

**The Indirect Effect of Entrepreneurship on Pay Dispersion:
Entry Cost Reduction, Mobility Threat and Wage Redistribution within Incumbent Firms**

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Abstract

Past research has examined the link between initiatives promoting entrepreneurship and compensation, but scholars have predominantly focused on earnings of individuals directly engaged in the founding process, such as founders, co-founders, and start-up employees. Shifting our focus to incumbent workers, we instead propose that a decline in the cost of entrepreneurship increases the variance in pay among incumbent workers, who are not involved in entrepreneurial activities. We posit that, as entrepreneurship becomes a more attractive career option, due to institutional changes, the outside option value of entrepreneurship increases. The resulting increase in mobility threat will disproportionately benefit high earners, or those employees who are more difficult to replace: as their bargaining power increases, incumbents will disproportionately reward these workers, especially when they are systematically more inclined to leave for entrepreneurship. We explore these arguments using a difference-in-differences methodology, based on the enactment of an entry reform that reduced the cost of entry in Portugal between 1995 and 2009. We find that an exogenous decrease in the administrative costs of establishing a new venture led to high earners capturing disproportionate rewards relative to low earners. We further show that this relationship was especially pronounced among high earners who (a) exhibited a higher ex-ante propensity to transition into entrepreneurship; (b) had fewer credible outside options in paid employment; and (c) operated in industries with decentralized wage bargaining arrangements. By documenting the impact of institutional changes that promote entrepreneurship on incumbent workers' pay, our study contributes to recent debates about the impact of entrepreneurship on individual earnings.

INTRODUCTION

In modern economies, entrepreneurship, defined as the creation of a new organization, is often regarded as a desirable outcome for regions and nations. Consequently, a myriad of governmental initiatives have been instituted to reduce the cost of launching a new venture and encourage participation in entrepreneurship (Eesley 2016, Eesley et al. 2018). Beyond the potential advantages in terms of job creation and economic growth (Haltiwanger et al. 2013), however, such initiatives often result in pay disparities. For example, prior research demonstrates that returns to entrepreneurship tend to be concentrated among a small minority involved in the founding process, leaving the majority with comparatively modest earnings (Gambardella and Giarratana 2010, Halvarsson et al. 2018, Lin et al. 2000, Sorenson, Dahl, Canales, and Burton 2021).

In examining the mechanisms underlying the dispersion of earnings associated with entrepreneurship, scholars have predominantly focused on individuals directly involved in entrepreneurial activities, including founders, co-founders, and startup employees. Yet initiatives that encourage entrepreneurship may also influence the earnings of those not directly participating in entrepreneurship: those employed by incumbent firms. A substantial body of research on strategic human capital recognizes that a loss of valuable talent – possibly due to transition into entrepreneurship – might pose a significant threat to established firms (Carnahan et al. 2012, Flammer and Kacperczyk 2019, Wezel et al. 2006), eliciting their strategic responses. Importantly, as incumbents reallocate resources to counter mobility threats, this can impact compensation of their workers, generating greater pay disparities inside incumbent firms. Despite their central importance to incumbents, however, theories of entrepreneurship have traditionally disregarded entrepreneurial mobility threats and their potential impact on incumbents' surplus allocation among current employees.

Therefore, in this study, we shift our attention from solely examining the direct impact of entrepreneurial initiatives on founders' earnings to evaluating the indirect influence of such initiatives on workers within established firms. We propose that institutional changes aimed at reducing the costs of founding new ventures indirectly influence workers' pay by amplifying the entrepreneurial mobility threat

faced by incumbent firms. Building on the theories of outside job prospects (i.e., outside options) as a pivotal mechanism that enhances a worker's bargaining power to bid up wages (Caldwell and Danieli 2018, Doeringer and Piore 1971, Phillips 2001, Shin 2014), we expect a decline in entrepreneurship costs to have a differential impact on high and low wage earners, resulting in heightened pay disparities among workers in incumbent firms. Specifically, as the cost of entrepreneurship decreases, high earners, often endowed with specialized skills (Borjas and Bronars 1989) and contributing greater value to the firm (Carrington and Zaman 1994, Kletzer 1989), are likely to receive more lucrative wage offers. In contrast, low earners, whose skills are often more substitutable (Becker 1962, Campbell et al. 2012, Chadwick et al. 2016), and are less valued by employers (Chadwick et al. 2016), are unlikely to witness commensurate wage increases. Finally, to probe the proposed mechanisms more deeper, we examine whether the impact of lower entrepreneurship costs is more pronounced when: (a) workers' outside options in entrepreneurship are more credible, presenting a more significant threat to employers; (b) workers' credible outside options as paid employees (within their primary occupation, industry, and region) are less numerous, leading to more significant gains from options in entrepreneurship; and (c) wage negotiation is governed by greater decentralization and flexibility, enabling employees to leverage their enhanced bargaining power to extract surplus. In summary, we propose that a reduction in entrepreneurship costs will affect the earnings of incumbent workers by intensifying mobility threats, thus serving as a previously overlooked mechanism through which institutional changes promoting entrepreneurship influence pay dispersion.

To evaluate the relationship between the initiatives aiming to reduce entrepreneurship costs and the earnings of workers in incumbent firms, we exploit the staggered and plausibly exogenous enactment of a reform that lowered the cost of entry (i.e., "On the Spot Firm" program) in Portugal between 2005 and 2009. This institutional change serves as a suitable context for testing our hypotheses because the bureaucratic and financial burden of launching a new venture decreased significantly following the reform, therefore increasing the value of employee outside options (Bertrand and Kramarz 2002, Branstetter et al. 2014, Bruhn 2011, Eberhart et al. 2017). As a result, the reform introduced a plausibly

exogenous decrease in the cost of entrepreneurship for salaried employees, providing us with a fortuitous identification tool.

THEORY AND HYPOTHESES

Past Research

Launching one's own venture is one of the most valued career paths in today's labor markets, with a significant share of individuals initiating and running a business at various junctures of their careers (Burton et al. 2002, 2016). Yet despite the governmental and private sector encouragement of entrepreneurship, via entities such as incubators and accelerators, our understanding of how these efforts impact the distribution of individual earnings remains limited. In assessing the returns to entrepreneurial activities, prior research has primarily focused on the direct impact of entrepreneurship on founders, co-founders, or new-startup employees. First, a growing line of work has found pronounced disparities in returns among founders and startup employees, showing that only a small share of them realize positive returns, while the majority fails to reap benefits from starting a new venture (Åstebro et al. 2011, Gambardella and Giarratana 2010, Halvarsson et al. 2018, Lin et al. 2000). For example, focusing on macro-level patterns of income dispersion, scholars have found that returns vary more systematically in countries and regions where entrepreneurial activities are more intense or more prevalent (Gambardella and Giarratana 2010, Halvarsson et al. 2018, Lippmann et al. 2005), thus reinforcing the notion that only a small share of founders and their employees garner superior returns. Second, existing research has considered founders as exemplars of an entrepreneurial earnings' discount, attributed to non-pecuniary motives presumably steering their entrepreneurial pursuits (Hamilton 2000, Moskowitz and Vissing-Jørgensen 2002). In particular, past studies found that entrepreneurs willingly accept diminished financial gains when founding and managing a new business in exchange for notable non-pecuniary benefits, including flexible work arrangements, schedule control (Thébaud 2015), and autonomy (Hamilton 2000, Moskowitz and Vissing-Jørgensen 2002). Finally, limited yet expanding research has investigated the effects of entrepreneurial reforms on salaried employees. For example, scholars have devoted ample attention to the influence of such initiatives on gender disparities, focusing, in particular, on the departure

of women employees (Castellaneta et al., 2020), and the resulting impact on gender wage gap. Finally, scholars have examined how entrepreneurial reforms affect returns to education or other general skills, by potentially increasing product market competition. Research in this line has suggested that heightened competition might render profits more sensitive to cost reductions, while more educated or skilled workers might be better equipped to produce at lower costs (Guadalupe, 2007; Fernandes et al., 2014).

Overall, past work has devoted considerable attention to the distribution of returns among founders and startup personnel. However, researchers have overlooked that *potential* entrepreneurial mobility events – wherein individuals leave salaried work to strike on their own or join new ventures as employees – may pose considerable *threats* to incumbent employers, prompting a strategic response on their part. Indeed, theories of strategic human capital have long recognized that mobility events can threaten firm performance and survival due to a potential loss of valuable human capital, triggering strategic response from employers (Bode et al. 2015, Carnahan et al. 2012, Flammer and Kacperczyk 2019, Wezel et al. 2006). For example, in a study of knowledge workers, Flammer and Kacperczyk (2019) found that an increase in the mobility threats due to a lower trade-secret protection increased non-pecuniary benefits bestowed upon incumbent employees, acting as a preventive measure against their departure. Importantly, if incumbents respond to mobility threats, in general, they may adopt similar strategies to counteract threats arising from entrepreneurial-mobility – particularly when entrepreneurship costs decline. Importantly, to the extent that firms may react to entrepreneurial mobility threats, their strategic responses could significantly impact the remuneration of incumbent workers. Yet this potential indirect effect, implied by the theories of strategic human capital, has remained unexplored in entrepreneurship studies. Hence, our understanding of the mechanisms underlying the relationship between initiatives that reduce the cost of entrepreneurship and the distribution of earnings remains incomplete.

In what follows, we redirect our focus from the *direct* effect of entrepreneurship on the pay of *founders* to an evaluation of the *indirect* influence on the earnings of workers in incumbent firms, introduced by the elevated entrepreneurial-mobility threat. Specifically, drawing on the theories of

employee bargaining (Doeringer and Piore 1971, Hambrick and Finkelstein 1995, Lin and Tomaskovic-Devey 2013, Shin 2014) and outside options (Emerson 1962), we propose that a decline in entrepreneurship costs will impose mobility threats on incumbents, affecting employee bargaining power, and subsequently impacting their remuneration.

Outside Job Prospects and Employee Bargaining Position

In most organizations, the division of a firm surplus between employers and employees, and the subsequent value capture by each party, are influenced by their relative bargaining power (Doeringer and Piore 1971, Hambrick and Finkelstein 1995, Lin and Tomaskovic-Devey 2013, Shin 2014). Thus, employee compensation does not solely depend on their productivity; rather, it is also determined by their bargaining position relative to owners and managers (Card et al. 2014, Farber 2008, Hall and Soskice 2001, Manning 2013, Yanadori and Cui 2013). In examining the sources of bargaining power, past studies have uniformly highlighted the key role of alternative options or the availability of external alternatives in the labor market. For example, since Emerson's foundational theory of exchange-based power (Emerson 1962), scholars have recognized that an individual's power emanates from their control over resources valued by another individual and not readily attainable outside the specific exchange. Indeed, the presence of alternatives outside a given exchange influences an actor's power within that relationship, strengthening their positive negotiation position vis-à-vis the counterpart. Conversely, when the availability of other options increases, the power derived from the specific exchange declines. Building on this key notion that outside options change the power dynamics in exchange relationships, subsequent research confirms that exchange partners negotiate better and more lucrative offers when alternatives to the focal exchange partnerships emerge (Magee et al. 2007, Pinkley and Northcraft 1994, Sondak and Bazerman 1991). For example, in a laboratory setting, students were more likely to negotiate better outcomes when they have made more investments in securing outside options or external alternatives (Malhotra and Gino 2011).

Importantly, the principle of outside options as a source of power within exchange relationships extends to the employer-employee relationships. From this perspective, the availability of alternative job

prospects can enhance an employee's bargaining power vis-à-vis the employer. Simply put, when an employee's outside options become more enticing, their bargaining power with the employer rises, affecting their ability to negotiate higher wages (Doeringer and Piore 1971, Hambrick and Finkelstein 1995). Consistent with this notion, prior studies document that employee wages increase when employers have lower bargaining power, as indicated by their lower status or reduced scale (Phillips 2001), or when firms are located within clusters, which result in greater availability of outside employment options (Molloy and Barney 2015). Consequently, employees wield greater bargaining power and command higher wages as compensation for forgoing alternative options, which subsequently reduces their dependence on the exchange (Doeringer and Piore 1971, Hambrick and Finkelstein 1995, Sevchenko and Ethiraj 2018). Conversely, employees exhibit less bargaining power and capture a smaller share of surplus when the availability of their outside job prospects dwindles. For example, disparities in outside options accounted for as much as 30 percent of the gender wage gap in the German labor market, where women had fewer and less valuable outside options that could be leveraged to negotiate their pay (Caldwell and Danieli 2018). Overall, the critical insight shared across these studies is that wage disparities reflect bargaining positions across employees vis-à-vis their employers and that outside job prospects are an important driver of such differences.

Cost of entrepreneurship, Entrepreneurial Mobility Threat and Compensation

Employee bargaining position is generally bound to improve when mobility threats surge due to the presence of valuable outside options. The prospect of becoming a founder represents an attractive outside option for employees within incumbent firms (Babina 2020, Kacperczyk 2012, Sørensen and Sharkey 2014), thus imposing on incumbent firms the threat of losing valuable talent. Drawing on this broader framework of outside options and bargaining power, we therefore posit that, following a reduction in entrepreneurship costs, employers will be inclined to disproportionately reward high earners, given that they create more value for the firm and are more difficult to substitute upon departure to entrepreneurship.

