The Political Economy of Labor Policy

Diego Huerta *

August 16, 2024

[Latest version]

Abstract

This article explores the political origins of size-contingent labor regulation, which imposes stricter requirements on larger firms. The theory is based on the political conflict between workers and entrepreneurs that is shaped by endogenous occupational decisions. The equilibrium policy protects only workers in larger firms, regardless of the government's political orientation. Firms strategically adjust their labor demand in response to the size-contingent policy, causing welfare distortions. These distortions can be eliminated by balancing the bargaining power of workers and entrepreneurs. A dynamic extension to the model rationalizes the long-term stability of size-contingent labor regulation within countries.

Keywords: size-contingent labor regulation, occupational choice, political conflict.
JEL: L51, J8, J65, D72

*Department of Economics, University of Chile, Diagonal Paraguay 257, Santiago, Chile.
Email: dhuertad@fen.uchile.cl. Web: diegohuertad.com.
I am especially grateful to Georgy Egorov and Giorgio Primiceri for their invaluable guidance and support in this project. I also thank Nicola Persico, Lawrence Christiano, Matthias Doepke, Ronald Fischer, Harry Pei, Sandeep Baliga, Matthew Rognlie, Guido Lorenzoni, Asher Wolinsky, Eduardo Engel, Alejandro Micco, Amilcar Velez, Alan Liu, and Miguel Jorquera for very useful comments and discussions. In addition, I thank the participants of the Northwestern University Macro seminar for helpful comments and the Center for International Macroeconomics (CIM) from Northwestern University for providing financial assistance.

1 Introduction

Labor regulation encompasses a set of rules that govern the relationship between employers and employees. Every country has established a different group of regulations, such as severance payments, reinstatement possibilities, safety and health standards, and dismissal notification procedures. The primary motivation of labor regulation is similar in all countries: to shield workers from unfair treatment. Several policy institutions such as the OECD and the IMF advocate for a reduction of these rigidities as a cure for the high unemployment experienced by regions with highly regulated labor markets, such as Europe. Nevertheless, such reforms have been hard to implement due to considerable political opposition (Saint-Paul, 2002). Possibly as a way to address these challenges, many countries have implemented labor rules that apply differentially according to firm size (*size-contingent* labor regulation). However, such regulations are not innocuous: they create a wedge between firms' wages, employment stability, and growth possibilities (Schivardi and Torrini, 2008; Leonardi and Pica, 2013).

In most countries, size-contingent labor regulation typically imposes stricter regulations only on firms with the number of employees higher than a certain threshold (*tiered* labor regulation). For instance, in France, firms with more than 50 employees must follow a complex redundancy plan for collective dismissals, establish a health and safety committee, and incur higher liability for workplace accidents, among other duties. In Italy, firms with more than 15 employees must pay higher damage costs for unjustified dismissals and reinstate the dismissed employee.

In the last five decades, *tiered* labor regulations have been adopted by countries with very different institutional backgrounds and by governments with political positions ranging from left to right (see Section 2). This is remarkable because this regulation is not fully consistent with either ideology. Indeed, it leaves workers in smaller firms unprotected while imposing higher costs on larger firms. Furthermore, the welfare costs of labor regulation are estimated to be rather high (Garicano et al., 2016; Aghion et al., 2023). But if labor regulation is so costly, why does it exist, and why is *tiered* in many countries?

To address these questions, this article builds a political and economic theory that endogenizes and explains the emergence of *tiered* labor regulations. In my model, citizens are born differentiated by their wealth (assets) and choose to become workers or to start a firm and become entrepreneurs. Workers decide how much labor to supply in response to the equilibrium wage. Firms are heterogeneous, with their investment and labor constrained by endogenous credit limits that depend positively on their assets and negatively on the strength of regulation.[1]

[1]The model captures the empirical findings from the literature on labor and finance that labor regulation distorts firms' decisions by crowding out external finance (Simintzi et al., 2015; Serfling, 2016), discouraging investment (Bai et al., 2020), and reducing employment (Autor et al., 2006, 2007). In my model, these distortions are more pronounced in smaller firms, which face significantly tighter credit constraints.

Labor regulation comprises a tax on labor use, with both variable and fixed cost components.[2]

The design of labor regulation is a one-time decision made by a politically-oriented government (either more *pro-worker* or *pro-business*), which maximizes the "politically-weighted" welfare of workers and entrepreneurs. Initially, all firms are subject to light labor regulations. The government makes a binary decision for each firm: whether to maintain weak regulation or to strengthen it to a certain level.

In my baseline model, I make five important assumptions. First, labor regulation can be contingent on assets (*asset-based* regulation) and is enforceable. Second, real wages are fully flexible in response to regulation. Third, the design of labor policy is a one-time decision. Fourth, the government chooses only the variable component of regulation, rather than both costs simultaneously. Fifth, workers are initially randomly matched to firms. After a regulatory change, labor-mobility frictions, such as job search costs or previously signed contract terms, prevent workers from freely moving between firms.[3] I begin by studying the equilibrium policy under these assumptions, which simplifies the analysis and the intuition behind the emergence of size-contingent labor policy. Then, I develop several extensions to the baseline model where these assumptions are relaxed.

The main result is that the equilibrium labor regulation is *tiered* regardless of the political orientation of the government. Thus, there exists an equilibrium size threshold above which stricter regulation applies. Even when the government cares only about workers, it keeps those in smaller firms unprotected. Conversely, even when the government cares exclusively about entrepreneurs, it subjects larger firms to stricter regulation. More *pro-worker* governments choose a lower size threshold. These results align with the empirical evidence presented in Section 2.

To establish these results, I start by showing that a flat improvement in labor regulation is neutral, i.e. has no impact on the real economy. Strengthening labor laws in all firms increases the expected labor payment to workers due to higher protection, such as better dismissal compensation. In response to this increase, workers supply more labor, while entrepreneurs demand less labor, leading to a reduction of the equilibrium wage. In equilibrium, the decrease in wage counteracts the initial increase in labor payments. Thus, a homogeneous improvement in labor regulation has no impact on welfare. Can a size-contingent policy improve the political welfare? This article shows that the answer is yes. Moreover, it turns out that such a policy is *tiered* regardless of the political orientation of the government.

The intuition for this result comes from the impact of a *tiered* regulation on the labor market

[2]A similar cost structure to analyze the costs of labor regulation is used by both the empirical labor literature (Abowd and Kramarz, 2003; Kramarz and Michaud, 2010) and the quantitative macro literature (Garicano et al., 2016; Aghion et al., 2023).

[3]While this assumption simplifies the analysis, it is not crucial for the main result. An extension of the model shows that minimal mobility frictions are sufficient to sustain a *tiered* regulation in equilibrium.

and across different groups of workers and entrepreneurs. First, consider a *pro-business* government, that cares substantially more about entrepreneurs than workers. Establishing tighter regulation only on larger firms increases labor market competition, thus reducing the equilibrium wage. Smaller firms substantially benefit from lower wages, while larger firms can more easily absorb stricter regulation due to their easier access to credit. Thus, a *pro-business* government views a *tiered* labor regulation as a way to cross-subsidize small firms at a relatively low cost for larger firms. The political motivation for a *pro-business* government to adopt a *tiered* regulation can be summarized as follows: *"regulate large businesses to foster small businesses growth"*.

Second, consider a *pro-worker* government. In principle, it would like to provide protection to all workers. However, stricter regulation in smaller firms reduces their already limited access to credit, which discourages investment and hiring. Thus, despite that labor protection increases expected labor payments, it significantly decreases employment in the small-scale sector. As a result, the welfare of the group of workers in smaller firms decreases when labor regulation strengthens. Therefore, even though a *pro-worker* government aims to protect all workers, it chooses to implement softer labor regulations in smaller firms. The core principle of a *pro-worker* government is summarized as *"do not regulate small businesses to protect their workers"*.

In the last part of the paper, I study several extensions where I relax the key assumptions of the baseline model and show that the main result that the equilibrium labor policy is *tiered* is generally robust. More importantly, the study of these extensions informs other policy-related questions, such as how to mitigate the welfare distortions induced by *tiered* labor regulations and why these regulations have remained stable in many countries. I discuss below the three most important extensions.

First, I consider a more realistic environment where labor policy can be contingent on labor (*labor-based* regulation). I show that the government's problem is equivalent to choosing an asset threshold to maximize the *labor-based* welfare. Thus, the properties of the equilibrium policy can be understood through the lens of the baseline model, where size is defined by assets. As a result, the equilibrium regulation remains *tiered* regardless of the government's political orientation. In response to a *tiered* regulation, a group of firms hires labor just below the regulatory threshold to legally avoid stricter regulation, causing welfare distortions.[4] Strategic behavior implies that the *labor-based* welfare is lower than the *asset-based* welfare. Can the government use an alternative mechanism to achieve the maximum *asset-based* welfare (i.e. that survives strategic behavior)?

The second extension addresses this question. I study the equilibrium regulation when the strength of labor regulation to be exercised in each firm is determined through independent ne-

[4]As evidence of such strategic behavior, Gourio and Roys (2014) and Garicano et al. (2016) show that the firm size distribution is distorted in France, where the regulatory threshold is 50. Few firms have exactly 50 employees, while a large number of firms have 49 employees.

gotiations between groups of workers (unions) and entrepreneurs. Under certain conditions, the government can attain the maximum *asset-based* welfare by setting a uniform level of unions' bargaining power. This result is possible because the equilibrium regulation remains *tiered*. Even when workers in smaller firms could demand better conditions, they agree to remain unprotected. They anticipate that their firms would struggle to accommodate stricter regulation, negatively impacting their welfare. As a result, the government chooses the unions' bargaining power to control the outcome of negotiations in larger firms.

The main takeaway of the second extension is that the government can eliminate the distortions caused by strategic behavior by allowing unions to exist while properly choosing their bargaining power relative to entrepreneurs. Thus, the existing regulations designed to limit unions' power, such as the Right-to-Work Laws in the US or the Strikes Act 2023 in the UK, can be effective ways to achieve a similar outcome to the most preferred size-contingent labor regulation while bypassing its unintended welfare distortions.

A final question is why size-contingent labor regulation has remained stable over time in many countries (see the empirical evidence in Section 2). To address this concern, I develop a dynamic extension to the model. The main feature is that labor regulation affects the future distribution of wealth, which in turn determines the future design of regulations. Thus, the dynamics of size-contingent labor regulation result from the interaction between policies and the wealth distribution over time. I analyze the endogenous evolution of labor regulation in an economy with an initial wealth distribution that follows a power law and where occupational choice is initially limited by credit constraints.

The main finding from the dynamic extension is that the equilibrium regulatory threshold increases over time and reaches a steady state level in the long-run, regardless of the political orientation of the government. The intuition is that a *tiered* labor regulation creates a cross-subsidy from large to small firms, which reduces the future share of small to large firms, thereby decreasing the support for a highly protective regulation. Overall, a *tiered* regulation reinforces the future support for the same type of regulation through the changes it induces in the wealth distribution. A steady-state *tiered* regulation is reached once occupational choice is no longer limited by credit constraints. This result sheds light on the long-term stability of this type of policy within countries.

This paper adds to a vast literature on the political economy of labor policy. Saint-Paul (2000) provides a review of the early work on this topic (see also Saint-Paul, 2002; Botero et al., 2004). One strand of this literature rationalizes the existence of two-tier systems, where groups of workers *within* a firm coexist under flexible and rigid regulations. These papers build on efficiency wage models along the lines of Shapiro and Stiglitz (1984) (e.g. Saint-Paul, 1996; Boeri et al., 2012). Much less work has been done to understand size-contingent labor regulation, which creates a wedge *between* groups of workers and firms. Boeri and Jimeno (2005) took a first step in this direction by showing that if monitoring effectiveness is decreasing in firm size, then stricter regulation is only accepted in large units. To the best of my knowledge, this paper is the first to develop a theory of endogenous policy choice that rationalizes the emergence of *tiered* labor regulation across countries.

The macro literature studying size-contingent policies has relied on different extended versions of Lucas (1978) model to estimate the welfare costs of such regulations (Guner et al., 2008; Restuccia and Rogerson, 2008; Gourio and Roys, 2014; Garicano et al., 2016; Aghion et al., 2023). All these papers take size-contingent regulations as exogenously given. I add to this literature by studying the origins of size-contingent labor regulation. The distinctive feature of my model is that the extent to which a firm adapts to labor regulation depends on its access to credit, which is endogenously given by its assets. This interaction between labor regulation and financial frictions is not present in the aforementioned models and is key for the emergence of a *tiered* regulation in equilibrium.

This article also relates to an important literature studying the joint determination of financial and labor regulations (e.g. Pagano and Volpin, 2005; Perotti and Von Thadden, 2006; Fischer and Huerta, 2021). In particular, Pagano and Volpin (2005) show that the proportionality of the electoral system is positively correlated with employment protection. I contribute to this literature by showing, in an extended version of the model, that the equilibrium policy remains *tiered* under both proportional and majoritarian representation, with more protective regulations arising under proportional systems. Therefore, the emergence of a size-contingent labor regulation is not restricted by the type of electoral system, as observed in the data.

To sum up, this article contributes to the understanding of the determinants of labor policy in at least four ways. First, it provides a rationale for the emergence of *tiered* labor regulations that are widespread across countries. Second, it shows that the welfare distortions induced by *tiered* regulations can be eliminated by allowing unions to exist while limiting their bargaining power. Third, it shows that the dynamic interaction between the wealth distribution and labor regulation over time justifies the long-term stability of size-contingent labor policy. Finally, different extensions to the baseline model suggest that more protective size-contingent regulations should arise in countries with leftist governments, flexible wages, proportional electoral systems, and tighter labor-mobility frictions.

The paper is organized as follows. Section 2 presents motivating evidence. Section 3 introduces the baseline model. Section 4 describes the individual preferences for labor regulation. Section 5 studies the political equilibrium. Section 6 presents the extensions. Section 7 concludes.

2 Motivating Evidence

2.1 Institutional background

Labor regulation encompasses a set of rules that govern the relationship between employers and employees. These regulations cover several aspects of employment such as Employment Protection Legislation (EPL), safety and health standards (e.g. health insurance requirement), employee representation (e.g. right to unionization), regulation of working time (e.g. holiday entitlements), among others. EPL is among the most studied type of regulation. It encompasses regulations concerning hiring and dismissal of workers such as procedural requirements, notice period, severance pay, and reinstatement possibilities for unfair dismissals.

In several countries, labor regulation makes special provisions for firms hiring more employees than a certain threshold (*size-contingent* labor regulation). Throughout the paper, I also refer to this specific design of regulation as a *tiered labor regulation*, to emphasize that it imposes a "discrete jump" in the stringency of labor regulation above a certain threshold.[5] Section C in the Appendix provides a survey of the countries that have implemented *tiered* labor regulations since 1950. A well-studied example is France, where firms with more than 50 employees must form a committee on health and safety conditions, follow a complex plan in case of dismissing more than 9 employees, and incur higher liability in case of a workplace accident, among other requirements. Another example is Italy, where firms with more than 15 employees must pay higher dismissal costs and reinstate the dismissed employee in case of unjustified dismissal.

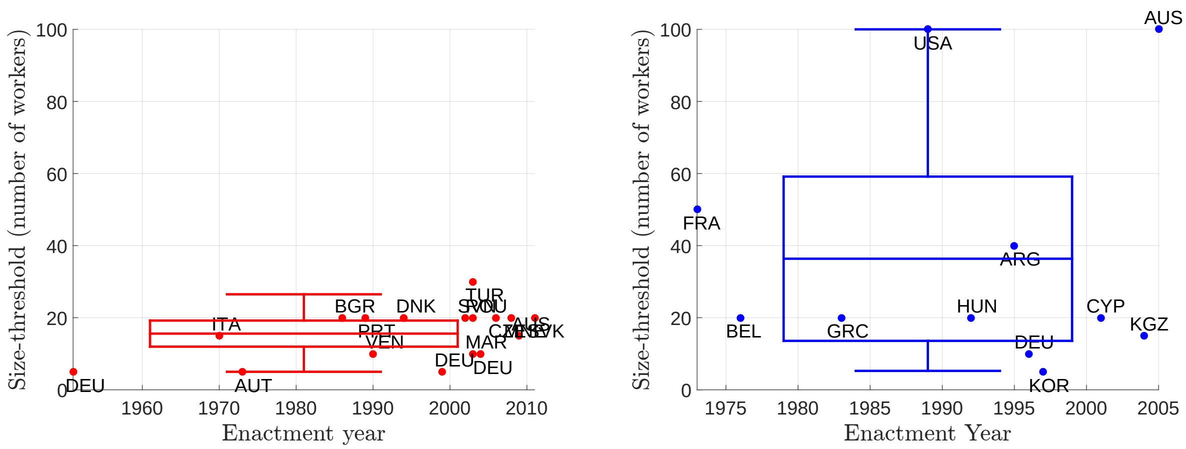
2.2 Size-contingent labor regulation across the world

Figure 1 serves as motivation for this paper. The figure plots the firm size threshold (number of workers) at which different types of labor regulations become stricter across various countries.[6] The x-axis shows the year in which the size threshold was defined or changed in a given country. The y-axis represents the size threshold above which regulation becomes stricter. Panel a) corresponds to instances in which the size threshold was enacted by a left-wing government (in red), while Panel b) shows the years in which the regulation was issued by a right-wing government

[5]In my model, in principle, the equilibrium policy may have any shape (e.g. U-shaped, downward tiered, upward tiered, etc). Thus, the term "size-contingent" is not precise enough to distinguish between the different possible types of size-dependent policies. The term *tiered* regulation has been used in several other papers studying this type of regulation (see for instance Brock and Evans, 1985; Brock et al., 1986; Trebbi and Zhang, 2022)

[6]Source: data collected from different sources, including countries' Labor Codes, the International Labor Organization (ILO), and studies regarding labor regulations reforms in different countries. Left and right-wing governments are defined based on the political orientation of the executive as measured by the World Bank Database of Political Institutions (WDPI), and defined in Beck et al. (2001). Appendix C provides more details on data construction.

(in blue).[7] The box plots represent the 95% confidence interval around the mean. The top and bottom horizontal lines are the 95th and 5th percentiles, respectively.



(a) Size threshold, left-wing.

(b) Size threshold, right-wing.

Figure 1: Size-contingent labor regulation across the world

The figure provides four insights regarding labor regulations. First, many countries have implemented a size-contingent labor regulation, where stricter labor rules apply to firms exceeding a certain employee threshold. This size threshold varies significantly across countries.

Second, once the size threshold is defined, it remains fixed over time in most of the countries, with some exceptions such as Germany and Australia.

Third, size-contingent labor regulations have been implemented by either left or right-wing executives, across several regions, and by countries with very different institutional and political backgrounds. Table 1 below shows how the adoption of size-contingent labor regulation is distributed across regions and over time. It also presents the number of observations by the political orientation of the executive in the enactment year and by countries' legal origins.

Finally, the average size threshold is lower when enacted by a leftist government compared to when enacted by a right-wing government.[8] While not fundamental to motivate the paper, this last claim requires further justification. In Table 3 in Appendix C, I present the results from regressing the regulatory size threshold on five important determinants of labor regulations suggested in the literature: a dummie for left-wing political orientation of the executive (Esping-Andersen, 1990), countries' legal origin (Botero et al., 2004) , degree of proportionality of the electoral system (Pagano and Volpin, 2005), ethnic fractionalization (Alesina and La Ferrara, 2005),

[7] There are only two instances in which a size-contingent labor regulation was adopted by a centrist government: Italy in 1960 and Finland in 2007.

[8] The average size threshold for left-wing governments is lower than the average threshold for right-wing ones with a 95% level of confidence.

and a democracy index (Greenhill et al., 2009). The coefficient on the dummie for a left-wing executive is negative and statistically significant even after controlling for other determinants of labor regulation and after removing the outliers in Figure 1b. Thus, leftist governments are associated with a lower size-threshold above which labor regulation becomes more protective.

These facts raise the questions: If left-wing governments supposedly care about workers, why do they keep those in smaller firms unprotected? Conversely, if right-wing governments want to protect businesses, why do they impose stricter regulation on larger firms? This paper provides a political economy explanation to these questions.

The facts depicted in Figure 1 also serve as a guidance for the model. Firstly, because the size thresholds remain relatively fixed over time, I study a one-time labor reform. Secondly, governments have the option to implement firm-specific labor regulations, potentially leading in equilibrium to a size-contingent policy. Lastly, the governments' political orientation, either more leftist (*pro-worker*) or right-wing (*pro-business*), influences their choice regarding labor policy. Further details about the modeling assumptions are discussed in Section 3.1.

Table 1: Adoption of size-contingent labor regulation across the world

Years	N obs.	Region	N countries	Pol. orientation	N obs.	Legal origins	N countries
1950-1980	6	North America	1	Left	17	French	9
1981-1990	5	South America	2	Center	2	English	3
1991-2000	7	Oceania	1	Right	11	German	3
2001-2011	13	Northern Europe	2			Socialist	8
		Southern Europe	6			Scandinavian	2
		Western Europe	4				
		Eastern Europe	5				
		East Asia	1				
		Western Asia	1				
		Central Asia	1				
		North Africa	1				

3 The Model

This section outlines the baseline model, which is based on Fischer and Huerta (2021). Citizens are heterogeneous in wealth (assets). The probability density function $g(a)$ of wealth a is given by $g : [0, a_M] \to \mathbb{R}$. Agents decide between becoming workers or entrepreneurs. An entrepreneur who invests k units of capital and hires l units of labor produces $f(k,l) = k^\alpha l^\beta$ units of output, with $\alpha+\beta < 1$. Agents are price-takers in the labor and capital markets. The wage rate w is determined to perfectly clear the labor market (*fully flexible* wage). The price of capital is exogenously given by ρ. The price of the single good is normalized to one.

3.1 Modeling labor regulation

Labor regulation comprises a tax on labor use with a variable component τ and a fixed cost component F. Both costs may be size-contingent and depend on a firm's assets (*asset-based* policy). The labor regulation function is denoted by $\mathcal{P}(a) = (\tau(a), F(a))$. Specifically, an entrepreneur with assets a that hires l units of labor must pay $\tau(a)wl + F(a)$ to her workers.

The macro literature on the welfare costs of size-contingent labor regulation relies on a similar labor cost structure (e.g Gourio and Roys, 2014; Garicano et al., 2016; Aghion et al., 2023).[9] A key dimension of my model is to endogenize the design of regulation, which is typically exogenous in this literature.

In my baseline model, the design of the variable component of labor regulation (τ) is a one-time decision made by a politically-oriented government that can enact and enforce the selected policy. Thus, I rule out strategic behavior of entrepreneurs, such as adjusting or underreporting firm size to avoid regulation. In addition, workers are initially randomly matched to firms. After a regulatory change, labor-mobility frictions, such as job search costs, previously signed contract terms, or geographic barriers, prevent them from freely moving between firms.

3.1.1 Connection to real-world labor regulations

There are three important aspects of labor regulation captured in my modeling approach. First, labor regulation often involves a direct transfer from the employer to her employees. For instance, severance payments are direct monetary transfers upon termination, while notice of termination is an informational transfer with economic value (Pissarides, 2001).[10]

[9] See also Guner et al. (2008); Restuccia and Rogerson (2008); Braguinsky et al. (2011)

[10] The fact that labor regulation entails employer-to-employee transfers seems to be a distinctive feature compared to general redistribution or subsidies to SMEs. To illustrate this, in Section 6.5, I extend the model to examine size-contingent regulations on capital use, such as special tax treatments or credit subsidies. I find that the emergence of a *tiered* regulation on capital use is constrained by factors that do not limit the emergence of a *tiered* labor regulation.

Second, labor regulation imposes both variable and fixed costs on labor use. For example, severance payments are often based on a worker's salary wl, which motivates the variable cost τ. Other regulations, such as procedural requirements upon termination or safety standards, induce fixed costs on labor use (F). A similar cost structure to analyze the costs of labor regulation is used by both the labor literature (Abowd and Kramarz, 2003; Kramarz and Michaud, 2010) and the quantitative macro literature (Garicano et al., 2016; Aghion et al., 2023).

Finally, labor regulation is contingent on firm size in several countries, as shown by the empirical evidence presented in Section 2.

3.2 Summary of key assumptions and extensions

To sum up, I make five important assumptions: 1) the labor policy is *asset-based* and enforceable, 2) real wages are fully flexible, 3) the design of labor policy is a one-time decision, 4) the government chooses only the variable component of labor regulation (τ) but not τ and F simultaneously, and 5) workers are initially randomly matched to firms, with labor-mobility frictions preventing them from freely moving between firms after a regulatory change. In Section 5, I characterize the equilibrium policy under these assumptions, which help to simplify the exposition and to understand the main intuition behind the emergence of a *tiered* labor policy.

In Section 6, I discuss several extensions to the baseline model where I relax the key assumptions. The main result of the paper, that the equilibrium labor regulation is *tiered*, is generally robust across these extensions. In studying these extensions, I address other important policy-related questions, such as how to mitigate the welfare distortions induced by *tiered* labor regulations and why these regulations have remained stable in many countries over time. Additional details and proofs of each extension are in the Appendix D.

The most important extensions are: i) Labor-based policy, $\mathcal{P}(l) = (\tau(l), F(l))$, ii) Inflexibility in real wages, iii) Independent bargaining between workers and entrepreneurs, iv) Dynamic extension of the model, v) Microfoundation for the government's problem: proportional representation, vi) Alternative political mechanism: Majoritarian representation, vii) Model that incorporates a variable degree of labor mobility, viii) Regulations on capital use, ix) Two-dimensional labor policy (i.e. τ and F are chosen simultaneously), and x) Model that distinguishes between individual and collective dismissal regulations.

3.3 Timeline

Consider a three periods one-good open economy. Figure 2 illustrates the timeline. In what follows, I describe the events of each period.

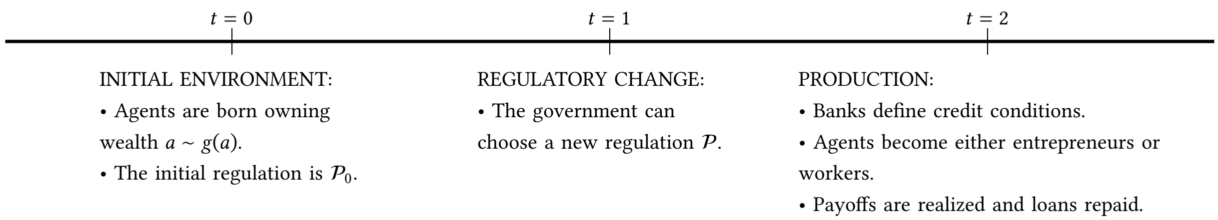


Figure 2: Timeline.

3.3.1 t=0

At $t = 0$, a continuum of risk neutral agents are born differentiated by wealth a. The initial strength of labor regulation is homogeneous across firms and given by $\mathcal{P}_0(a) = (\tau_0, F_0)$.

3.3.2 t=1

At $t = 1$, a government can decide to increase the strength of labor regulation. In particular, it can choose to increase the variable labor cost to $\tau_1 > \tau_0$ and the fixed cost to $F_1 > F_0$. The government makes a binary decision for each firm: whether to keep the initially "weak" labor regulation or to apply stricter regulation. The resulting labor policy is denoted by $\mathcal{P} \equiv (\tau, F)$, with $\tau : [0, a_M] \to \{\tau_0, \tau_1\}$ and $F : [0, a_M] \to \{F_0, F_1\}$.[11]

3.3.3 t=2

At $t = 2$, the economy operates in accordance with the chosen policy $\mathcal{P}$. The single period is divided into three stages as illustrated by Figure 3. Below, I detail the events at each sub-period.

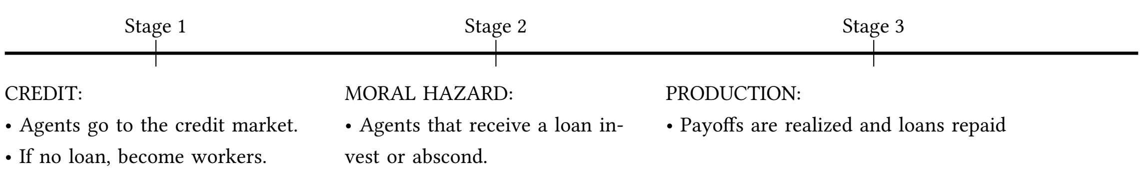


Figure 3: Timing at $t = 2$.

[11] In Section 5, I analyze the equilibrium policy when the government chooses only the variable component of labor regulation, τ. The two-dimensional case is covered in Section D.9 in the Appendix.

3.3.3.1 Stage 1: Credit

There is a competitive banking system that provides credit to potential entrepreneurs and has unlimited access to international funds at the interest rate ρ. Due to credit market imperfections, banks constrain access to credit. As detailed in Section 3.5, banks set a minimum wealth required to obtain a loan, $\underline{a} > 0$, and establish debt limits contingent on assets, $d(a)$. Excluded agents may become workers ($a < \underline{a}$), the rest can become entrepreneurs ($a \geq \underline{a}$). These credit conditions depend on labor regulations.

3.3.3.2 Stage 2: Moral hazard

Banks provide credit to entrepreneurs while facing a moral hazard problem: investment decisions are non contractible and banks are imperfectly protected against malicious default. Borrowers ($a \geq \underline{a}$) have two options. First, they can invest their capital in a firm and become entrepreneurs. Second, they may commit *ex-ante* fraud and abscond with the loan to finance private consumption. In this case, only a fraction $1-\phi$ of the loan is recovered by the legal system, where $1-\phi$ represents the loan recovery rate or the strength of creditor protection.[12]

Agents excluded from the credit market ($a < \underline{a}$) may become workers at $t = 2$ and supply l_s units of labor. They face a disutility cost of labor given by $\varsigma(l_s) = l_s^\gamma$ with $\gamma > 2$.

3.3.3.3 Stage 3: Production

Entrepreneurs produce $f(k,l)$, repay their loan, and transfer $\tau wl + F$ to their workers.

