.J., 1990. On the efficiency of matching and related models of search and unemployment. Rev. Econom. Stud. 57 (2), 279–298.
Kiyotaki, N., Wright, R., 1993. A search-theoretic approach to monetary economics. Amer. Econ. Rev. 83 (1), 63–77.
Koetter, M., Noth, F., Rehbein, O., 2020. Borrowers under water! Rare disasters, regional banks, and recovery lending. J. Financ. Intermed. 43, July, 100811.
List, J.A., Momeni, F., 2021. When corporate social responsibility backfires: Evidence from a natural field experiment. Manage. Sci. 67 (1), 8–21.
Lo, A.W., Thakor, R.T., 2023. Financial intermediation and the funding of biomedical innovation: A review. J. Financ. Intermed. April, 101028.
Oehmke, M., Opp, M.M., 2022. A Theory of Socially Responsible Investment. Working Paper, Swedish House of Finance.
Quinn, R.E., Thakor, A.V., 2018. Creating a purpose-driven organization. Harv. Bus. Rev. 96 (4), 78–85.
Quinn, R.E., Thakor, A.V., 2019. The Economics of Higher Purpose. Berrett-Koehler Press.
Quinn, R.E., Thakor, A.V., 2020. Higher Purpose, Incentives and Economic Performance. Working Paper, Washington University in St. Louis.
Rajan, R.G., Ramella, P., Zingales, L., 2022. What Purpose do Corporations Purport? Evidence from Letters to Shareholders. Working Paper, University of Chicago.

Rauf, A., 2023. Bank stability and the price of loan commitments. J. Financ. Intermed. 54, April, 101027.
Serafeim, G., 2020. Social-impact efforts that create real value. Harv. Bus. Rev. 98 (5), 38–48.
Song, F., Thakor, A., 2022. Ethics, capital and talent competition in banking. J. Financ. Intermed. 52, October, 100963.
Thakor, A.V., 2019. The Purpose of Banking: Transforming Banking for Stability and Economic Growth. Oxford University Press.
Thakor, A.V., 2022. Higher Purpose, the Greater Good and Finance. Working Paper, Washington University in St. Louis.
Thakor, R.T., 2023. Liquidity windfalls and reallocation: Evidence from farming and fracking. Manage. Sci. forthcoming.
Thanassoulis, J.E., 2021. Competition and misconduct. J. Finance forthcoming.
Volz, S., 2019. Banking amish-style. Am. Stud. Blog.
White, A., 2016. Lessons from companies that put purpose ahead of short-term profits. Harv. Bus. Rev. 56–65.