Although high earners may be equally or less sensitive to reduction in entrepreneurship costs than are their low-earning counterparts, employers will be more compelled to offer wage premiums to these workers for at least two reasons.¹ First, high earners are more valued by the firm, as they possess firm- and occupation-specific skills, rendering them indispensable for employers and difficult to substitute (Carnahan et al. 2012, Carrington and Zaman 1994, Kletzer 1989). For example, research shows that high earners often exhibit enhanced educational credentials, superior on-the-job training (Becker 1962), and a better fit in terms of preferences, skills, or capabilities required for a specific job (Jovanovic 1979, Lazear and Oyer 2012). Second, a departure of a high earner, following a decline in the cost of entrepreneurship, will be more difficult to remedy because the pool of desired workers is limited and because the required search process will be lengthier and costlier for the firm. Consistent with this claim, extensive literature demonstrates that the pool of employees possessing firm-specific skills is often limited in the labor market because specialized skills are not easily applicable across all firms (Becker 1962, Carnahan et al. 2012, Kryscynski et al. 2021). Consequently, employers might not be able to swiftly find a replacement for a high earner, when the threat of entrepreneurial mobility increases. Hence, all employees may exploit the departure threat for more favourable terms (Carnahan et al. 2012, Phillips 2002), but employers will be willing to respond to outside options in entrepreneurship only when they pertain to more valuable and more difficult-to-replace workers, such as the high earners in the firm.

Finally, while the reduction in the financial burden of founding may have a more direct impact on low earners, who often grapple with greater financial constraints, the decrease in entrepreneurship costs

¹ Our claim does not require an assumption that high-earning employees be more affected by the decline in entrepreneurship costs. For high earners, a decrease in entrepreneurship costs might not be as conspicuous as it is for those earning less. Nonetheless, our theory holds valid provided that the reduction in costs: (a) is factored into the considerations of lower earners; and (b) renders the entrepreneurial option more advantageous compared to paid employment. In the latter case, high earners will demand additional compensation to maintain allegiance to their employers, and employers will acquiesce to such demands, given the challenges associated with replacing high-earning workers. Hence, our arguments hold as long as employers perceive high earners as valuable and deem their retention crucial and as long as high earners are at least somewhat affected by the reduction in entrepreneurship costs (i.e., even if low and high earners are affected equally or low earners are affected more considerably than high earners). Relatedly, our claims remain valid irrespective of whether the two groups exhibit different propensities of transition into entrepreneurship. Even if those with lower wages are more inclined to become founders, it is the high earners that will derive greater surplus in paid employment when entrepreneurship costs decline due to the difficulty of replacing them.

will also have a considerable influence on the mobility threat of high earners, by increasing the demand for these individuals as startup employees. As the costs associated with founding diminish and the rate of new ventures increases, more startup employment opportunities will emerge. However, this elevated demand for startup personnel will be particularly pronounced among high earners of incumbent firms, considering that startup employers tend to place disproportionate value on high human capital, especially in the initial stages of development, when they are still in the startup phase (Hietaniemi 2022, Masters and Thiel 2014). For example, in a study of Finnish startups, Hietaniemi et al., (2023) found that new standalone ventures were more likely to recruit early workers who were specialists or had lower skill transferability in order to leverage these employees' unique skills to develop new products and foster growth. Hence, as the demand for startup employers disproportionately favours high earners, their bargaining power will additionally escalate, facilitating wage negotiations.

In summary, we expect that a decrease in entrepreneurship costs, precipitated by institutional shifts, will indirectly influence earnings by altering the surplus allocation among workers in incumbent firms. By intensifying the mobility threats associated with founding or joining a startup, such regulatory adjustments will bolster the bargaining power of high earners against their employers. Consequently, those who already secured a premium within the firm, owing to the substantial value they create for the employer, will witness additional wage increases, as employers strive to pre-empt their departure. Conversely, individuals with lower earnings will be less likely to receive similarly appealing counteroffers, as they can be more easily replaced and are therefore not as valuable to the firm. We provide a more detailed explanation of this logic in a formal model in Appendix 2, which supports the following predictions:

Hypothesis 1 (H1): A decrease in entrepreneurship costs will result in a more pronounced increase in the wages of high earners compared to low earners in incumbent firms.

Exploring the Mechanism: Shifts in Entrepreneurial Mobility Threat and Bargaining Power

A central tenet of our theory is that a reduction in entrepreneurship costs, by imposing a threat of human capital loss on employers, will lead high-earning employees to witness significant increases in

their bargaining positions, translating into pay premiums. Therefore, as a further test of our claims, we expect this effect to be systematically pronounced when: (a) outside options in entrepreneurship are more credible, presenting employers with a heightened perceived risk of talent loss; (b) outside options as paid employees are less credible and thus bargaining gains from entrepreneurship as a further outside option will be more substantial; and (c) negotiating individual wages is more feasible, allowing employees to more easily extract surplus by leveraging their heightened bargaining power.

First, our theory posits that employers will offer higher compensation to workers whose potential transition into entrepreneurship appears is deemed more credible. Consistent with this claim, theories of outside options posit that the availability of alternatives increases bargaining power only when such alternative are credible and can be exercised by the focal actor (Binmore et al. 1991), such as when individuals have invested in generating external job prospects (Malhotra and Gino 2011). In these cases, employers find themselves compelled to offer premiums to retain the employee. Following this logic, we therefore expect that the pay increases for high earners will be further pronounced when employers can reasonably deduce that the transition into entrepreneurship is a more credible prospect.

A fundamental question is how to ascertain an employee's predisposition to become a founder in advance. Studies of entrepreneurship have long established that observable individual traits, including demographics and education, are systematically correlated with the tendency to become a founder and/or to benefit from entrepreneurship (Castellaneta et al. 2020, Estrin et al. 2016, Kacperczyk 2012). This implies that employers can discern from such traits whether an individual fits the "entrepreneurship mould." For example, if an employee is young, white, or male, conforming to the stereotypical belief about who transitions into entrepreneurship (Castellaneta et al. 2020, Kacperczyk and Guzman 2019), the potential for them to become a founder is deemed more threatening, thereby bolstering their bargaining position. Consequently, we anticipate that high earners will receive additional compensation when entrepreneurship represents a more credible outside option, as determined by employers based on observable, individual traits, which predispose workers to entrepreneurship. In short, wage increases

among high earners will be amplified when these employees exhibit a higher ex-ante propensity to become a founder.

As another test of our claims, we assess whether our effect becomes more pronounced when employees outside options within paid employment are less credible. Research suggests that outside options are more credible when they encompass readily available opportunities within the same occupation, industry and region as the worker's current job (Schubert et al. 2022, Starr et al. 2018). When credible options within paid employment are limited, workers gain more from having viable alternatives outside paid work, such as the potential to become founders or join new ventures as employees. Inherently, those with fewer alternatives within paid work have less leverage to negotiate wages, and, as a result, are likely to benefit more – in terms of both bargaining power and wage increases – from more attractive prospects in entrepreneurship. Providing direct evidence for the value of outside-occupation options, Schubert, Stansbury and Taska (2022) found that an increase in job options outside of primary occupations resulted in significant wage increases within workers' current roles in the United States. Therefore, if increases in bargaining power account for the predicted effect, the impact of the declining entrepreneurship costs will be systematically pronounced for employees with less credible options within paid employment, especially those whose opportunities within the same occupation, industry, and region are limited.

As a final test of our theory, we consider whether workers are better positioned to leverage their enhanced bargaining power by negotiating more individualized wages. Ample research demonstrates that employees are more adept at translating their bargaining power into remuneration when wages are determined on a more decentralized basis (e.g., at the firm level), as compared to a more centralized approach (e.g., at the industry level). Therefore, if bargaining power underlies our findings, high earners will be more likely to secure wage premiums when wage setting is decentralized and flexible, and can more easily accommodate individual requests (Cutcher-Gershenfeld and Kochan 2004, Kochan and Wheeler 1975). Industries regulated by centralized collective bargaining systems, where labor unions negotiate uniform wages for all industry workers, often offer limited scope for individual input during

negotiation of new agreements and the implementation of their terms, even for high-performing employees (Chamberlain and James, McKersie et al. 1965). In contrast, firm-level bargaining often rewards individual productive attributes (e.g., human capital), more than centralized approaches, leading to increased pay disparities (Plasman et al. 2007). For example, consistent with this claim, Card and De La Rica (2006) demonstrate that firm-level contracting is associated with substantial wage premium, with larger premiums accruing to higher-paid workers. Therefore, under more flexible and decentralized wage negotiation structure, high-earning employees, who wield substantial value for the firm, are more likely to secure larger pay premiums. Thus, with a reduction in the cost of entering entrepreneurship, high earners are apt to extract more value from their outside options.

In summary, as additional evidence of the mechanism – namely the increased bargaining power of high-earning workers following a reduction in entrepreneurship costs – we examine the conditions under which outside options are more credible or attractive and when employees can more effectively negotiate individual premiums. We expect that, following a decrease in the cost of entrepreneurship, the disproportionate wage increase among high earners will be amplified when workers can more credibly threaten that they will depart to entrepreneurship, when outside options within paid employment are less credible, and when bargaining agreements are outcomes of decentralized collective negotiations.

Therefore, we hypothesize that:

Hypothesis 2 (H2): Following a decline entrepreneurship costs, the wage increases for high earners vs. low earners within incumbent firms will be amplified when: (a) workers exhibit a higher ex-ante probability of becoming a founder; (b) workers have fewer credible ex-ante outside options as paid employees; and (c) bargaining agreements are outcomes of decentralized negotiations.

EMPIRICAL SETTING AND DATA

Empirically, it is difficult to estimate how a decrease in entrepreneurship cost may affect the dispersion of pay among employees within incumbent firms, given that the correlation between the two variables in a given region might be spurious. For example, unobservable cultural factors might play a role, as certain regions may exhibit a greater degree of individualism, leading to both a higher tolerance for wage disparities and a greater inclination to support policy-makers who are more predisposed to

promote entrepreneurial initiatives by reducing entry costs. "To address these and other potential endogeneity problems, an ideal design should leverage plausibly exogenous shifts in the cost of entry, such as the financial resources and time needed to found a new venture.

We take advantage of this kind of design, by leveraging institutional reforms that reduced the costs of founding a new business. More specifically, we focus on reforms that lowered the cost of entrepreneurship in Portugal. Beginning in 2005, a deregulation reform, "On the Spot Firm" ("Empresa na Hora"), was implemented at different moments in time across different Portuguese regions ("concelhos," or municipalities), progressively decreasing barriers to founding new ventures in these regions. Important for our purpose, the timing of the enactment across municipalities can be plausibly considered exogenous (Branstetter et al. 2014, Fernandes et al. 2014) because it was not correlated with any municipality-specific social and economic characteristics (e.g., number of inhabitants in a municipality or inhabitants' GDP per capita). Further, the program aimed to alleviate bureaucratic burdens of founding a new firm, including significant financial and non-financial (e.g., time) costs. Before 2005, starting a new business in Portugal required about 54 to 78 days (see Figure 1): an entrepreneur needed to visit several offices and fill out more than 20 forms and documents, with an estimated cost of about 2,000 euros (more than 13 percent of the Portuguese annual GDP per capita). As a result, Portugal ranked relatively low (133 out of 155 countries) in the Doing Business Ranking of the World Bank (World Bank 2006).

To mitigate these barriers to entrepreneurial entry, the government enacted the "On the Spot Firm" program, which reduced the administrative burden of founding a new venture (e.g., the company's identification card, the corporate taxpayer number, and the security number). For example, before the reform, a prospective entrepreneur had to visit several different offices and fill in multiple forms to register their venture. After the reform, all these activities were efficiently handled by the same office, significantly reducing the bureaucracy associated with registering a new business. Indeed, following the introduction of the "On the Spot Firm" program, the business environment in Portugal became significantly more conducive to starting a new business, with an estimated cost of only 300 euros and a time cost of less than one hour – which, as shown in Figure 1, is well below the OECD average of 14 days

(Branstetter et al. 2014, Fernandes et al. 2014).

*****Insert Figure 1 about here*****

The regulatory reform was officially launched in July 2005, when pilot one-stop shops were created in the municipalities of Coimbra, Aveiro, Barreiro, and Mota. The number of shops gradually increased over time, and, by the end of 2009, 164 one-stop shops were launched in 308 municipalities throughout the country. Table A1 lists all municipalities where one-stop shops opened between 2005 and 2009.²

Whereas the reform pertained specifically to entrepreneurship, this governmental initiative received ample media attention, which raised popular awareness of the program, potentially increasing the threat of talent loss among incumbent employers. Notably, the reform had—and still has—a significant impact on Portuguese media outlets, which have showcased instances of employees leaving their paid positions in companies to establish their own ventures.³ For example, a few years after the reform was enacted, one journal reported the case of Nuno Carvalho, a former employee at Cisco, who founded a new company called Zonadvanced through the “On the Spot” program. When asked to describe the process of founding a new company, he recognized “the differences with the past” and argued that:

“The mere fact that all the necessary steps for the constitution of the company are concentrated in one place is an advantage. Clear and easily accessible information, coupled with this, contributes significantly to the agility of businesses and government services.”⁴

The significance of “Empresa na Hora” has also been featured in international media, including the Web Summit, the most important technology conference in Europe, where “Empresa na Hora” was

² The average number of new businesses opened in a municipality in Portugal in any year is 35. Hence, as Portugal has 308 municipalities, the overall number of startups in any single year is 10,870. The minimum number of new ventures in a municipality-year has been 0 (for instance, in the municipality of Viana do Alentejo in 1996) and the maximum number of new ventures has been 1,283 (in the municipality of Lisbon in 2008).