3.4 Payoffs

3.4.1 Entrepreneurs

The utility of an entrepreneur with wealth a, who borrows d, hires l units of labor, and operates a firm with labor regulations (τ, F) is:

$$U^e(a,d,l|\tau,F) = f(k,l) - \tau wl - F - (1+\rho)d. \tag{3.1}$$

Note that agents' utilities also depend on the economy-wide labor regulation $\mathcal{P}$ as it determines the equilibrium wage. I omit the dependence on $\mathcal{P}$ to simplify notation.

[12] Fischer et al. (2019) build a model with a similar financial structure (see also Balmaceda and Fischer, 2009), but where collateral laws are represented by a more general functional form. The results of the model remain unchanged under that more general approach.

3.4.2 Individual workers

The labor utility of a worker that supplies l_s units of labor to a firm with a labor regulation (τ, F) is given by:

$$u^w(l_s|\tau, F) = \tau w l_s + F - \varsigma(l_s). \tag{3.2}$$

The worker also obtains $(1 + \rho)a$ from depositing her wealth in the banking system. Thus, the total worker's utility is $u^w + (1 + \rho)a$.

Given a labor regulation $\mathcal{P}$, the endogenous probability of a worker to be matched to a firm with regulations (τ, F) is denoted by $p(\tau, F)$. Thus, the expected labor utility of an individual worker is:

$$\mathbb{E}u^w = \sum_{(i,j)\in\{0,1\}\times\{0,1\}} p(\tau_i, F_j)\, u^w(l_s|\tau_i, F_j). \tag{3.3}$$

In Section E in the Appendix, I provide an explicit expression for the matching probabilities.

3.4.3 Group of workers

Finally, define the total utility of workers in a firm that hires l units of labor and operates under labor regulations (τ, F):

$$U^w(l|\tau, F) = n \cdot u^w(l_s|\tau, F) \equiv \frac{l}{l_s} \cdot [\tau w l_s + F - \varsigma(l_s)] = \tau w l + \frac{l}{l_s} \cdot (F - \varsigma(l_s)), \tag{3.4}$$

where $n \equiv l/l_s$ is a measure of the "number" of workers hired by the firm. The government's problem presented in Section 3.7 can be written either in terms of $\mathbb{E}u^w$ or as the integral of U^w over the wealth distribution. I opt for the latter, as the government's regulatory choices can be interpreted in terms of the effects on different groups of workers and entrepreneurs. This approach provides a more intuitive interpretation of the results. Section A.3 in the Appendix shows how to derive the expression for U^w.

3.5 Ex-ante competitive equilibrium

This section describes the competitive equilibrium that arises if the economy operates under the initial homogeneous regulation, $\mathcal{P}_0 = \{\tau_0, F_0\}$. Citizens define their political preferences for labor regulation based on this *ex-ante* competitive equilibrium. Given $\mathcal{P}_0$ and $g(a)$, agents understand their societal position under $\mathcal{P}_0$ and how changes in labor regulations would affect them relative to this initial position. Section 3.6 provides more details about agents' belief formation.

3.5.1 Individual optimization

3.5.1.1 Workers' decisions To find the individual labor supply, $l_s^0 \equiv l_s(\mathcal{P}_0)$, each worker maximizes (3.2) to obtain:

$$\varsigma'(l_s^0) = \tau_0 w. \tag{3.5}$$

3.5.1.2 Entrepreneurs' decisions Given the labor policy, $\mathcal{P}_0 = (\tau_0, F_0)$, the entrepreneur's decision problem is:

$$\max_{d,l} U^e(a, d, l|\tau_0, F_0)$$

$$s.t. \;\; U^e(a, d, l|\tau_0, F_0) \geq u^w(l_s^0|\tau_0, F_0) + (1 + \rho)a, \tag{3.6}$$

$$U^e(a, d, l|\tau_0, F_0) \geq \phi k, \tag{3.7}$$

where (3.6) and (3.7) are the occupational and incentive compatibility constraints, respectively. Condition (3.6) asks that the agent prefers to form a firm instead of becoming a worker and (3.7) states that the entrepreneur does not have incentives to abscond with the loan. Solving the unconstrained problem leads to the optimal firm size. The optimal capital, k_0^*, and labor, l_0^*, are given by:

$$f_k(k_0^*, l_0^*) = 1 + \rho, \tag{3.8}$$

$$f_l(k_0^*, l_0^*) = \tau_0 w. \tag{3.9}$$

Note that only sufficiently rich entrepreneurs can operate at the efficient scale (k_0^*, l_0^*) because loans are limited by financial constraints. Section A.1 in the Appendix describes the debt contract. The non-absconding condition (3.7) defines two critical wealth thresholds. First, a minimum level of wealth required to obtain a loan, $\underline{a}_0$. Second, a minimum wealth, $\overline{a}_0$, to obtain a loan to operate efficiently. Thus, agents with $[\underline{a}_0, \overline{a}_0)$ can obtain a loan to start a firm but must operate at an inefficient scale, i.e. they invest $k < k_0^*$. As shown by equations (A.6) and (A.7) in the Appendix, the optimal decisions of entrepreneurs can be written in terms of wealth, i.e. $d = d(a)$, $l = l(a)$, and $k(a) = a + d(a)$. Hence, entrepreneurs' and workers' utilities can be simply denoted as $U^e(a)$ and $U^w(a)$.

The occupational constraint (3.6) defines a third critical wealth level, $\hat{a}_0$, from which agents prefer to establish a firm instead of becoming workers. Section A.2 in the Appendix briefly describes the different arrangements that could arise in the model as a function of $\underline{a}_0$ and $\hat{a}_0$. For simplicity, I consider the case in which $\underline{a}_0 > \hat{a}_0$. Thus, agents excluded from the credit market prefer to become workers instead of forming a firm. The features of the model remain qualitatively unchanged in the remaining cases.

3.5.2 Ex-ante competitive equilibrium: Definition and outcome

Definition 1 *Given the labor regulation $\mathcal{P}_0$, a competitive equilibrium is such that: i) agents with wealth $a < \underline{a}_0$ become workers and supply l_s^0 units of labor, ii) agents with $a \geq \underline{a}_0$ become entrepreneurs and invest $k(a) = a + d(a)$ in a firm, and iii) the equilibrium wage w is given by:*

$$l_s^0 \cdot G(\underline{a}_0) = \int_{\underline{a}_0}^{\overline{a}_0} l(a)\ g(a)\partial a + l_0^*(1 - G(\overline{a}_0)), \tag{3.10}$$

where the left-hand side is total labor supply and the right-hand side is labor demand.

In sum, the model sorts agents into four groups: i) workers ($a < \underline{a}_0$), ii) entrepreneurs operating inefficient firms ($a \in [\underline{a}_0, \overline{a}_0)$), iii) entrepreneurs obtaining credit to operate efficiently ($a \in [\overline{a}_0, k_0^*)$), and iv) entrepreneurs that self-finance an efficient firm ($a \geq k_0^*$). Figure 4 summarizes these features.

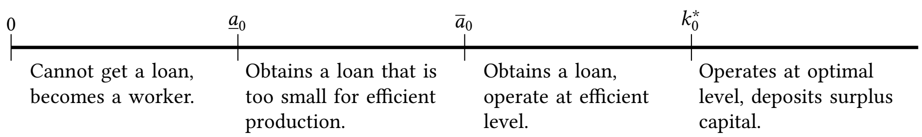


Figure 4: *Ex-ante* competitive equilibrium.

3.6 Belief formation

At $t = 0$, agents can rationally predict the equilibrium if the economy were to operate under the initial labor regulation $\mathcal{P}_0$ (the *ex-ante* competitive equilibrium in Figure 4).

At $t = 1$, citizens define their political preferences for labor regulation based on the *ex-ante* competitive equilibrium. Given the initial regulation $\mathcal{P}_0$ and wealth distribution $g(a)$, they can predict how the equilibrium wage w, credit conditions $d(a)$, hiring decisions $l(a)$, individual labor supply l_s, and the probability $p(\tau, F)$ of being matched to a firm with regulation (τ, F) would change at $t = 2$ under any new policy design $\mathcal{P}$.

To simplify exposition, I assume that agents do not consider the effects of a policy change on the minimum collateral, $\underline{a}_0$. Thus, there is a set of agents around $\underline{a}_0$ who do not anticipate the change in their occupations. Otherwise, agents would have to keep track of the behavior of four thresholds at $t = 2$: $\underline{a}(\tau_i, F_j)$, evaluated at $(i, j) \in \{0, 1\} \times \{0, 1\}$. In Section E.2 in the Appendix, I characterize the competitive equilibrium when agents account for all these thresholds and under an arbitrary labor regulation $\mathcal{P}$. In Section D.4, when I study the dynamics of size-contingent labor regulation, I allow agents to fully anticipate these effects.

3.7 The problem of the government

The design of the *asset-based* labor regulation $\mathcal{P}$ is chosen by a politically-oriented government that can enact and enforce the selected policy. I begin by presenting the government's problem and then explain its microfoundations through a political process.

At $t = 1$, the government makes a binary decision for each firm with assets a: whether to maintain weak labor regulations or to strengthen them. Specifically, it can increase τ_0 to $\tau_1 > \tau_0$ and F_0 to $F_1 > F_0$. Thus, it chooses a labor policy $\mathcal{P} = (\tau, F)$ with $\tau : [0, a_M] \to \{\tau_0, \tau_1\}$ and $F : [0, a_M] \to \{F_0, F_1\}$. The relative importance of workers over entrepreneurs in the government's decision-making process is measured by the *political weight* $\lambda \in [0, 1]$, which captures the government's political orientation. A higher λ represents a more leftist or *pro-worker* government, while a lower λ indicates a more right-wing or *pro-business* government.

The *political objective function* corresponds to the ex-post weighted welfare, denoted by $\bar{U}(\mathcal{P}, \lambda)$. The equilibrium policy maximizes $\bar{U}(\mathcal{P}, \lambda)$ given $\mathcal{P}_0$ and subject to the labor market equilibrium condition:[13]

$$\begin{aligned} &\max_{\mathcal{P}=\{\mathcal{P}(a)\}_0^{a_M}} \{\bar{U}(\mathcal{P}, \lambda) \equiv \lambda \cdot \mathbb{E}_g[U^w|\mathcal{P}] + (1-\lambda) \cdot \mathbb{E}_g[U^e|\mathcal{P}]\} \\ &s.t. \quad \mathbb{E}_g[l_s|\mathcal{P}] = \mathbb{E}_g[l|\mathcal{P}], \end{aligned} \tag{3.11}$$

where the constraint is the analogous to (3.10), but allowing the labor policy to depend on firm size. $\mathbb{E}_g[\cdot|\mathcal{P}]$ represents the integral of a variable over the wealth distribution $g(a)$.[14]

In Section D.5 in the Appendix, I provide an explicit microfoundation for this problem. I show that it can be rationalized as a probabilistic voting model à la Persson and Tabellini (2000). The political weight λ depends on the primitives of the model and on the endogenous mass of workers, $G(\underline{a}_0)$. The electoral competition takes place between two parties that simultaneously announce their electoral platforms to maximize their probability of winning the election.

Note that as it stands, solving problem (3.11) poses important challenges. First, there is no restriction on the shape of the policy that maximizes $\bar{U}$. In principle, one would need to examine all possible solutions that satisfy the labor market equilibrium condition. Second, the functional form of $\bar{U}$ depends on the shape of labor regulation. Last, the equilibrium condition must clear the labor supplied and demanded by all subsets of agents subject to a given regulation's regime.

To solve the problem, in Section 4, I start by studying the agents' political preferences for an improvement in labor regulation. Next, in Section 5, I show that these endogenous preferences give rise to a *tiered* labor regulation in equilibrium.

[13] The dependence on $\mathcal{P}_0$ comes from the fact that the government is deciding whether to increase labor regulations from (τ_0, F_0) to $(\tau, F) \in \{(\tau_0, F_0), (\tau_1, F_0), (\tau_0, F_1), (\tau_1, F_1)\}$. In addition, individuals form their political preferences for labor regulation based on the *ex-ante* equilibrium, which depends on $\mathcal{P}_0$ (Section 3.5).

[14] The political objective function is equivalent to $\bar{U}(\mathcal{P}) \equiv \lambda \cdot \mathbb{E}u^w(\mathcal{P}) \cdot G(\underline{a}_0) + (1-\lambda) \cdot \mathbb{E}_g[U^e|\mathcal{P}]$. The government's problem can be solved using either $\mathbb{E}u^w(\mathcal{P})$ or $\mathbb{E}_g[U^w|\mathcal{P}]$.

4 Political Preferences for Labor Regulation

This section describes the political preferences for labor regulation among different groups of entrepreneurs and workers. I focus on the variable component of labor regulation, τ. The results can be easily expanded to F.[15]

Given the initial policy $\mathcal{P}_0$, I analyze the *ex-post* effect of a marginal increase of τ on entrepreneurs' (U^e) and workers' utility (U^w). I consider the effects from an individual perspective: the impact on a particular agent's utility if τ marginally increases in her firm. However, when labor regulation strengthens in a non-negligible mass of firms, general equilibrium effects arise due to changes in the equilibrium wage. This section does not address this second-order effect.[16] I leave that discussion for Section 5, where I explore in detail the political preferences when agents consider how the equilibrium wage responds to the specific shape of labor regulations.

The following assumption on the cost of capital $(1 + \rho)$ is a sufficient condition for Propositions 1 and 2 to hold:[17]

Assumption 1 $1 + \rho > \frac{\alpha\phi}{\beta(1-\alpha-\beta)}$.

4.1 Preferences of entrepreneurs

The next proposition describes the effects of a marginal increase of τ on entrepreneurs' utilities.

Proposition 1 *Consider the initial labor regulation, $\mathcal{P}_0(a) = (\tau_0, F_0)$, then:*

1. *All entrepreneurs are worse off after a marginal increase of τ.*

2. *This negative effect is strictly decreasing if $a \in [\underline{a}_0, \overline{a}_0)$ and remains constant after $a \geq \overline{a}_0$.*

Proposition 1 shows that increasing the strength of labor regulation negatively affects all entrepreneurs. More stringent labor regulation increases firms' operating costs, reducing their access to credit. Consequently, most firms must shrink, decreasing their investment and hiring.

For smaller firms, the negative effect of labor regulation is more pronounced due to their substantially reduced access to credit, i.e. $d(a)$ goes down. This leads to significantly lower investment and hiring in the small-scale sector. Conversely, the credit capacity of better-capitalized

[15] An important difference between τ and F is that τ has a greater impact on the intensive margin of agents' decisions (e.g. how much labor to hire and supply), while F has a larger effect on the extensive margin (e.g. occupational choice).

[16] However, the proofs of the main propositions of this section (Propositions 1 and 2) are more general. I consider the possibility of an indirect effect through wages ($\frac{\partial w}{\partial \tau}$), which occur if a non-negligible mass of firms experience an increase in τ. Both propositions hold as long as τ does not improve in all firms. In that case, the net effect on the effective wage ($w\tau$) is zero and so labor regulation is neutral (see Lemma 1 in Section 5.2).

[17] This assumption is in general not very restrictive, as it is not binding for a large set of 'reasonable' parameters. For instance, for $\phi = 20\%, \alpha = 0.3, \beta = 0.6\%$ it asks that $\rho > -90\%$.

firms is less affected. Many of them have unused debt capacity that they use to adapt to labor regulation. As a result, larger firms can more easily absorb higher labor costs and continue operating relatively close to the optimal operation scale.

To sum up, all entrepreneurial groups oppose a marginal increase of τ. The strongest opposition comes from entrepreneurs running the smallest firms, while large entrepreneurs are less reluctant to improvements of τ.

4.2 Preferences of workers

The following proposition characterizes the change in the utility of the different groups of workers due to a marginal improvement of τ.

Proposition 2 *Consider the initial labor regulation, $\mathcal{P}_0(a) = (\tau_0, F_0)$, and suppose a marginal increase of τ. Then, there is a cutoff $\tilde{a}_0 \in (\underline{a}_0, \overline{a}_0)$ given by:*

$$\frac{\partial U^w(\tilde{a}_0|\mathcal{P}_0)}{\partial \tau} = 0, \tag{4.1}$$

such that:

1. *Workers' welfare in firms with $a \in [\underline{a}_0, \tilde{a}_0)$ decreases.*
2. *Workers' welfare in firms with $a > \tilde{a}_0$ increases.*
3. *This marginal effect is strictly increasing in $a \in [\underline{a}_0, \overline{a}_0)$ and remains constant after $a \geq \overline{a}_0$.*

Proposition 2 suggests the existence of interest groups of workers with diverging political preferences for labor regulation. Strengthening labor regulation, which supposedly benefits workers, has an ambiguous effect on their welfare. Two opposing effects determine the net impact of increased τ: i) a higher *effective wage* (τw), but ii) stricter credit constraints which force some firms to shrink and hire less labor.

After an improvement of τ, the welfare of the group of workers in smaller firms ($a \in [\underline{a}_0, \tilde{a}_0)$) declines. Stricter labor regulation in smaller firms reduces their already limited access to credit, which discourages investment and hiring. Thus, despite that labor regulation increases the effective wage, it significantly decreases employment in smaller firms, thereby reducing the welfare of their workers. On the other hand, an improvement in labor regulation increases the welfare of workers in larger firms ($a > \tilde{a}_0$). While some of these enterprises face tighter credit constraints and hire less labor, this is compensated by increased payments to workers due to higher labor protection, leading to a net increase in their welfare.

4.3 Summary of the political preferences for labor regulation

Figure 5 illustrates Propositions 1 and 2. It shows the marginal impact of increased τ on U^e (blue dashed line) and U^w (red solid line) as a function of firm assets, a.

The main prediction of this section is that although the purpose of labor regulation is to protect workers, it has unintended welfare consequences. It reduces the welfare of workers in smaller firms while primarily benefiting those in larger firms. Moreover, it significantly hurts smaller firms, while larger firms can more easily accommodate stricter labor regulations. In a companion paper (Huerta, 2024), I provide empirical support for these results by using firm-level panel data and exploiting the state-level adoption of Wrongful Discharge Laws (WDLs) in the US.

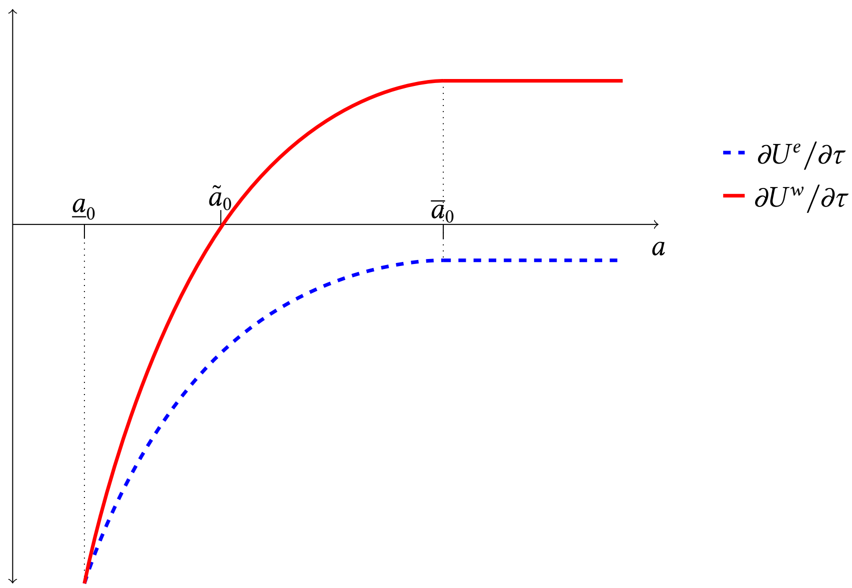


Figure 5: Effects of an increase of τ on entrepreneurs' and workers' utility.

Table 2 summarizes the political preferences of workers and entrepreneurs across different business sectors.[18] Workers in small firms are aligned with their entrepreneurs in opposing to stricter labor regulations. In contrast, workers in larger firms are in favor of stronger labor regulations but opposed to their employers' interests.

	Worker	Entrepreneur
Small scale sector; $a \in [\underline{a}_0, \tilde{a}_0)$	< 0	$<< 0$
Large scale sector; $a > \tilde{a}_0$	> 0	< 0

Table 2: Political preferences for an increase of τ.

[18] '< 0' indicates opposition to labor regulation, while '> 0' denotes support for labor regulation. '$<< 0$' stands for strong opposition.

5 Political Equilibrium

This section characterizes the political equilibrium under an *asset-based* policy. It is divided into four parts. In Section 5.1, I show that the solution to problem (3.11) is monotone at both components, τ and F. This does not rule out flat labor regulations. In Section 5.2, I examine how the equilibrium wage changes with regulation. In Section 5.3, I investigate the political preferences of different groups of agents when they consider the general equilibrium effects of regulation. Finally, in Section 5.4, I characterize the equilibrium labor regulation and find that it is *tiered*, regardless of the weights the government assigns to workers and entrepreneurs.

5.1 A first step: Monotonicity of the equilibrium regulation

Proposition 3 exploits the properties of individual preferences studied in Section 4 to show that any equilibrium policy must satisfy monotonicity at each component. As a result, there are two asset thresholds, $a^{\tau} \in [\underline{a}_0, a_M]$ and $a^F \in [\underline{a}_0, a_M]$, above which labor regulation becomes stricter. This result allows me to write $\bar{U}$ more explicitly and makes the government's problem tractable. However, it does not rule out flat regulations, so the equilibrium policy is not necessarily *tiered.*

Proposition 3 *Any labor regulation that solves* (3.11), $\mathcal{P} = (\tau, F)$, *satisfies monotonicity at each component:*

$$x(a) : x(a') \leq x(a'') \quad \forall a' < a'', x \in \{\tau, F\}.$$

Moreover, there are size thresholds, $a^{\tau} \in [\underline{a}_0, a_M]$ and $a^F \in [\underline{a}_0, a_M]$, such that:

$$x(a) = \begin{cases} x_0 \; if \, a < a^x, \\ x_1 \; if \, a \geq a^x. \end{cases} \tag{5.1}$$

To simplify the exposition, in the rest of the paper, I focus on the case where the government chooses only the variable dimension of labor regulation, τ. In Section D.9 in the Appendix, I study the two-dimensional case, where the government chooses the design of τ and F simultaneously. In that extension, I show that the equilibrium regulation is *tiered* in both dimensions, with two size thresholds above which each type of regulation becomes stricter. This is consistent with the labor rules that apply, for instance, in Austria and France (see Section C.1 in the Appendix).

Using the result of Proposition 3, the government's problem can be rewritten in terms of the size threshold, a^τ, as follows:

$$\max_{a^\tau \in [\underline{a}_0, a_M]} \Bigg\{ \bar{U}(a^\tau, \lambda) \equiv \lambda \left(\int_{\underline{a}_0}^{a^\tau} U^w(a|\tau_0) g(a) \partial a + \int_{a^\tau}^{a_M} U^w(a|\tau_1) g(a) \partial a \right) + (1-\lambda) \left(\int_{\underline{a}_0}^{a^\tau} U^e(a|\tau_0) g(a) \partial a + \int_{a^\tau}^{a_M} U^e(a|\tau_1) g(a) \partial a \right) \Bigg\}$$

$$s.t. \quad m^0 \cdot l_s(\tau_0) = \int_{\underline{a}_0}^{a^\tau} l(a|\tau_0) g(a) \partial a, \tag{5.2}$$

$$m^1 \cdot l_s(\tau_1) = \int_{a^\tau}^{a_M} l(a|\tau_1) g(a) \partial a, \tag{5.3}$$

$$m^0 + m^1 = G(\underline{a}_0), \tag{5.4}$$

where $\bar{U}(a^\tau, \lambda)$ is the politically-weighted welfare given the size threshold a^τ and the government's political orientation λ. Throughout the paper, I refer to $\bar{U}(a^\tau, \lambda)$ as the *asset-based welfare*. Also, m^0 and m^1 are the endogenous masses of workers that supply $l_s(\tau_0)$ and $l_s(\tau_1)$ units of labor, respectively. The three restrictions of the problem correspond to the labor market equilibrium conditions. The first two equations equalize labor supplied and demanded under the two different regulatory regimes, τ_0 and τ_1. The last condition imposes that the sum of workers under τ_0 and τ_1 must be equal to the total mass of workers, $G(\underline{a}_0)$. Conditions (5.2) to (5.4) form a system of three equations and three unknowns: m^0, m^1 and w. The equilibrium wage w is uniquely defined by these conditions.

5.2 The size threshold and the equilibrium wage

The next lemma shows that a less protective labor policy, i.e. a larger size threshold a^τ, leads to a higher equilibrium wage. In particular, a flat regulation is neutral. I explain these results below.

Lemma 1 *The equilibrium wage w is increasing in a^τ. In particular, if $a^\tau = \underline{a}_0$, the change in w is such that $\frac{\partial \bar{w}}{\partial a^\tau} = 0$.*

First, suppose that the government implements a flat labor reform, where labor regulation improves from τ_0 to τ_1 for all firms (i.e. $a^\tau = \underline{a}_0$). The direct effect of stricter labor regulation is that the effective wage ($\bar{w} \equiv \tau w$) is higher. Thus, individual workers supply more labor while firms face higher operating leverage, which crowds out external finance and reduces hiring. In consequence, less capital is invested and less labor is demanded. Higher labor supply and lower labor demand imply a lower equilibrium wage.

Lemma 1 establishes that the direct positive effect of a flat labor reform on the effective wage ($\bar{w}$) is exactly counteracted by the reduction in w. Thus, $\bar{w}$ does not change in equilibrium, making a flat regulation neutral. The intuition is that as long as the net effect on $\bar{w}$ remains positive, workers and firms adjust their labor decisions by pushing down w. This process continues until the net effect on $\bar{w}$ is zero. Therefore, workers' and entrepreneurs' welfare remains unchanged relative to the initial case in which $\mathcal{P}_0 = (\tau_0, F_0)$.

Second, suppose that the government deviates from a flat reform ($a^\tau = \underline{a}_0$) and marginally increases the size threshold a^τ. Workers in firms with $a < a^\tau$ are subject to weaker labor regulation and thus, face a lower effective wage. As a result, these workers supply less labor. Additionally, entrepreneurs operating firms with $a < a^\tau$ face lower labor costs and demand more labor. Increased labor demand and reduced labor supply in firms under weaker labor regulation lead to a higher equilibrium wage relative to a flat reform. As the size threshold increases, the mass of firms facing weaker labor regulation rises, which leads to a larger w. Eventually, when $a^\tau \to a_M$, the equilibrium wage converges to the wage before any regulatory change, $w(\mathcal{P}_0)$.

In conclusion, increasing the size threshold raises the equilibrium wage. In particular, passing a flat labor reform ($a^\tau = \underline{a}_0$) will keep the outcome of the initial regulation ($a^\tau = a_M$) unchanged. Formally: $\bar{U}(a^\tau = \underline{a}_0, \lambda) = \bar{U}(a^\tau = a_M, \lambda)$ for any λ. The question that must be asked is: Can the government improve welfare ($\bar{U}$) by implementing a *tiered* labor policy (i.e. $a^\tau \in (\underline{a}_0, \overline{a}_0)$)?

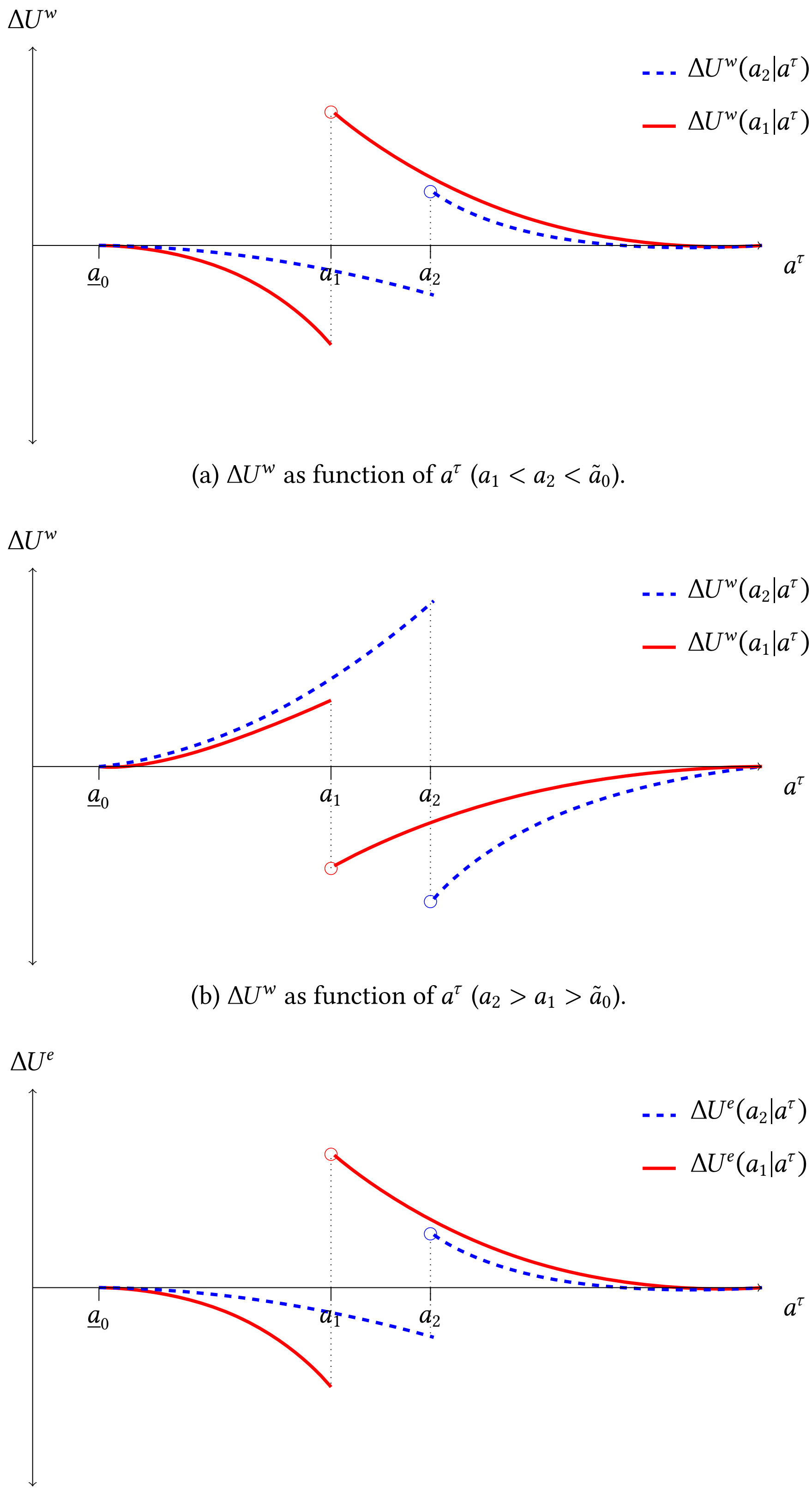
To answer this question, I start by describing the individual political preferences for the asset threshold a^τ. Then, in Proposition 4, I characterize the equilibrium labor policy that aggregates these interests.

5.3 Political preferences for the size threshold

This section characterizes the preferences for the size threshold a^τ across the different groups of workers and entrepreneurs. Figure 6 depicts the changes in utilities of the different groups as a function of the size threshold, a^τ. The changes are relative to the initial regulation, $\mathcal{P}_0$.

Preferences of workers in small firms Figure 6a depicts the change in U^w as a function of the size threshold for workers in small firms, with assets $a < \tilde{a}_0$. Section 4 shows that the utility of workers in smaller firms decreases when labor regulation strengthens. In fact, they benefit from lower wages because smaller firms can significantly increase their labor. The lower the wage, the greater the increase in utility for workers in smaller firms. Thus, when the size threshold is non-binding ($a < a^\tau$), the change in utility as a function of a^τ is positive and decreasing in a^τ (since $\frac{\partial w}{\partial a^\tau} > 0$). On the other hand, because workers in smaller firms suffer from higher labor protection, there is a discrete fall in utility when the size threshold becomes binding ($a = a^\tau$). As a^τ declines towards $\underline{a}_0$, the change in utility returns to zero.

Figure 6a also compares the utility gains of workers in small firms of different sizes, a_1 and a_2 (where $a_1 < a_2 < \tilde{a}_0$). The red solid line shows that workers in less capitalized firms (a_1) benefit



(a) ΔU^w as function of a^τ ($a_1 < a_2 < \tilde{a}_0$).

(b) ΔU^w as function of a^τ ($a_2 > a_1 > \tilde{a}_0$).

(c) ΔU^e as function of a^τ ($a_2 > a_1$).

Figure 6: Political preferences for the size threshold as a function of assets.

more from a non-binding size threshold ($a_1 < a^\tau$). Conversely, the blue dashed line shows that workers in more capitalized firms (a_2) suffer less from stricter labor regulation ($a_2 \geq a^\tau$).

Preferences of workers in large firms Figure 6b shows the change in utility of workers in large firms ($a > \tilde{a}_0$). The effects are reversed relative to Figure 6a. As discussed in Section 4, these workers benefit from a higher wage and stricter regulation. In this case, workers in larger firms (a_2) benefit more from increased protection (blue dashed line), while those in less capitalized firms (a_1) are less affected by not receiving that higher protection (red solid line).

Preferences of entrepreneurs Figure 6c presents the change in entrepreneurs' utilities as a function of a^τ. Entrepreneurs benefit from stricter labor regulation as long as they remain operating under weak regulations ($a < a^\tau$). The explanation is that a more protective regulation, i.e. a lower size threshold, decreases the equilibrium wage and reduces operational costs. However, when entrepreneurs are subject to stricter regulation ($a > a^\tau$), their utility decreases as they must pay a higher effective wage, $\bar{w}$. As shown in the figure, entrepreneurs operating less capitalized firms (a_1) benefit more from being excluded from stricter regulation (red solid line), while those running larger firms (a_2) suffer less from facing more stringent regulation (blue dashed line).

Summary of political preferences To sum up, there are conflicting interests regarding the scope of labor regulation. Workers in smaller firms ($a < \tilde{a}_0$) would prefer stricter regulation for everyone except themselves. Meanwhile, workers in larger firms ($a > \tilde{a}_0$) would prefer high protection for themselves but not for others. All firms would like strong labor regulation for their competition but to operate under weak regulation themselves. The questions that remain are: What is the best regulatory design that balances these political interests, and how does it depend on the political orientation of the government?

Intuitively, based on Figure 6, a left-wing government may want to implement a *tiered* labor regulation because it can benefit both workers in small ($a < \tilde{a}_0$) and large firms ($a > \tilde{a}_0$). However, in choosing the labor policy, the government must balance two opposing forces: decreasing the size threshold benefits workers in smaller firms but harms those in larger firms due to reduced wages. On the other hand, Figure 6c suggests that a right-wing government can benefit owners of smaller firms by imposing stricter regulations on larger firms. The next section formalizes these ideas by studying the equilibrium policy.

5.4 Equilibrium labor regulation

To simplify the exposition define:

$$\bar{U}^e(a^\tau) \equiv \int_{\underline{a}}^{a^\tau} U^e(a|\tau_0)g(a)\partial a + \int_{a^\tau}^{a_M} U^e(a|\tau_1)g(a)\partial a, \tag{5.5}$$

$$\bar{U}^w(a^\tau) \equiv \int_{\underline{a}}^{a^\tau} U^w(a|\tau_0)g(a)\partial a + \int_{a^\tau}^{a_M} U^w(a|\tau_1)g(a)\partial a, \tag{5.6}$$

where expression (5.5) is the aggregate entrepreneurs' welfare ($\lambda = 0$) and (5.6) corresponds to the aggregate workers' welfare ($\lambda = 1$). Thus, the *asset-based welfare* is written as:

$$\bar{U}(a^\tau, \lambda) = \lambda \cdot \bar{U}^w(a^\tau) + (1 - \lambda) \cdot \bar{U}^e(a^\tau). \tag{5.7}$$

The following proposition characterizes the political equilibrium.

Proposition 4

1. *$\bar{U}(a^\tau, \lambda)$ achieves a global maximum in $[\underline{a}_0, a_M]$ at some size threshold $a^\tau_{pe} \in (\underline{a}_0, a_M)$ characterized by:*

$$a^\tau_{pe} = \sup_{a^\tau} \bar{U}(a^\tau, \lambda). \tag{5.8}$$

Suppose that $g(\cdot)$ satisfies $g' < 0$, then:

2. *$\bar{U}^e(a^\tau, \lambda)$ and $\bar{U}^w(a^\tau, \lambda)$ are strictly concave in a^τ.*

3. *The equilibrium size threshold a^τ_{pe} is the unique solution to:*

$$\lambda \frac{\partial \bar{U}^w(a^\tau_{pe}, \lambda)}{\partial a^\tau} = -(1 - \lambda) \frac{\partial \bar{U}^e(a^\tau_{pe}, \lambda)}{\partial a^\tau}. \tag{5.9}$$

4. *The equilibrium size threshold a^τ_{pe} is decreasing in λ.*

Proposition 4 states the main result of the paper. The equilibrium labor regulation is *tiered* (i.e. $a^\tau_{pe} \in (\underline{a}_0, a_M)$) regardless of the political orientation of the government. Thus, even when the government cares only about entrepreneurs, it imposes stricter regulation on larger firms. Conversely, even when it cares only about workers, it keeps workers in smaller firms under weak protection. Moreover, the size threshold is decreasing in λ, thus more leftist governments establish a more protective labor regulation. These results are consistent with the stylized facts presented in Figure 1 in Section 2. Section E.1.4 in the Appendix describes the *ex-post* competitive equilibrium under a *tiered* labor regulation.

The result holds for any continuous wealth distribution g on $[0, a_M]$. Under the additional assumption that $g' < 0$, both $\bar{U}^e$ and $\bar{U}^w$ are strictly concave in the size threshold a^τ. Thus, $\bar{U} = \lambda \bar{U}^w + (1-\lambda)\bar{U}^e$ is concave for any $\lambda \in [0, 1]$. The equilibrium policy is uniquely determined by (5.9) for any λ. Figure 7 illustrates these features. The red solid line corresponds to $\bar{U}^w(a^\tau, \lambda = 1)$, where a^τ_{LW} is the left-wing equilibrium policy. The blue dashed line shows $\bar{U}^e(a^\tau, \lambda = 0)$, which reaches its maximum at some a^τ_{RW} (right-wing regulation). The dotted line corresponds to $\bar{U}(a^\tau, \lambda)$ for $\lambda \in (0, 1)$, which attains its maximum at some $a^\tau_C \in (a^\tau_{LW}, a^\tau_{RW})$.

The assumption that $g' < 0$ guarantees that the *asset-based welfare* is strictly concave. However, as stated in item 1, it is not essential to conclude that the equilibrium regulation is *tiered*. The exponential distribution, and more importantly, the Pareto distribution satisfy that $g' < 0$. There is an important body of literature suggesting that the wealth distribution, especially at the upper tail, is well approximated by a Pareto distribution (for a literature review, see Jones, 2015).

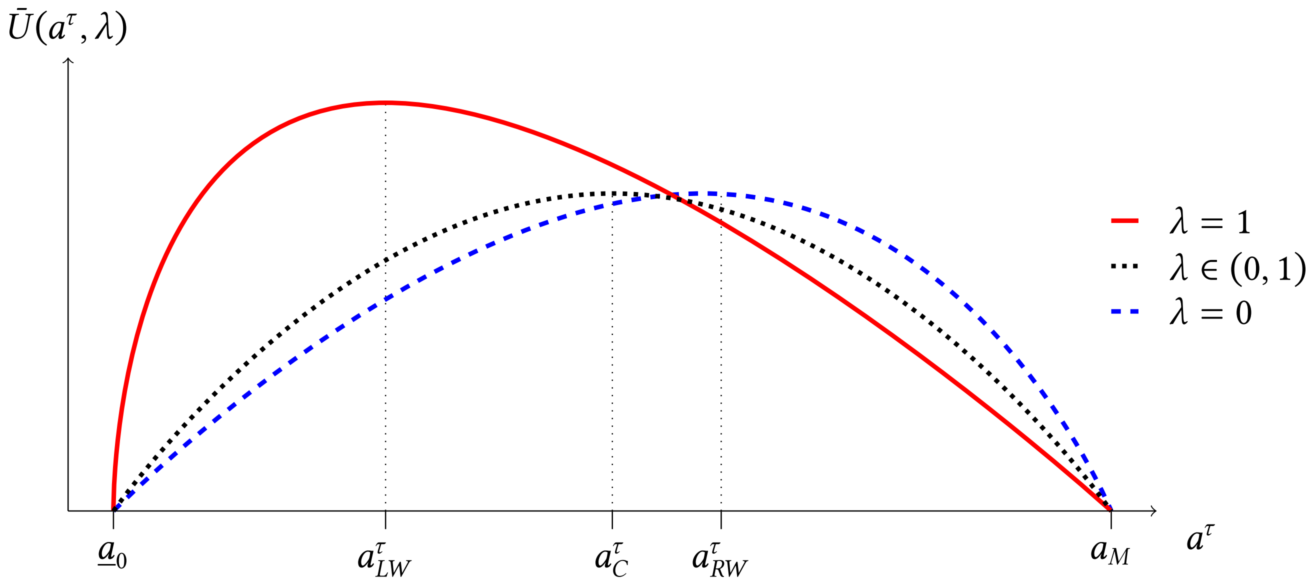


Figure 7: *Asset-based welfare* ($\bar{U}$) as a function of λ and a^τ when $g' < 0$.

The intuition for Proposition 4 is as follows. First, right-wing governments understand that stricter regulation in larger firms leads to a lower equilibrium wage due to increased competition in the labor market. The small-scale sector significantly benefits from lower labor costs due to increased access to credit and investment. Large firms have to pay higher labor costs, but can more easily adjust their operations due to their unconstrained access to credit. Thus, from a right-wing government's perspective, a *tiered* labor regulation is a way to cross-subsidize smaller firms at a relatively low cost for larger firms.

Second, left-wing governments understand that smaller firms cannot accommodate stricter regulations, which would negatively affect their workers. Thus, even when a left-wing government would like to give protection to all workers, it keeps those in smaller firms under weak protection as a means of safeguarding their welfare from the adverse effects that labor regulation would have on their firms' operations.

To sum up, the political motivation of a right-wing government to establish a *tiered* labor regulation can be stated as follows:

> "*regulate large businesses to foster small businesses growth*",

while the motto of a left-wing government is:

> "*do not regulate the small businesses to protect their workers*".

6 Extensions

This section presents several extensions to the baseline model. Overall, the main result that the equilibrium labor regulation is *tiered* is generally robust across extensions. More importantly, these extensions address other key policy-related questions, such as how to mitigate the welfare distortions caused by size-contingent labor regulation and why such regulation persists in many countries over time. Additional details and proofs of each extension are in the Appendix D.

In Section 6.1, I examine the equilibrium policy when firm size is determined by labor, as in the data. In Section 6.2, I study the equilibrium policy under inflexibility in real wages. In Section 6.3, I investigate the labor regulation that results from independent negotiations between workers and entrepreneurs. In Section 6.4, I provide a dynamic extension to the model. In Section 6.5, I briefly discuss three extensions: i) labor regulation under different electoral systems, ii) model with labor mobility, and iii) regulations on capital use.

Appendix D presents additional extensions that are not covered in this section. In Section D.9, I study a two-dimensional labor reform where the government chooses τ and F simultaneously. In Section D.10, I adapt the model to distinguish between individual and collective dismissal regulations. In Section D.11, I briefly analyze the distortions generated when agents can self-report their assets.

6.1 Labor-based policy

This section studies a more realistic environment where the government applies regulations contingent on labor. In response to a *labor-based* policy, a group of firms strategically hire their labor to legally avoid regulations, creating welfare distortions. The main takeaway is that the government accounts for these distortions and still adopts a *tiered* labor regulation, as observed in the data. However, these distortions reduce the effectiveness of such policies in generating "cross subsidies" through wages. As a result, the *labor-based welfare* is lower than the *asset-based welfare* obtained in Section 5, when there was no strategic behavior.

6.1.1 The problem of the government

Labor regulation $\mathcal{P} = (\tau, F)$ maps labor to a specific strength of labor regulation. Formally, $\tau(l)$: $[l_{min}, l_{max}] \to \{\tau_0, \tau_1\}$ and $F(l)$: $[l_{min}, l_{max}] \to \{F_0, F_1\}$. The optimal labor function is increasing in a and decreasing in τ and F. Thus, the domain of both functions is defined by $l_{min} = l(\underline{a}_0|x_1)$ and $l_{max} = l(\bar{a}_0|x_0)$, with $x \in \{\tau, F\}$. The government's problem is given by (3.11), and similar to an *asset-based policy*, the solution satisfies monotonicity in both components. Proposition 5 in Section D.1 in the Appendix shows this result. Therefore, there are two labor thresholds, l^τ and l^F, above which labor regulation becomes stricter:

$$x(l) = \begin{cases} x_0 & \text{if } l < l^x, \\ x_1 & \text{if } l \geq l^x, \end{cases} \tag{6.1}$$

To simplify the exposition, I focus on the design of the variable dimension of regulation, τ.

6.1.2 Strategic behavior

In response to a *labor-based* policy as in equation (6.1), firms hire their labor strategically. They can legally avoid stricter regulation by hiring an amount of labor just below l^τ. More specifically, there is an endogenous range of firms $[a_1, a_2]$ that hire slightly less labor than l^τ to operate under weak regulations. Formally, these two thresholds are defined as follows:

$$U^e(a_1, d(a_1), l^\tau|\tau_0) = U^e(a_1, d(a_1), l(a_1)|\tau_0), \tag{6.2}$$

$$U^e(a_2, d(a_2), l^\tau|\tau_0) = U^e(a_2, d(a_2), l(a_2)|\tau_1), \tag{6.3}$$

where the asset thresholds a_1 and a_2 are implicit functions of l^τ, and $l(\cdot)$ is the optimal labor demand function. Gourio and Roys (2014) and Garicano et al. (2016) provide evidence of such strategic behavior in France, where the regulatory threshold is 50. Few firms have exactly 50 employees, while a large number of firms have 49 employees.

Figure 8 illustrates the units of labor hired as a function of assets given a size threshold l^τ. There are three groups of firms. First, firms with $a \in [\underline{a}_0, a_1)$ are subject to weak labor regulation (τ_0) and hire labor optimally. Second, firms with $a \in [a_1, a_2]$ act strategically and hire slightly less than l^τ units of labor to operate under weak regulations. Thus, they hire less labor than what is optimal according to their operation scale.[19] Third, firms with $a > a_2$ operate under stricter labor regulation (τ_1) and hire labor optimally given their investment level.

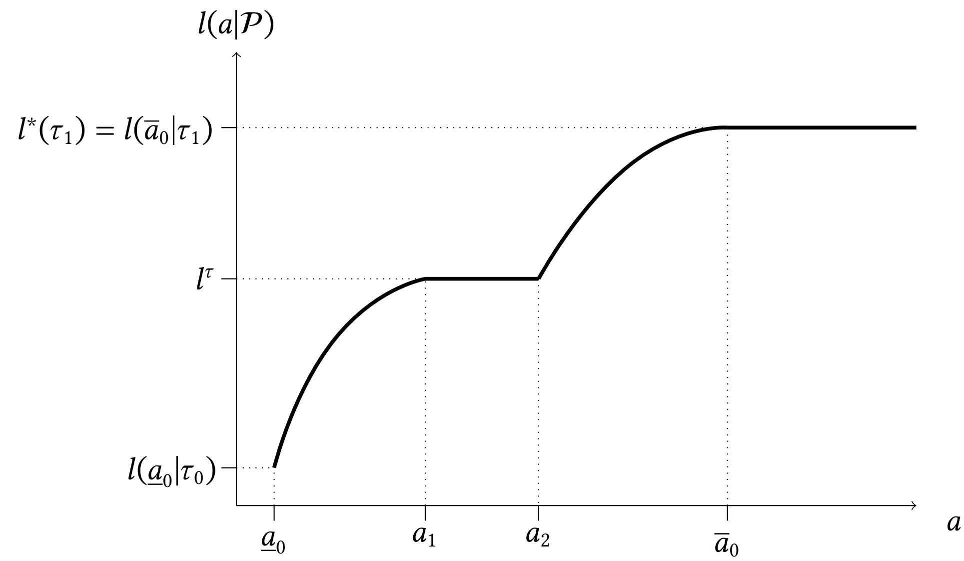


Figure 8: Labor decisions as a function of assets.

6.1.3 Political equilibrium under a labor-based policy

Equation (6.1) and conditions (6.2) and (6.3) allow me to write the government's problem more explicitly. Define the total entrepreneurs' and workers' welfare as follows:

$$\tilde{U}^e(l^\tau) = \int_{\underline{a}_0}^{a_1} U^e(a, l(a)|\tau_0)g(a)\partial a + \int_{\boldsymbol{a_1}}^{\boldsymbol{a_2}} \boldsymbol{U^e(a, l^\tau|\tau_0)g(a)\partial a} + \int_{a_2}^{a_M} U^e(a, l(a)|\tau_1)g(a)\partial a, \quad (6.4)$$

$$\tilde{U}^w(l^\tau) = \int_{\underline{a}_0}^{a_1} U^w(a, l(a)|\tau_0)g(a)\partial a + \int_{\boldsymbol{a_1}}^{\boldsymbol{a_2}} \boldsymbol{U^w(a, l^\tau|\tau_0)g(a)\partial a} + \int_{a_2}^{a_M} U^w(a, l(a)|\tau_1)g(a)\partial a, \quad (6.5)$$

where the bold terms capture the direct welfare distortions generated by strategic behavior. These distortions also create general equilibrium effects through wages, which impact the welfare of the

[19] Recall that given capital, $k(a|\tau) = a + d(a|\tau)$, the optimal amount of labor when the strength of labor regulation is τ ($l(a|\tau)$) is given by: $f_l(k(a|\tau), l(a|\tau)) = \tau w$. Firms that belong to $(a_1, a_2]$ hire less labor than what is optimal given their capital, thus $f_l(k, l^\tau) > \tau w$.

rest of the agents that do not act strategically. The problem of the government is:

$$\max_{l^\tau \in [l_{min}, l_{max}]} \left\{ \tilde{U}(l^\tau) = \lambda \tilde{U}^w(l^\tau) + (1-\lambda)\tilde{U}^e(l^\tau) \right\}$$

$$s.t. \quad m^0 \cdot l_s(\tau_0) = \int_{\underline{a}_0}^{a_1} l(a|\tau_0) g(a) \partial a + l^\tau \cdot [G(a_2) - G(a_1)], \tag{6.6}$$

$$m^1 \cdot l_s(\tau_1) = \int_{a_2}^{a_M} l(a|\tau_1) g(a) \partial a, \tag{6.7}$$

$$m^0 + m^1 = G(\underline{a}_0), \tag{6.8}$$

where equations (6.6) to (6.8) are the equilibrium labor market conditions. The government now chooses regulations while accounting for the welfare distortions caused by strategic behavior. In Section D.1 in the Appendix, I show how the government's problem can be reformulated to maximize the *labor-based welfare* by choosing a unique asset threshold. Once the problem is rewritten in terms of an asset threshold, the same insights described in Section 5 apply. Proposition 6 in the Appendix shows that the equilibrium policy remains *tiered* regardless of the government's political orientation. Thus, there is a size threshold l^τ above which firms face stricter regulation. This result is consistent with the empirical evidence in Section 2.

Overall, when labor regulation is based on labor, the government must consider the distortions from strategic behavior. Some firms hire labor just below l^τ, preventing the equilibrium wage from dropping significantly as regulation becomes more protective. This limits the government's ability to create "cross subsidies" through a *tiered* regulation. As a result, the *labor-based welfare* is lower than the *asset-based welfare* obtained in Section 5, where there was no strategic behavior. An important question is whether an alternative mechanism can withstand strategic behavior while achieving the maximum *asset-based welfare.* Section 6.3 proposes such a mechanism.

6.2 Inflexibility in real wages

An important property for the emergence of a *tiered* labor regulation in Section 5 is that real wages are flexible downward after regulation. However, in many countries, real rigidities prevent wages from falling below a certain level. For instance, in France, 90% of workers are covered by collective bargaining agreements and minimum wages are relatively high, limiting the responsiveness of real wages to labor regulation.

To address this concern, I extend the model to incorporate inflexible wages using the approach by Garicano et al. (2016). The degree of wage inflexibility is captured by $\iota \in [0, 1]$. The wage level is given by: $w_\iota = w + \iota(w_0 - w)$, where w is the equilibrium wage under perfect flexibility and w_0 is the wage rate under the initially flat policy, $\mathcal{P}_0 = (\tau_0, F_0)$. Section D.2 in the Appendix provides a detailed analysis for perfectly inflexible wages ($\iota = 1$), which represents the "least favorable scenario" for the emergence of a *tiered* regulation. Despite this, the equilibrium policy remains *tiered* for governments that are not strongly *pro-business*. The results also extend to partial inflexibility in real wages, i.e. $\iota \in (0,1)$.

The main result is stated in Proposition 7 in Appendix D: a "sufficiently" *pro-worker* government, $\lambda > 1/(2-\frac{1}{\gamma})$, implements a *tiered* labor regulation. In contrast, a "sufficiently" *pro-business* government, $\lambda \leq 1/2+\frac{1}{(\gamma-2)}$, maintains weak labor regulations across the board as regulation only harms entrepreneurs when wages are inflexible. Thus, even when the real wage is not responsive to labor regulation, there a is range of leftist and left-center governments that choose to provide protection only to workers in larger firms.

6.3 Independent bargaining

The main message of Section 6.1 is that the equilibrium regulation remains *tiered* when firm size is defined by labor. However, in response to a *labor-based* policy, some firms hire labor strategically to legally avoid stricter regulation, causing welfare distortions. As a result, the *labor-based welfare* is lower than the *asset-based welfare* obtained in Section 5, where strategic behavior was ruled out. Can governments use an alternative mechanism to achieve the maximum *asset-based welfare* (i.e. that survives strategic behavior)?

This section presents such an alternative mechanism: independent bargaining between workers (unions) and entrepreneurs. Under certain conditions, the government can eliminate the welfare distortions caused by a *tiered* regulation by properly allocating the bargaining power between unions and firms. Full details and discussion are provided in Section D.3 in the Appendix.

6.3.1 Bargaining terms

Each group of workers in a firm is organized as a union, whose purpose is to promote working conditions in line with workers' common interests. Unions bargain with firm owners (entrepreneurs) to define labor regulations before production takes place and to maximize their workers' welfare, U^w. The government can control the final outcome of negotiations by regulating unions' bargaining power μ, where μ can be simply understood as the frequency at which a firm's regulation is set at the union's optimal level. The policy instrument—unions' bargaining power—is a single-dimensional parameter that is uniform across firms. Thus, it survives strategic behavior because firms cannot adjust their size to face more favorable regulations.

Several real-world regulations limit unions' bargaining power. In the US, the Right-to-Work Law allows workers to opt out of joining unions and paying union fees. Australia's Fair Work Act 2009 requires a secret ballot and three days' notice before workers can take a bargaining strike. Recently, the UK's Strikes Act 2023 enables employers in sectors with specified minimum service levels to serve a work of notice on unions seven days before a strike begins.

6.3.2 Equilibrium labor regulation

The equilibrium labor regulation from independent negotiations is *tiered* at $\tilde{a}_0$, regardless of unions' bargaining power. Formally, it is given by τ_0 for $a < \tilde{a}_0$ and $\tau^* \in [\tau_0, \tau_1]$ for $a \geq \tilde{a}_0$ (see Lemma 4 in Appendix D), where τ^* is increasing in the bargaining power of unions μ.

This result is a consequence of the preferences presented in Table 2. Even when workers in smaller firms ($a < \tilde{a}_0$) could demand better conditions, they agree to remain under weak protection to avoid the negative impact that labor regulation has on their welfare. In equilibrium, is like unions never come to exist in smaller firms. In contrast, workers in large firms ($a \geq \tilde{a}_0$) benefit from stricter labor regulation, and thus, demand a higher τ. However, the level of protection they can achieve is limited by unions' bargaining power.

In response to the outcome arising from independent bargaining, the government chooses μ to control negotiations in larger firms ($a \geq \tilde{a}_0$). For the case of labor inflexibility, Proposition 8 in Appendix D shows that there is a range of λ's (political orientation) such that the government can choose μ to attain the maximum *asset-based welfare*. This result can be extended to flexible wages. Overall, allowing unions to exist and regulating their bargaining power can be an alternative mechanism to achieve the welfare of the most preferred size-contingent labor regulation.

6.4 The dynamics of size-contingent labor regulation

An important question that arises from the evidence in Section 2 is why size-contingent regulation has remained stable in most countries over time. To address this question, I develop a dynamic extension of the baseline model. The main feature is that labor regulation affects the future wealth distribution, which in turn determines the future design of regulations. Thus, the dynamics of size-contingent regulation are a result of the joint interaction between policies and the wealth distribution over time. This feature poses important technical challenges for theoretically characterizing transition dynamics. To tackle these difficulties and shed light on the dynamic properties of labor regulation, I make two key assumptions: i) the initial wealth distribution follows a power law, and ii) workers and entrepreneurs save a fixed fraction of their assets every period. A complete description and discussion of the model is presented in Section D.4.

I analyze the endogenous evolution of size-contingent labor regulation in an economy where occupational choice is initially limited by credit constraints. The main finding is that the equilibrium regulatory threshold increases over time and reaches a steady state level in the long-run, regardless of the government's political orientation. This result rationalizes the long-term stability of size-contingent labor policy within countries. I provide an intuition for this result below.

First, a *tiered* labor regulation introduces a cross-subsidy from larger to smaller firms. Moreover, it greatly benefits the small-scale sector while imposing a relatively low cost on larger firms. Thus, the future share of small to large firms decreases, increasing the entrepreneurial support for a less protective regulation, i.e. a higher regulatory threshold.

From the point of view of workers, those in smaller firms have a strong preference for a protective regulation, i.e. a low regulatory threshold. On the other hand, those in larger firms demand protection for themselves but not for workers in smaller firms (a higher regulatory threshold). Thus, as smaller firms growth over time, the overall workers' support for a highly protective labor regulation decreases. As a result, the implementation of a *tiered* labor regulation induces a decline in the support for a highly protective labor policy, which explains why the regulatory threshold increases over time. The regulatory threshold reaches a stationary level once occupational choice is no longer limited by credit constraints.

6.5 Additional Extensions

Electoral systems In Section D.5, I show that the government's problem presented in Section 3.7 can be microfounded as a probabilistic voting model with proportional representation. In Section D.6, I examine the equilibrium under a majoritarian electoral system. Consistently with the data, I find that the emergence of a *tiered* labor regulation is not restricted by the type of electoral system. However, more protective regulations (i.e. lower regulatory thresholds) are expected to arise under proportional electoral systems.

Labor mobility In Section D.7, I explore the effects of labor mobility on the equilibrium policy. Two results arise from this extension. First, minimal labor-mobility frictions are sufficient for the emergence of a *tiered* labor regulation in equilibrium. Second, the equilibrium regulation is more protective under tighter mobility frictions.

Regulations on capital use In Section D.8, I examine regulations on capital use that are also size-contingent across many countries. The emergence of a *tiered* regulation on capital use depends on at least three factors: the progressivity of government's transfer program, whether regulation restricts firm size or subsidizes credit, and the government's political orientation. Overall, it is not straightforward to reframe the entire analysis as general redistribution or as subsidies to SMEs. A distinctive feature of labor regulation for the emergence of a *tiered* regulation is that it involves direct employer-to-employee transfers. The removal of this feature significantly changes the theoretical analysis. A deeper study of other size-contingent regulations is left for future work.