³ Our analysis shows that reform has garnered and still continues to receive extensive media attention both in Portugal and on a global scale. According to LexisNexis records, the reform has been widely covered across various media outlets, including newspaper articles, industry trade publications, legal news, newswires, press releases, and web-based publications. This considerable media coverage has likely played a crucial role in raising public awareness of the program, attracting the attention of not only prospective entrepreneurs but also established employers, which aligns with our prediction.

⁴ https://www.jornaldenegocios.pt/empresas/pme/detalhe/sai_uma_empresa_na_hora

considered a major reason for why Portugal has become a hubspot for entrepreneurs.⁵ Relatedly, the renowned “Doing Business” Report of the World Bank in 2006 considered Portugal as a “top reformer” in starting a business, attributed to the “Empresa na Hora” reform. This reform allowed Portugal to increase its ranking by 80 places concerning the “Starting a Business” indicator.⁶

We explore the impact of this institutional change on wage dispersion in incumbent firms by using data from Portugal, Quadro de Pessoal (QDP), maintained by the Portuguese Ministry of Labor and Social Security. QDP is a matched employer-employee database that tracks over time the population of Portuguese workers aged 16 years and older and their employers, and provides rich information on employee gender, age, education level (schooling), job, hierarchical position within the firm, qualification, and type of contract and earnings split into different components, including base wage and bonuses. Firm-level data include location, industry, total number of workers, sale volumes, and the number of establishments. Unlike previous research using the Portuguese registry data (Fernandes et al. 2014), we consider firms in all industries. We restricted our analyses to the 1995 to 2009 period because some variables (e.g., employee education level) are not available before this period⁷. Finally, a new online procedure for registration of new firms was implemented after 2009, invalidating our staggered shock.

METHODOLOGY

To estimate the impact of the “On the Spot Firm” reform, we use a difference-in-differences estimator based on the treatments listed in Table A1 of Appendix 1. Our approach follows closely (Bertrand and Mullainathan 2003) difference-in-differences approach when treatments are staggered at the regional (in our case municipality) level. To estimate the heterogeneous effect of the reform on wages across different groups of treated workers, we follow other approaches that examine heterogeneous

⁵ https://websummit.com/blog/startup-portugal-tech-entrepreneurs?utm_source=google&utm_medium=cpc&utm_campaign=20777355059&utm_content=164218862068&utm_term=&gad_source=1&gclid=Cj0KCQiAwvKtBhDrARIsAJj-kTghd4BkBiWwlsnv8uj-jXQMPColqm5cFmfKMa861LqnZ6MI5KZRswaAkHaEALw_wcB

⁶ <https://archive.doingbusiness.org/en/doingbusiness>

⁷ As a robustness check, we also estimated our effect within a 10-year window, with five years before and five years after the shock. Results (available upon request) are substantially the same.

treatment effects in a difference-in-differences framework (Chatterji and Seamans 2012, Chava et al. 2013, Fernandes et al. 2014). Our specification takes the following form:

$$\text{Wage}_{imt} = f(\beta \text{Entry_cost_reduction}_{mt} + \gamma_1 \text{Entry_cost_reduction}_{mt} * \text{High_earner}_{imt} + \gamma_2 \text{Entry_cost_reduction}_{mt} * \text{Middle_earner}_{imt} + \beta_{CV} \text{CV}) \quad (1)$$

where *Entry cost reduction* is equal to “1” if an individual *i* is working in a municipality *m* that, at year *t*, has enacted the “On the Spot Firm” reform, and errors are clustered at the municipality level, the level of the shock, to address potential serial correlation concerns. The dependent variable *wage* is computed as the sum of the following monthly components: (a) base pay, or the gross amount of money paid in the reference month to employees on a regular monthly basis for their normal hours of work; (b) tenure-related payments; and (c) regular payments. We classify employees in the top tercile as “high earners,” employees in the middle tercile as “middle earners,” and employees in the bottom tercile as “low earners.” Hence, *high earner* is a dummy equal to “1” for employees occupying, in a certain year *t*, the top tercile in the municipality’s wage distribution (and “0” otherwise). Similarly, *middle earner* is a dummy equal to “1” for employees occupying, in a certain year *t*, the mid tercile in the municipality’s wage distribution (and “0” otherwise).⁸

CV is a vector of control variables. In particular, for any worker, we include time-varying covariates such as age and its square, level of education, qualification rank, occupation within the company, and monthly hours worked.⁹ Education (years of schooling), as defined by the International Standard Classification of Education (ISCED), is measured with a dummy variable, *high education*, equal to “1” for individuals with ISCED 4/5/6 level of higher-education credentials (which corresponds to a

⁸ In additional analyses (available upon request), we used the following alternative measures of employee earning positions: (a) two groups (above and below the median); (b) four groups, based on quartiles of the distribution; (c) a continuous wage measure, at time *t*-1. The results (available upon request) do not substantially change.

⁹ Occupations are recorded in the QDP data at the six-digit level in accordance with the International Standard Classification of Occupations (ISCO) for 1988. We use ISCO-88s major groups: 1 – directors; 2 – intellectual and scientific specialists; 3 – professional and technical; 4 – administrative and managerial; 5 – clerical and sales workers; 6 – agriculture, silviculture, and fishing; 7 – production and related workers; 8 – equipment operators and laborers; and 9 – unqualified workers.

university degree), that is, more than 12 years of schooling. *Low education* and *medium education* are equal, respectively, to “1” for individuals with ISCED level 1 (i.e., less than 9 years of schooling) and ISCED level 2 (i.e., between 9 and 12 years of schooling). The eight levels of organizational rank are defined in the QDP as “1” for top executives (i.e., top management); “2” for intermediary executives (i.e., middle management); “3” for supervisors, team leaders, and foremen; “4” for higher-skilled professionals; “5” for skilled professionals; “6” for semi-skilled professionals; “7” for non-skilled professionals; and “8” for apprentices, interns, and trainees. Following prior studies (Fernandes et al., 2014), we group these levels into three categories: “high qualification” (levels 1 to 4), “medium qualification” (level 5), and “low qualification” (levels 6 to 8). At the firm level, we control for size, defined as the number of employees in the firm.

In all our specifications, CV includes region (municipality), industry, and year dummies to control for any unobserved regional and industrial characteristics and aggregate shocks. In our specifications, we sequentially include: (a) firm-fixed effects, which control for any firm time-invariant (or almost time-invariant) characteristics; (b) employee-fixed effects to control for any individual time-invariant characteristics; and (c) a fixed effect for an employee-employer pair, to control for any time-invariant factor related to the same individual within the same company. By estimating our models with a firm-fixed-effect estimator, we limit our analyses to incumbent firms, or organizations already established before the entry-deregulation reform. Hence, our estimates are not driven by changes in firm composition within a given municipality. By including an individual-fixed-effect estimator, we further net out our findings of any changes in the composition in the labor force or in the industry. With employee-firm fixed effects, we estimate changes in wage dispersion for the same worker within the same employer organization. H1 would be supported if, in equation (1), γ_l is positive and significant, suggesting the regulatory reform increased the wage of top earners more than that of bottom earners—which is the baseline category omitted from our analysis.

To test H2—about the heterogeneous treatment effect among high earners—we interact our treatment with our three measures of bargaining power. We expect increases in wage inequality to be

amplified for workers: (a) with a higher ex-ante probability of transitioning into entrepreneurship; (b) operating in industries with fewer employers within the same industry and region; and (c) operating in industries with individual rather than collective wage setting arrangements. Hence, we estimate three models, with the first modelling the interaction between our treatment with the *Entrepreneurship Probability*:

$$\text{Wage}_{imt} = f(\beta \text{Entry_cost_reduction}_{mt} + \mu \text{Entry_cost_reduction}_{mt} * \text{Entrepreneurship Probability}_{imt} + \gamma_1 \text{Entry_cost_reduction}_{mt} * \text{High_earner}_{imt} + \gamma_2 \text{Entry_cost_reduction}_{mt} * \text{Middle_earner}_{imt} + \delta_1 \text{Entry_cost_reduction}_{mt} * \text{High_earner}_{imt} * \text{Entrepreneurship Probability}_{imt} + \delta_2 \text{Entry_cost_reduction}_{mt} * \text{Middle_earner}_{imt} * \text{Entrepreneurship Probability}_{imt} + \beta_{CV} \text{CV}) \quad (2)$$

To compute *Entrepreneurship Probability*, or an individual-level measure of ex-ante propensity to become a founder, we proceed in two steps. First, we begin by estimating the probability that an individual is a founder¹⁰—that is, owner and manager of a new venture versus a wage worker as a function of a number of standard, individual-level attributes shown by past research to significantly increase the odds of becoming a founder (Kacperczyk 2012, Kacperczyk and Marx 2016, Sorensen and Sorensen 2007). These attributes include demographic and human capital characteristics such as age, age squared, gender, educational credentials (i.e., education dummies), qualification (i.e., qualification dummies), and occupational status (i.e., occupation dummies). All covariates are measured at time $t-1$ to ensure temporal precedence. Consistent with past research (e.g., Sorensen 2007), we include year, municipality, industry, and worker-fixed effects to net our models of potential unobserved heterogeneity.

Second, we compute the predicted probability of entrepreneurship in each year for every individual in our sample. For individual-year observations after 2005, we compute the predicted probability in 2004, or the last year available before the enactment of the shock, to mitigate any endogeneity concerns around the entry cost reform (which would affect the probability of becoming an

¹⁰ Following a recent literature (e.g., Sorensen, 2007; Kacperczyk, 2012), we define entrepreneurship as the act of launching a new business with a positive employment in order to “operate it from the owner-manager position.” Consistent with this definition, our data only track new ventures with at least one employee in addition to the founder. Finally, consistent with the recent literature (Levine and Rubinstein 2017, 2018), we do not consider self-employment – which refers to “initiating a sole proprietorship to sell one's own service or products” (Carroll and Mosakowski 1987) – as an instance of entrepreneurship.

entrepreneur). Our final measure is therefore the ex-ante predicted probability of entrepreneurship, which we interact with the deregulation treatment and workers' wage terciles. All other covariates are those described and used for estimating equation (1). We expect δ_1 in the estimated equation (2) to be positive and significant because high earners who exhibit typical entrepreneurial attributes – and are thus perceived by employers as having a more credible outside option in entrepreneurship – will incur additionally higher wages when the cost of entrepreneurship declines.

Next, we estimate the interaction between our treatment and *Outside options*, as below:

$$\text{Wage}_{imt} = f(\beta \text{Entry_cost_reduction}_{mt} + \mu \text{Entry_cost_reduction}_{mt} * \text{Outside_options}_{imt} + \gamma_1 \text{Entry_cost_reduction}_{mt} * \text{High_earner}_{imt} + \gamma_2 \text{Entry_cost_reduction}_{mt} * \text{Middle_earner}_{imt} + \delta_1 \text{Entry_cost_reduction}_{mt} * \text{High_earner}_{imt} * \text{Outside_options}_{imt} + \delta_2 \text{Entry_cost_reduction}_{mt} * \text{Middle_earner}_{imt} * \text{Potential Outside options}_{imt} + \beta_{CV} \text{CV}) \quad (3)$$

where *Outside Options* was computed as the number of jobs in the same industry-occupation-region of the focal employee (in 2004, i.e., one year before the reform was enacted, to alleviate any endogeneity concern¹¹) minus the number of similar jobs in the firm of the focal worker (divided by 1000). Based on our theory, we expect δ_1 in equation (3) to be negative and significant because high earners who have fewer ex-ante outside option as paid employees should be the ones benefitting more from an increase in the prospects in entrepreneurship.

Finally, in our third model, we estimate an interaction term between our treatment and *Decentralized bargaining*, as shown below:

$$\text{Wage}_{imt} = f(\beta \text{Entry_cost_reduction}_{mt} + \mu \text{Entry_cost_reduction}_{mt} * \text{Decentralized Bargaining}_{imt} + \gamma_1 \text{Entry_cost_reduction}_{mt} * \text{High_earner}_{imt} + \gamma_2 \text{Entry_cost_reduction}_{mt} * \text{Middle_earner}_{imt} + \delta_1 \text{Entry_cost_reduction}_{mt} * \text{High_earner}_{imt} * \text{Decentralized bargaining}_{imt} + \delta_2 \text{Entry_cost_reduction}_{mt} * \text{Middle_earner}_{imt} * \text{Decentralized bargaining}_{imt} + \beta_{CV} \text{CV}) \quad (4)$$

In Portugal, most industries have centralized collective bargaining agreements in place, where labor unions negotiate uniform wages for all industry workers. However, a number of industries, such as

¹¹ Our findings hold when using a time-variant measure that takes into account the number of jobs in any year (results available upon request).

financial services, information and communication and utilities, transport and logistics, exhibit more decentralized and flexible negotiation processes.¹² This flexibility enables a more accurate reflection of individual bargaining power. We thus construct a dummy variable equal to one for those industries with a more decentralized salary negotiation process and zero otherwise. Consistent with our theory, we expect δ_1 in equation (4) to be significantly positive, indicating that an increase in bargaining power correlates with wages, especially when bargaining is governed by individual/decentralized approaches.

Table 1 shows the descriptive statistics of the main variables used in the analyses.

*****Insert Table 1 about here*****

RESULTS

We begin with non-parametric analyses to visualize the effect of the entry cost reform at the municipality level. Our approach compares treated municipalities (i.e., or municipalities enacting the reform at a certain point in time) with a control group of never-treated municipalities (or municipalities that never enact the reform). Figure 2 shows the evolution of entrepreneurship (defined as the number of new businesses) for treated and control municipalities. As can be seen, the number of new ventures increases substantially in treated municipalities relative to the control group immediately after the reform is enacted¹³. Further, treated municipalities exhibited a higher number of new firms compared to control municipalities, before the reform was enacted. However, this difference might reflect different population sizes across treated and control municipalities,¹⁴ whereas the underlying propensity to entrepreneurship

¹² Our measure is time invariant and is gathered by the following source: <https://www.worker-participation.eu/national-industrial-relations/countries/portugal>. In particular, it is written that: “agreements signed jointly by several companies (ACs) covered more workers than industry-level agreements in financial services, information and communication and utilities. Individual company agreements are also important in transport and logistics, although they cover fewer workers than the industry-level agreements.” This is confirmed by the Quadro de Pessoal data related to 2004, or the year before the reform was launched.

¹³ Additional analyses we conducted show that new ventures are mostly concentrated in the “real estate activities and rental services” and in “accommodation and restaurants”—which is not surprising, given the importance of tourism for the Portuguese economy. This is also consistent with our theory, as we predict that those leaving the company are mainly lower human-capital employees—as such, we do not expect these individuals to found high-growth ventures.

¹⁴ In particular, in 2004, the year before the reform was enacted, the treated municipalities had, on average, 50000 inhabitants while the control municipalities had, on average, 17000 inhabitants.

appears to be similar. Indeed, when we compare entry rates—or the proportion of new firms to all firms—the difference between treated and control municipalities is economically and statistically negligible (0.039 vs. 0.04, with the p -value of the difference equal to 0.6). More importantly, any difference in the levels does not invalidate our diff-in-diff approach, given that the DiD estimate relies on the parallel trend assumption (or a similar trend before the treatment and after the treatment, in the absence of it). And as can be seen, treated and control municipalities display similar entry patterns before the entry cost reform, supporting the validity of the parallel trend assumption.

Comparing, again, treated municipalities with never-treated municipalities, we further explore whether, consistent with our theory, the deregulation reform has had a differential effect on the wages of high- vs. low-earning employees. As can be seen in Figure 3, which plots employee wages separately for top, middle, and bottom earners, average wages exhibit parallel trends across all three employee groups prior to the entry cost reform. Following the reform enactment, however, top earners witness significant wage increases relative to middle and low earners.

The previous figures compare treated municipalities to *never-treated* municipalities. As such, our estimates are unlikely to be biased by treatment effect heterogeneity over time—a bias that may arise when early-treated units are included in the control group (Goodman-Bacon 2021). However, to alleviate this concern, we considered all municipalities and implemented an alternative approach for coping with heterogeneous treatment effects, developed by Borusyak et al. (2021). The results, shown in Appendix Figure A1b and A2b, confirm our predictions and are similar to estimates of a simple staggered diff-in-diff estimating the marginal effect of the reform on our outcomes of interest (cf. Figures A1a and A2a). Treated and control municipalities exhibit a similar pattern before the reform, both when we consider new ventures and salary levels of high-, medium- and low-earners. Importantly, this pattern starts to significantly diverge after the reform is enacted. Overall, the municipality-level analyses provide initial support for our hypotheses.

To probe the predicted effects further, we next turn to parametric analyses at the individual level, by exploring the effect of our treatment on wage dispersion in paid employment. First, based on H1, we

expect that the entry cost reform will lead to disproportionate wage increases for high earners, but not low earners, in incumbent firms. Table 2 reports estimates from a difference-in-differences specification, with firm-fixed effects (Model 4) and employee-firm pair fixed effects. Based on the latter specification—which estimates our treatment effect for the same individual working in the same firm before and after our treatment—we find strong support for H1. Following the entry cost reform, the salary of high earners increases by about 2.7 percent.¹⁵ Based on the results in column 5, this corresponds to an increase of about 156 euros per month. At the same time, the wage of low earners decreases by about 2 percentage points (as compared to the counterfactual, or equivalent workers in control municipalities). Finally, we obtain similar estimates when the relationship between our treatment and outcome variable is assumed to be linear rather than log-linear. Hence, our findings are robust to different assumptions about the functional form of the parallel trend—cf. column 5 of Table 2.¹⁶

Overall, our results corroborate H1 showing that the decline in the cost of entrepreneurship produces a stark increase in wage dispersion among incumbent workers. Further evidence suggests that high-earning workers reap disproportionate rewards relative to low-earning workers, following our treatment. Finally, as shown in Appendix Table A2, these findings are robust to numerous robustness checks, including clustering of standard errors at the municipality and firm levels (columns 1-2); controlling for municipality-year fixed effects (columns 3-4); and using as the dependent variable the hourly wage (i.e., the log of the ratio between wage and hours worked (columns 5-6). Moreover, results are robust controlling for wage growth in the municipality and municipality population at the municipality level (results available upon request).

¹⁵ This corresponds to the sum of the standalone effect of the entry cost reduction ($\beta=-0.0195$) and the interaction effect with the high-earner dummy ($\beta=0.0461$)

¹⁶ We also obtain similar results when using the approach of Borusyak et al. (2021) to alleviate the possibility that our estimates may be biased by treatment effect heterogeneity. Given the high number of individual-fixed effects, and the presence of interaction, the Stata “did_imputation” command could not converge. Hence, we estimated the results by first regressing employee’s wage on: industry, employee-, employer- and municipality-fixed effects (as well as individual-level controls such as age, education etc.). We then used the log of the residuals as our dependent variable and estimated split-sample models for high, low and mid earners. Results (available upon request) show that only high earners experience a wage increase, following our treatment.

****Insert Figure 2, Figure 3, and Table 2 about here****

Exploring the Mechanisms: Shifts in Mobility Threat and Bargaining Power

We next turn to cross-sectional heterogeneity by individual attributes and explore whether our treatment effect is amplified for high-earning workers with a higher ex-ante probability of becoming an entrepreneur prior to treatment, as predicted by H2. Appendix Table A3 reports estimates for the ex-ante probability of becoming an entrepreneur. Consistent with prior studies (Castellaneta et al. 2020, Kacperczyk and Guzman 2019), we find a curvilinear association between an individual's age and probability of being an entrepreneur, a negative association with high educational credentials and work hours, but a positive association with high and middle job qualifications. Overall, these results confirm findings in past research: entrepreneurship transition is not random; rather, it is systematically correlated with observable demographic and human-capital attributes. Hence, the predicted probability of being a founder is a credible signal to employers that a focal worker may be inclined to leave for entrepreneurship when the cost of entrepreneurship falls.

Table 3a reports estimates for the effect of the deregulation reform on wages. Our first coefficient of interest is the interaction between the reduction in entry cost, high earner, and the predicted values of *Entrepreneurship Probability*. As seen in Models 3 and 4 (controlling for firm, employee, and employee-firm pair fixed effects), the coefficient of the interaction term is positive and statistically significant at the 1 percent level. The effect is also economically sizable. Based on the results presented in Model 4, a one-standard-deviation increase in the predicted probability of entrepreneurship increases the wage difference between low and high earners by around 0.9 percent, following our treatment. This suggests that, consistent with the prediction in H2, an increase in wage dispersion in incumbent firms is amplified for individuals with a higher predicted probability of being an entrepreneur (prior to our treatment) and, therefore, a more credible outside option. These results are robust to using an alternative measure of entrepreneurship propensity, which is uncorrelated with any observable individual's characteristics. We obtain such measure by predicting entrepreneurship propensity in a regression specification that models

several demographic traits as regressors. We then regress this predicted value of entrepreneurship propensity on the probability of being a high-, medium-, or low-salary individual and consider the residuals. As Table A4 shows, even with an alternative measure, we recover our estimates. Hence, we find evidence that the treatment effect of lower costs of entrepreneurship is amplified when an individual's options in entrepreneurship appear more credible and more threatening.

Next, we expect our treatment effect to be pronounced when workers have fewer outside options in paid employment ex-ante, as indicated by the number of jobs in other firms in the same industry, occupation and region of the focal worker (Caldwell and Danieli, 2018). Table 3b shows that, as expected, the wage increases experienced by high-earning workers are less (more) pronounced in regions where employees face more (fewer) outside options and thus are less (more) likely to benefit from the expansion of options in entrepreneurship. We find that when the number of outside options increases (decreases) by one standard deviation, the salary gain that high-earners versus low-earners achieve after the reform decreases (increases) by 0.7 percent (Table 3b, column 4).

As another test, we examine whether our treatment effect is systematically amplified when employees are better positioned to leverage their bargaining power to negotiate individualized wages because they operate in industries with decentralized rather than collective wage bargaining practices (Cutcher-Gershenfeld and Kochan 2004, Kochan and Wheeler 1975). We find support for our results. Table 3c shows that, consistent with our expectation, the wage dispersion due to entry cost reduction is accentuated in sectors with decentralized bargaining, where high earners, compared to low-earners, are more likely to witness further salary increase between 3.5 and 5 percent, according to the specification, following the entry cost reduction (cf. Table 3c, columns 2-4).

*****Insert Table 3a, 3b & 3c about here*****

Supplemental Analyses: Outcomes

We next conduct supplemental analyses to explore the implications of our theory in terms of outcomes. Our theory posits that, as the value of entrepreneurial opportunities increases, imposing a threat

of human capital loss on employers, this will be met with reluctance to concede rewards to low earners, given that these workers will witness minimal increases in bargaining power due to their limited ability to create value for the firm. Hence, for low earners, increases in alternative opportunities in entrepreneurship will exceed the rewards these employees can obtain in wage work. Although low earners often receive higher wages in paid employment than in entrepreneurship, the latter offers substantial non-pecuniary benefits, such as greater autonomy or ability to act as “one own’s boss.” (Moskowitz and Vissing-Jørgensen 2002). Therefore, at least some low earners will prefer to enter entrepreneurship despite potentially earning returns below their wage (Hamilton 2000). Importantly, given that employees choose jobs as a function of their expected utility – which depends not only on income but also workplace conditions (Shepherd et al. 2000) – our theory therefore implies that low earners will be more likely than high earners to leave for entrepreneurship, in expectation of greater benefits outside wage work. Indeed, consistent with our prediction, past studies have found that a decrease in start-up costs due to regulatory changes increases the founding rate among marginal entrepreneurs, who often lack skills and human capital and are thus less able to capture value in paid employment (Branstetter et al. 2014). Hence, employers will generally present a counteroffer as long as it amounts to less than the worker’s marginal productivity (or their replacement cost), but low earners will be unlikely to receive wage premium, given the low cost of their replacement. Therefore, employers may allow low earners to depart rather than increase their salary. To test this conjecture, we estimate the following equation:

$$\text{Entrepreneur}_{imt} = f(\beta \text{Entry_cost_reduction}_{mt} + \gamma_1 \text{Entry_cost_reduction}_{mt} * \text{High_earner}_{imt} + \gamma_2 \text{Entry_cost_reduction}_{mt} * \text{Middle_earner}_{imt} + \beta_{CV} \text{CV}) \quad (5)$$

where *Entrepreneur* is equal to “1” for individuals who are classified as an employer at a newly founded firm (i.e., in the first year of the firm’s existence).¹⁷ Our specification in equations (5) includes the same

¹⁷ Our results are robust to using an alternative definition of an entrepreneur as any owner-manager of a company, regardless of whether it is new or not (results available upon request).

covariates as in equation (1), except for firm fixed effects, and employee-firm fixed effects—which is substituted by gender in one specification. Covariates in equation (5) are lagged to predict the probability of becoming an entrepreneur at time t . Our prediction is supported if γ_1 is negative and significant, indicating that the regulatory reform increased transition to entrepreneurship among bottom earners more than top earners.

Table 4 reports these estimates, with the main coefficient of interest being the interaction between *Entry cost reduction* and *High Earner*. As presented in Table 4, these estimates lead to two important conclusions. First, as seen in Model 1, the coefficient of *High Earner* is negative and statistically significant, suggesting that high earners are less likely than low earners to leave wage work and become founders. In addition, Model 2, which includes an individual fixed-effect estimator, shows that the interaction term between *High Earner* and *Entry cost reduction* is negative and statistically significant at conventional levels. This suggests that, relative to low earners, high earners are less likely to become founders following a decline in the cost of entrepreneurship. Furthermore, the coefficient of *Entry cost reduction* is positive and statistically significant at conventional levels, indicating that the probability of low earners to become founders increases by 0.02 percentage points, following a decline in the cost of entrepreneurship. This is a sizable percentage increase, considering that, in the context of our sample data, the overall probability of being a founder is 2 percent and the probability of transitioning from employee status at time $t-1$ to founder status at time t is 0.2 percent.