7 Conclusions

This article explores the political origins of size-contingent labor regulation, which imposes stricter regulations on larger firms (regulation is *tiered*). In my model, wealth heterogeneity and occupational choice give rise to endogenous political preferences for labor regulation. A politically-oriented government designs labor regulation, potentially choosing a size-contingent policy to accommodate agents' heterogeneous preferences.

This paper contributes to our understanding of the determinants of labor policy in at least four ways. First, it shows that the equilibrium labor regulation that results from the political conflict between workers and entrepreneurs is *tiered*, regardless of the government's political orientation. This result rationalizes the emergence of such policies across countries with different political backgrounds. Extensions of the model indicate that more protective *tiered* labor regulations (i.e. lower regulatory thresholds) should arise in countries with leftist governments, flexible wages, proportional electoral systems, and tighter labor-mobility frictions.

Second, a *tiered* labor policy causes welfare distortions as some firms strategically hire their labor to avoid stricter regulation. This study shows that governments can eliminate such distortions by allowing unions to exist while limiting their bargaining power relative to entrepreneurs. Thus, policy measures that limit unions' power, such as the Right-to-Work-Laws in the US and the Strikes Act 2023 in the UK, can be effective ways to achieve a similar outcome to the most preferred *tiered* regulation while bypassing its unintended welfare distortions.

Third, a dynamic extension of the model predicts the emergence of a steady-state *tiered* labor regulation that results from the joint interaction between policies and the wealth distribution over time. This finding sheds light on the long-term stability of *tiered* labor regulations within countries.

Finally, the model delivers new testable predictions for the welfare effects of labor regulation across groups of workers and firms. Although labor regulation aims to protect workers, it has unintended regressive consequences. It reduces the welfare of workers in smaller firms while mainly benefiting those in larger firms. Moreover, labor regulation significantly hurts smaller firms, while larger firms can more easily accommodate stricter regulations. In a companion paper (Huerta, 2024), I provide empirical support for these predictions by using firm-level panel data and exploiting the state-level adoption of Wrongful Discharge Laws in the US.

Future research may extend the analysis to understand the origins and economic consequences of other types of size-contingent regulations that are widespread worldwide, such as special tax treatments, credit subsidies, and restrictions on business expansion. Exploring the evolution and stability of different regulations through models that account for the dynamic interaction between policies and inequality appears to be a fruitful direction for future inquiry.

References

Abowd, John M and Francis Kramarz, "The Costs of Hiring and Separations," *Labour Economics*, 2003, *10* (5), 499–530.

Adamopoulos, Tasso, Loren Brandt, Chaoran Chen, Diego Restuccia, and Xiaoyun Wei, "Land Security and Mobility Frictions," *The Quarterly Journal of Economics*, 2024, *139* (3), 1941–1987.

Addison, John T and McKinley L Blackburn, "The Worker Adjustment and Retraining Notification Act," *Journal of Economic Perspectives*, 1994, *8* (1), 181–190.

Aghion, Philippe, Antonin Bergeaud, and John Van Reenen, "The Impact of Regulation on Innovation," *American Economic Review*, 2023, *113* (11), 2894–2936.

Alesina, Alberto and Eliana La Ferrara, "Ethnic Diversity and Economic Performance," *Journal of Economic Literature*, 2005, *43* (3), 762–800.

_ , **Arnaud Devleeschauwer, William Easterly, Sergio Kurlat, and Romain Wacziarg**, "Fractionalization," *Journal of Economic Growth*, 2003, *8*, 155–194.

Autor, David H, John J Donohue III, and Stewart J Schwab, "The Costs of Wrongful-Discharge Laws," *The Review of Economics and Statistics*, 2006, *88* (2), 211–231.

_ , **William R Kerr, and Adriana D Kugler**, "Does Employment Protection Reduce Productivity? Evidence from US States," *The Economic Journal*, 2007, *117* (521), F189–F217.

Bachas, Pierre, Roberto N Fattal Jaef, and Anders Jensen, "Size-Dependent Tax Enforcement and Compliance: Global Evidence and Aggregate Implications," *Journal of Development Economics*, 2019, *140*, 203–222.

Bai, John, Douglas Fairhurst, and Matthew Serfling, "Employment Protection, Investment, and Firm Growth," *The Review of Financial Studies*, 2020, *33* (2), 644–688.

Balmaceda, Felipe and Ronald Fischer, "Economic Performance, Creditor Protection, and Labour Inflexibility," *Oxford Economic Papers*, 10 2009, *62* (3), 553–577.

Beck, Thorsten, George Clarke, Alberto Groff, Philip Keefer, and Patrick Walsh, "New Tools in Comparative Political Economy: The Database of Political Institutions," *The World Bank Economic Review*, 2001, *15* (1), 165–176.

Bellmann, Lutz, Hans-Dieter Gerner, and Christian Hohendanner, "Fixed-Term Contracts and Dismissal Protection: Evidence from a Policy Reform in Germany," Technical Report, Working Paper Series in Economics 2014.

Bertrand, Marianne and Francis Kramarz, "Does Entry Regulation Hinder Job Creation? Evidence from the French Retail Industry," *The Quarterly Journal of Economics*, 2002, *117* (4), 1369–1413.

Binmore, Ken, "Perfect Equilibria in Bargaining Models," *The Economics of Bargaining*, 1987.

Boeri, Tito and Juan F Jimeno, "The Effects of Employment Protection: Learning from Variable Enforcement," *European Economic Review*, 2005, *49* (8), 2057–2077.

__ , **J Ignacio Conde-Ruiz, and Vincenzo Galasso**, "The Political Economy of Flexicurity," *Journal of the European Economic Association*, 2012, *10* (4), 684–715.

Botero, Juan C, Simeon Djankov, Rafael La Porta, Florencio Lopez de Silanes, and Andrei Shleifer, "The Regulation of Labor," *The Quarterly Journal of Economics*, 2004, *119* (4), 1339–1382.

Braguinsky, Serguey, Lee G Branstetter, and Andre Regateiro, "The Incredible Shrinking Portuguese Firm," Technical Report, National Bureau of Economic Research 2011.

Brock, W.A., D.S. Evans, and B.D. Phillips, *The Economics of Small Businesses: Their Role and Regulation in the U.S. Economy* CERA research study, Holmes & Meier, 1986.

Brock, William A and David S Evans, "The Economics of Regulatory Tiering," *The Rand Journal of Economics*, 1985, pp. 398–409.

Coppedge, Michael, John Gerring, Carl Henrik Knutsen, Staffan I Lindberg, Jan Teorell, David Altman, Michael Bernhard, M Steven Fish, Adam Glynn, Allen Hicken et al., "V-Dem Dataset V10," 2020.

Easterly, William and Ross Levine, "Africa's Growth Tragedy: Policies and Ethnic Divisions," *The Quarterly Journal of Economics*, 1997, pp. 1203–1250.

Esping-Andersen, Gosta, *The Three Worlds of Welfare Capitalism*, Princeton University Press, 1990.

Esping-Andersen, Gøsta, *Social Foundations of Postindustrial Economies*, Oxford University Press, 1999.

Fischer, Ronald and Diego Huerta, "Wealth Inequality and the Political Economy of Financial and Labour Regulations," *Journal of Public Economics*, 2021, *204*, 104553.

__ , __ , **and Patricio Valenzuela**, "The Inequality-Credit Nexus," *Journal of International Money and Finance*, 2019, *91*, 105 – 125.

Garicano, Luis, Claire Lelarge, and John Van Reenen, "Firm Size Distortions and the Productivity Distribution: Evidence from France," *American Economic Review*, 2016, *106* (11), 3439–79.

Gourio, François and Nicolas Roys, "Size Dependent Regulations, Firm Size Distribution, and Reallocation," *Quantitative Economics*, 2014, *5* (2), 377–416.

Greenhill, Brian, Layna Mosley, and Aseem Prakash, "Trade-Based Diffusion of Labor Rights: A Panel Study, 1986–2002," *American Political Science Review*, 2009, *103* (4), 669–690.

Guner, Nezih, Gustavo Ventura, and Yi Xu, "Macroeconomic Implications of Size-Dependent Policies," *Review of Economic Dynamics*, 2008, *11* (4), 721–744.

Hicks, Alexander M, *Social Democracy & Welfare Capitalism: A Century of Income Security Politics*, Cornell University Press, 1999.

Huerta, Diego, "The Evolution of the Welfare State," 2023. https://www.diegohuertad.com/working_paper/EvolutionWelfareState/.

__ , "The Regressive Effects of Worker Protection: The Role of Financial Constraints," 2024. https://www.diegohuertad.com/working_paper/labor_policy_empirical/.

Itskhoki, Oleg and Benjamin Moll, "Optimal Development Policies with Financial Frictions," *Econometrica*, 2019, *87* (1), 139–173.

Jones, Charles I, "Pareto and Piketty: The Macroeconomics of Top Income and Wealth Inequality," *Journal of Economic Perspectives*, 2015, *29* (1), 29–46.

Kramarz, Francis and Marie-Laure Michaud, "The Shape of Hiring and Separation Costs in France," *Labour Economics*, 2010, *17* (1), 27–37.

Kugler, Adriana and Giovanni Pica, "Effects of Employment Protection on Worker and Job Flows: Evidence from the 1990 Italian Reform," *Labour Economics*, 2008, *15* (1), 78–95.

Leonardi, Marco and Giovanni Pica, "Who Pays for It? The Heterogeneous Wage Effects of Employment Protection Legislation," *The Economic Journal*, 2013, *123* (573), 1236–1278.

Lindbeck, Assar and Jörgen W Weibull, "Balanced-Budget Redistribution as the Outcome of Political Competition," *Public Choice*, 1987, *52* (3), 273–297.

Lucas, Robert E, "On the Size Distribution of Business Firms," *The Bell Journal of Economics*, 1978, pp. 508–523.

Martins, Pedro S, "Dismissals for Cause: The Difference that Just Eight Paragraphs can Make," *Journal of Labor Economics*, 2009, *27* (2), 257–279.

Mosley, Layna and Saika Uno, "Racing to the Bottom or Climbing to the Top? Economic Globalization and Collective Labor Rights," *Comparative Political Studies*, 2007, *40* (8), 923–948.

Neumayer, Eric and Indra De Soysa, "Globalization and the Right to Free Association and Collective Bargaining: An Empirical Analysis," *World Development*, 2006, *34* (1), 31–49.

Pagano, Marco and Paolo F Volpin, "The Political Economy of Corporate Governance," *American Economic Review*, 2005, *95* (4), 1005–1030.

Perotti, Enrico C and Ernst-Ludwig Von Thadden, "The Political Economy of Corporate Control and Labor Rents," *Journal of Political Economy*, 2006, *114* (1), 145–175.

Persson, Torsten and Guido Tabellini, "The Size and Scope of Government: Comparative Politics with Rational Politicians," *European Economic Review*, 1999, *43* (4-6), 699–735.

_ **and** _ , *Political Economics: Explaining Economic Policy*, The MIT Press, 2000.

Pissarides, Christopher A, "Employment Protection," *Labour Economics*, 2001, *8* (2), 131–159.

Porta, Rafael La, Florencio Lopez de Silanes, and Andrei Shleifer, "The Economic Consequences of Legal Origins," *Journal of Economic Literature*, 2008, *46* (2), 285–332.

Restuccia, Diego and Richard Rogerson, "Policy Distortions and Aggregate Productivity with Heterogeneous Establishments," *Review of Economic Dynamics*, 2008, *11* (4), 707–720.

Rutherford, Tod and Lorenzo Frangi, "Overturning Italy's Article 18: Exogenous and Endogenous Pressures, and Role of the State," *Economic and Industrial Democracy*, 2018, *39* (3), 439–457.

Saint-Paul, Gilles, *Dual Labor Markets: A Macroeconomic Perspective*, MIT press, 1996.

_ , *The Political Economy of Labour Market Institutions*, Oxford University Press, 2000.

_ , "The Political Economy of Employment Protection," *Journal of Political Economy*, 2002, *110* (3), 672–704.

Schivardi, Fabiano and Roberto Torrini, "Identifying the Effects of Firing Restrictions Through Size-Contingent Differences in Regulation," *Labour Economics*, 2008, *15* (3), 482–511.

Serfling, Matthew, "Firing Costs and Capital Structure Decisions," *The Journal of Finance*, 2016, *71* (5), 2239–2286.

Shapiro, Carl and Joseph E Stiglitz, "Equilibrium Unemployment as a Worker Discipline Device," *The American Economic Review*, 1984, *74* (3), 433–444.

Siefert, Achim and Elke Funken-Hotzel, "Wrongful Dismissals in the Federal Republic of Germany," *Comp. Lab. L. & Pol'y. J.*, 2003, *25*, 487.

Simintzi, Elena, Vikrant Vig, and Paolo Volpin, "Labor Protection and Leverage," *The Review of Financial Studies*, 2015, *28* (2), 561–591.

Trebbi, Francesco and Miao Ben Zhang, "The Cost of Regulatory Compliance in the United States," Technical Report, National Bureau of Economic Research 2022.

Verick, Sher, "Threshold Effects of Dismissal Protection Legislation in Germany," *Available at SSRN 494225*, 2004.

Vranken, Martin, "Labour Law Reform in Australia and New Zealand: Once United, Henceforth Divided," *Revue Juridique Polynésienne/New Zealand Association of Comparative Law Yearbook*, 2005, *11*, 25–41.

Yoo, Gyeongjoon and Changhui Kang, "The Effect of Protection of Temporary Workers on Employment Levels: Evidence from the 2007 Reform of South Korea," *ILR Review*, 2012, *65* (3), 578–606.

A Appendix: Basics

A.1 Optimal debt contract

In this section, I characterize the conditions that define the optimal debt contract under the initial policy, $\mathcal{P}_0 = (\tau_0, F_0)$. These conditions can be generalized to any policy, $\mathcal{P}$.

Define the auxiliary function:

$$\Psi(a, d, l|\tau_0, F_0) \equiv U^e(a, d, l|\tau_0, F_0) - \phi k, \tag{A.1}$$

which measures the severity of agency problems for a triplet (a, d, l).[20] Analogously as in Fischer and Huerta (2021), it can be shown that there exists a minimum wealth required to obtain a loan, $\underline{a}_0 = \underline{a}(\tau_0, F_0)$, which is given by:[21]

$$\Psi(\underline{a}_0, \underline{d}_0, \underline{l}_0|\tau_0, F_0) = 0 \Leftrightarrow U^e(\underline{a}_0, \underline{d}_0, \underline{l}_0|\tau_0, F_0) = \phi \underline{k}_0 \tag{A.2}$$

$$\Psi_d(\underline{a}_0, \underline{d}_0, \underline{l}_0|\tau_0, F_0) = 0 \Leftrightarrow f_k(\underline{k}_0, \underline{l}_0) = 1 + \rho + \phi, \tag{A.3}$$

$$\frac{\partial U^e(\underline{a}_0, \underline{d}_0, \underline{l}_0|\tau_0, F_0)}{\partial l} = 0 \Leftrightarrow f_l(\underline{k}_0, \underline{l}_0) = \tau_0 w, \tag{A.4}$$

where $\underline{k}_0 \equiv \underline{a}_0 + \underline{d}_0$, $\underline{d}_0 > 0$ is the amount of debt that the first agent with access to credit can obtain, and $\underline{l}_0$ are the units of labor she hires. Intuitively, the first condition requires that the minimum wealth to get a loan $\underline{a}_0$ leaves the agent indifferent between absconding with the loan or honoring the contract. The second expression imposes that an agent with $\underline{a}_0$ receives the minimum debt, $\underline{d}_0$. The final condition ensures that labor hired $\underline{l}_0$ is optimal at the capital level k_0.

Thus, there is credit rationing: a rationed borrower ($a < \underline{a}_0$) may be willing to pay a higher interest rate to obtain a loan, but banks will not accept such an offer since they cannot trust the borrower. From condition (A.3), the marginal return to investment of the first agent with access to credit is $1 + \rho + \phi$, which corresponds to the highest possible return to investment. As a increases, the return to capital falls until it eventually attains the level obtained by an efficient firm $1 + \rho$. Since U^e is increasing and continuous in the relevant range, there exists a critical wealth level, $\overline{a}_0 > \underline{a}_0$, such that an entrepreneur with $\overline{a}_0$ is the first agent that can obtain a loan to invest efficiently:

$$\Psi(\overline{a}_0, k_0^* - \overline{a}_0, l_0^*) = 0. \tag{A.5}$$

[20] If $\Psi > 0$ the incentives to commit default decrease as Ψ increases. In contrast, if $\Psi < 0$ the entrepreneur has incentives to behave maliciously. A more negative Ψ means that the entrepreneur has less incentives to honor the credit contract and abscond with the loan.

[21] Conditions below arise from a *minimax* problem. See proof of Lemma 1 in Fischer and Huerta (2021) for more details.

Thus, in equilibrium, these two thresholds define an endogenous range of entrepreneurs, $[\underline{a}_0, \overline{a}_0)$, who have constrained access to credit and operate at an inefficient scale. Because in this range the marginal return to capital exceeds the marginal cost of debt, these agents request their maximum allowable loan, which is given by:

$$\Psi(a, d, l|\tau_0, F_0) = 0, \tag{A.6}$$

where labor $l \equiv l(a|\tau_0, F_0)$ satisfies:

$$f_l(a + d, l) = \tau_0 w. \tag{A.7}$$

A.2 Occupational choice

In Section 3.5, I define $\hat{a}_0$ as the critical wealth level from which agents prefer to form a firm instead of becoming workers. Formally:

$$\hat{a}_0 \equiv \inf_{\{a\}} \{U^e(a, d(a), l(a)) - u^w(a)\} \geq 0.$$

Different arrangements could arise in the model as a function of $\underline{a}_0$ and $\hat{a}_0$. Figure 9 illustrates these features. Panel a) shows the case in which $\underline{a}_0 > \hat{a}_0$. All agents with $a < \hat{a}_0$ become workers and those with $a \geq \underline{a}_0$ become entrepreneurs. Agents with $a \in (\hat{a}_0, \underline{a}_0)$ may become either workers or invest their little wealth in a firm (micro-entrepreneurs). In the paper, I focus on the case in which all agents with $a < \underline{a}_0$ become workers. Panel b) presents the case in which some agents that can access the credit market prefer to become workers, $a \in [\underline{a}_0, \hat{a}_0)$. Fischer and Huerta (2021) show that the properties of the model are preserved under the cases that are not studied in this paper.

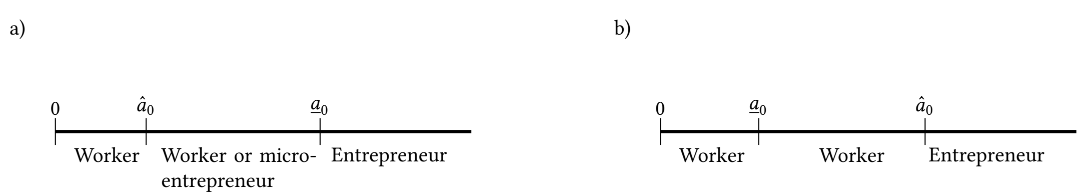


Figure 9: Occupational choice.

A.3 Deriving the utility of a group of workers

This section shows how the derive the expression for the utility of the group of workers in a firm hiring l units of labor, denoted by $U^w(l)$ (equation (3.4)). Recall the labor market equilibrium condition:

$$l_s \cdot G(\underline{a}) = \int_{\underline{a}}^{a_M} l \; g(a) \partial a, \tag{A.8}$$

multiply by τw, add $F \cdot G(\underline{a})$, and substract $\varsigma(l_s) \cdot G(\underline{a})$ on both sides to obtain:

$$\begin{aligned}
\underbrace{[\tau w \cdot l_s + F - \varsigma(l_s)]}_{=u^w(l_s)} \cdot G(\underline{a}) &= \left(\int_{\underline{a}}^{a_M} (\tau w \cdot l)\ g(a)\partial a \right) + [F - \varsigma(l_s)] \cdot G(\underline{a}), \\
\Rightarrow u^w(l_s) \cdot G(\underline{a}) &= \left(\int_{\underline{a}}^{a_M} (\tau w \cdot l)\ g(a)\partial a \right) + \left((F - \varsigma(l_s)) \cdot \int_{\underline{a}}^{a_M} \frac{l}{l_s}\ g(a)\partial a \right), \\
\Rightarrow u^w(l_s) \cdot G(\underline{a}) &= \int_{\underline{a}}^{a_M} U^w(l)\ g(a)\partial a. \qquad \text{(A.9)}
\end{aligned}$$

where in the second line I have used the labor market equilibrium condition (A.8). Expression (A.9) shows how the aggregate workers' welfare, $u^w(l_s) \cdot G(\underline{a})$, is distributed across firms of different sizes, where the utility of the group of workers in a firms hiring l units of labor is given by:

$$U^w(l|\tau, F) = \tau w l + \frac{l}{l_s}(F - \varsigma(l_s)). \qquad \text{(A.10)}$$

B Appendix: Main Proofs

To simplify notation, in the rest of the Appendix I denote the effective labor payment per unit of labor supplied as $\bar{w} = \tau w$ (*effective wage*) and its derivative in terms of some measure x by $\bar{w}_x$. I also denote the integral of some function $z(a)$ over the wealth distribution, i.e. $\int z(a)g(a)\partial a$, by $\int z(a)\partial G(a)$. Additionally, I denote the marginal productivity of capital of the first agent that becomes an entrepreneur ($a = \underline{a}_0$) by $1 + \underline{r} \equiv 1 + \rho + \phi$.

The following properties are useful to prove Propositions 1 and 2:

1. $\frac{\partial d}{\partial \tau} = \frac{l\bar{w}_\tau}{pf_k - (1+\underline{r})} < 0.$
2. $\frac{\partial l}{\partial \tau} = \bar{w}_\tau \left(\frac{1}{f_{ll}} - \frac{\beta f_k}{f_{ll}(f_k - (1+\underline{r}))} \right) < 0.$
3. $\frac{\partial \underline{a}_0}{\partial \tau} = \frac{l_0 \bar{w}_\tau}{f_k - \phi} > 0.$
4. $\frac{\partial l_s}{\partial \tau} = \frac{\bar{w}_\tau}{\varsigma''(l_s)} > 0.$
5. $\frac{\partial u^w}{\partial \tau} = \bar{w}_\tau l_s > 0.$
6. $\frac{\partial d}{\partial a} = -\frac{f_k - \phi}{f_k - (1+\underline{r})} > 0.$
7. $\frac{\partial l}{\partial a} = -\frac{f_{lk}}{f_{ll}} \left(1 + \frac{\partial d}{\partial a}\right) > 0.$

Proof:

Item 1. Differentiation of equation (A.6) in terms of τ leads to:

$$\Psi_d \frac{\partial d}{\partial \tau} + \underbrace{\Psi_l}_{=0} \frac{\partial l}{\partial \tau} + \Psi_\tau = 0$$

$$\Rightarrow \frac{\partial d}{\partial \tau} = -\frac{\Psi_\tau}{\Psi_d} = \frac{l\bar{w}_\tau}{f_k - (1+\underline{r})} < 0, \tag{B.1}$$

where I have used the FOC of labor, $\Psi_l = \frac{\partial U^e}{\partial l} = 0$, that $f_k \in [1+\rho, 1+\underline{r}]$, and that $\bar{w}_\tau > 0$.[22]

Item 2. From the FOC of labor (A.7):

$$\left(f_{lk}\frac{\partial d}{\partial \tau} + f_{ll}\frac{\partial l}{\partial \tau} \right) = \bar{w}_\tau,$$

$$\Rightarrow \frac{\partial l}{\partial \tau} = \frac{\bar{w}_x - f_{lk}\frac{\partial d}{\partial \tau}}{f_{ll}} = \bar{w}_\tau \left(\frac{1}{f_{ll}} - \frac{\beta f_k}{f_{ll}(f_k - (1+\underline{r}))} \right) < 0, \tag{B.2}$$

[22]Note that when τ increases in a single firm: $\bar{w}_\tau = w > 0$. However, when τ increases in a non-negligible mass of firms, the equilibrium wage goes down, partially offsetting the direct effect of improved labor regulation. Despite this, it is still true that $\bar{w}_\tau > 0$. The only exception is when τ improves in all firms. In that case, labor regulation is neutral: $\bar{w}_\tau = 0$. I study that particular case in Lemma 1.

where the last equality follows from $f_{kl} = \frac{\alpha\beta f}{kl} = \frac{\beta f_k}{l}$.

Item 3. Differentiate (A.2) to obtain:

$$\Psi_a(\underline{a}_0, \underline{d}_0, \underline{l}_0)\frac{\partial \underline{a}_0}{\partial \tau} + \underbrace{\Psi_d(\underline{a}_0, \underline{d}_0, \underline{l}_0)}_{=0 \text{ by (A.3)}}\frac{\partial \underline{d}_0}{\partial \tau} + \underbrace{\Psi_l(\underline{a}_0, \underline{d}_0, \underline{l}_0)}_{=0 \text{ by (A.4)}}\frac{\partial \underline{l}_0}{\partial \tau} + \Psi_\tau(\underline{a}_0, \underline{d}_0, \underline{l}_0) = 0,$$

$$\Rightarrow \frac{\partial \underline{a}_0}{\partial \tau} = -\frac{\Psi_\tau(\underline{a}_0, \underline{d}_0, \underline{l}_0)}{\Psi_a(\underline{a}_0, \underline{d}_0, \underline{l}_0)} = \frac{\underline{l}_0 \bar{w}_\tau}{f_k(\underline{k}_0, \underline{l}_0) - \phi} > 0. \tag{B.3}$$

Item 4. Differentiate condition (3.5) in terms of τ and solve for $\frac{\partial l_s}{\partial \tau}$ to obtain the result.

Item 5. Differentiation of (3.2) in terms of τ gives:

$$\frac{\partial u^w}{\partial \tau} = \bar{w}_\tau l_s + \underbrace{(\bar{w} - \varsigma'(l_s))}_{=0 \text{ by (3.5)}}\frac{\partial l_s}{\partial \tau} = \bar{w}_\tau l_s > 0. \tag{B.4}$$

Item 6. Differentiate (A.6) in terms of a to obtain:

$$\Psi_k\left(1 + \frac{\partial d}{\partial a}\right) + \Psi_d \frac{\partial d}{\partial a} + \Psi_l \frac{\partial l}{\partial a} = 0.$$

Use that $\Psi_k = f_k - \phi$, $\Psi_d = -(1+\rho)$, and that $\Psi_l = 0$ to obtain the result.

Item 7. Differentiate (A.7) in terms of a to obtain:

$$\left[f_{lk}\left(1 + \frac{\partial d}{\partial a}\right) + f_{ll}\frac{\partial l}{\partial a}\right] = 0,$$

$$\Rightarrow \frac{\partial l}{\partial a} = -\frac{f_{lk}}{f_{ll}}\left(1 + \frac{\partial d}{\partial a}\right) > 0. \tag{B.5}$$

■

B.1 Proof of Proposition 1

Proposition 1 *Consider the initial labor regulation, $\mathcal{P}_0(a) = (\tau_0, F_0)$, then:*

1. *All entrepreneurs are worse off after a marginal increase of τ.*
2. *This negative effect is strictly decreasing if $a \in [\underline{a}_0, \bar{a}_0)$ and remains constant after $a \geq \bar{a}_0$.*

Proof: Differentiation of $U^e(a)$ in terms of τ gives:

$$\frac{\partial U^e(a)}{\partial \tau} = [f_k - (1+\rho)]\frac{\partial d}{\partial \tau} - \bar{w}_\tau l. \tag{B.6}$$

Replace (B.1) in (B.6) to obtain:

$$\frac{\partial U^e(a)}{\partial \tau} = l \cdot \bar{w}_\tau \left[\frac{f_k - (1+\rho)}{f_k - (1+\underline{r})} - 1\right] = \phi \bar{w}_\tau \frac{l}{f_k - (1+\underline{r})} < 0. \tag{B.7}$$

Thus, the effect of increased τ on entrepreneurs' utility is negative. In particular, $\lim_{a \to \underline{a}_0+} \frac{\partial U^e(a)}{\partial \tau} = -\infty$ and $\frac{\partial U^e(\bar{a}_0)}{\partial \tau} = -l^* \bar{w}_\tau$. In order to conclude that this negative effect becomes weaker as a increases, all is left to show is that $\frac{\partial}{\partial a}\left(\frac{\partial U^e(a)}{\partial \tau}\right) > 0$. Differentiate (B.7) with respect to a:

$$\frac{\partial}{\partial a}\left(\frac{\partial U^e(a)}{\partial \tau}\right) = \frac{\phi \bar{w}_\tau}{(f_k - (1+\underline{r}))^2}\left[\frac{\partial l}{\partial a}(f_k - (1+\underline{r})) - l\frac{\partial}{\partial a}(f_k)\right].$$

Note that:

$$\frac{\partial}{\partial a}(f_k) = \left(f_{kk} - \frac{f_{kl}^2}{f_{ll}}\right)\left(1 + \frac{\partial d}{\partial a}\right) = -\frac{\alpha f}{(1-\beta)k^2}(1-\alpha-\beta)\left(1+\frac{\partial d}{\partial a}\right) < 0, \tag{B.8}$$

Use equations (B.5) and (B.8) to obtain:

$$\begin{aligned}
\frac{\partial}{\partial a}\left(\frac{\partial U^e(a)}{\partial \tau}\right) &= \frac{\phi \bar{w}_\tau}{(f_k - (1+\underline{r}))^2}\left(1+\frac{\partial d}{\partial a}\right)\left[-\frac{f_{kl}}{(f_{ll}}(f_k - (1+\underline{r})) + l\frac{\alpha f}{(1-\beta)k^2}(1-\alpha-\beta)\right], \\
&= \underbrace{\frac{\phi l \bar{w}_\tau}{(1-\beta)k(f_k - (1+\underline{r}))^2}\left(1+\frac{\partial d}{\partial a}\right)}_{>0}\left[\alpha(f_k - (1+\underline{r})) + f_k(1-\alpha-\beta)\right].
\end{aligned}$$

Denote the term in brackets by h and notice that:

$$h \equiv \alpha(f_k - (1+\underline{r})) + f_k(1-\alpha-\beta) > -\alpha\phi + (1+\rho)(1-\alpha-\beta) > 0,$$

where the first inequality comes from $f_k \in [1+\rho, 1+\underline{r}]$ and the second one uses Assumption 1. Therefore, $\frac{\partial}{\partial a}\left(\frac{\partial U_e(a)}{\partial \tau}\right) > 0$. Thus, smaller firms are more adversely affected by an increase in τ. ■

B.2 Proof of Proposition 2

Proposition 2 *Consider the initial labor regulation, $\mathcal{P}_0(a) = (\tau_0, F_0)$, and suppose a marginal increase of τ. Then, there is a cutoff $\tilde{a}_0 \in (\underline{a}_0, \overline{a}_0)$ given by:*

$$\frac{\partial U^w(\tilde{a}_0|\mathcal{P}_0)}{\partial \tau} = 0, \tag{B.9}$$

such that:

1. *Workers' welfare in firms with $a \in [\underline{a}_0, \tilde{a}_0)$ decreases.*
2. *Workers' welfare in firms with $a > \tilde{a}_0$ increases.*
3. *This marginal effect is strictly increasing in $a \in [\underline{a}_0, \overline{a}_0)$ and remains constant after $a \geq \overline{a}_0$.*

Proof: Differentiating condition (3.4) with respect to τ:

$$\begin{aligned}\frac{\partial U^w(a)}{\partial \tau} &= \bar{w}_\tau l + \frac{\partial l}{\partial \tau}\bar{w} + \frac{\left[\frac{\partial l}{\partial \tau}(F - \varsigma(l_s)) - l\varsigma'(l_s)\frac{\partial l_s}{\partial \tau}\right] l_s - l(F - \varsigma(l_s))\frac{\partial l_s}{\partial \tau}}{(l_s)^2}, \\ &= \bar{w}_\tau \cdot l \underbrace{\left[1 - \frac{1}{\varsigma''(l_s)\cdot l_s}\left(\varsigma'(l_s) - \frac{\varsigma(l_s)}{l_s} - \frac{F}{l_s}\right)\right]}_{=(\gamma-1)/\gamma + \frac{F}{l_s} > 0} + \underbrace{\frac{\partial l}{\partial \tau}}_{<0}\underbrace{\left(\frac{F}{l_s} + \varsigma'(l_s) - \frac{\varsigma(l_s)}{l_s}\right)}_{=\frac{F}{l_s} + (\gamma-1)l_s^{\gamma-1} > 0},\end{aligned} \tag{B.10}$$

where I have used that $\bar{w} = \varsigma'(l_s)$ and that $\frac{\partial l_s}{\partial \tau} = \frac{\bar{w}_\tau}{\varsigma''(l_s)} > 0$. Note that the sign of $\frac{\partial U^w(a)}{\partial \tau}$ is ambiguous and depends on a through l. In particular, $\lim_{a \to \underline{a}_0^+} \frac{\partial d}{\partial \tau} = -\infty$ and so, $\lim_{a \to \underline{a}_0^+} \frac{\partial l}{\partial \tau} = -\infty$, which implies that $\lim_{a \to \underline{a}_0^+} \frac{\partial U^w(a)}{\partial \tau} = -\infty$. Thus, at least in a neighborhood of $\underline{a}_0$, workers are made worse off when τ increases. Additionally, the labor market must satisfy the welfare equilibrium condition (equation (A.9)):

$$\int_{\underline{a}_0}^{a_M} u^w \partial G(a) = \int_{\underline{a}_0}^{a_M} U^w(a)\partial G(a). \tag{B.11}$$

Differentiate (B.11) in terms of τ and evaluate at $\mathcal{P}_0$ to obtain:

$$\underbrace{\frac{\partial u^w}{\partial \tau}G(\underline{a}_0) + u^w g(\underline{a}_0)\frac{\partial \underline{a}_0}{\partial \tau}}_{>0} = \int_{\underline{a}_0}^{a_M} \frac{\partial U^w(a)}{\partial \tau}\partial G(a) \underbrace{- U^w(\underline{a}_0)g(\underline{a}_0)\frac{\partial \underline{a}_0}{\partial \tau}}_{<0}, \tag{B.12}$$

where I have used that $\frac{\partial u^w}{\partial \tau} > 0$ and $\frac{\partial \underline{a}_0}{\partial \tau} > 0$. Using the fact that $\frac{\partial U^w(a)}{\partial \tau} < 0$ in some neighborhood of $\underline{a}_0$ and that the second term of the right-hand side is also negative, it follows that $\frac{\partial U^w(a)}{\partial \tau}$ must be positive in some range (otherwise condition (B.12) is violated). If $\frac{\partial U^w(a)}{\partial \tau}$ is strictly increasing in a, then there exist some threshold $\tilde{a}_0 \in (\underline{a}_0, \overline{a}_0)$ given by:

$$\frac{\partial U^w(\tilde{a}_0)}{\partial \tau} = 0,$$

such that $\frac{\partial U^w(a)}{\partial \tau} < 0$ if $a \in [\underline{a}_0, \tilde{a}_0)$ and $\frac{\partial U^w(a)}{\partial \tau} > 0$ if $a > \tilde{a}_0$. This leads to the results of the proposition. Thus, all is left to show is that $\frac{\partial}{\partial a}\left(\frac{\partial U^w(a)}{\partial \tau}\right) > 0$. Differentiation of $\frac{\partial U^w(a)}{\partial \tau}$ with respect to a leads to:

$$\frac{\partial}{\partial a}\left(\frac{\partial U^w(a)}{\partial \tau}\right) = \underbrace{\bar{w}_\tau \cdot \frac{\partial l}{\partial a}}_{>0} \underbrace{\left[1 - \frac{1}{\varsigma'' \cdot l_s}\left(\varsigma'(l_s) - \frac{\varsigma(l_s)}{l_s} - \frac{F}{l_s}\right)\right]}_{>0} + \frac{\partial}{\partial a}\left(\frac{\partial l}{\partial \tau}\right) \underbrace{\left(\frac{F}{l_s} + \varsigma'(l_s) - \frac{\varsigma(l_s)}{l_s}\right)}_{>0}.$$

Thus, the sign of $\frac{\partial}{\partial a}\left(\frac{\partial U^w(a)}{\partial \tau}\right)$ depends on the sign of $\frac{\partial}{\partial a}\left(\frac{\partial l}{\partial \tau}\right)$. In what follows, I show that $\frac{\partial}{\partial a}\left(\frac{\partial l}{\partial \tau}\right) > 0$, which implies that $\frac{\partial}{\partial a}\left(\frac{\partial U^w(a)}{\partial \tau}\right) > 0$. Differentiation of (B.2) leads to:

$$\begin{aligned}
\frac{\partial}{\partial a}\left(\frac{\partial l}{\partial \tau}\right) &= \frac{\bar{w}_\tau}{1-s}\left[-\frac{\frac{\partial}{\partial a}(f_{ll})}{f_{ll}^2} - \beta\frac{\frac{\partial}{\partial a}(f_k)(f_k-(1+\underline{r}))f_{ll}}{(f_k-(1+\underline{r}))^2 f_{ll}^2} + \beta f_k \frac{\left(p\frac{\partial}{\partial a}(f_k)f_{ll} + (f_k-(1+\underline{r}))\frac{\partial}{\partial a}(f_{ll})\right)}{(f_k-(1+\underline{r}))^2 f_{ll}^2}\right],\\
&= \underbrace{\frac{\bar{w}_\tau}{(pf_k-(1+\underline{r}))^2 f_{ll}^2}}_{\equiv h>0}\left[\frac{\partial}{\partial a}(f_{ll})\cdot[\beta f_k(f_k-(1+\underline{r})) - (f_k-(1+\underline{r}))^2] + \beta\frac{\partial}{\partial a}(f_k)\cdot f_{ll}(1+\underline{r})\right].
\end{aligned} \tag{B.13}$$

Notice that:

$$\frac{\partial}{\partial a}(f_{ll}) = f_{llk}\left(1+\frac{\partial d}{\partial a}\right) + f_{lll}\frac{\partial l}{\partial a} = \left(f_{llk} - \frac{f_{kl}\cdot f_{lll}}{f_{ll}}\right)\left(1+\frac{\partial d}{\partial a}\right) = \frac{\alpha\beta f}{kl^2}\left(1+\frac{\partial d}{\partial a}\right) > 0. \tag{B.14}$$

Defining $\tilde{h} \equiv h\cdot\left(1+\frac{\partial d}{\partial a}\right)$ and replacing (B.8) and (B.14) in (B.13) gives:

$$\begin{aligned}
\frac{\partial}{\partial a}\left(\frac{\partial l}{\partial \tau}\right) &= \tilde{h}\left[\frac{\alpha\beta f}{kl^2}\cdot[\beta f_k(f_k-(1+\underline{r})) - (f_k-(1+\underline{r}))^2] - \beta\frac{\alpha f}{(1-\beta)k^2}(1-\alpha-\beta)\cdot f_{ll}(1+\underline{r})\right],\\
&= \underbrace{-(1-\beta)^{-1}\tilde{h}\frac{f_{ll}}{k}}_{>0}\left[\alpha[\beta f_k(f_k-(1+\underline{r})) - (f_k-(1+\underline{r}))^2] + \beta f_k(1-\alpha-\beta)(1+\underline{r})\right].
\end{aligned}$$

The sign of this expression is determined by the sign of the term in brackets, which I denote by q:

$$\begin{aligned}
q &\equiv \alpha[\beta f_k(f_k-(1+\underline{r})) - (f_k-(1+\underline{r}))^2] + \beta f_k(1-\alpha-\beta)(1+\underline{r}),\\
&= -\alpha(f_k-(1+\underline{r}))(f_k(1-\beta)-(1+\underline{r})) + \beta f_k(1-\alpha-\beta)(1+\underline{r}).
\end{aligned}$$

Recall that $f_k \in [1+\rho, 1+\underline{r}]$, then:

$$f_k - (1+\underline{r}) \in [-\phi, 0],$$
$$f_k(1-\beta) - (1+\underline{r}) \in [-(\beta(1+\rho)+\phi), -\beta(1+\rho+\phi)].$$

Using these properties and Assumption 1:

$$\begin{aligned} q &\geq -\alpha\phi(\beta(1+\rho)+\phi) + \beta(1+\rho)(1-\alpha-\beta)(1+\rho+\phi), \\ &> -\alpha\phi(\beta(1+\rho)+\phi) + \beta(1+\rho)(1-\alpha-\beta)(\beta(1+\rho)+\phi), \\ &> (\beta(1+\rho)+\phi)\big[-\alpha\phi + \beta(1+\rho)(1-\alpha-\beta)\big] > 0, \end{aligned}$$

which implies that $\frac{\partial}{\partial a}\left(\frac{\partial l}{\partial \tau}\right) > 0$. Thus, $\frac{\partial}{\partial a}\left(\frac{\partial U^w(a)}{\partial \tau}\right) > 0$, which leads to the result of the proposition. ■

B.3 Proof of Proposition 3

Proposition 3 *Any labor regulation that solves* (3.11), $\mathcal{P} = (\tau, F)$, *satisfies monotonicity at each component:*

$$x(a) : x(a') \leq x(a'') \quad \forall a' < a'', x \in \{\tau, F\}.$$

Moreover, there are size thresholds, $a^\tau \in [\underline{a}_0, a_M]$ and $a^F \in [\underline{a}_0, a_M]$, such that:

$$x(a) = \begin{cases} x_0 \text{ } if\, a < a^x, \\ x_1 \text{ } if\, a \geq a^x. \end{cases} \tag{B.15}$$

Proof: By contradiction, suppose that there is some solution to problem (3.11), $\mathcal{P}(a) = (\tau(a), F(a))$, such that the function $x(a)$, with $x \in \{\tau, F\}$, violates monotonicity in some non-zero measure set $\mathcal{A} \in \mathcal{J}([\underline{a}_0, a_M])$ and for which monotonicity holds in $[\underline{a}_0, a_M] - \{\mathcal{A}\}$. Assume that $\mathcal{A}$ is partitioned into two intervals $\mathcal{A}_0, \mathcal{A}_1$ such that:

$\mathcal{A} = \mathcal{A}_0 \bigcup \mathcal{A}_1$, $\mathcal{A}_0 \bigcap \mathcal{A}_1 = \emptyset$ and $a' \in \mathcal{A}_0, a'' \in \mathcal{A}_1 \Rightarrow a' < a''$,

and define:

$$x(a) : x(a') > x(a''), a' \in \mathcal{A}_0, a'' \in \mathcal{A}_1.$$

This last condition is equivalent to $x(\mathcal{A}_0) > x(\mathcal{A}_1) \Leftrightarrow x(\mathcal{A}_0) = x_1$ and $x(\mathcal{A}_1) = x_0$. Further, define $m_g^e(x_0|\mathcal{P}, \mathcal{A})$ and $m_g^e(x_1|\mathcal{P}, \mathcal{A})$ as the masses of entrepreneurs in the set $\mathcal{A}$ that operate under x_0 and x_1 when $\mathcal{P}$ is implemented:

$$m_g^e(x_i|\mathcal{P},\mathcal{A}) \equiv \int_{a\in\mathcal{A}} \mathbf{1}[x(a)=x_i]\partial G(a), \quad i\in\{0,1\}. \tag{B.16}$$

Consider an alternative labor regulation $\mathcal{P}'$ that satisfies monotonicity in $\mathcal{A}$. For $x \in \{\tau, F\}$, $\mathcal{P}'$ is composed by the function $x'(a)$ that satisfies:

$$x'(a) = \begin{cases} x(a) & \text{if } a \in [\underline{a}_0, a_M] - \{\mathcal{A}\}, \\ \{x'(a) \,:\, x'(\tilde{\mathcal{A}}_0) < x'(\tilde{\mathcal{A}}_1)\} & \text{if } a \in \mathcal{A} = \tilde{\mathcal{A}}_0 \bigcup \tilde{\mathcal{A}}_1, \end{cases}$$

where $\mathcal{A}$ is partitioned into two intervals $\tilde{\mathcal{A}}_0, \tilde{\mathcal{A}}_1$ such that:
$\mathcal{A} = \tilde{\mathcal{A}}_0 \bigcup \tilde{\mathcal{A}}_1$, $\tilde{\mathcal{A}}_0 \bigcap \tilde{\mathcal{A}}_1 = \emptyset$ and $a' \in \tilde{\mathcal{A}}_0, a'' \in \tilde{\mathcal{A}}_1 \Rightarrow a' < a''$,
and
$m_g^e(x_0|\mathcal{P}',\mathcal{A}) = m_g^e(x_0|\mathcal{P},\mathcal{A})$ and $m_g^e(x_1|\mathcal{P}',\mathcal{A}) = m_g^e(x_1|\mathcal{P},\mathcal{A})$.

Note that $x'(\tilde{\mathcal{A}}_0) = x_0$ and $x'(\tilde{\mathcal{A}}_1) = x_1$. Thus, x' satisfies monotonicity in $\mathcal{A}$. Moreover, it reverts and preserves the masses of entrepreneurs operating under x_0 and x_1 that arise from x. From Proposition 1, $\frac{\partial}{\partial a}\left(\frac{\partial U^e}{\partial x}\right) > 0$, thus the aggregate welfare of entrepreneurs is higher under x'. Additionally, Proposition 2 shows that $\frac{\partial}{\partial a}\left(\frac{\partial U^w}{\partial x}\right) > 0$, hence workers' welfare is also larger under x'. Therefore, x cannot be the solution to problem (3.11).

Nevertheless, observe that $\mathcal{P}'$ may not satisfy monotonicity in $[\underline{a}_0, a_M]$. For instance, if x was such that $x(a) = x_1, \forall a$. But since $\mathcal{A}$ was chosen arbitrarily, the argument can be repeated iteratively to discard any solution for which monotonicity does not hold in some non-zero measure set. Hence, the solution to the government's problem must satisfy monotonicity at both components, which implies equation (B.15).[23] ∎

B.4 Proof of Lemma 1

The proof of Lemma 1 makes use of the following properties:

1. $\frac{\partial d}{\partial w} < 0$.

2. $\frac{\partial l}{\partial w} < 0$.

3. $\frac{\partial \underline{a}}{\partial w} > 0$.

4. $\frac{\partial l_s}{\partial w} > 0$.

[23]Notice that the resulting policy $\mathcal{P}'$ is not necessarily the solution. It is an arbitrary labor regulation that satisfies monotonicity and that dominates any policy $\mathcal{P}$ that violates monotonicity in some non-zero measure set.

Proof: Differentiation of (A.6) gives:

$$\frac{\partial d}{\partial w} = -\frac{\Psi_w}{\Psi_d} = \frac{\tau l}{p f_k - (1 + \underline{r})} < 0$$

The FOC of labor (A.7) implies:

$$\frac{\partial l}{\partial w} = \left(\tau - f_{kl} \frac{\partial d}{\partial w} \right) \frac{1}{f_{ll}} < 0.$$

To show item 3 use equation (A.2) to obtain that: $\frac{\partial \underline{a}}{\partial w} = -\frac{\Psi_w}{\Psi_a} = \frac{\tau \underline{l}}{p f_k - \phi} > 0$. For the last item, use (3.5) to conclude that: $\frac{\partial l_s}{\partial w} = \frac{\tau}{\varsigma''(l_s)} > 0$. ■

Lemma 1 *The equilibrium wage w is increasing in a^τ. In particular, if $a^\tau = \underline{a}_0$, the change in w is such that $\frac{\partial \tilde{w}}{\partial a^\tau} = 0$.*

Proof: Recall the labor market equilibrium conditions:

$$m^0 \cdot l_s(\tau_0) = \int_{\underline{a}}^{a^\tau} l(a|\tau_0) \partial G(a), \tag{B.17}$$

$$m^1 \cdot l_s(\tau_1) = \int_{a^\tau}^{a_M} l(a|\tau_1) \partial G(a), \tag{B.18}$$

$$m^0 + m^1 = G(\underline{a}). \tag{B.19}$$

Differentiation of conditions (B.17) to (B.19) in terms of a^τ leads to:

$$\frac{\partial m^0}{\partial a^\tau} l_s^0 + m^0 \frac{\partial l_s^0}{\partial a^\tau} = \int_{\underline{a}}^{a^\tau} \frac{\partial l^0(a)}{\partial a^\tau} \partial G(a) + l^0(a^\tau) g(a^\tau) - l^0(\underline{a}) g(\underline{a}) \frac{\partial \underline{a}}{\partial a^\tau}, \tag{B.20}$$

$$\frac{\partial m^1}{\partial a^\tau} l_s^1 + m_1 \frac{\partial l_s^1}{\partial a^\tau} = \int_{a^\tau}^{a_M} \frac{\partial l^1(a)}{\partial a^\tau} \partial G(a) - l^1(a^\tau) g(a^\tau), \tag{B.21}$$

$$\frac{\partial m^1}{\partial a^\tau} = g(\underline{a}) \frac{\partial \underline{a}}{\partial a^\tau} - \frac{\partial m^0}{\partial a^\tau}, \tag{B.22}$$

where I have defined $l^0(a) \equiv l(a|\tau_0)$, $l^1(a) \equiv l(a|\tau_1)$, $l_s^0 \equiv l_s(\tau_0)$, and $l_s^1 \equiv l_s(\tau_1)$.

Combining (B.21) and (B.22):

$$\frac{\partial m^0}{\partial a^\tau} = \left(-\int_{a^\tau}^{a_M} \frac{\partial l^1(a)}{\partial a^\tau} \partial G(a) + l^1(a^x) g(a^\tau) + l_s^1 g(\underline{a}) \frac{\partial \underline{a}}{\partial a^\tau} + m_1 \frac{\partial l_s^1}{\partial a^\tau} \right) \frac{1}{l_s^1}, \tag{B.23}$$

rearranging (B.20) gives:

$$\frac{\partial m^0}{\partial a^\tau} = \left(\int_{\underline{a}}^{a^\tau} \frac{\partial l^0(a)}{\partial a^\tau} \partial G(a) + l^0(a^\tau) g(a^\tau) - l^0(\underline{a}) g(\underline{a}) \frac{\partial \underline{a}}{\partial a^\tau} - m^0 \frac{\partial l_s^0}{\partial a^\tau} \right) \frac{1}{l_s^0}. \tag{B.24}$$

Equalizing conditions (B.23) and (B.24):

$$l_s^1 \int_{\underline{a}}^{a^\tau} \frac{\partial l^0(a)}{\partial a^\tau} \partial G(a) + l_s^0 \int_{a^x}^{a_M} \frac{\partial l^1(a)}{\partial a^\tau} \partial G(a) - l_s^1(l^0(\underline{a}) + l_s^0) g(\underline{a}) \frac{\partial \underline{a}}{\partial a^\tau} - m^0 l_s^1 \frac{\partial l_s^0}{\partial a^\tau} - m^1 l_s^0 \frac{\partial l_s^1}{\partial a^\tau} = (l_s^0 l^1(a^\tau) - l_s^1 l^0(a^\tau)) g(a^\tau),$$

$$\Rightarrow \frac{\partial w}{\partial a^\tau} \left(l_s^1 \int_{\underline{a}}^{a^\tau} \underbrace{\frac{\partial l^0(a)}{\partial w}}_{<0} \partial G(a) + l_s^0 \int_{a^\tau}^{a_M} \underbrace{\frac{\partial l^1(a)}{\partial w}}_{<0} \partial G(a) - l_s^1(l^0(\underline{a}) + l_s^0) g(\underline{a}) \underbrace{\frac{\partial \underline{a}}{\partial w}}_{>0} - m^0 l_s^1 \underbrace{\frac{\partial l_s^0}{\partial w}}_{>0} - m^1 l_s^0 \underbrace{\frac{\partial l_s^1}{\partial w}}_{>0} \right) = \underbrace{(l_s^0 l^1(a^\tau) - l_s^1 l^0(a^\tau))}_{<0} g(a^\tau).$$

This last condition implies that $\frac{\partial w}{\partial a^\tau} > 0$. Finally, suppose that $a^\tau = \underline{a}_0$, i.e. the strength of labor regulation increases from τ_0 to τ_1 for all firms. Recall the equilibrium labor market condition under a flat labor policy:

$$l_s \cdot G(\underline{a}) = \int_{\underline{a}}^{a_M} l(a) \partial G(a).$$

Differentiation in terms of τ leads to:

$$\frac{\partial l_s}{\partial \tau} G(\underline{a}) + l_s\, g(\underline{a}) \frac{\partial \underline{a}}{\partial \tau} = \int_{\underline{a}}^{a_M} \frac{\partial l}{\partial \tau} \partial G(a) - \underline{l}\; g(\underline{a}) \frac{\partial \underline{a}}{\partial \tau} \Rightarrow \frac{\partial \bar{w}}{\partial \tau} \underbrace{\left(\frac{\partial l_s}{\partial \bar{w}} G(\underline{a}) + [l_s + \underline{l}] g(\underline{a}) \frac{\partial \underline{a}}{\partial \bar{w}} - \int_{\underline{a}}^{a_M} \frac{\partial l}{\partial \bar{w}} \partial G(a) \right)}_{>0} = 0,$$

where I have used that $\frac{\partial l_s}{\partial \tau} = \frac{\partial \bar{w}}{\partial \tau} \frac{\partial l_s}{\partial \bar{w}}$, $\frac{\partial \underline{a}}{\partial \tau} = \frac{\partial \bar{w}}{\partial \tau} \frac{\partial \underline{a}}{\partial \bar{w}}$ and $\frac{\partial l}{\partial \tau} = \frac{\partial \bar{w}}{\partial \tau} \frac{\partial l}{\partial \bar{w}}$. In conclusion, $\frac{\partial \bar{w}}{\partial \tau} = 0$ if $a^\tau \leq \underline{a}_0$. ■

B.5 Proof of Proposition 4

Proposition 4

1. *$\bar{U}(a^\tau, \lambda)$ achieves a global maximum in $[\underline{a}_0, a_M]$ at some size threshold $a_{pe}^\tau \in (\underline{a}_0, a_M)$ characterized by:*

$$a_{pe}^\tau = \sup_{a^\tau} \bar{U}(a^\tau, \lambda). \tag{B.25}$$

Suppose that $g(\cdot)$ satisfies $g' < 0$, then:

2. *$\bar{U}^e(a^\tau, \lambda)$ and $\bar{U}^w(a^\tau, \lambda)$ are strictly concave in a^τ.*

3. *The equilibrium size threshold a_{pe}^τ is the unique solution to:*

$$\lambda \frac{\partial \bar{U}^w(a_{pe}^\tau, \lambda)}{\partial a^\tau} = -(1 - \lambda) \frac{\partial \bar{U}^e(a_{pe}^\tau, \lambda)}{\partial a^\tau}. \tag{B.26}$$

4. *The equilibrium size threshold a_{pe}^τ is decreasing in λ.*

Proof: Differentiation of equations (5.5) and (5.6) in terms of a^τ leads to:

$$\begin{aligned}
\frac{\partial \bar{U}^e(a^\tau)}{\partial a^\tau} &= \int_{\underline{a}_0}^{a^\tau} \frac{\partial U^e(a|\tau_0)}{\partial a^\tau}\partial G + \int_{a^\tau}^{a_M} \frac{\partial U^e(a|\tau_1)}{\partial a^\tau}\partial G + [U^e(a^\tau|\tau_0) - U^e(a^\tau|\tau_1)]g(a^\tau), \\
&= \frac{\partial w}{\partial a^\tau}\left[\int_{\underline{a}_0}^{a^\tau} \frac{\partial U^e(a|\tau_0)}{\partial w}\partial G + \int_{a^\tau}^{a_M} \frac{\partial U^e(a|\tau_1)}{\partial w}\partial G\right] + [U^e(a^\tau|\tau_0) - U^e(a^\tau|\tau_1)]g(a^\tau). \quad \text{(B.27)}
\end{aligned}$$

$$\begin{aligned}
\frac{\partial \bar{U}^w(a^\tau)}{\partial a^\tau} &= \int_{\underline{a}_0}^{a^\tau} \frac{\partial U^w(a|\tau_0)}{\partial a^\tau}\partial G + \int_{a^\tau}^{a_M} \frac{\partial U^w(a|\tau_1)}{\partial a^\tau}\partial G + [U^w(a^\tau|\tau_0) - U^w(a^\tau|\tau_1)]g(a^\tau), \\
&= \frac{\partial w}{\partial a^\tau}\left[\int_{\underline{a}_0}^{a^\tau} \frac{\partial U^w(a|\tau_0)}{\partial w}\partial G + \int_{a^\tau}^{a_M} \frac{\partial U^w(a|\tau_1)}{\partial w}\partial G\right] + [U^w(a^\tau|\tau_0) - U^w(a^\tau|\tau_1)]g(a^\tau).
\end{aligned} \quad \text{(B.28)}$$

Proof of Item 1

First, recall that $\lim_{a\to\underline{a}_0^+} \frac{\partial U^w(a|\tau_0)}{\partial \tau} = -\infty$ and $\lim_{a\to\underline{a}_0^+} \frac{\partial U^e(a|\tau_0)}{\partial \tau} = -\infty$ (see the proofs of Propositions 1 and 2). Therefore, $\lim_{a^\tau\to\underline{a}_0^+} \frac{\partial \bar{U}^w(a^\tau)}{\partial a^\tau} > 0$ and $\lim_{a^\tau\to\underline{a}_0^+} \frac{\partial \bar{U}^e(a^\tau)}{\partial a^\tau} > 0$. Second, note that $\bar{U}^w(a^\tau)$ and $\bar{U}^e(a^\tau)$ are bounded in $[\underline{a}_0, a_M]$:

$$\begin{aligned}
\bar{U}^e(a^\tau) < M^e \equiv U^e(a_M|\tau_0)[1 - G(\underline{a}_0)], \quad \forall a^\tau \in [\underline{a}_0, a_M], \\
\bar{U}^w(a^\tau) < M^w \equiv U^w(a_M|\tau_1)[1 - G(\underline{a}_0)], \quad \forall a^\tau \in [\underline{a}_0, a_M].
\end{aligned}$$

To obtain the results above, first note that by Proposition 1, $U^e(a|\tau)$ is increasing in a and decreasing in τ. Second, Proposition 2 shows that $U^w(a|\tau)$ is increasing in a and increasing in τ for $a \in [\tilde{a}_0, a_M]$. Finally, use that $a^\tau \in [\underline{a}_0, a_M]$ and $\tau \in \{\tau_0, \tau_1\}$ to conclude that $\bar{U}^e(a^\tau)$ and $\bar{U}^w(a^\tau)$ are bounded by some finite positive numbers M^w and M^e, respectively.

As a result, $\bar{U}^e(a^\tau)$ and $\bar{U}^w(a^\tau)$ are continuous and bounded functions in $[\underline{a}_0, a_M]$ satisfying: i) $\bar{U}^e(\underline{a}_0) = \bar{U}^e(a_M) > 0$ and $\bar{U}^w(\underline{a}_0) = \bar{U}^w(a_M) > 0$,[24] ii) $\frac{\partial \bar{U}^e(\underline{a}_0^+)}{\partial a^\tau} > 0$ and $\frac{\partial \bar{U}^w(\underline{a}_0^+)}{\partial a^\tau} > 0$. Thus, $\bar{U}^e(a^\tau)$ and $\bar{U}^w(a^\tau)$ achieve a global maximum $\tilde{M}^e > \bar{U}^e(\underline{a}_0)$ and $\tilde{M}^w > \bar{U}^w(\underline{a}_0)$ given by:

$$\begin{aligned}
\tilde{M}^e &= \sup_{a^\tau} \bar{U}^e(a^\tau), \\
\tilde{M}^w &= \sup_{a^\tau} \bar{U}^w(a^\tau),
\end{aligned}$$

In conclusion, $\bar{U} = \lambda\bar{U}^w + (1-\lambda)\bar{U}^e$ achieves a global maximum. Moreover, properties i) and ii) imply that the global maximum is achieved at some $a^\tau_{pe} \in (\underline{a}_0, a_M)$. Thus, the equilibrium policy is *tiered* regardless of the value of λ.