*****Insert Table 4 about here*****

Identification Assumptions

Treatment Relevance. First, to be relevant, our treatment effect should be associated with higher rates of newly founded ventures. Figure 2 provides evidence that this is the case. Our estimates are further recovered in a multivariate regression framework. Specifically, Table 5 shows that the “On the Spot Firm” reform has a positive effect on the number of new firms launched in a certain municipality and year (Model 1): the founding probability increases by about 29 units, or about 5 percent in relative terms

(Model 2). In Models 3 and 4, we re-estimate these specifications at the municipality-industry-year level, while also including municipality, year, and industry-fixed effects. Together, these results show that our treatment is relevant: “On the Spot Firm” reform increased the number of newly founded firms by about 5 percent. Interestingly, the effect of the shock is positive also when we focus on potentially high-growth ventures, or ventures that begin operations with more than 5 employees in their founding year (results available upon request).

*****Insert Table 5 about here*****

Treatment Exogeneity. Second, our identification strategy would be more compelling if the timing when the entry cost reform is enacted in a municipality is exogenous with respect to the ex-ante levels of entrepreneurship and wage dispersion. Prior studies have established that the reform timing does not depend on economic and social attributes of the treated municipalities (e.g., Branstetter et al. 2014). To better assess whether this is the case, we estimate a linear probability model to predict the timing of the reform. We construct a dependent variable *Timing* equal to “1” in the year of the enactment in a given municipality, and “0” in years before the enactment. The independent variables (all computed at year $t-1$) are measures of wage dispersion, employee average income, overall population, the fraction of the population out of the labor force, and the municipality entry rate (i.e., the ratio between new firms and all firms in a municipality), GDP and GDP growth rate (computed at the NUTS 30 level). As shown in Table 6, these covariates are uncorrelated with the likelihood of enacting the “On the Spot Firm” reform in a municipality. More importantly, none of the wage dispersion measures is significantly associated with the reform timing. These findings reinforce the validity of our identification strategy.

*****Insert Table 6 about here*****

SUTVA Assumption. One might be further concerned about possible violations of the Stable Unit Treatment Value Assumption (SUTVA). The SUTVA assumption could be violated if the deregulation reform induces at least some high-earning employees to migrate to neighbouring municipalities and possibly receive higher rewards. Although possible, this explanation is unlikely for two reasons. First, it is

difficult to identify a rationale explaining why geographic mobility among high performers would rise, especially if control municipalities are the destination. Second, even if plausible, this possibility is mitigated by the inclusion of a firm-employee fixed effect, as our results are estimated for workers who remain attached to the same employer before and after the reform. Nevertheless, to probe this explanation deeper, we assessed the effect of the deregulation reform using municipalities that are non-neighbour of the treated counties as a control group. Presumably, any spillover effect of the deregulation reform would be less substantial for control counties, distant from the treated counties. Yet the results (shown in Appendix Table A5) continue to hold, even when we use non-neighbouring municipalities as our control group.

Time-invariant measures of high, middle, and low earners. One might further be concerned that our measure of high, middle, and low earners may be endogenous to the deregulation reform, as the probability a worker falls into a specific tercile might be affected by this reform. Although plausible, this is unlikely to be an issue for several reasons. First, most employees in our sample (about 70 percent) do not change their wage tercile position over the course of their careers, thus alleviating the concern that the pay position may itself be affected by our treatment and then lead to spurious results. Indeed, as Table A6 shows, the entry cost reform does not determine any significant changes in employees' tercile position: employees remain in the same tercile, before and after the reform. Second, we limit our sample to individuals who did not experience any shifts in their wage tercile, which naturally reduces our sample size. As shown in Appendix Table A7, we recover our results—which is expected, given that most employees do not change wage terciles over time and that the treatment does not affect employees' tercile positions.

Robustness checks on Alternative Explanations

Product-market competition and returns to skills. A potential concern is that, rather than shifts in outside options and the resulting changes in employee bargaining power, our estimates may reflect increases in product-market competition. First, when product markets become more competitive, the sensitivity of profits to costs increases. If high-skilled or high-educated employees—who are likely better

paid—are generally more efficient (i.e., capable of producing at lower costs), these workers will become more valuable to employers when competitive pressures increase. As a result, demand for these employees will rise, leading to higher salaries (cf. Guadalupe 2007 and Fernandes et al., 2014 who advance this explanation for why salaries of more educated workers increase after the entry cost reduction in Portugal).

Although plausible, this explanation is unlikely to fully account for our results, for at least two reasons. First, unlike shifts in employee bargaining power, change in product-market competition fails to explain all our findings in tandem, including the disproportionate transition of low-earning employees to entrepreneurship (cf. Table 4), or the fact that our estimates are amplified for workers with a higher ex-ante probability of becoming a founder, with less credible ex-ante outside options as paid employees, and in industries where salaries are bargained at a more decentralized level (Table 3a-3c). Increases in product-market competition offer no such explanatory power, and thus are unlikely to apply.

Second, given that the deregulation reform led to a disproportionate founding of smaller ventures, started and operated by lower human capital workers (Branstetter et al. 2014), it stands to reason that these new start-ups exerted limited competitive pressures on incumbents (perhaps except smaller, lower-performing firms). Indeed, we find that the reform reduced competition, as measured by the Herfindahl index of sales at the industry-municipality level (cf. Appendix Table A8), with the largest incumbents being unlikely to suffer from any detrimental increase in competition intensity. Rather, our results indicate that these large incumbents benefitted from the reform, possibly due to a systematic increase in demand, stemming from greater employment and spending. Importantly, our results are in line with the findings of Felix and Maggi (2022), who show that the entry deregulation reform in Portugal led to increased employment, primarily driven by the size expansion among the most productive firms due to heightened demand. Not only were these firms less likely to exit, but also the exit behavior of the least productive firms remained unaffected. This implies that, as demonstrated in Table A8, the reform did not enhance competition—and, if anything, had the opposite effect.

To further ensure that our results are not influenced by an increase in competition, we narrow our focus to those firms that, according to our findings and Felix and Maggi (2022), were unaffected by an

increase in competition intensity—namely, the largest and most productive firms. As a measure of size, we consider the number of employees and divide the sample into large firms (with more than 250 employees) and small firms (with a number of employees lower or equal to 250). Regarding productivity, we use the ratio between sales and the number of employees and split the sample based on the median productivity value. Table 7 reveals that even within these firms, and possibly especially among them, the reform disproportionately increased the wages of high earners compared to low earners.

*****Insert Table 7 about here*****

Internal job market dynamics. An additional concern regards internal job market dynamics, which might explain the rise in high-earning employees' wages. If some employees decide to leave after the entry cost reform, vacancies might be filled through internal promotions. This explanation is unlikely, however, because our results show it is mainly low-earning employees leaving—hence, their vacancies are unlikely to constitute a promotion when filled by another employee. However, to rule out this explanation, we replicate our analyses on wage excluding all employees who are promoted. As Table A9 shows, the findings are substantially the same.

Spurious economic conditions. A final concern is that economic conditions of the municipality could have influenced both the enactment of the reform and the subsequent widening of the wage gap. As demonstrated in Table 6, measures of wage dispersion, average employee income, overall population, the fraction of the population out of the labor force, municipality entry rate (i.e., the ratio between new firms and all firms in a municipality), GDP and GDP growth rate (computed at the NUTS 30 level) show no correlation with the likelihood of enacting the "On the Spot Firm" reform in a municipality. This mitigates the concern that economic changes might drive our findings. However, to further dismiss this possibility, we consider a specification of our main regression at the employee level, where all these variables are included as controls. The results remain unchanged (see Table A10).

DISCUSSION

In this study, we advance the current understanding of how lowering entrepreneurship costs, following an institutional change, affects pay dispersion of workers in incumbent firms. In doing so, we uncover a new,

theoretical channel underlying the relationship between entrepreneurship and wage dispersion: the rise of an *entrepreneurial mobility threat*, following a decline in the cost of entrepreneurship. Empirically, we find evidence that institutional changes designed to lower entrepreneurship costs lead to disproportionate wage increases among high earners in incumbent firms, and these increases are amplified among those who are perceived as “fitting the entrepreneurial mould,” or exhibiting more credible options in entrepreneurship. In addition, we find the treatment effect to be more pronounced when workers face more limited options in paid employment ex-ante and thus benefit to a greater extent from an expansion in non-traditional opportunities, such as entrepreneurship. Finally, our results are amplified for workers who operate in industries governed by decentralized wage bargaining because, in those cases, employees can more easily leverage their bargaining power to capture more surplus. Overall, these results yield additional evidence consistent with the mechanism we hypothesized: increases in wages among high earners reflect disproportionate increases in their bargaining power, following a decrease in the cost of entrepreneurship and the ensuing increase in the entrepreneurial mobility threat.

Our study makes several contributions. First, we extend the emerging stream of entrepreneurship research on outcomes of start-up entry in general, and their consequences for variance in pay, in particular (Gambardella and Giarratana 2010, Halvarsson et al. 2018). Past studies have not considered the possibility of change in employees’ bargaining position relative to employers and scholars have devoted limited attention to the reaction of incumbent firms to entrepreneurship initiatives, such as those which lower entry barriers. Drawing on sociological and economics research on outside options and employee-employer bargaining (Caldwell and Danieli 2018, Doeringer and Piore 1971, Hambrick and Finkelstein 1995, Phillips 2001, Shin 2014, Yanadori and Cui 2013), our findings extend this emerging line of work by documenting the impact of institutional changes on wage dispersion among incumbent workers – by triggering incumbents’ reactions to an increase in employees’ outside options.

In addition, our study extends research on income inequality and organizations more generally, pointing to the micro-level dynamics responsible for the growing inequality of income in modern labor markets (Cobb and Lin 2017, Cobb and Stevens 2017, Davis 2013, Hollister 2004, Sorensen and

Sorenson 2007). Whereas much past research focuses on macro-level, corporate demography and firm attributes such as firm size (Cobb and Stevens 2017, Davis and Cobb 2010) or vertical differentiation (Sorensen and Sorenson 2007), we emphasize the critical role of micro-level, bargaining dynamics between employers and employees triggered by an increase in entrepreneurial mobility threat. Hence, our findings offer a new, more micro-level account of how inequality of pay is generated within the labor market.

Finally, we contribute to research on institutions and entrepreneurship (Eberhart et al. 2017, Eesley 2016) by documenting the unintended consequences of institutional changes that promote entrepreneurship. Significant scholarship has equated successful participation in entrepreneurial activity with the absence of institutional barriers that can undermine an individual's ability and motivation to pursue a new venture (Eberhart et al. 2017, Hiatt et al. 2009, Sine et al. 2005, Sine and David 2003, Thébaud 2015). Institutional theorists have further posited that regulative institutions are a potent force to propel entry (Djankov et al. 2002, Eesley 2016, Hiatt et al. 2009, Sine and David 2003). We extend this line of work by uncovering the unintended effects of such regulations on incumbent firms and the way they allocate rewards across their workers. Hence, our results suggest that greater attention to unexpected outcomes in general, and competitive dynamics in particular, may uncover often obscure effects of institutional changes intended to propel entrepreneurial activities.

Several issues remain to be addressed in future research. First, whereas we focus on regulatory reforms decreasing the cost of entrepreneurship, our findings are likely pertinent to other types of institutional initiatives, such as a ban of non-compete clauses (NCCs), which might also promote entrepreneurship by decreasing the costs associated with founding a new venture (Kang and Fleming 2020). Hence, it is plausible that such a ban will trigger similar dynamics to the one we theorized in our study. Although prevalent among low wage workers (Lipsitz and Starr 2022), NCCs are more commonly observed among high-wage profiles such as executives and high-tech workers (Conti 2014, Fallick et al. 2006, Garmaise 2011, Kini et al. 2019, Marx et al. 2009, Stuart and Sorenson 2003). Hence, future studies may want to investigate whether the bargaining power of high earners disproportionately increases, as the

NCC enforceability weakens. It might be worthwhile, for example, to assess whether increases in the mobility threat among high earning workers—given that they are most likely to be bound by such covenants—will lead to greater increases in wage dispersion among workers in incumbent firms.

Another promising research avenue would be to investigate the net societal effect of entrepreneurship. Underlying the literature on entrepreneurship is the notion that initiatives to promote new venture formation may lead to desirable societal outcomes, given the potential benefits of job creation or innovation (Armanios et al. 2017, Cohen et al. 2018, Hochberg and Fehder 2015, Lanahan and Armanios 2018, Lanahan and Feldman 2015). Our study identifies and unpacks the often-neglected consequences of such policies, in terms of stark disparities in wage allocation. Future studies may further investigate the net outcomes of such policies by taking the benefits and costs into simultaneous consideration, not only for small, entrepreneurial firms but for incumbents as well.

In addition, our study is characterized by methodological limitations. First, whereas our shock is plausibly exogenous with respect to our key dependent variable (wage dispersion)—and our analyses validate this assumption—as in any archival study, random assignment is absent and thus endogeneity bias may always be present. Hence, our estimates should be interpreted with caution when it comes to causal inferences. Second, our findings may reflect, at least to some extent, the specific nature of the labor market in Portugal. In particular, the decision to switch jobs may be, at least partially, determined by the nature of the contract, and Portuguese workers might generally be less mobile than workers in other labor markets, such as in the United States. Therefore, future research may want to profitably replicate our findings in other geographic contexts.