Proof of Item 2

[24]These properties come from the fact that having $a^\tau = \underline{a}_0$ or $a^\tau = a_M$ leads to the same effective wage $\bar{w}$ and thus, to the same equilibrium outcomes (see the last part of Lemma 1)

Differentiation of (B.27) and (B.28) in terms of a^τ leads to:

$$\frac{\partial^2 \bar{U}^e}{\partial a^{\tau 2}} = -2\left[\frac{\partial U^e(a^\tau|\tau_1)}{\partial a^\tau} - \frac{\partial U^e(a^\tau|\tau_0)}{\partial a^\tau}\right] \cdot g(a^\tau) - [U^e(a^\tau|\tau_1) - U^e(a^\tau|\tau_0)] \cdot g'(a^\tau), \tag{B.29}$$

$$\frac{\partial^2 \bar{U}^w}{\partial a^{\tau 2}} = -2\left[\frac{\partial U^w(a^\tau|\tau_1)}{\partial a^\tau} - \frac{\partial U^w(a^\tau|\tau_0)}{\partial a^\tau}\right] \cdot g(a^\tau) - [U^w(a^\tau|\tau_1) - U^w(a^\tau|\tau_0)] \cdot g'(a^\tau). \tag{B.30}$$

Propositions 1 and 2 show that $\frac{\partial^2 U^e}{\partial a \partial \tau} > 0$ and $\frac{\partial^2 U^w}{\partial a \partial \tau} > 0$. Thus, the first terms of equations (B.29) and (B.30) are negative. Moreover, recall that $\frac{\partial U^e}{\partial \tau} < 0$. Hence, if $g' < 0$, then the second term of (B.29) is negative. Therefore, $\frac{\partial^2 \bar{U}^e}{\partial a^{\tau 2}} < 0$, and so $\bar{U}^e$ is strictly concave in a^τ. Note however that the sign of $\frac{\partial U^w}{\partial \tau}$ depends on a^τ. In particular, if $a^\tau > \tilde{a}_0$, Proposition 2 implies that $\frac{\partial U^w}{\partial \tau} > 0$, and thus, the sign of (B.30) is ambiguous.

In order to find the sign of (B.30), I use the fact that the labor market satisfies the following welfare condition (see Section E.1.3):

$$\bar{U}^w = m^0 u^w(\tau_0) + m^1 u^w(\tau_1).$$

Differentiating twice in terms of a^τ gives:

$$\frac{\partial^2 \bar{U}^w}{\partial (a^\tau)^2} = -2 \underbrace{\frac{\partial w}{\partial a^\tau}}_{>0} \left[\frac{\partial u^w(\tau_1)}{\partial w} - \frac{\partial u^w(\tau_0)}{\partial w}\right] \underbrace{\frac{\partial m^0}{\partial a^\tau}}_{>0}, \tag{B.31}$$

where I have used that $\frac{\partial m_1}{\partial a^\tau} = -\frac{\partial m_0}{\partial a^\tau}$. For the term in square brackets recall that: $\frac{\partial u^w}{\partial \tau} = \frac{\partial \bar{w}}{\partial \tau} l_s > 0$, therefore:

$$\frac{\partial^2 u^w}{\partial w \partial \tau} = \underbrace{\frac{\partial^2 \bar{w}}{\partial w \partial \tau}}_{>0} l_s + \underbrace{\frac{\partial \bar{w}}{\partial \tau}\frac{\partial l_s}{\partial w}}_{>0} > 0,$$

In conclusion, (B.31) is negative, and so, $\bar{U}^w$ is also strictly concave in a^τ.

Proof of Item 3

Since both $\bar{U}^e$ and $\bar{U}^w$ are strictly concave, then $\bar{U} = \lambda \bar{U}^w + (1-\lambda)U^e$ is strictly concave. The unique size threshold a^τ_{pe} that maximizes $\bar{U}$ is then given by (5.9).

Proof of Item 4

Finally, from Propositions 1 and 2, $\frac{\partial U^w(a)}{\partial w} \geq \frac{\partial U^e(a)}{\partial w}$ for $a > \underline{a}_0$. Therefore, the size threshold at which $\frac{\partial \bar{U}^w}{\partial a^\tau} = 0$ is to the left of that at which $\frac{\partial \bar{U}^e}{\partial a^\tau} = 0$. Since both functions are concave, the size threshold that maximizes $\bar{U}$ moves to the left as λ increases, which proves the last item. ■

Online Appendix
The Political Economy of Labor Policy

Diego Huerta

C Appendix: Data

C.1 Data collection

This section explains how the data presented in Figures 1a and 1b was constructed. I list below the sources for each of the 25 countries. Labor codes were obtained mainly from the International Labor Organization (ILO). For some countries the information comes from studies regarding labor regulations (which are cited after those countries' names). The focus is on countries that apply size-contingent labor regulation. Thus, the data is on the size threshold (number of workers) above which regulation becomes stricter. For each country, I searched the year in which the size threshold was enacted and all the instances in which it was changed. I consider a wide range of labor regulations as the ones described in Section 2.1.

Left and right-wing governments are defined based on the political orientation of the executive as measured by the World Bank Database of Political Institutions (WDPI), and defined in Beck et al. (2001). The WDPI provides a variable that can take three values "Left", "Center" or "Right". There are only two instances in which a regulatory size threshold was enacted by a center government: Italy in 1960 and Finland in 2007.

Argentina According to the Small and Medium Entreprises Law (SMEL) enacted in 1995, Article 83, the rules on notice period do not apply to SMEs defined as those companies with less than 40 employees.

Australia According to the Workplace Relations Act, 2005, claims of unfair dismissal were not available for workers in firms with 100 or more workers. Four years later, the Fair Work Act (FWA) 2009, defined exemptions pertaining to dismissal in firms with less than 15 employees. Firms with less than 15 workers are are exempted from a redundancy pay and their employees can make a claim for unfair dismissal only after 12 months of engagement (6 months in firms with 15 or more employees). Source: Vranken (2005).

Austria The Work Constitution Act, 1973, establishes that protection regarding individual dismissal only applies to firms with more than 5 employees. According to Section 45a of the Labour Market Promotion Act, 1969, the definition of collective dismissals excluded enterprises with less than 20 workers. Since there are size thresholds from which both individual and collective dismissal regulations apply, I choose to use the one reported by ILO, i.e. 5.

Belgium According to Article 1, Royal Order on Collective Dismissals, 1976, collective dismissal regulations apply to firms with more than 20 workers. However, individual dismissal regulations apply to all firms.

Bulgary According to the Labor Code, 1986, enterprises with less than 20 workers are excluded from collective dismissal regulations. Individual dismissal regulations apply to all firms.

Cyprus The Collective Dismissals Act, Section 2, 2001, excludes firms with less than 20 employees from collective dismissal regulations. Individual dismissal regulations apply to all firms.

Czech Republic According to Section 62 of the Labor Code, 2006, enterprises with less than 20 workers are excluded from collective dismissal regulations. Individual dismissal regulations apply to all firms.

Denmark According to Section 1 of the Collective Dismissals Act, 1994, enterprises with less than 20 workers are excluded from collective dismissal regulations. Individual dismissal regulations apply to all firms.

Finland The Act on Cooperation within Undertakings, 2007, establishes that procedures with regards to economic dismissals apply only to firms with 20 or more workers.

France Labor laws make special provisions for firms with more than 10, 11, 20 or 50 employees. However, 50 is generally agreed by labor lawyers to be the threshold from which costs increase significantly. According to the Labor Code, Articles L.1235-10 to L.1235-12, 1973, firms with at least 50 employees firing more than 9 workers must follow a complex redundancy plan with oversight from Ministry of Labor. Firms with 50 or more workers must also establish a committee on health and safety (Aticle L.4611-1), must form a staff commitee with a minimum budget of 0.3% of total payroll (Article L.2322-1-28), are obliged to set up a profit-sharing plan (Article L.3322-2), face higher duties in case of an accident in the workplace (Article L.12226-10), must conduct a formal professional assesment for each worker older than 45 (Article L.6321-1). Sources: Garicano et al. (2016), Gourio and Roys (2014).

Germany In 1951, the Federal Parliament enacted a federal Act on the Protection against Dismissal (Kündigungsschutzgesetz, PADA). The Act established that dismissals in establishments with more than 5 workers required a social justification. The threshold for the applicability of the PADA has changed three times. In 1996, from 5 to 10 employees and then back again to 5 workers in 1999. Since 2004 this threshold has been shifted to 10 workers. Sources: Siefert and Funken-Hotzel (2003), Verick (2004), Bellmann et al. (2014).

Greece According to Act No. 1387/1983 enterprises with less than 20 workers are excluded from collective dismissal regulations. Individual dismissal regulations apply to all firms.

Hungary According to Section 94 of the Labor Code, 1992, enterprises with less than 20 workers are excluded from collective dismissal regulations. Individual dismissal regulations apply to all firms.

Italy Individual dismissals were first regulated in Italy in 1966 through Law No. 604. In case of dismissal, workers could take employers to court. If judges ruled that these dismissals were unfair, employers had either to reinstate the worker or pay a firing cost which depended on firm size. Firms with more than 60 employees had to pay twice the amount paid by firms with less than 60 workers. In 1970, the Workers' Statute (Law No. 300) established that in case of unfair dismissal those firms with more than 15 employees had to reinstate workers and pay their foregone wages. Article 35 of The Workers' Statute also excluded employers with less than 15 workers (or less than 5 in the agricultural sector) from some specific aspects of union rights. Sources: Kugler and Pica (2008), Rutherford and Frangi (2018)

Kyrgyzstan According to Article 55 of the Labor Code, 2004, fixed-term contracts may be concluded during the first year of its creation in enterprises employing up to 15 workers.

Montenegro According to Article 92 of the Labor Law, 2008, regulations on collective dismissals apply only to firms with at least 20 employees.

Morroco According to Article 66 of the Labor Code, 2003, regulations on collective dismissals apply only to firms with at least 10 employees. Individual dismissal regulations apply to all firms.

Portugal The Decreto-Lei 64-A/89 introduced in 1989 softened the dismissal constraints faced by firms. Article 10 defined 12 specific rules that firms with more than 20 workers needed to follow. Only four of these rules applied to firms employing 20 or fewer workers. Firms with less than 50 employees were allowed to conduct a collective dismissal involving only two workers, but those enterprises with more than 50 workers required that at least five workers be dismissed. Source: Martins (2009).

Romania Article 1 of the Labor Code, 2004, that regulated individual and collective dismissal excluded enterprises with less than 20 employees.

Slovakia A new definition of collective dismissals was introduced in 2011 into the Labor Code. According to Section 73, enterprises with less than 20 workers are excluded from procedural requirements regarding collective dismissals.

Slovenia The Employment Relationship Act (ERA), 2002, excluded firms with less than 20 employees from the procedural requirements applicable to collective dismissals.

South Korea The Labour Standards Act enacted in 1997, Article 11, establishes that employment regulations apply to firms with more than 5 workers. Source: Yoo and Kang (2012).

Turkey According to Article 18 of the Labor Act, 2003, workers in establishments with less than 30 employees are not covered by the job security provision.

United States According to the Workforce Investment Act passed in 1989, firms with 100 or more employees, excluding part-time employees, are required to provide 60 days' written notice to displaced workers. Source: Addison and Blackburn (1994).

Venezuela Under the Organic Labor Law of 1990, enterprises with less than 10 employees were exempt from the obligation to reinstate workers even if there was a court decision ruling that the dismissal was unjustified.

C.2 The determinants of size-contingent labor regulation

In this section, I employ a cross-country regression analysis to evaluate the claim that a leftist executive is associated with a lower size-threshold above which labor regulation becomes stricter.[1] In Table 3, I present the results from regressing the regulatory size-threshold on five important determinants of labor regulations suggested in the literature.

First, political power theories suggest that regulations protecting workers are introduced by leftist governments to benefit their constituencies (Esping-Andersen, 1990, 1999; Hicks, 1999). Thus, I include a dummie for left-wing political orientation of the executive taken from the World Bank Database of Political Institutions (WBDPI).

Second, following the findings of Botero et al. (2004) that French and Scandinavian legal origins have higher levels of labor regulation, I control for countries' legal origin taken from La Porta et al. (2008).

Third, I add a measure for the degree of proportionality of the electoral system which has been recognized as an important factor in the choice of the strength of employment protection (Pagano and Volpin, 2005).

Fourth, in fractionalized societies the formation of ethnic-based groups may influence the choice of public policies, such as labor regulations (Easterly and Levine, 1997; Alesina and La Ferrara, 2005). Thus, I include a measure for ethnic fractionalization taken from Alesina et al. (2003).

Finally, previous studies find that democracy is positively correlated with labor rights (Mosley and Uno, 2007; Neumayer and De Soysa, 2006; Greenhill et al., 2009). Thus, I include a democracy index taken from Coppedge et al. (2020).

Columns (1) to (3) present the results when using all countries and observations reported in Section C.1. In columns (4) to (6), I repeat the estimation without considering the observations from the US and Australia in 2005 that may significantly bias the estimation (see Figure 1b). The coefficient on the dummie variable representing a left-wing political orientation of the executive is negative and significant, even after removing outliers and controlling for the main determinants of labor regulation recognized in the literature. Thus, leftist governments have on average enacted a lower regulatory size threshold compared to right-wing governments.

[1]Some countries such as Australia, Germany, and Italy have changed their regulatory size threshold at least one time. Thus, these countries have more than one observation.

Table 3: Determinants of Size-Contingent Labor Regulation

	(1)	(2)	(3)	(4)	(5)	(6)
	Full Sample			No Outliers		
Left	-16.80**	-14.33*	-12.05	-11.45**	-8.543*	-7.731*
	(7.135)	(7.509)	(8.458)	(5.461)	(4.843)	(4.368)
Proportionality	-5.532	-6.579	-7.376	2.690	0.635	0.336
	(5.700)	(5.675)	(4.391)	(3.917)	(3.500)	(2.479)
French Legal Origin		-2.905	-2.888		6.664	5.992
		(7.715)	(8.904)		(5.144)	(4.700)
Scandinavian Legal Origin		-7.115	-12.53		-1.154	-4.832
		(8.221)	(16.42)		(4.770)	(8.507)
German Legal Origin		-24.64**	-29.91**		-12.43***	-16.04**
		(8.919)	(10.82)		(2.602)	(5.820)
Ethnic Fractionalization			0.146			-17.36
			(26.62)			(14.92)
Electoral Democracy Index			35.37			2.494
			(23.87)			(13.24)
Constant	46.71***	54.02***	28.66	20.07*	23.52***	27.28**
	(16.77)	(19.13)	(24.54)	(10.22)	(7.575)	(12.94)
Observations	30	30	30	28	28	28
R-squared	0.249	0.405	0.475	0.182	0.472	0.528

The dependent variable is the size threshold (number of workers) above which labor regulation becomes stricter. The "Full Sample" contains all the countries reported in Section C.1. "No Outliers" removes the observations from the US and Australia in 2005 that may significantly bias the estimation. "Left" is a dummie that indicates whether the size threshold was enacted by a left-wing executive as measured in the World Bank Database of Political Institutions (WBDPI). "Proportionality" measures the degree of proportionality of the electoral system. Following Pagano and Volpin (2005), "Proportionality"= $pr - plurarity - housesys + 2$, which are variables taken from WBDPI. "Proportionality" is equal to 3 if all the seats are assigned through a proportional rule, 2 if the majority of the seats are assigned proportionally, 1 when a minority of seats are defined via this rule, and 0 if no seats are determined in this way. "French, Scandinavian, and German Legal Origin" are dummies that capture the origin of the legal system, taken from La Porta et al. (2008). "Ethnic" is a measure of ethnic fractionalization taken from Alesina et al. (2003). The "Electoral Democracy Index" is taken from Coppedge et al. (2020). Robust standard errors are reported in parenthesis. ***, **, and *, indicate significance levels at the 1%, 5%, and 10%, respectively.

D Appendix: Extensions

D.1 Labor-based policy

This section shows that the equilibrium policy remains *tiered* when firms' size is defined in terms of labor. I start by showing that the equilibrium policy satisfies monotonicity at each component.

Proposition 5 *The equilibrium labor regulation, $\mathcal{P}(l) = (\tau(l), F(l))$, satisfies monotonicity at each component:*

$$x(l) \, : \, x(l') \leq x(l'') \quad \forall l' < l'', \; x \in \{\tau, F\}.$$

Moreover, there are labor two thresholds, $l^{\tau} \in [l_{min}, l_{max}]$ and $l^{F} \in [l_{min}, l_{max}]$, such that:

$$x(l) = \begin{cases} x_0 \text{ if } l < l^x, \\ x_1 \text{ if } l \geq l^x. \end{cases}$$

Proof: The proof proceeds similarly to that of Proposition 3. By contradiction, suppose that there is some solution to the government's problem, $\mathcal{P}(l) = (\tau(l), F(l))$, such that the function $x(l)$, with $x \in \{\tau, F\}$, violates monotonicity in some non-zero measure set $\mathcal{L} \in \mathcal{J}([l^x_{min}, l^x_{max}])$ and for which monotonicity holds in $[l^x_{min}, l^x_{max}] - \mathcal{L}$. Then, as in the proof of Proposition 3, construct some alternative regulation $x'(l)$ that satisfies monotonicity in $\mathcal{L}$. Denote by l^x the labor threshold above which $x'(l) = x_1$. Given $x'(l)$, there is range of firms $[a_1, a_2]$ that hire an amount of labor slightly lower than l^x:

$$U^e(a_1, d(a_1), l^x | x_0) = U^e(a_1, d(a_1), l(a_1) | x_0),$$
$$U^e(a_2, d(a_2), l^x | x_0) = U^e(a_2, d(a_2), l(a_2) | x_1).$$

Then, the labor function given assets, $\tilde{l}(a)$, for assets level in $\mathcal{A} \equiv \{a \, : \, a = l^{-1}(l), \; l \in \mathcal{L}\}$ is given by:[2]

$$\tilde{l}(a) = \begin{cases} l(a) & \text{if } a < a_1, \\ l^x & \text{if } a \in [a_1, a_2], \\ l(a) & \text{if } a > a_2. \end{cases} \tag{D.1}$$

The next step is to show that $x'(l)$ gives higher welfare than $x(l)$. This requires that $\frac{\partial}{\partial a}\left(\frac{\partial U^e}{\partial x}\right) \geq 0$ and $\frac{\partial}{\partial a}\left(\frac{\partial U^w}{\partial x}\right) \geq 0$. Note that $\frac{\partial}{\partial a}\left(\frac{\partial U^j}{\partial x}\right) = \frac{\partial}{\partial l}\left(\frac{\partial U^j}{\partial x}\right) \cdot \frac{\partial \tilde{l}(a)}{\partial a}$, where $j \in \{e, w\}$. From the proofs of Propositions 1 and 2, $\frac{\partial}{\partial l}\left(\frac{\partial U^j}{\partial x}\right) > 0$. Also, $\frac{\partial l(a)}{\partial a} > 0$. Thus, from equation (D.1), $\frac{\partial \tilde{l}(a)}{\partial a} \geq 0$. Then, $\frac{\partial}{\partial a}\left(\frac{\partial U^j}{\partial x}\right) \geq 0$, which concludes the proof. ■

[2] $l^{-1}(\cdot)$ is the inverse labor demand function of firms, implicitly defined by $f_l(a + d(a), l(a)) = \tau w$.

The next step is to map the government's problem into a problem in which it chooses an asset threshold to maximize the *labor-based welfare*. Use conditions (6.2) and (6.3) to express l^x and a_2^x in terms of the asset threshold a_1^x. Formally, given a_1^x, the labor threshold is $l^x = l(a_1^x|x_0)$. The second threshold, $a_2^x \equiv a_2(a_1^x)$, is implicitly defined by:

$$U^e(a_2^x, d(a_2^x), l(a_1^x)|x_0) = U^e(a_2^x, d(a_2^x), l(a_2^x)|x_1).$$

Then, the problem of the government presented in Section 6.1.3 can be rewritten in terms of the asset threshold a_1^x:

$$\begin{aligned}
\max_{a_1^x\in[\underline{a}_0,a_M]} \tilde{U}(a_1^x,\lambda) = \lambda\cdot\Bigg(&\int_{\underline{a}_0}^{a_1^x} U^w(a,l(a)|x_0)\partial G(a) + \int_{a_1^x}^{a_2(a_1^x)} U^w(a,l(a_1^x)|x_0)\partial G(a) + \int_{a_2(a_1^x)}^{a_M} U^w(a,l(a)|x_1)\partial G(a)\Bigg)\\
+(1-\lambda)\cdot\Bigg(&\int_{\underline{a}_0}^{a_1^x} U^e(a,l(a)|x_0)\partial G(a) + \int_{a_1^x}^{a_2(a_1^x)} U^e(a,l(a_1^x)|x_0)\partial G(a) + \int_{a_2(a_1^x)}^{a_M} U^e(a,l(a)|x_1)\partial G(a)\Bigg)
\end{aligned}$$

$$s.t \quad m^0\cdot l_s(x_0) = \int_{\underline{a}_0}^{a_1^x} l(a|x_0)\partial G(a) + l(a_1^x)\cdot[G(a_2(a_1^x)) - G(a_1^x)], \tag{D.2}$$

$$m^1\cdot l_s(x_1) = \int_{a_2(a_1^x)}^{a_M} l(a|x_1)\partial G. \tag{D.3}$$

$$m^0 + m^1 = G(\underline{a}_0), \tag{D.4}$$

This alternative formulation leads to Proposition 6. The proposition requires the following lemma:

Lemma 2 *The equilibrium wage w is increasing in the labor threshold l^x. In particular, if $l^x = l^x_{min}$, the change in w is such that $\frac{\partial\bar{w}}{\partial l^x} = 0$.*

Proof:

Differentiation of conditions (D.2) to (D.4) in terms of a_1^x leads to,

$$\frac{\partial m^0}{\partial a_1^x}l_s^0 + m^0\frac{\partial l_s^0}{\partial a_1^x} = \int_{\underline{a}}^{a_1^x}\frac{\partial l^0(a)}{\partial a_1^x}\partial G + \frac{\partial l^x}{\partial a_1^x}G(a_2^x) + l^x g(a_2^x)\frac{\partial a_2^x}{\partial a_1^x} - l^0(\underline{a})g(\underline{a})\frac{\partial \underline{a}}{\partial a_1^x}, \tag{D.5}$$

$$\frac{\partial m^1}{\partial a_1^x}l_s^1 + m_1\frac{\partial l_s^1}{\partial a_1^x} = \int_{a_2^x}^{a_M}\frac{\partial l^1(a)}{\partial a_1^x}\partial G - l^x g(a_2^x)\frac{\partial a_2^x}{\partial a_1^x}, \tag{D.6}$$

$$\frac{\partial m^1}{\partial a_1^x} = g(\underline{a})\frac{\partial \underline{a}}{\partial a_1^x} - \frac{\partial m^0}{\partial a_1^x}, \tag{D.7}$$

where I have defined: $l^0(a)\equiv l(a|x_0), l^1(a)\equiv l(a|x_1), l_s^0 \equiv l_s(x_0)$, and $l_s^1\equiv l_s(x_1)$.

Combining (D.6) and (D.7):

$$\frac{\partial m^0}{\partial a^x} = \left(-\int_{a^x}^{a_M}\frac{\partial l^1(a)}{\partial a_1^x}\partial G + l^x g(a_2^x)\frac{\partial a_2^x}{\partial a_1^x} + l_s^1 g(\underline{a})\frac{\partial \underline{a}}{\partial a^x} + m_1\frac{\partial l_s^1}{\partial a^x}\right)\frac{1}{l_s^1}. \tag{D.8}$$

Rearranging (D.5) gives:

$$\frac{\partial m^0}{\partial a^x} = \left(\int_{\underline{a}}^{a^x} \frac{\partial l^0(a)}{\partial a^x} \partial G + \frac{\partial l^x}{\partial a_1^x} G(a_2^x) + l^x g(a_2^x) \frac{\partial a_2^x}{\partial a_1^x} - l^0(\underline{a}) g(\underline{a}) \frac{\partial \underline{a}}{\partial a_1^x} - m^0 \frac{\partial l_s^0}{\partial a_1^x} \right) \frac{1}{l_s^0}. \tag{D.9}$$

Equalizing conditions (D.8) and (D.9):

$$l_s^1 \int_{\underline{a}}^{a_1^x} \frac{\partial l^0(a)}{\partial a_1^x} \partial G + l_s^0 \int_{a_2^x}^{a_M} \frac{\partial l^1(a)}{\partial a_1^x} \partial G - l_s^1 (l^0(\underline{a}) + l_s^0) g(\underline{a}) \frac{\partial \underline{a}}{\partial a_1^x} - m^0 l_s^1 \frac{\partial l_s^0}{\partial a_1^x} - m^1 l_s^0 \frac{\partial l_s^1}{\partial a_1^x} + \frac{\partial l^x}{\partial a_1^x} G(a_2^x) = l^x (l_s^0 - l_s^1) g(a_1^x),$$

$$\Rightarrow \frac{\partial w}{\partial a_1^x} \left(l_s^1 \int_{\underline{a}}^{a_1^x} \underbrace{\frac{\partial l^0(a)}{\partial w}}_{<0} \partial G + l_s^0 \int_{a_2^x}^{a_M} \underbrace{\frac{\partial l^1(a)}{\partial w}}_{<0} \partial G - l_s^1 (l^0(\underline{a}) + l_s^0) g(\underline{a}) \underbrace{\frac{\partial \underline{a}}{\partial w}}_{<0} - m^0 l_s^1 \frac{\partial l_s^0}{\partial w} - m^1 l_s^0 \underbrace{\frac{\partial l_s^1}{\partial w}}_{<0} + \underbrace{\frac{\partial l^x}{\partial w}}_{<0} G(a_2^x) \right) = \underbrace{l^x (l_s^0 - l_s^1)}_{<0} g(a_1^x).$$

This last condition implies that $\frac{\partial w}{\partial a_1^x} > 0$. Finally, to show that $\frac{\partial \bar{w}}{\partial l^x} = 0$, the proof proceeds similarly to that of Lemma 1. ■

Proposition 6

1. *$\tilde{U}(l^x, \lambda)$ achieves a global maximum in $[l_{min}^x, l_{max}^x]$ at some labor threshold $l_{pe}^x \in (l_{min}^x, l_{max}^x)$ characterized by:*

$$l_{pe}^x = \sup_{l^x} \tilde{U}(l^x, \lambda).$$

   Suppose that $g(\cdot)$ satisfies $g' < 0$, then:

2. *$\tilde{U}^e(a_1^x, \lambda)$ and $\tilde{U}^w(a_1^x, \lambda)$ are strictly concave in a_1^x.*

3. *The equilibrium labor threshold l_{pe}^x is the unique solution to:*

$$\lambda \frac{\partial \tilde{U}^w(l_{pe}^x, \lambda)}{\partial l^x} + (1 - \lambda) \frac{\partial \tilde{U}^e(l_{pe}^x, \lambda)}{\partial l^x} = 0 \tag{D.10}$$

Proof: Rewrite equations (6.4) and (6.5) as a function of a_1^x and differentiate in terms of a_1^x,

$$\frac{\partial \tilde{U}^e}{\partial a_1^x} = \int_{\underline{a}_0}^{a_1^x} \frac{\partial U^e(a, l(a)|x_0)}{\partial a_1^x} \partial G + \frac{\partial U^e(a_1^x, l^x|x_0)}{\partial a_1^x} [G(a_2^x) - G(a_1^x)] + \int_{a_2^x}^{a_M} \frac{\partial U^e(a, l(a)|x_1)}{\partial a_1^x} \partial G + [U^e(a_1^x, l(a_2^x)|x_0) - U^e(a_1^x, l(a_2^x)|x_1)] g(a_2^x), \tag{D.11}$$

$$\frac{\partial \tilde{U}^w}{\partial a_1^x} = \int_{\underline{a}_0}^{a_1^x} \frac{\partial U^w(a, l(a)|x_0)}{\partial a_1^x} \partial G + \frac{\partial U^w(a_1^x, l^x|x_0)}{\partial a_1^x} [G(a_2^x) - G(a_1^x)] + \int_{a_2^x}^{a_M} \frac{\partial U^w(a, l(a)|x_1)}{\partial a_1^x} \partial G + [U^w(a_1^x, l(a_2^x)|x_0) - U^w(a_1^x, l(a_2^x)|x_1)] g(a_2^x). \tag{D.12}$$

Proof of Item 1

Using equations (D.11) and (D.12), the proof proceeds similarly to that of Proposition 4.

Proof of Item 2

Differentiation of equations (D.11) and (D.12) gives,

$$\frac{\partial^2 \tilde{U}^e}{\partial a_1^{x2}} = -2 \underbrace{\left[\frac{\partial U^e(a_2^x, l(a_2^x)|x_1)}{\partial a_1^x} - \frac{\partial U^e(a_2^x, l(a_2^x)|x_0)}{\partial a_1^x}\right]}_{>0} \cdot \underbrace{\frac{\partial a_2^x}{\partial a_x^1}}_{>0} - \underbrace{\left[U^e(a_2^x, l(a_2^x)|x_1) - U^e(a_2^x, l(a_2^x)|x_0)\right]}_{<0} \underbrace{g'(a_2^x)}_{<0} \underbrace{\frac{\partial a_2^x}{\partial a_x^1}}_{>0},$$

$$\frac{\partial^2 \tilde{U}^w}{\partial a_1^{x2}} = -2 \underbrace{\left[\frac{\partial U^w(a_2^x, l(a_2^x)|x_1)}{\partial a_1^x} - \frac{\partial U^w(a_2^x, l(a_2^x)|x_0)}{\partial a_1^x}\right]}_{>0} \cdot \underbrace{\frac{\partial a_2^x}{\partial a_x^1}}_{>0} - \underbrace{\left[U^w(a_2^x, l(a_2^x)|x_1) - U^w(a_2^x, l(a_2^x)|x_0)\right]}_{?} \underbrace{g'(a_2^x)}_{<0} \underbrace{\frac{\partial a_2^x}{\partial a_x^1}}_{>0},$$

where I have used the results from Propositions 1 and 2 that $\frac{\partial^2 U^e}{\partial a \partial x} > 0$, $\frac{\partial^2 U^w}{\partial a \partial x} > 0$, and that $\frac{\partial U^e}{\partial x} < 0$. Thus, if $g' < 0$, then $\frac{\partial^2 \tilde{U}^e}{\partial a_1^{x2}} < 0$. To show that $\frac{\partial^2 \tilde{U}^w}{\partial a_1^{x2}} < 0$, proceed as in the proof of item 2 of Proposition 4.

Proof of Item 3

Since both $\tilde{U}^e(a_1^x)$ and $\tilde{U}^w(a_1^x)$ are strictly concave in a_1^x, then $\tilde{U}(a_1^x) = \lambda \tilde{U}^e(a_1^x) + (1-\lambda)\tilde{U}^e(a_1^x)$ is strictly concave. The size threshold that maximizes $\tilde{U}(a_1^x)$, denoted by a_{pe}^x, satisfies:

$$\frac{\partial \tilde{U}(a_{pe}^x)}{\partial a_1^x} = 0 \Leftrightarrow \frac{\partial \tilde{U}(l_{pe}^x)}{\partial l^x} \cdot \underbrace{\frac{\partial l^x}{\partial a_1^x}}_{>0} = 0,$$

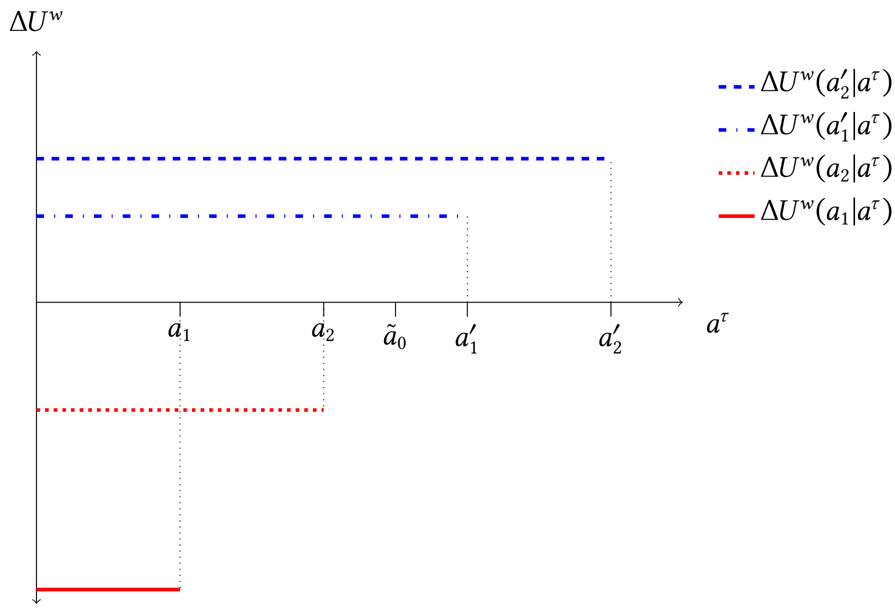
where the last condition leads to (D.10). ∎

D.2 Inflexibility in real wages

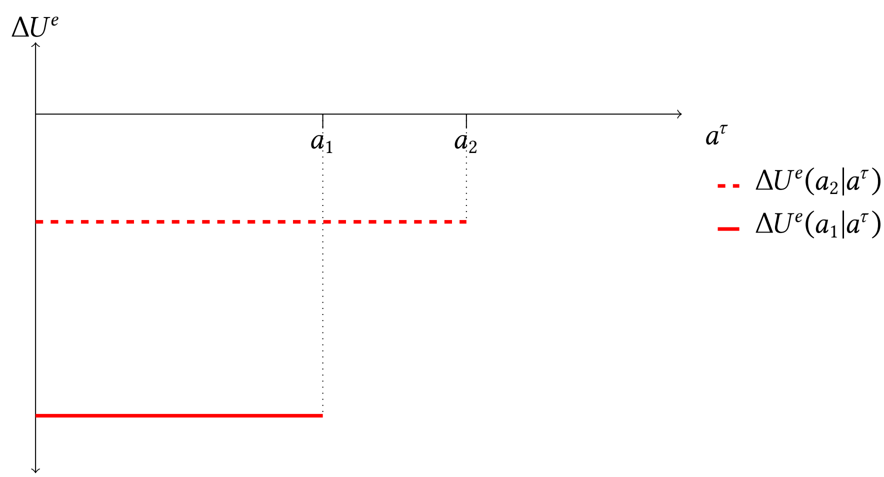
This section studies the equilibrium regulation when real wages are perfectly inflexible, $\iota = 1$. Thus, the wage rate is given by $w_0 = w(\mathcal{P}_0)$ as defined by condition (3.10). The results can be extended to partial inflexibility in real wages, i.e. $\iota \in (0,1)$. The government maximizes the *asset-based welfare* by taking the wage w_0 as given. Since wages cannot adjust to regulations, when τ improves it generates unemployment. Section E.3 in Appendix E shows how the endogenous probabilities to be matched to a firm under weak (τ_0) and strong (τ_1) regulations adjust to account for unemployment.

D.2.1 Political preferences with inflexible wages

Figure 10 illustrates the change in workers' and entrepreneurs' utilities as a function of the size threshold a^τ. The effects of an increase in τ can be inferred from Propositions 1 and 2 of Section 4. The changes are relative to the utilities they would obtain under the initial labor policy, $\mathcal{P}_0$. All agents are indifferent when they are not affected by the change in regulations, i.e. when their firms' assets are such that $a < a^\tau$. This is in contrast with Section 5 where all agents are affected by a change in regulations through changes in wages (i.e. even if they remain subject to the initially weak regulation).



(a) ΔU^w as function of a^τ.



(b) ΔU^e as function of a^τ.

Figure 10: Political preferences for the size threshold as a function of assets.

D.2.1.1 Workers' preferences for a^τ The red solid and dotted lines in Figure 10a show that the groups of workers in firms with assets $a < \tilde{a}_0$ are worse off whenever their firms are subject to stricter labor regulation, i.e. whenever $a \geq a^\tau$. In contrast, as shown by the blue dashed and dashed-dotted lines, workers in firms with $a > \tilde{a}_0$ benefit from a change in regulations as long as they receive higher protection, i.e. if $a \geq a^\tau$.

The figure also compares the utility losses and gains of workers matched to firms with four different sizes: $a_1 < a_2 < \tilde{a}_0$ and $a'_2 > a'_1 > \tilde{a}_0$. Within small firms ($a < \tilde{a}_0$), workers in less capitalized firms (a_1) suffer more from regulation than those in larger firms (a_2). On the other hand, within large firms ($a > \tilde{a}_0$), those workers in larger firms (a'_2) gain more from an increase in labor regulation than those in smaller firms (a'_1).

D.2.1.2 Entrepreneurs' preferences for a^τ Figure 10b depicts entrepreneurs' utilities as a function of a^τ. All entrepreneurs are worse off under stricter regulation, i.e. when $a > a^\tau$. Those running smaller firms (a_1) suffer more from labor regulation than owners of larger firms (a_2). From Section 4, recall that larger firms can more easily absorb stricter regulation due to their better access to credit.

D.2.1.3 The asset-based welfare Figure 11 depicts the *asset-based welfare* as a function of a^τ and λ. The value of $\bar{U}$ at $\mathcal{P}_0$ is normalized to zero in the figure. Thus, if the government does not implement any regulatory change, i.e. if it sets $a^\tau = a_M$, then $\bar{U} = 0$. As shown in the figure, the shape of $\bar{U}$ depends on λ.

First, when the government cares only about workers ($\lambda = 1$), then $\bar{U}$ is single-peaked at $\tilde{a}_0$, as shown by the continuous red line in the figure. Therefore, the political equilibrium when $\lambda = 1$ is $a^\tau = \tilde{a}_0$. Second, if the government cares only about entrepreneurs ($\lambda = 0$), then $\bar{U}$ is negative in $[0, a_M]$ and increasing in a^τ because wealthier entrepreneurs suffer less from labor regulation. This is shown by the dashed-blue line. In this case, the government chooses not to strengthen regulations, i.e. $a^\tau = a_M$.

The question that remains is: what is the shape of $\bar{U}$ for $\lambda \in (0, 1)$? This case is illustrated by the dotted line. Intuitively, for a relatively low λ, the welfare should remain negative for any size threshold, thus $a^\tau = a_M$. Conversely, for a relatively high λ, $\bar{U}$ should still have a single peak at some asset threshold that gives $\bar{U} > 0$. For intermediate values of λ, the function may have more than one peak depending on the shape of the wealth distribution. Moreover, the peak may give a negative value for $\bar{U}$. Next section describes the set of λ's for which a political equilibrium can be characterized.

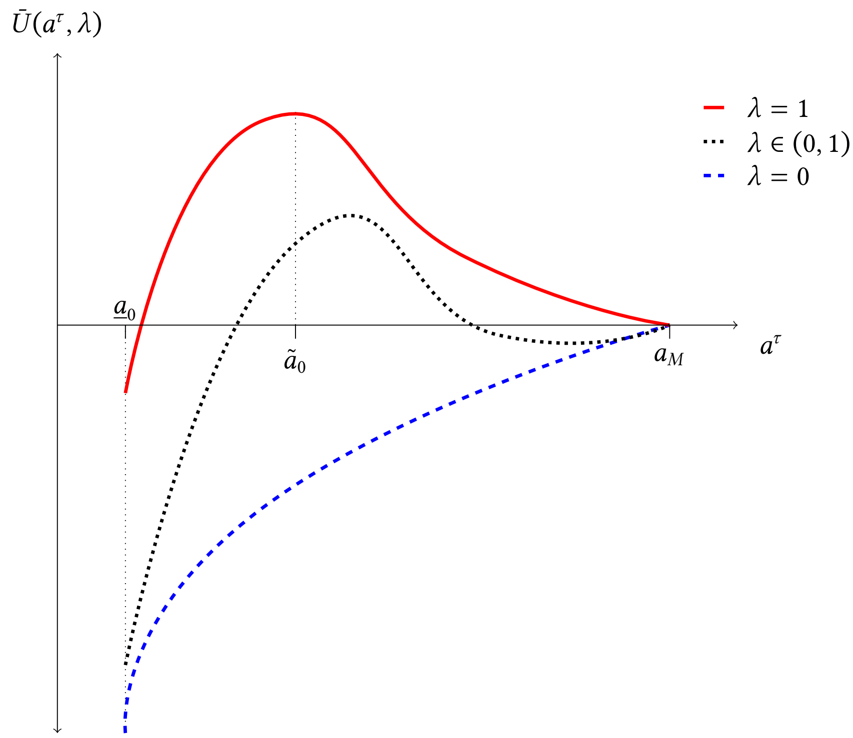


Figure 11: *Asset-based welfare* ($\bar{U}$) as function of λ and a^τ.

D.2.2 Equilibrium labor policy with inflexible wages

The following proposition characterizes the political equilibrium, given by the size threshold a^τ_{pe} that maximizes the *asset-based welfare.*[3]

Proposition 7 *The equilibrium size threshold under inflexible wages, a^τ_{pe}, is as follows:*

1. *If $\lambda \leq \frac{1}{2+1/(\gamma-2)}$, then $a^\tau_{pe} = a_M$.*
2. *If $\lambda > \frac{1}{2-1/\gamma}$, then $a^\tau_{pe} \in [\tilde{a}_0, \overline{a}_0)$ satisfies:*

$$\lambda \frac{\partial U^w(a^\tau_{pe}|\tau_0)}{\partial \tau} = -(1-\lambda)\frac{\partial U^e(a^\tau_{pe}|\tau_0)}{\partial \tau}. \tag{D.13}$$

In particular, if $\lambda = 1$, then $a^\tau_{pe} = \tilde{a}_0$ and $a^\tau_{pe} > \tilde{a}_0$ if $\lambda < 1$.

Figure 12 illustrates Proposition 7. It shows the equilibrium labor policy, $\tau_{pe}(a)$, as a function of firm's assets a and the government's political orientation λ. A *pro-business* government ($\lambda \leq$

[3] To simplify the proof of the proposition and obtain (D.13), I define $\tau_1 = \tau_0 + \Delta, \Delta > 0$ and take $\Delta \to 0$. However, this is not essential for the result. When Δ is some arbitrary positive number, the condition can be written in terms of finite differences.

$\frac{1}{2+1/(\gamma-2)}$) is not willing to improve labor regulation and maintains low labor protection in all firms, as shown by the blue dashed line. On the other hand, a sufficiently *pro-worker* government ($\lambda > \frac{1}{2-1/\gamma}$) implements a *tiered* labor regulation, that is, there is a size threshold $a^\tau_{pe} > \underline{a}_0$ above which stricter regulation applies (red dotted line). Thus, workers in smaller firms ($a < a^\tau_{pe}$) are left without protection.

The equilibrium threshold, a^τ_{pe}, equalizes the weighted marginal workers' benefit and the weighted entrepreneurs' marginal costs at the threshold, as shown by expression (D.13). In principle, a *pro-worker* government would like to provide high protection to all workers. However, stricter labor regulation in smaller firms reduces their already limited access to credit, which discourages investment and hiring. Thus, despite that labor regulation increases the effective wage (τw_0), it significantly decreases employment in smaller firms, thereby reducing the welfare of their workers. Hence, to satisfy condition (D.13), a *pro-worker* government must choose a size threshold $a^\tau_{pe} > \underline{a}_0$. On the other hand, a *pro-business* government does not provide any protection to workers as it only harms entrepreneurs.

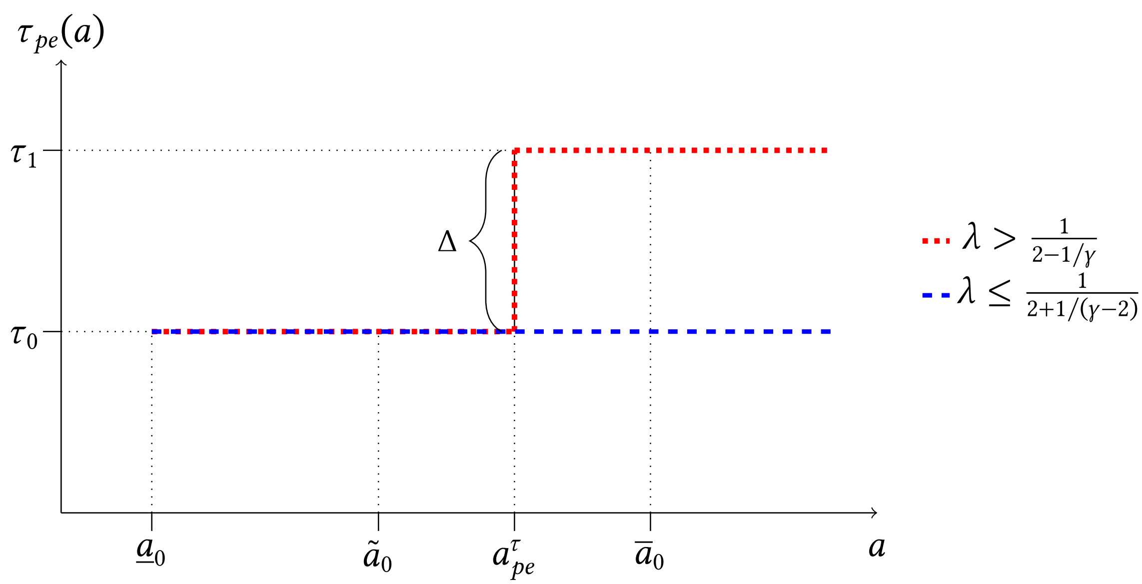


Figure 12: Equilibrium labor policy under inflexible wages.

Proposition 7 shows that the equilibrium size threshold can be explicitly characterized as long as $\lambda \leq \frac{1}{2+1/(\gamma-2)}$ or $\lambda > \frac{1}{2-1/\gamma}$, i.e. for non-centrist governments. In Section 5, I show that when wages are flexible, the equilibrium policy can be characterized for any $\lambda \in [0, 1]$.

A final question that should be asked is: What is the effect of λ on the equilibrium size threshold? Intuitively, Figure 11 shows that as λ increases, i.e. as the government becomes more *pro-worker*, the red solid line receives a larger weight and the maximum of $\bar{U}$ shifts left. Thus, more leftist governments should establish a lower size threshold, i.e. a more protective labor regulation. Lemma 3 formalizes this result. This prediction is consistent with the empirical evidence presented in Figure 1 in Section 2, which shows that on average more leftist governments set a lower size threshold. Botero et al. (2004) also provides evidence that the left is associated with more stringent labor regulations.

Lemma 3 *If $\lambda > \frac{1}{2-1/\gamma}$, the equilibrium size threshold, a^{τ}_{pe}, under inflexible wages is strictly decreasing in λ.*

D.2.3 Inflexibility in real wages: Proofs

D.2.3.1 Proof of Proposition 7

Proposition 7 *The equilibrium size threshold under inflexible wages, a^{τ}_{pe}, is as follows:*

1. *If $\lambda \leq \frac{1}{2+1/(\gamma-2)}$, then $a^{\tau}_{pe} = a_M$.*
2. *If $\lambda > \frac{1}{2-1/\gamma}$, then $a^{\tau}_{pe} \in [\tilde{a}_0, \overline{a}_0)$ satisfies:*

$$\lambda \frac{\partial U^w(a^{\tau}_{pe}|\tau_0)}{\partial \tau} = -(1-\lambda)\frac{\partial U^e(a^{\tau}_{pe}|\tau_0)}{\partial \tau}.$$

In particular, if $\lambda = 1$, then $a^{\tau}_{pe} = \tilde{a}_0$ and $a^{\tau}_{pe} > \tilde{a}_0$ if $\lambda < 1$.

Proof: The FOC of the government's problem in Section 5.1 is as follows:

$$\lambda[U^w(l(a^{\tau}_{pe}|\tau_0)) - U^w(l(a^{\tau}_{pe}|\tau_1))]g(a^{\tau}_{pe}) + (1-\lambda)[U^e(k(a^{\tau}_{pe}), l(a^{\tau}_{pe})|\tau_0) - U^e(k(a^{\tau}_{pe}), l(a^{\tau}_{pe})|\tau_1)]g(a^{\tau}_{pe}) = 0.$$

Replacing the formulas for the utilities and rearranging terms:

$$\begin{aligned}(2\lambda-1)[\bar{w}(x_0)l(a^{\tau}_{pe}|\tau_0) - \bar{w}(\tau_1)l(a^{\tau}_{pe}|\tau_1)] - \lambda\left[\frac{l(a^{\tau}_{pe}|\tau_0)}{l_s(a^{\tau}_{pe}|\tau_0)}\varsigma(l_s(a^{\tau}_{pe}|\tau_0)) - \frac{l(a^{\tau}_{pe}|\tau_1)}{l_s(a^{\tau}_{pe}|\tau_1)}\varsigma(l_s(a^{\tau}_{pe}|\tau_1))\right] \\ + (1-\lambda)\left[\tilde{f}(a^{\tau}_{pe}|\tau_0) - \tilde{f}(a^{\tau}_{pe}|\tau_1)\right] = 0,\end{aligned}$$

where I have defined:

$$\tilde{f}(a|\tau) \equiv f(k(a|\tau), l(a|\tau)) - (1+\rho)d(a|\tau), \tag{D.14}$$

which corresponds to firm's output net of credit costs. Define the following "weighted worker's welfare" function:

$$\hat{U}^w(a|\tau) = (2\lambda-1)\bar{w}(\tau)l(a|\tau) - \lambda\frac{l(a|\tau)}{l_s(\tau)}\varsigma(l_s(\tau)). \tag{D.15}$$

Then, the FOC reads as:

$$\hat{U}^w(a^\tau_{pe}|\tau_0) - \hat{U}^w(a^\tau_{pe}|\tau_1) = \tilde{f}(a^\tau_{pe}|\tau_1) - \tilde{f}(a^\tau_{pe}|\tau_1)$$

Divide both sides of previous expression by Δ and take $\lim_{\Delta\to 0}(\cdot)$ to obtain:[4]

$$\frac{\partial \hat{U}^w(a^\tau_{pe}|\tau_0)}{\partial \tau} = -(1-\lambda)\frac{\partial \tilde{f}(a^\tau_{pe}|\tau_0)}{\partial \tau}. \tag{D.16}$$

Analogously to expression (B.10), differentiation of (D.15) in terms of τ leads to:

$$\frac{\partial}{\partial \tau}\left(\hat{U}^w(a)\right) = \bar{w}_\tau \cdot l\left[(2\lambda-1) - \frac{1}{\varsigma''(l_s)\cdot l_s}\left((2\lambda-1)\varsigma'(l_s) - \lambda\frac{\varsigma(l_s)}{l_s}\right)\right] + \underbrace{\frac{\partial l}{\partial \tau}}_{<0}\left((2\lambda-1)\varsigma'(l_s) - \lambda\frac{\varsigma(l_s)}{l_s}\right) \tag{D.17}$$

In what follows, expression (D.17) is used to characterize the solution to (D.16). Two cases are studied: i) $\lambda \leq \frac{1}{2+1/(\gamma-2)}$ and ii) $\lambda > \frac{1}{2-1/\gamma}$. When $\lambda \in \left[\frac{1}{2+1/(\gamma-2)}, \frac{1}{2-1/\gamma}\right]$ there may exist multiple solutions.

Case 1: $\lambda \leq \frac{1}{2+1/(\gamma-2)}$

Note that in this case:

$$(2\lambda-1)\varsigma'(l_s) - \lambda\frac{\varsigma(l_s)}{l_s} = [(2\lambda-1)\gamma - \lambda](l_s)^{\gamma-1} < 0,$$

and

$$(2\lambda-1) - \frac{1}{\varsigma''(l_s)\cdot l_s}\left((2\lambda-1)\varsigma'(l_s) - \lambda\frac{\varsigma(l_s)}{l_s}\right) = \frac{(2\lambda-1)\gamma(\gamma-2)+\lambda}{\gamma(\gamma-1)} < \frac{\lambda(2(\gamma-2)+1)+\gamma-2}{\gamma(\gamma-1)} < 0.$$

Proceeding as in Proposition 2, differentiation of (D.17) in terms of a leads to:

$$\frac{\partial}{\partial a}\left(\frac{\partial \hat{U}^w(a|\tau_0)}{\partial \tau}\right) = \underbrace{\bar{w}_\tau \cdot \frac{\partial l}{\partial a}}_{>0}\underbrace{\left[(2\lambda-1) - \frac{1}{\varsigma''(l_s)\cdot l_s}\left((2\lambda-1)\varsigma'(l_s) - \lambda\frac{\varsigma(l_s)}{l_s}\right)\right]}_{<0}$$
$$+ \underbrace{\frac{\partial}{\partial a}\left(\frac{\partial l}{\partial \tau}\right)}_{>0}\underbrace{\left((2\lambda-1)\varsigma'(l_s) - \lambda\frac{\varsigma(l_s)}{l_s}\right)}_{<0} < 0.$$

[4]Note that this expression is analogous to (D.13). As will be clear later, this alternative form is useful to study the solution of the government's problem. Additionally, I take $\Delta \to 0$ to simplify the proof of the proposition and obtain condition (D.13). However, this is not essential for the result. When Δ is some arbitrary positive number, the condition can be written in terms of finite differences.

Hence, in this case, the left-hand side of (D.16) is decreasing in a. Also, because $\lim_{a\to \underline{a}_0^+} \frac{\partial \hat{U}^w(a|\tau_0)}{\partial \tau} = +\infty$, a similar argument as the one used in Proposition 2 can be used to conclude that there is some cutoff $\hat{a}_0 \in (\underline{a}_0, \overline{a}_0)$ defined by:

$$\frac{\partial \hat{U}(\hat{a}_0|\tau_0)}{\partial \tau} = 0,$$

such that $\frac{\partial \hat{U}^w(a|\tau_0)}{\partial \tau} > 0$ if $a < \hat{a}_0$ and $\frac{\partial \hat{U}^w(a|\tau_0)}{\partial \tau} < 0$ if $a > \hat{a}_0$. Moreover, from Proposition 1:

$$\frac{\partial}{\partial a}\left(-\frac{\partial \tilde{f}(a|\tau_0)}{\partial \tau}\right) < 0.$$

Thus, the right-hand side of (D.16) is also decreasing in a. Additionally, $\lim_{a\to \underline{a}_0^+} -\frac{\partial \tilde{f}(a|\tau_0)}{\partial \tau} = +\infty$ and $\frac{\partial \tilde{f}(a|\tau_0)}{\partial \tau} = 0$ for $a \geq \overline{a}_0$. Since $\frac{\partial \hat{U}^w(\hat{a}_0|\tau_0)}{\partial \tau} = 0$ and $\hat{a}_0 < \overline{a}_0$, then $-(1-\lambda)\frac{\partial \tilde{f}(a|\tau_0)}{\partial \tau}$ is always above $\frac{\partial \hat{U}^w(a|\tau_0)}{\partial \tau}$. Figure 22 in Section F of the Appendix illustrates condition (D.16) in terms of a^τ_{pe}. The left-hand side is represented by the red solid line, while the blue dashed line depicts the right-hand side. In conclusion, the FOC is always positive and the government chooses $a^\tau_{pe} = a_M$.

Case 2: $\lambda > \frac{1}{2-1/\gamma}$

Note that this condition is equivalent to $\gamma > \frac{\lambda}{2\lambda-1}$. Thus:

$$(2\lambda-1)\varsigma'(l_s) - \lambda\frac{\varsigma(l_s)}{l_s} = [(2\lambda-1)\gamma - \lambda](l_s)^{\gamma-1} > 0$$

and

$$(2\lambda-1) - \frac{1}{\varsigma''(l_s)\cdot l_s}\left((2\lambda-1)\varsigma'(l_s) - \lambda\frac{\varsigma(l_s)}{l_s}\right) = \frac{(2\lambda-1)\gamma(\gamma-2)+\lambda}{\gamma(\gamma-1)} > \frac{\lambda(\gamma-1)}{\gamma(\gamma-1)} = \frac{\lambda}{\gamma} > 0.$$

These properties and the same argument used in Proposition 2 can be used to show that: $\lim_{a\to \underline{a}_0^+} \frac{\partial \hat{U}^w(a|\tau_0)}{\partial \tau} = -\infty$ and that $\frac{\partial}{\partial a}\left(\frac{\partial \hat{U}^w(a|\tau_0)}{\partial \tau}\right) > 0$. Thus, there is a cutoff $\hat{a}_0 \in (\underline{a}_0, \overline{a}_0)$ such that $\frac{\partial \hat{U}^w(a|\tau_0)}{\partial \tau} < 0$ if $a < \hat{a}_0$ and $\frac{\partial \hat{U}^w(a|\tau_0)}{\partial \tau} > 0$ if $a > \hat{a}_0$.[5] Figure 23 in Section F illustrates equation (D.16) in terms of a^τ. The properties of $\hat{U}^w$ and $\tilde{f}$ imply that there is a unique solution $a^\tau_{pe} \in (\hat{a}_0, \overline{a}_0)$ to equation (D.16). In particular, when $\lambda = 1$ the FOC reads as $\frac{\partial U^w(a^\tau_{pe}|\tau_0)}{\partial \tau} = 0$, which by Proposition 2 is solved by $a^\tau_{pe} = \tilde{a}_0$. Otherwise, when $\lambda \in (\frac{1}{2-1/\gamma}, 1)$, $a^\tau_{pe} > \hat{a}_0 > \tilde{a}_0$, as shown in the figure. ■

D.2.3.2 Proof of Lemma 3

Lemma 3 *If $\lambda > \frac{1}{2-1/\gamma}$, the equilibrium size threshold, a^τ_{pe}, under inflexible wages is strictly decreasing in λ.*

[5] Since $\lambda > 2\lambda - 1$ when $\lambda \in (0,1)$, then the cutoff at which $\frac{\partial \hat{U}^w}{\partial \tau} = 0$ is to the right of that at which $\frac{\partial U^w}{\partial \tau} = 0$.

Proof: Differentiating (D.13) in terms of λ:

$$\frac{\partial U^w}{\partial \tau} + \lambda \cdot \frac{\partial^2 U^w}{\partial a_{pe}^{\tau} \partial \tau} \frac{\partial a_{pe}^{\tau}}{\partial \lambda} = \frac{\partial U^e}{\partial \tau} - (1-\lambda) \cdot \frac{\partial^2 U^e}{\partial a_{pe}^{\tau} \partial \tau} \frac{\partial a_{pe}^{\tau}}{\partial \lambda},$$

$$\Rightarrow \frac{\partial a_{pe}^{\tau}}{\partial \lambda} = \frac{\frac{\partial U^e}{\partial \tau} - \frac{\partial U^w}{\partial \tau}}{\lambda \frac{\partial^2 U^w}{\partial a_{pe}^{\tau} \partial \tau} + (1-\lambda) \frac{\partial^2 U^e}{\partial a_{pe}^{\tau} \partial \tau}}. \tag{D.18}$$

Note that from (D.13):

$$\lambda \left(\frac{\partial U^w}{\partial \tau} - \frac{\partial U^e}{\partial \tau} \right) = -\frac{\partial U^e}{\partial \tau} > 0.$$

Thus, the numerator of (D.18) is negative. Finally, from Propositions 1 and 2, the denominator is positive. Thus, $\frac{\partial a_{pe}^{\tau}}{\partial \lambda} < 0$, when $\lambda > \frac{1}{2-1/\gamma}$. ■

D.3 Independent bargaining

D.3.1 Timeline

Figure 13 illustrates the timeline. At $t = 0$, workers are matched to a firm and are subject to the initially homogeneous labor regulation, $\mathcal{P}_0 = (\tau_0, F_0)$. The different groups of workers form unions to bargain on τ with their firms. The results can be expanded to the case in which agents bargain on τ and F simultaneously.