Overall, our findings suggest that initiatives to foster entrepreneurial entry must take unintended effects on incumbent firms and their workers into consideration. The increase in pay dispersion we observe when considering the effect on individual wage may percolate to the macro-level. A preliminary analysis shows that this might be the case (cf. Figure 4), as, following the reform enactment, that treated municipalities experienced stark increases in wage dispersion relative to control municipalities. This, as our formal model shows, might be due to an increase in both within- and between-firm wage inequality

(cf. Appendix 2). Taken together, our findings indicate that moving the debate beyond the direct and most obvious effects and recasting the core arguments in terms of a larger set of processes, direct and indirect, is critical to understanding how institutional changes that promote entrepreneurship affect important outcomes, such as earnings and their variance.

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Table 1. Descriptive statistics and correlations

	Count	Mean	SD	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.
1. Entry cost reduction	26824276	0.239	0.426	1.00																	
2. Wage	26824276	779.843	769.209	0.14	1.00																
3. Low wage	26824276	0.322	0.467	-0.00	-0.36	1.00															
4. Mid wage	26824276	0.335	0.472	-0.00	-0.16	-0.49	1.00														
5. High wage	26824276	0.343	0.475	0.01	0.51	-0.50	-0.51	1.00													
6. New hire	26824276	0.153	0.360	0.08	-0.09	0.16	-0.02	-0.13	1.00												
7. Age	26824276	37.385	11.250	0.03	0.15	-0.12	-0.03	0.15	-0.18	1.00											
8. High education	26824276	0.092	0.289	0.12	0.40	-0.17	-0.12	0.28	0.03	-0.06	1.00										
9. Mid education	26824276	0.375	0.484	0.10	0.05	-0.06	0.01	0.05	0.07	-0.24	-0.25	1.00									
10. Low education	26824276	0.532	0.499	-0.17	-0.28	0.16	0.06	-0.21	-0.08	0.27	-0.34	-0.83	1.00								
11. High qualification	26824276	0.204	0.403	0.08	0.47	-0.26	-0.16	0.42	-0.07	0.11	0.48	0.04	-0.32	1.00							
12. Medium qualification	26824276	0.450	0.497	-0.06	-0.13	-0.08	0.11	-0.03	-0.05	-0.01	-0.19	0.02	0.09	-0.46	1.00						
13. Low qualification	26824276	0.347	0.476	-0.01	-0.26	0.31	0.02	-0.33	0.10	-0.08	-0.21	-0.06	0.18	-0.37	-0.66	1.00					
14. Hours worked	26824276	164.350	29.722	-0.04	0.11	-0.30	0.15	0.14	-0.13	0.00	-0.09	0.01	0.05	-0.02	0.07	-0.06	1.00				
15. Workers	26824276	839.745	2588.330	0.03	0.14	-0.11	-0.05	0.16	-0.03	0.02	0.03	0.11	-0.12	0.08	-0.05	-0.02	-0.03	1.00			
16. Decentralized bargaining	26824276	0.105	0.307	0.02	0.26	-0.19	-0.08	0.27	-0.06	0.09	0.09	0.09	-0.14	0.13	0.03	-0.15	0.01	0.42	1.00		
17. Outside options	26824276	15.870	18.520	-0.01	-0.16	0.15	0.05	-0.19	0.04	-0.10	-0.15	-0.05	0.14	-0.16	0.20	-0.08	-0.00	-0.02	-0.14	1.00	
18. Entrepreneurship probability*	17537132	0.008	0.026	0.05	0.29	-0.03	-0.11	0.13	0.03	-0.02	0.33	0.10	-0.28	0.43	-0.18	-0.19	-0.07	-0.17	-0.05	-0.10	1.00

*The number of observations is lower as this variable is computed only on individuals present in the labor force before 2005.

Table 2. Effect on wage by tercile

	(1)	(2)	(3)	(4)	(5)
	Wage (ln)	Wage (ln)	Wage (ln)	Wage (ln)	Wage
Entry cost reduction	-0.0474* (0.0200)	-0.0331*** (0.0059)	-0.0266*** (0.0056)	-0.0195*** (0.0048)	-93.1979*** (11.7737)
Mid earner	0.3336*** (0.0164)	0.2568*** (0.0109)	0.2260*** (0.0097)	0.2142*** (0.0090)	90.5511*** (3.1658)
High earner	0.7812*** (0.0282)	0.5566*** (0.0170)	0.4969*** (0.0154)	0.4674*** (0.0147)	282.8785*** (12.3637)
Entry cost reduction * Mid earner	0.0317* (0.0141)	0.0178* (0.0071)	0.0112+ (0.0064)	0.0064 (0.0060)	42.0579*** (10.4895)
Entry cost reduction * High earner	0.0677* (0.0300)	0.0748*** (0.0133)	0.0592*** (0.0125)	0.0461*** (0.0109)	249.3135*** (53.0634)
Age	0.0100*** (0.0008)	0.0120*** (0.0011)	0.0122*** (0.0009)	0.0117*** (0.0009)	-4.1747*** (1.1210)
Age squared	-0.0001*** (0.0000)	-0.0001*** (0.0000)	-0.0001*** (0.0000)	-0.0001*** (0.0000)	0.0572** (0.0174)
Mid education	0.0537*** (0.0070)	0.0018** (0.0006)	0.0005 (0.0006)	-0.0012 (0.0011)	-12.8785** (4.3078)
High education	0.2016*** (0.0068)	0.0865*** (0.0054)	0.0728*** (0.0061)	0.0557*** (0.0044)	111.5850*** (4.7883)
Hours worked (ln)	0.5143*** (0.0368)	0.6514*** (0.0137)	0.6924*** (0.0091)	0.6615*** (0.0126)	217.8497*** (9.2907)
Mid qualification	0.0329*** (0.0028)	0.0261*** (0.0009)	0.0253*** (0.0007)	0.0153*** (0.0007)	-8.6520*** (2.4564)
High qualification	0.1557*** (0.0060)	0.0844*** (0.0027)	0.0816*** (0.0030)	0.0570*** (0.0033)	41.2510*** (8.0329)
Workers (ln)	0.0189*** (0.0010)	0.0157*** (0.0008)	0.0159*** (0.0025)	0.0255*** (0.0021)	31.9029*** (3.8052)
Constant	3.4038*** (0.1819)	2.6237*** (0.0727)	2.4611*** (0.0444)	2.5888*** (0.0540)	-288.4161*** (42.2721)
R2	0.82	0.94	0.95	0.96	0.91
N	26,824,276	25,502,042	25,413,725	23,128,490	23,128,490
Occupation FE	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES
Municipality FE	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES
Worker FE		YES	YES	YES	YES
Firm FE			YES	YES	YES
Worker&Firm FE				YES	YES

Note: Ordinary least-squares (OLS) regressions. The dependent variable is the monthly logged wage of the worker in columns 1-4 and the monthly wage of the worker in column 5. It is constructed by adding three components: (a) base pay, or the gross amount of money paid in the reference month to employees on a regular monthly basis for their normal hours of work; (b) tenure-related payments; and (c) regular payments. Employees in the top tercile are classified as high earners, employees in the middle tercile are classified as mid earners, and employees in the bottom tercile represent low earners. Standard errors clustered by municipalities are in parentheses.

+p<0.1; *p<0.5; **p<0.01; ***p<0.001

Table 3a. Effect on wage by tercile and probability of becoming an entrepreneur

	(1)	(2)	(3)	(4)	(5)
	Wage (ln)	Wage (ln)	Wage (ln)	Wage (ln)	Wage
Entry cost reduction	-0.0402* (0.0173)	-0.0347*** (0.0048)	-0.0298*** (0.0049)	-0.0246*** (0.0045)	-110.8071*** (11.6162)
Mid Earner	0.3145*** (0.0183)	0.2369*** (0.0103)	0.2140*** (0.0093)	0.2059*** (0.0086)	81.6283*** (2.6173)
High Earner	0.7316*** (0.0276)	0.5149*** (0.0154)	0.4689*** (0.0143)	0.4507*** (0.0142)	271.3206*** (13.4431)
Entry cost reduction * Mid Earner	0.0228 (0.0146)	0.0145* (0.0058)	0.0096+ (0.0055)	0.0071 (0.0055)	44.6748*** (9.1496)
Entry cost reduction * High Earner	0.0609** (0.0231)	0.0677*** (0.0099)	0.0538*** (0.0102)	0.0453*** (0.0097)	218.3290*** (37.3918)
Entrepreneurship probability	-1.2520*** (0.0785)	-1.1963*** (0.1268)	-0.9958*** (0.1062)	-0.8553*** (0.0926)	-296.6311*** (85.4181)
Entry cost reduction*Entrepreneurship Probability	-0.0404 (0.0944)	0.1536*** (0.0345)	0.2230*** (0.0351)	0.2500*** (0.0405)	353.0778*** (48.3814)
Mid Earner * Entrepreneurship Probability	0.6074*** (0.0848)	0.7772*** (0.0872)	0.6458*** (0.0783)	0.6419*** (0.0868)	283.2668** (87.1818)
High Earner* Entrepreneurship Probability	3.5556*** (0.1934)	2.0850*** (0.1737)	1.7827*** (0.1445)	1.5600*** (0.1228)	1044.1863*** (187.0585)
Entry cost reduction * Mid Earner* Entrepreneurship Probability	-0.0897 (0.0710)	0.0208 (0.0378)	0.0694+ (0.0370)	0.1148** (0.0438)	459.5545*** (93.9754)
Entry cost reduction * High Earner* Entrepreneurship Probability	0.3036* (0.1453)	0.4707*** (0.0617)	0.4176*** (0.0444)	0.3443*** (0.0533)	3820.2561*** (647.7718)
Age	0.0093*** (0.0009)	0.0119*** (0.0012)	0.0121*** (0.0010)	0.0111*** (0.0009)	-4.9281*** (1.1125)
Age squared	-0.0001*** (0.0000)	-0.0001*** (0.0000)	-0.0001*** (0.0000)	-0.0001*** (0.0000)	0.0653*** (0.0179)
Mid education	0.0521*** (0.0057)	0.0010 (0.0007)	-0.0002 (0.0009)	-0.0016 (0.0013)	-13.1618** (4.6789)
High education	0.2240*** (0.0060)	0.0834*** (0.0057)	0.0710*** (0.0058)	0.0568*** (0.0049)	115.7298*** (6.8756)
Hours worked (ln)	0.4872*** (0.0396)	0.6424*** (0.0118)	0.6702*** (0.0106)	0.6597*** (0.0133)	230.1083*** (10.7498)
Mid qualification	0.0343*** (0.0021)	0.0223*** (0.0008)	0.0214*** (0.0007)	0.0145*** (0.0008)	-10.1345*** (2.7843)
High qualification	0.1504*** (0.0045)	0.0770*** (0.0029)	0.0731*** (0.0031)	0.0563*** (0.0035)	41.7476*** (7.4192)
Workers (ln)	0.0224*** (0.0010)	0.0168*** (0.0010)	0.0189*** (0.0029)	0.0254*** (0.0025)	30.4392*** (3.9952)
Constant	3.4445*** (0.1989)	2.6870*** (0.0547)	2.5730*** (0.0455)	2.6153*** (0.0567)	-306.1882*** (48.4492)
R2	0.83	0.94	0.95	0.96	0.91
N	17,537,132	17,102,050	17,038,195	16,193,383	16,193,383
Occupation FE	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES
Municipality FE	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES
Worker FE		YES	YES	YES	YES
Firm FE			YES	YES	YES
Worker&Firm FE				YES	YES

Note: Ordinary least-squares (OLS) regressions. The dependent variable is the monthly logged wage of the worker in columns 1-4 and the monthly wage of the worker in column 5. It is constructed by adding three components: (a) base pay, or the gross amount of money paid in the reference month to employees on a regular monthly basis for their normal hours of work; (b) tenure-related payments; and (c) regular payments.

Entrepreneurship Probability is constructed in two steps. First, we focus on the pre-treatment period (i.e., before 2005) and we compute the probability that an individual is an entrepreneur versus a wage worker as a function of a number of individual-level attributes—including demographic and human capital characteristics such as age, age squared, female, education dummies, qualification dummies, and occupation dummies at $t-1$, as well as year, country, industry, and worker fixed effects. Second, we compute the predicted probability of entrepreneurship – or becoming an entrepreneur - in each year for every individual in our sample. For individual-year observations after 2005 (which is not calculated because we use only pre-treatment observations), we use the probability of 2004. Standard errors clustered by municipalities are in parentheses. + $p<0.1$; * $p<0.5$; ** $p<0.01$; *** $p<0.001$

Table 3b. Effect on wage by tercile and number of outside options

	(1)	(2)	(3)	(4)	(5)
	Wage (ln)	Wage (ln)	Wage (ln)	Wage (ln)	Wage
Entry cost reduction	-0.0350* (0.0161)	-0.0262*** (0.0060)	-0.0210*** (0.0057)	-0.0134** (0.0051)	-91.4571*** (12.2606)
Mid earner	0.3518*** (0.0121)	0.2734*** (0.0091)	0.2413*** (0.0084)	0.2292*** (0.0079)	95.6160*** (2.4828)
High earner	0.8166*** (0.0230)	0.5714*** (0.0142)	0.5123*** (0.0133)	0.4816*** (0.0129)	288.9936*** (10.3467)
Entry cost reduction * Mid earner	0.0149 (0.0091)	0.0130+ (0.0078)	0.0083 (0.0073)	0.0042 (0.0075)	45.7756*** (12.1766)
Entry cost reduction * High earner	0.0467+ (0.0246)	0.0747*** (0.0137)	0.0607*** (0.0134)	0.0474*** (0.0121)	281.8049*** (59.8620)
Outside options	0.0003 (0.0003)	0.0003** (0.0001)	0.0004*** (0.0001)	0.0004*** (0.0001)	0.0995 (0.0837)
Entry cost reduction * Outside options	-0.0006+ (0.0003)	-0.0003*** (0.0001)	-0.0003*** (0.0001)	-0.0003*** (0.0001)	-0.0860 (0.0559)
Mid earner * Outside options	-0.0009** (0.0003)	-0.0008*** (0.0001)	-0.0008*** (0.0001)	-0.0008*** (0.0001)	-0.2436** (0.0821)
High earner * Outside options	-0.0023*** (0.0004)	-0.0007** (0.0002)	-0.0008*** (0.0002)	-0.0007*** (0.0002)	-0.1421 (0.2725)
Entry cost reduction * Mid earner * Outside options	0.0009* (0.0004)	0.0002* (0.0001)	0.0001 (0.0001)	0.0001 (0.0001)	-0.2533* (0.1125)
Entry cost reduction * High earner * Outside options	0.0014** (0.0005)	-0.0003+ (0.0002)	-0.0004* (0.0002)	-0.0004* (0.0001)	-3.1259*** (0.6631)
Age	0.0101*** (0.0008)	0.0121*** (0.0012)	0.0122*** (0.0010)	0.0118*** (0.0009)	-4.0075*** (1.0864)
Age squared	-0.0001*** (0.0000)	-0.0001*** (0.0000)	-0.0001*** (0.0000)	-0.0001*** (0.0000)	0.0552** (0.0169)
Mid education	0.0532*** (0.0069)	0.0018** (0.0006)	0.0005 (0.0006)	-0.0012 (0.0011)	-12.7460** (4.2528)
High education	0.1999*** (0.0071)	0.0861*** (0.0054)	0.0724*** (0.0060)	0.0552*** (0.0043)	109.8165*** (4.6335)
Hours worked (ln)	0.5140*** (0.0366)	0.6513*** (0.0137)	0.6923*** (0.0090)	0.6613*** (0.0126)	217.6909*** (9.2870)
Mid qualification	0.0323*** (0.0024)	0.0261*** (0.0009)	0.0254*** (0.0007)	0.0154*** (0.0007)	-8.4944*** (2.5106)
High qualification	0.1573*** (0.0061)	0.0850*** (0.0026)	0.0823*** (0.0029)	0.0576*** (0.0032)	42.4847*** (7.8217)
Workers (ln)	0.0186*** (0.0009)	0.0156*** (0.0007)	0.0160*** (0.0025)	0.0255*** (0.0021)	32.3803*** (3.8397)
Constant	3.3867*** (0.1792)	2.6108*** (0.0725)	2.4472*** (0.0442)	2.5756*** (0.0535)	-302.0099*** (42.0430)
R2	0.82	0.94	0.95	0.96	0.91
N	26,824,276	25,502,042	25,413,725	23,128,490	23,128,490
Occupation FE	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES
County FE	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES
Worker FE		YES	YES	YES	YES
Firm FE			YES	YES	YES
Worker&Firm FE				YES	YES

Note: Ordinary least-squares (OLS) regressions. The dependent variable is the monthly logged wage of the worker in columns 1-4 and the monthly wage of the worker in column 5. The dependent variable is constructed by adding three components: (a) base pay, or the gross amount of money paid in the reference month to employees on a regular monthly basis for their normal hours of work; (b) tenure-related payments; and (c) regular payments. To mitigate endogeneity of the entry cost reduction shock, *Outside Options* was computed as the number of jobs in the same industry-occupation-region of the focal employee (in 2004, i.e., one year before the reform was enacted, to alleviate any endogeneity concern) minus the number of similar jobs in the firm of the focal worker (divided by 1000). Standard errors clustered by municipality are in parentheses.

+p<0.1; *p<0.5; **p<0.01; ***p<0.001

Table 3c. The effect on wage by tercile and industries with decentralized vs. centralized bargaining

	(1)	(2)	(3)	(4)	(5)
	Wage (ln)	Wage (ln)	Wage (ln)	Wage (ln)	Wage
Entry cost reduction	-0.0470* (0.0198)	-0.0325*** (0.0059)	-0.0265*** (0.0056)	-0.0194*** (0.0047)	-93.2426*** (11.4799)
Mid earner	0.3332*** (0.0159)	0.2552*** (0.0104)	0.2245*** (0.0093)	0.2128*** (0.0086)	90.4730*** (3.2324)
High earner	0.7741*** (0.0282)	0.5575*** (0.0189)	0.4979*** (0.0169)	0.4679*** (0.0158)	284.0183*** (13.5321)
Entry cost reduction*Mid earner	0.0338* (0.0144)	0.0166* (0.0060)	0.0104+ (0.0054)	0.0048 (0.0045)	37.4369*** (7.4168)
Entry cost reduction*High earner	0.0646* (0.0311)	0.0638*** (0.0119)	0.0510*** (0.0107)	0.0365*** (0.0088)	204.8064*** (36.9006)
Entry cost reduction*Decentralized bargaining	0.0072 (0.0076)	-0.0095** (0.0036)	-0.0001 (0.0040)	0.0040 (0.0049)	14.7747*** (3.6075)
Mid earner * Decentralized bargaining	0.0850*** (0.0139)	0.0550*** (0.0088)	0.0479*** (0.0093)	0.0556*** (0.0099)	47.0657*** (8.0419)
High earner* Decentralized bargaining	0.1406*** (0.0203)	0.0381* (0.0159)	0.0302** (0.0113)	0.0454*** (0.0092)	70.6457*** (10.8501)
Entry cost reduction*Mid earner * Decentralized bargaining	-0.0413*** (0.0102)	0.0151 (0.0156)	0.0060 (0.0132)	0.0147 (0.0178)	44.3559+ (23.4576)
Entry cost reduction*High earner* Decentralized bargaining	0.0000 (0.0152)	0.0533*** (0.0050)	0.0349*** (0.0052)	0.0356*** (0.0057)	168.6270*** (28.5782)
Age	0.0099*** (0.0008)	0.0122*** (0.0012)	0.0123*** (0.0010)	0.0118*** (0.0009)	-3.7715*** (1.0108)
Age squared	-0.0001*** (0.0000)	-0.0001*** (0.0000)	-0.0001*** (0.0000)	-0.0001*** (0.0000)	0.0524** (0.0158)
Mid education	0.0538*** (0.0069)	0.0019** (0.0006)	0.0006 (0.0006)	-0.0010 (0.0011)	-11.9460** (3.8606)
High education	0.2025*** (0.0067)	0.0864*** (0.0055)	0.0727*** (0.0061)	0.0554*** (0.0044)	109.9080*** (4.8869)
Hours worked (ln)	0.5136*** (0.0368)	0.6512*** (0.0137)	0.6922*** (0.0091)	0.6611*** (0.0126)	217.5597*** (9.5809)
Mid qualification	0.0344*** (0.0028)	0.0264*** (0.0009)	0.0256*** (0.0007)	0.0157*** (0.0007)	-6.5609*** (1.9614)
High qualification	0.1566*** (0.0062)	0.0847*** (0.0026)	0.0819*** (0.0029)	0.0573*** (0.0032)	42.6022*** (7.5079)
Workers (ln)	0.0181*** (0.0009)	0.0156*** (0.0008)	0.0161*** (0.0025)	0.0258*** (0.0020)	33.7904*** (4.1417)
Constant	3.4014*** (0.1817)	2.6181*** (0.0728)	2.4562*** (0.0443)	2.5816*** (0.0533)	-314.4413*** (46.2229)
R2	0.82	0.94	0.95	0.96	0.91
N	26,824,276	25,502,042	25,413,725	23,128,490	23,128,490
Occupation FE	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES
Municipality FE	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES
Worker FE		YES	YES	YES	YES
Firm FE			YES	YES	YES
Worker&Firm FE				YES	YES

Note: Ordinary least-squares (OLS) regressions. The dependent variable is the monthly logged wage of the worker in columns 1-4 and the monthly wage of the worker in column 5. It is constructed by adding three components: (a) base pay, or the gross amount of money paid in the reference month to employees on a regular monthly basis for their normal hours of work; (b) tenure-related payments; and (c) regular payments. The dummy decentralized bargaining is equal to one for industries with a decentralized salary negotiation process and zero otherwise. Standard errors clustered by municipalities are in parentheses.

+p<0.1; *p<0.5; **p<0.01; ***p<0.001

Table 4. Effect on the probability of being an entrepreneur by wage terciles

	(1)	(2)
	Entrepreneur	Entrepreneur
Entry cost reduction	0.0006*** (0.0002)	0.0002** (0.0001)
Mid Earner	-0.0005*** (0.0001)	0.0000 (0.0001)
High Earner	-0.0014*** (0.0001)	-0.0002* (0.0001)
Entry cost reduction * Mid Earner	-0.0000 (0.0001)	-0.0002** (0.0001)
Entry cost reduction * High Earner	-0.0006** (0.0002)	-0.0002** (0.0001)
Age	0.0002*** (0.0000)	0.0005*** (0.0000)
Age squared	-0.0000*** (0.0000)	-0.0000*** (0.0000)
Mid education	0.0001 (0.0001)	0.0003*** (0.0001)
High education	-0.0031*** (0.0004)	0.0005** (0.0002)
Hours worked (ln)	0.0002*** (0.0001)	-0.0002*** (0.0001)
Mid qualification	0.0006*** (0.0000)	0.0003*** (0.0000)
High qualification	0.0028*** (0.0002)	0.0013*** (0.0002)
Workers (ln)	-0.0007*** (0.0000)	-0.0005*** (0.0000)
Female	-0.0009*** (0.0001)	
Constant	0.0188*** (0.0036)	0.0033+ (0.0017)
R2	0.01	0.46
N	18,052,895	17,342,638
Occupation FE	YES	YES
Year FE	YES	YES
Municipality FE	YES	YES
Industry FE	YES	YES
Worker FE		YES

Note: Linear probability model regressions. The dependent variable is equal to one if the individual is an entrepreneur, defined as the founder in a local firm. All independent variables are considered at time $t-1$. Standard errors clustered by municipalities are in parentheses.

+ $p < 0.1$; * $p < 0.5$; ** $p < 0.01$; *** $p < 0.001$

Table 5. Relevance of entry cost reduction: effect on firm entry (municipality-level analyses)

	(1)	(2)	(3)	(4)
	Startups number	Log startups number	Startups number	Log startups number
Entry cost reduction	29.4720*** (6.3188)	0.0523* (0.0236)	1.2324*** (0.2706)	0.0640*** (0.0108)
Average income (ln)	-25.8043** (7.8974)	-0.6462*** (0.1263)	-1.3997*** (0.3836)	-0.1866*** (0.0342)
Total population	60.6660*** (12.9437)	0.5218*** (0.1177)	2.7649*** (0.5666)	0.3091*** (0.0538)
Unemployed (fraction)	-116.7364** (39.8939)	-1.9253*** (0.1868)	-5.7222** (1.8410)	-0.6587*** (0.0791)
Constant	-319.8584** (120.7363)	2.6932* (1.3527)	-13.4544* (5.2802)	-1.0967* (0.5310)
Observations	4,300	4,300	89,191	89,191
R-squared	0.31	0.54	0.06	0.10
Municipality FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Industry FE	NO	NO	YES	YES

Note: Ordinary least-squares (OLS) regressions. Models 1 and 2 are estimated at the municipality level. Models 3 and 4 are estimated at the municipality-industry level. Standard errors clustered by municipalities are in parentheses.

+p<0.1; *p<0.5; **p<0.01; ***p<0.001

Table 6. Exogeneity of entry cost reduction (municipality-level analyses)

	(1)	(2)	(3)	(4)	(5)	(6)
	Entry deregulation	Entry deregulation	Entry deregulation	Entry deregulation	Entry deregulation	Entry deregulation
Entry rate	0.3881 (0.2573)	0.3861 (0.2578)	0.3845 (0.2583)	0.3896 (0.2573)	0.3841 (0.2576)	0.3774 (0.2601)
Average income	0.0001 (0.0002)	0.0001 (0.0002)	0.0001 (0.0002)	0.0001 (0.0002)	0.0001 (0.0002)	0.0001 (0.0002)
Total population (ln)	0.0488 (0.0619)	0.0474 (0.0620)	0.0478 (0.0620)	0.0486 (0.0619)	0.0484 (0.0619)	0.0447 (0.0621)
Fraction of inactive people	0.0799 (0.1771)	0.0832 (0.1767)	0.0819 (0.1769)	0.0803 (0.1771)	0.0819 (0.1773)	0.0925 (0.1764)
GPD (log)	-0.2180 (0.2422)	-0.2220 (0.2430)	-0.2224 (0.2432)	-0.2176 (0.2422)	-0.2202 (0.2421)	-0.2294 (0.2438)
GPD growth rate	0.2529 (0.2769)	0.2558 (0.2776)	0.2558 (0.2777)	0.2529 (0.2770)	0.2533 (0.2767)	0.2587 (0.2774)
Gini (ln)		-0.0392 (0.0899)				-0.1691 (0.3451)
Theil (ln)			-0.0163 (0.0380)			0.0403 (0.1194)
P90-P10 (ln)				-0.0081 (0.0389)		0.0150 (0.0654)
P75-P25 (ln)					0.0459 (0.1239)	0.0917 (0.1483)
Constant	0.8457 (1.7927)	0.8137 (1.7915)	0.8352 (1.7930)	0.8485 (1.7944)	0.8576 (1.7915)	0.7525 (1.7966)
R2	0.14	0.14	0.14	0.14	0.14	0.14
N	1,945	1,945	1,945	1,945	1,945	1,945
Year FE	YES	YES	YES	YES	YES	YES
County FE	YES	YES	YES	YES	YES	YES

Note: Ordinary least-squares (OLS) regressions. All the independent variables are measured at t-1. GDP data are available starting from 2000.

+p<0.1; *p<0.5; **p<0.01; ***p<0.001

Table 7. Effect on wage by tercile and firm size or productivity

	(1)	(2)	(3)	(4)
	Wage (ln)	Wage (ln)	Wage (ln)	Wage (ln)
	Small	Big	Low productivity	High productivity
Entry cost reduction	-0.0136*** (0.0029)	-0.0400*** (0.0120)	-0.0144*** (0.0042)	-0.0208*** (0.0052)
Mid earner	0.2125*** (0.0090)	0.2194*** (0.0102)	0.1959*** (0.0089)	0.2248*** (0.0092)
High earner	0.4777*** (0.0170)	0.4417*** (0.0150)	0.4416*** (0.0147)	0.4802*** (0.0151)
Entry cost reduction * Mid earner	0.0046 (0.0037)	0.0142 (0.0135)	0.0115+ (0.0066)	0.0026 (0.0058)
Entry cost reduction * High earner	0.0351*** (0.0062)	0.0640** (0.0194)	0.0468*** (0.0129)	0.0435*** (0.0105)
Age	0.0114*** (0.0009)	0.0136*** (0.0027)	0.0071*** (0.0007)	0.0132*** (0.0010)
Age squared	-0.0001*** (0.0000)	-0.0001*** (0.0000)	-0.0001*** (0.0000)	-0.0002*** (0.0000)
Mid education	0.0005 (0.0007)	-0.0082+ (0.0046)	-0.0007 (0.0012)	-0.0012 (0.0013)
High education	0.0543*** (0.0050)	0.0511*** (0.0065)	0.0743*** (0.0067)	0.0493*** (0.0038)
Hours worked (ln)	0.6660*** (0.0133)	0.6520*** (0.0194)	0.6923*** (0.0165)	0.6451*** (0.0126)
Mid qualification	0.0156*** (0.0008)	0.0180*** (0.0026)	0.0158*** (0.0012)	0.0148*** (0.0010)
High qualification	0.0515*** (0.0026)	0.0701*** (0.0068)	0.0513*** (0.0016)	0.0578*** (0.0045)
Workers (ln)	0.0325*** (0.0010)	0.0063 (0.0063)	0.0195*** (0.0025)	0.0281*** (0.0023)
Constant	2.4905*** (0.0591)	2.8786*** (0.0682)	2.4563*** (0.0762)	2.6609*** (0.0528)
R2	0.95	0.96	0.95	0.96
N	16,790,573	6,216,679	6,539,510	16,588,980
Year FE	YES	YES	YES	YES
County FE	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES
Worker FE	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES
Worker&Firm FE	YES	YES	YES	YES

Note: Ordinary least-squares (OLS) regressions. The dependent variable is the monthly logged wage of the worker. It is constructed by adding three components: (a) base pay, or the gross amount of money paid in the reference month to employees on a regular monthly basis for their normal hours of work; (b) tenure-related payments; and (c) regular payments. Standard errors clustered by municipalities are in parentheses.

+p<0.1; *p<0.5; **p<0.0.1; ***p<0.001

Figure 1. Effect of the reform on the time needed to found a new venture

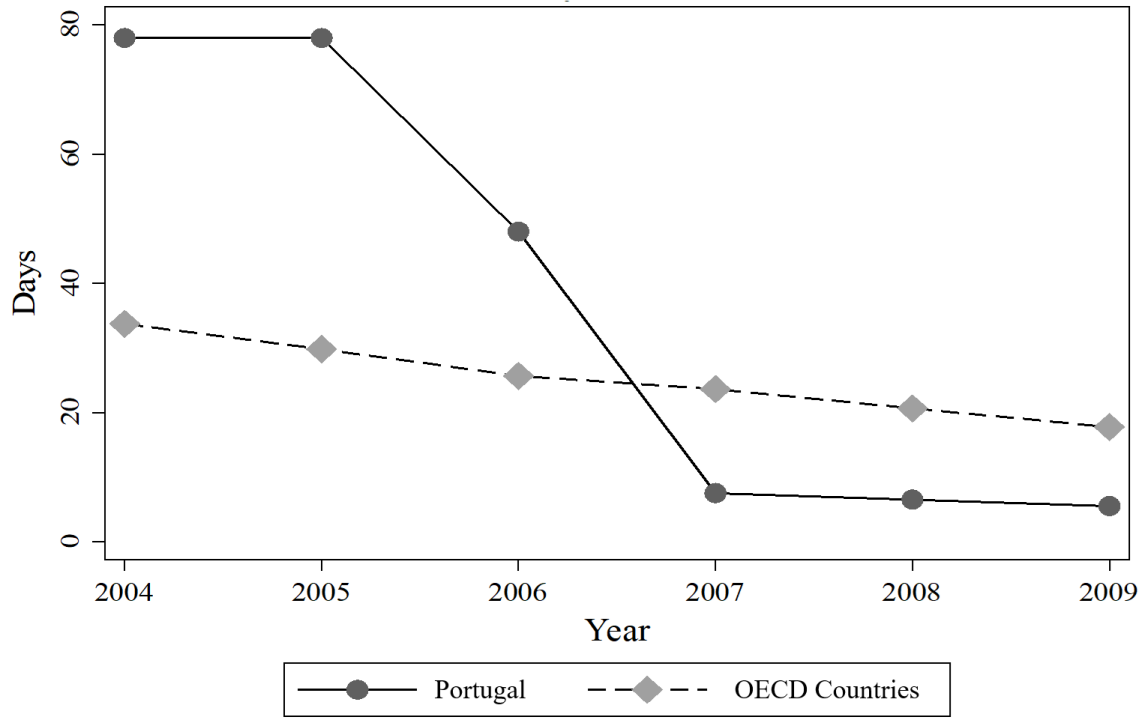
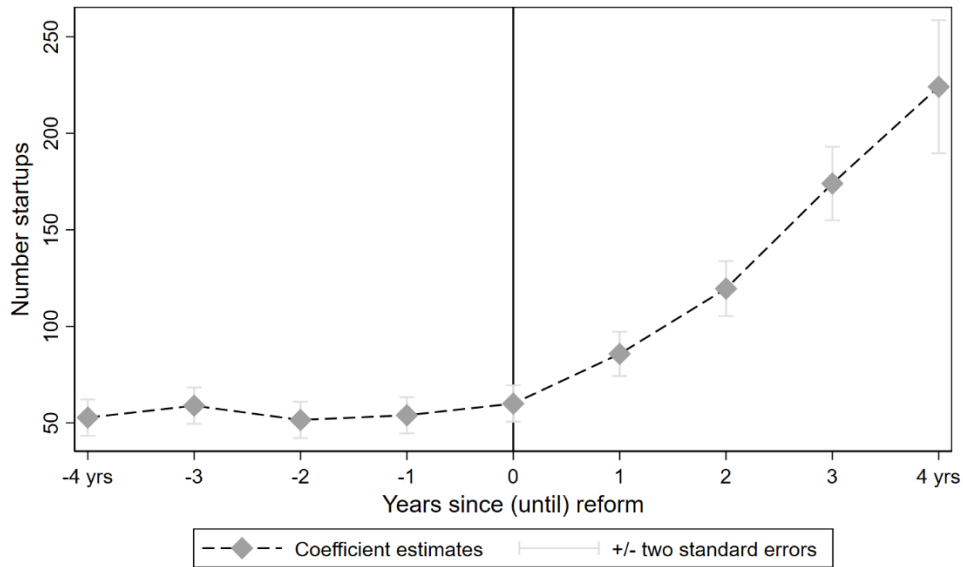
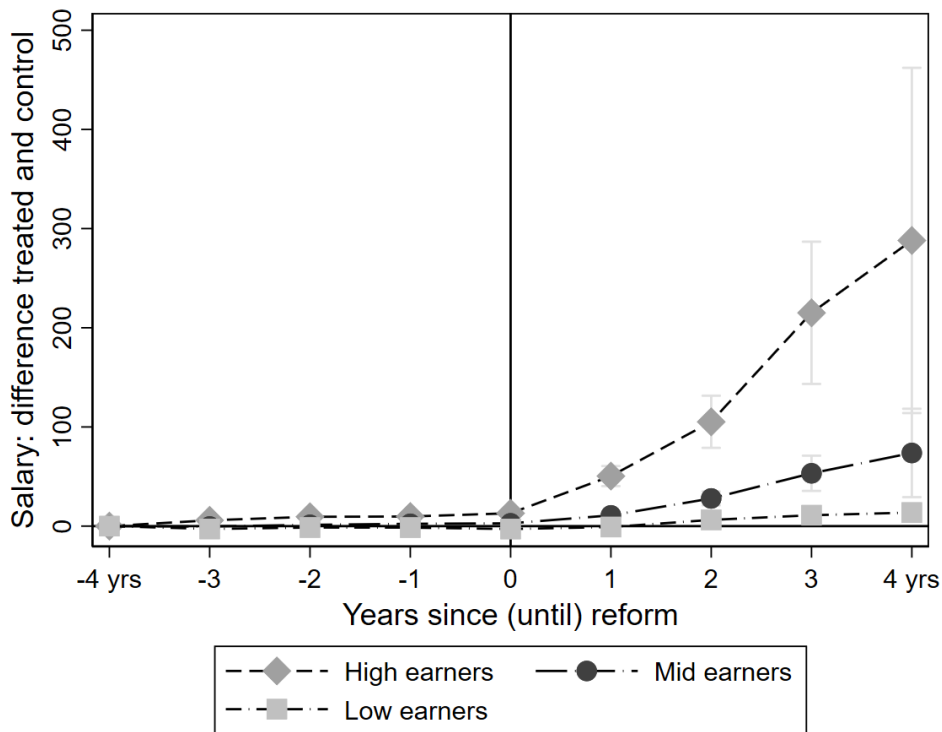


Figure 2. Effect on entry: treated vs. control municipalities



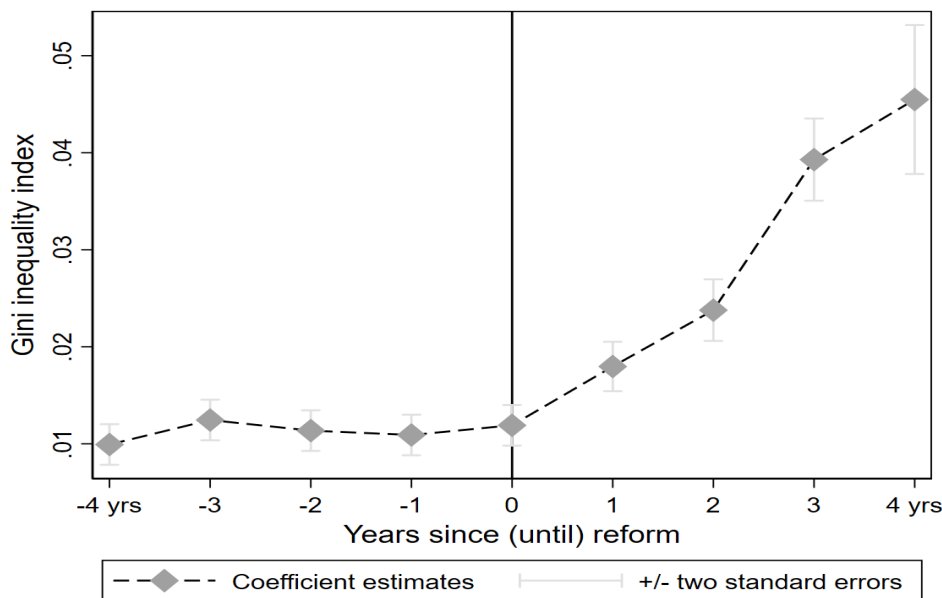
Note: The dependent variable is the number of new firms. The control group comprises never treated municipalities.

Figure 3. Effect on wage for low-wage, mid-wage, and high-wage employees: treated vs. control municipalities



Note: The dependent variable is wage. Each line represents the difference in the average wage between treated and never treated municipalities, for different wage groups of employees.

Figure 4. Effect on wage inequality (Gini index): treated vs. control municipalities



Note: The dependent variable is wage inequality (Gini index). The control group comprises never treated municipalities in the same year.