Negotiation terms are as follows. At $t = 1$, potential entrepreneurs and unions sign an employment contract which defines the strength of labor regulation to be exercised at $t = 2$. The contract specifies whether the firm is going to operate under weak (τ_0) or strong regulation (τ_1). Entrepreneurs cannot precommit to a given level of employment since debt and labor are decided at period $t = 2$, i.e. after the new regulation τ has been set. Conversely, at $t = 1$, unions in bargaining with entrepreneurs set their demands taking into account the effect on debt, and thus, on the amount of labor that will be hired at $t = 2$. However, as negotiations take place independently between unions and entrepreneurs of different firms, they cannot anticipate the general equilibrium effects of the economy-wide changes in labor regulation. At $t = 2$, the economy operates under the new regulation, τ, that results from independent negotiations. Production takes place and loans are repaid.

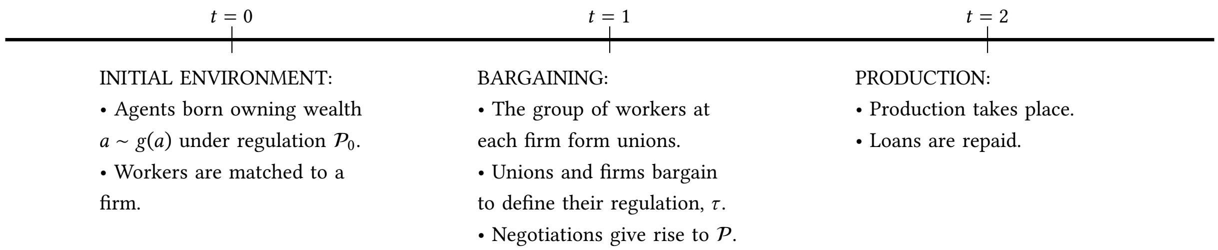


Figure 13: Timeline.

D.3.2 Bargaining mechanism

Unions and entrepreneurs bargain over their firm-specific labor regulation by following the random proposer model by Binmore (1987). Unions and entrepreneurs make take-it-or-leave-it proposals with frequencies μ and $1 - \mu$, respectively. Thus, a firm's regulation is set at the union's optimal level with frequency μ and at the entrepreneur's preferred level with frequency $1 - \mu$. Hence, $\mu \in [0, 1]$ can be interpreted as the "unions' bargaining power", which is now the unique policy instrument of the government.

Importantly, μ is not size-contingent. Thus, the politician's policy intervention operates in a single dimension and it is uniform across firms. This means that firms cannot strategically adjust their size in order to face less stringent regulations. Since the policy instrument has only one degree of freedom, it is not obvious whether there exists a level of μ that replicates the maximum *asset-based welfare* of Section 5. Recall that this level of welfare was attained under a size-contingent policy which provided the government a greater degree of freedom.

D.3.3 Equilibrium labor regulation

Negotiations lead to the expected labor regulation, $\tau_{rp} : [\underline{a}_0, a_M] \to \mathcal{O}$, to be implemented at $t = 2$, where $\mathcal{O}$ is the convex set given by:

$$\mathcal{O} = \{\big(\zeta\tau_0 + (1-\zeta)\tau_1, \zeta \in [0,1]\},$$

where $\tau_1 = \tau_0 + \Delta$, with $\Delta > 0$.

Lemma 4 *The expected labor regulation, $\tau_{rp} : [\underline{a}_0, a_M] \to \mathcal{O}$, that arises from the random proposer model is given by:*

$$\tau_{rp}(a) = \begin{cases} \tau_0 & \textit{if } a \in [\underline{a}_0, \tilde{a}_0), \\ \tau_0 + \mu\Delta & \textit{if } a \geq \tilde{a}_0. \end{cases} \tag{D.19}$$

Figure 14 illustrates Lemma 4. As opposed to Section 5, governments have no control over the size threshold above which labor regulation becomes stricter, which now is fixed and given by $\tilde{a}_0$. In this case, governments can affect the equilibrium policy by changing the bargaining power of unions, μ. Thus, now they have control over the size of the discontinuity at the size threshold. In next section, I show the conditions under which the expected regulation that arises from the random proposer model can replicate the maximum *asset-based welfare*.

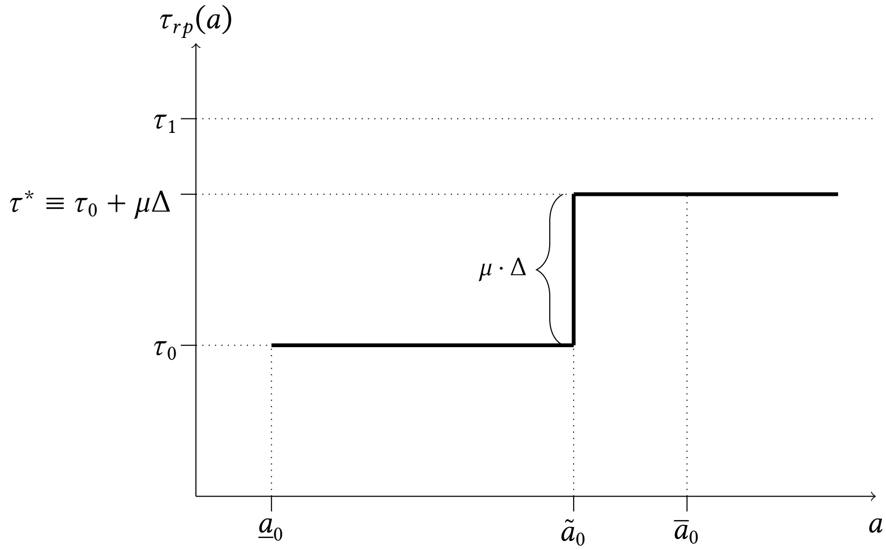


Figure 14: Expected labor regulation, τ_{rp}.

D.3.4 Bargaining under inflexible wages

I analyze the case in which wages are inflexible which is simpler. The results can be extended to flexible wages. The question to be studied in this section is as follows: Can the government choose the unions' bargaining power such that the resulting expected labor policy replicates the maximum *asset-based welfare*?

This question translates into finding a μ such that τ_{rp} gives the maximum *asset-based welfare*, $\bar{U}(a_{pe})$, where a_{pe} solves equation (D.13) in Section (D.2).

Proposition 8 *The unions' bargaining power function, $\mu(\lambda)$, that implements the maximum asset-based welfare is as follows:*

$$\mu(\lambda) = \begin{cases} 0 & \text{if } \lambda \leq \frac{1}{2+1/(\gamma-2)}, \\ \chi(\lambda) & \text{if } \lambda \in (\tilde{\lambda}, 1], \end{cases} \tag{D.20}$$

where $\chi(\lambda) \in (0, 1]$ is some increasing function in λ such that $\chi(1) = 1$ and $\tilde{\lambda} > \frac{1}{2-1/\gamma}$.

Proposition 8 shows that there is a unions' bargaining power function, $\mu(\lambda)$, that implements the maximum *asset-based welfare* for $\lambda \in \left[0, \frac{1}{2+1/(\gamma-2)}\right] \bigcup (\tilde{\lambda}, 1]$. As expected, more leftist governments provide higher bargaining power to unions. In contrast, right-wing governments are able to exactly enforce their preferred policy by not allowing unions to exist, $\mu = 0$. Left-wing regulators can implement the exact equilibrium policy of Section D.2.2 only when $\lambda = 1$ and by giving all the bargaining power to unions, $\mu = 1$. Otherwise, when $\lambda \in (\tilde{\lambda}, 1)$, the maximum *asset-based welfare* is achievable under a labor policy that is different to the one described in Section D.2.2. In what follows, I explain the intuition for this last result.

Under independent bargaining, governments do not have control over the threshold above which labor regulation becomes stricter, which is now fixed and given by $\tilde{a}_0$. However, Section D.2.2 shows that, when $\lambda \in (\tilde{\lambda}, 1)$, the preferred policy is such that the size threshold satisfies: $a^\tau > \tilde{a}_0$. Thus, the labor policy arising from independent negotiations has a lower size threshold than the most preferred policy, i.e. provides protection to a larger set of workers. Governments can solve this issue by limiting the bargaining power of unions (μ), that is by controlling the intensive margin of labor regulation, represented in Figure 14 by the size of the 'jump' ($\mu\Delta$) at the threshold. As a result, the policy that implements the maximum *asset-based welfare* provides protection to a larger set of workers, but the intensity of that protection is lower.

The main takeaway of this section is that government can eliminate the distortions created by strategic behavior by properly allocating the bargaining power between workers and entrepreneurs. In equilibrium, there are no unions in smaller firms ($a < \tilde{a}_0$). Even when workers from this sector are allowed to form unions and bargain on labor conditions, they accept to remain under weak protection regardless of their bargaining power. Thus, is like unions never come to exist in smaller firms. In consequence, the government chooses μ to control the outcome of negotiations in larger firms ($a > \tilde{a}_0$), and in this way, attain the desired level of welfare.

D.3.5 Bargaining: Proofs

D.3.5.1 Proof of Lemma 4

Lemma 4 *The expected labor regulation, $\tau_{rp} : [\underline{a}_0, a_M] \to \mathcal{O}$, that arises from the random proposer model is given by:*

$$\tau_{rp}(a) = \begin{cases} \tau_0 & \text{if } a \in [\underline{a}_0, \tilde{a}_0), \\ \tau_0 + \mu\Delta & \text{if } a \geq \tilde{a}_0. \end{cases}$$

Proof: Define $\tau_u(a)$ and $\tau_e(a)$ as the preferred policies of unions and entrepreneurs, respectively. First, when bargaining, agents cannot anticipate the effect of all agents' decisions on the equilibrium wage w. Thus, in this case, $\bar{w}_\tau = w$. That is, they only consider the direct positive effect of higher labor protection on their effective wage, but not the negative effect on w that happens when the economy-wide labor regulations change. From Proposition 2: $\frac{dU^w(a)}{d\tau} < 0$ if $a \in [\underline{a}_0, \tilde{a}_0)$ and $\frac{dU^w(a)}{d\tau} > 0$ if $a > \tilde{a}_0$. Thus:

$$\tau_u(a) = \begin{cases} \tau_0 & \text{if } a \in [\underline{a}_0, \tilde{a}_0), \\ \tau_1 & \text{if } a \geq \tilde{a}_0. \end{cases}$$

Moreover, from Proposition 1, $\frac{\partial U^e(a)}{\partial \tau} < 0$ for any $a \geq \underline{a}_0$. Thus, $\tau_e(a) = \tau_0$.

From the random proposer model, the labor regulation is set at $\tau_u(a)$ with frequency μ and at $\tau_e(a)$ with frequency $1 - \mu$. The resulting expected labor regulation τ_{rp} is given by:

$$\tau_{rp}(a) = \begin{cases} \tau_0 & \text{if } a \in [\underline{a}_0, \tilde{a}_0), \\ \tau_1\mu + \tau_0(1-\mu) & \text{if } a \geq \tilde{a}_0, \end{cases} .$$

Using that $\tau_1 = \tau_0 + \Delta$ leads to expression (D.19). ■

D.3.5.2 Proof of Proposition 8

Proposition 8 *The unions' bargaining power function, $\mu(\lambda)$, that implements the maximum asset-based welfare is as follows:*

$$\mu(\lambda) = \begin{cases} 0 & \text{if } \lambda \leq \frac{1}{2+1/(\gamma-2)}, \\ \chi(\lambda) & \text{if } \lambda \in (\tilde{\lambda}, 1], \end{cases}$$

where $\chi(\lambda) \in (0, 1]$ is some increasing function in λ such that $\chi(1) = 1$ and $\tilde{\lambda} > \frac{1}{2-1/\gamma}$.

Proof: Define the weighted welfare of the preferred policy given λ as follows:

$$\tilde{U}(\lambda) \equiv \max_{a^\tau \in (\underline{a}_0, a_M)} \left\{ \lambda \cdot \left(\int_{\underline{a}_0}^{a^\tau} U^w(a|\tau_0)\partial G + \int_{a^\tau}^{a_M} U^w(a|\tau_1)\partial G \right) + (1-\lambda) \cdot \left(\int_{\underline{a}_0}^{a^\tau} U^e(a|\tau_0)\partial G + \int_{a^\tau}^{a_M} U^e(a|\tau_1)\partial G \right) \right\}. \tag{D.21}$$

Define the weighted welfare of the expected labor regulation (τ_{rp}) given λ and bargaining power μ as:

$$V(\lambda, \mu) = \lambda \cdot \left(\int_{\underline{a}_0}^{\tilde{a}_0} U^w(a|\tau_0)\partial G + \int_{\tilde{a}_0}^{a_M} U^w(a|\tau^*)\partial G \right) + (1-\lambda) \cdot \left(\int_{\underline{a}_0}^{\tilde{a}_0} U^e(a|\tau_0)\partial G + \int_{\tilde{a}_0}^{a_M} U^e(a|\tau^*)\partial G \right), \tag{D.22}$$

where $\tau^* \equiv \tau_0 + \mu \cdot \Delta$. First, note that from Lemma 4, when $\lambda = 1$ and $\mu = 1$, then the size threshold arising from the random proposer model is $\tilde{a}_0$, which coincides with the preferred policy of the government. Thus, we have that $\tilde{U}(1) = V(1, 1)$, i.e. $\mu = 1$ implements $\tilde{U}(1)$. Second, observe that if $\mu = 0$, then $\tau_{rp} = \tau_0$, which coincides with τ_{pe} given $\lambda \leq \frac{1}{2+1/(\gamma-2)}$. Therefore, $\mu = 0$ implements $\tilde{U}(\lambda)$ for any $\lambda \leq \frac{1}{2+1/(\gamma-2)}$.

Finally, all is left to do is to find what μ implements $\tilde{U}(\lambda)$ when $\lambda > \frac{1}{2-1/\gamma}$. Define the FOC (D.13) as a function of (λ, μ, a):

$$FOC(\lambda, \mu, a) \equiv \lambda \frac{\partial U^w(a|\tau^*)}{\partial \tau} + (1-\lambda)\frac{\partial U^e(a|\tau^*)}{\partial \tau}. \tag{D.23}$$

Additionally, differentiate $V(\lambda, \mu)$ in terms of μ to obtain:

$$\begin{aligned} \frac{\partial V(\lambda, \mu)}{\partial \mu} &= \frac{\partial \tau^*}{\partial \mu}\left(\lambda \int_{a^\tau}^{a_M} \frac{\partial U^w(a|\tau^*)}{\partial \tau}\partial G + (1-\lambda)\int_{a^\tau}^{a_M} \frac{\partial U^e(a|\tau^*)}{\partial \tau}\partial G\right), \\ &= \Delta\left(\int_{\tilde{a}_0}^{a_M} \lambda \frac{\partial \tilde{U}(a|\tau^*)}{\partial \tau} + (1-\lambda)\frac{\partial U^e(a|\tau^*)}{\partial \tau}\partial G\right) = \Delta \int_{\tilde{a}_0}^{a_M} FOC(\lambda, \mu, a)\partial G. \end{aligned} \tag{D.24}$$

Pick $\lambda = 1 - \varepsilon$, for some $\varepsilon > 0$, but small. Note that $FOC(1-\varepsilon, 1, a) < 0$ if $a > a_{pe}$. Thus, by continuity of $FOC(\lambda, \mu, a)$, there must be some $\epsilon \in (0,1)$ such that $\frac{\partial V(\lambda,\mu)}{\partial \mu} < 0$ for $\mu \in (1-\epsilon, 1)$. In consequence, it must be that $V(1-\varepsilon, \mu) \geq V(1-\varepsilon, 1) = \tilde{U}(1-\varepsilon)$ for some $\mu \in (1-\epsilon, 1)$. Hence, for a given $\lambda = 1-\varepsilon$, there exists some $\mu(\lambda) \in (1-\epsilon, 1)$ that implements $\tilde{U}(1-\varepsilon)$. Since $\tilde{U}(\lambda)$ is increasing in λ, it must be that the function characterizing $\mu(\lambda)$, named as $\chi(\lambda)$, is increasing in λ. To conclude, since ε must be small, this result applies to some neighbourhood $\lambda \in (\tilde{\lambda}, 1)$, where $\tilde{\lambda} > \frac{1}{2-1/\gamma}$. ■

D.4 A dynamic extension to the model

This section develops a dynamic extension of the baseline model. The main feature is that labor regulation affects the future distribution of wealth, which in turn determines the future design of regulations. Thus, the dynamics of size-contingent labor regulation are a result of the joint interaction between policies and the wealth distribution over time.

I analyze the endogenous evolution of size-contingent labor regulation in an economy where occupational choice is initially limited by credit constraints. The main finding is that the equilibrium regulatory threshold increases over time and reaches a steady-state level in the long-run. This is true regardless of the political orientation of the ruling government. This result explains the long-term stability of size-contingent labor policy within countries.

D.4.1 The model

Time is continuous, there is an infinite time horizon, and no uncertainty. The state of the economy at period t is given by the endogenous distribution of wealth $g_t(a)$. The initial wealth distribution follows a power law $g_0(a) = c \cdot a^{-\zeta}$ with $c > 0$ and $\zeta < 1$.

Consider momentarily a discrete time model where the length of a period is Δ. Figure 15 illustrates the sequence of events that take place in a timeframe Δ. First, given the wealth distribution g_t, the government chooses the regulatory threshold a_t^τ by solving equation (5.9). Second, after observing the wealth distribution and the current regulation, agents make their occupational choice. Third, production takes place (Figure 2 illustrates the timing within this stage). Finally, agents save a fraction $\theta^j > 0$ of their wealth each period and consume the rest, where $j \in \{W, E\}$ represents "worker" and "entrepreneur", respectively, with $\theta^E > \theta^W$.

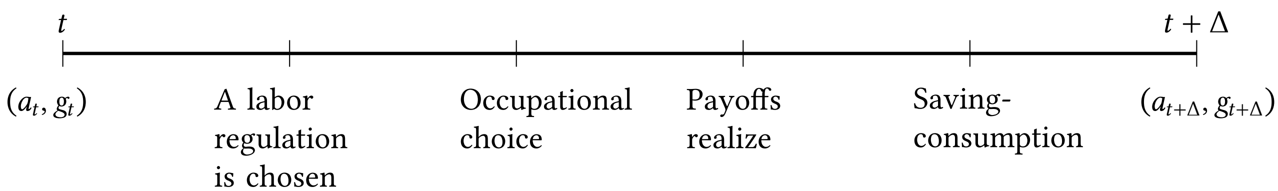


Figure 15: Timing within period t

Consider the labor policy τ_t such that $\tau_t(a) = \tau_0$ if $a < a_t^\tau$ and $\tau(a) = \tau_1$ if $a \geq a_t^\tau$. The income function of an individual with assets a given τ_t is:

$$y_t(a) = \begin{cases} f(k,l) - \tau_t(a)wl - F_0 - (1+\rho)d & \text{if an entrepreneur,} \\ \mathbb{E}u^w(\tau_t) + (1+\rho)a & \text{if a worker,} \end{cases} \tag{D.25}$$

where $\mathbb{E}u^w$ is given by equation (E.6).

D.4.2 Discussion of key assumptions

The main challenge in studying the dynamics of labor regulation lies in characterizing the joint dynamics of regulation and wealth distribution. Few papers in the literature provide analytical results for the policy dynamics in heterogeneous agent models (e.g. Itskhoki and Moll, 2019), but they do not incorporate an occupational decision or endogenous credit constraints as in my model. In Huerta (2023), I analytically characterize the transition dynamics of social benefits in a setting that incorporates both ingredients.

The dynamic extension I consider in this paper involves at least three complications relative to Huerta (2023). First, firms are heterogeneous in both capital and labor. Second, credit constraints apply to both the intensive and extensive margin. Third, the policy under study is a function of assets rather than a scalar.

In order to obtain analytical results, I make two important assumptions: 1) the initial density function follows a power law, and 2) agents save a fraction of their income that is exogenously given. Assumption 2) is the most important for tractability. It avoids solving the dynamic programming problem of individuals, which is analytically untractable given the variable size of firms and credit constraints that depend on both assets and labor regulation.

In Huerta (2023), I solve the individual dynamic programming problem and obtain an equilibrium condition for the saving rate, which depends on the current wealth distribution and policy. Entrepreneurs save more than workers, which motivates the assumption that $\theta^E > \theta^W$. However, in that paper, firms are homogeneous, and thus, I can solve analytically for the consumption and saving policy functions. On the other hand, Itskhoki and Moll (2019) obtain tractability by assuming constant returns to scale and exogenous financial constraints that are linear in capital.

D.4.3 Occupational choice

Consider the following occupational (OC) and incentive compatibility (IC) functions:

$$OC_t(a, \tau; a^\tau) = f(k(a), l(a)) - \tau w l(a) - F_0 - (1+\rho)d(a) - \mathbb{E}u^w, \tag{D.26}$$

$$IC_t(a, \tau; a^\tau) = f(k(a), l(a)) - \tau w l(a) - F_0 - (1+\rho)d(a) - \phi k(a), \tag{D.27}$$

where $k(a) = a + d(a)$, $d(a)$ in (D.26) solves $\Psi(a, d, l) = 0$, and $d(a)$ in (D.27) also solves $\Psi_d(a, d, l) = 0$. Note that both functions, OC_t and IC_t, depend on the regulatory threshold a^τ through the equilibrium wage w, which in turn affects $d(a)$, $l(a)$, and $\mathbb{E}u^w$. The time subscript captures the fact that all endogenous variables depend on the current wealth distribution g_t.

The occupational threshold, $\hat{a}(\tau, a^\tau)$, that defines the first agent who prefers to be an entrepreneur instead of a worker, is given by $OC(\hat{a}, \tau, a^\tau) = 0$. The minimum collateral to obtain credit $\underline{a}(\tau, a^\tau)$ is given by $IC(\underline{a}, \tau, a^\tau) = 0$. Occupational choice is determined by comparing both thresholds at the different levels of labor regulation, τ_0 and τ_1. The occupational threshold is decreasing in τ, thus $\hat{a}_0(a^\tau) \equiv \hat{a}(\tau_0, a^\tau) > \hat{a}_1(a^\tau) \equiv \hat{a}(\tau_1, a^\tau)$. On the other hand, the minimum collateral increases with τ, i.e. $\overline{a}_0(a^\tau) \equiv \overline{a}(\tau_0, a^\tau) < \overline{a}_1(a^\tau) \equiv \overline{a}(\tau_1, a^\tau)$.

Figure 16 illustrates occupational choice. "W" stands for worker, and "E" stands for entrepreneur. There are four relevant cases. When $a^\tau > \underline{a}_1$ (cases (1) and (2)), occupational choice is defined by $a^O \equiv \max\{\underline{a}_0, \hat{a}_0\}$. Agents with $a < a^O$ become workers, while the rest become entrepreneurs. On the other hand, if $a^\tau < \underline{a}_1$ (cases (3) and (4)), occupational choice is more involved and there is no simple rule that summarizes occupational decisions.

In this section, I study an economy where the initial regulatory threshold satisfies $a_0^\tau > \underline{a}_1(a_0^\tau)$ and with initially binding credit constraints, ($\underline{a}_0 > \hat{a}_0$ (case (1)). Given these initial conditions, the dynamics of occupational choice depend solely on the evolution of a_t^O.

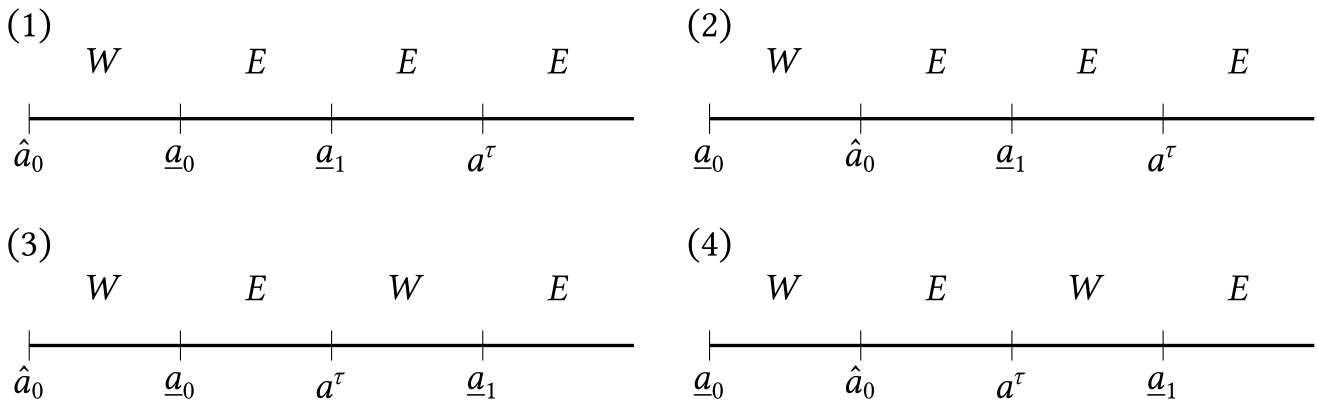


Figure 16: Occupational choice.

D.4.4 Equilibrium

Given some initial wealth distribution g_0 such that $a_0^\tau > \underline{a}_1(a_0^\tau)$ and $\underline{a}_0 > \hat{a}_0$, the evolution of the economy is characterized by the following equations:

$$d_t g_t = -G_t(a_t^O) d_a(\theta^W a g_t(a)) - \left(1 - G_t(a_t^O)\right) d_a(\theta^E a g_t(a)), \tag{D.28}$$

$$a_t^O = \max\{\underline{a}_t(\tau_0), \hat{a}_t(\tau_0)\}, \tag{D.29}$$

$$\lambda d_{a^\tau} \bar{U}_t^w(a_t^\tau) = -(1-\lambda) d_{a^\tau} \bar{U}_t^e(a_t^\tau) \tag{D.30}$$

where the operator $d_x(\cdot)$ denotes the derivative in terms of x. Equation (D.28) determines the evolution of the wealth distribution[6], (D.29) determines occupational choice, and (D.30) defines the dynamics of the regulatory threshold a_t^τ.

Note that from condition (D.28), the economy does not attain a stationary distribution. In particular, wealth is accumulated indefinitely due to the assumption of fixed saving rates. Despite this, the regulatory threshold reaches a steady state level (see Proposition 9).

D.4.5 The dynamics of the regulatory threshold

Proposition 9 shows two important results. The regulatory threshold increases over time and it attains a steady-state level. This is true regardless of the weights the government puts on workers and entrepreneurs. These results provide an explanation for the persistence of size-contingent

[6]This condition is known as the Kolmogorov Forward Equation. For a proof of its derivation see Lemma 2 in Huerta (2023)

labor regulation over time and within countries. According to the model, the implementation of a *tiered* labor regulation influences the future evolution of the wealth distribution in such a way that the future support for such a regulation is reinforced.

Proposition 9 *Suppose that the initial wealth distribution g_0 is such that i) $a_0^\tau > \underline{a}_1(a_0^\tau)$ and ii) credit constraints are binding $\underline{a}_0 > \hat{a}_0$, then the regulatory threshold a_t^τ increases over time and reaches a stationary level a^* that solves:*

$$OC(\hat{a}(\tau_1, a^*), \tau_0; a^*) = 0. \tag{D.31}$$

The implementation of a *tiered* labor regulation introduces a cross-subsidy from larger to smaller firms. Moreover, it greatly benefits the small-scale sector while imposing a relatively low cost on larger firms. Thus, the future share of small to large firms decreases, increasing the entrepreneurial support for a less protective regulation, i.e. a higher regulatory threshold.

From the point of view of workers, those in smaller firms have a strong preference for a protective regulation, i.e. a low regulatory threshold. On the other hand, those in larger firms demand protection for themselves but not for workers in smaller firms (a higher regulatory threshold). Thus, as smaller firms growth over time, the overall workers' support for a highly protective labor regulation decreases. In sum, the implementation of a *tiered* labor regulation induces a decline in the support for a highly protective labor policy, which explains why the regulatory threshold increases over time.

The final question is why the regulatory threshold reaches a steady state value. The cross-subsidy from large to small firms induced by a *tiered* regulation reinforces wealth accumulation, which makes credit constraints less binding over time. At some point, the *IC* becomes no longer binding. Thus, occupational decisions are not restricted by credit constraints anymore. The decision to invest in a firm is then determined by the occupational constraint (condition (D.31)), which defines the stationary regulatory threshold.

D.4.6 A dynamic extension to the model: Proofs

D.4.6.1 Proof of Proposition 9

Proposition 9 *Suppose that the initial wealth distribution g_0 is such that i) $a_0^\tau > \underline{a}_1(a_0^\tau)$ and ii) credit constraints are binding $\underline{a}_0 > \hat{a}_0$, then the regulatory threshold a_t^τ increases over time and reaches a stationary level a^* that solves:*

$$OC(\hat{a}(\tau_1, a^*), \tau_0; a^*) = 0. \tag{D.32}$$

Proof: Consider an initial distribution g_0 such that $a_0^\tau > \underline{a}(\tau_1, a_0^\tau)$ and $\underline{a}_0 > \hat{a}_0$. These conditions imply that occupational choice over time will be as in cases (1) or (2) from Figure 16, thus it will depend on $\underline{a}_0$ and $\hat{a}_0$. To avoid confusion with the time subscripts denote these thresholds as $\underline{a}_t$

and $\hat{a}_t$. Also, the derivative of a variable in terms of t is denoted by $d_t(\cdot)$. The evolution of the regulatory threshold a_t^τ is obtained by differentiating (D.30) in terms of t. To simplify exposition, I study separately a *pro-business* ($\lambda = 0$) and a *pro-worker* ($\lambda = 1$) government. The result then extends to any λ.

Consider first $\lambda = 0$. Differentiating (B.27) in terms of t gives:

$$
\begin{aligned}
\frac{\partial}{\partial t}\left(\frac{\partial \bar{U}_t^e}{\partial a^\tau}\right) = & \int_{\underline{a}_t}^{a^\tau} \frac{\partial^2 U^e(a|\tau_0)}{\partial (a^\tau)^2} d_t a^\tau g_t(a) \partial a + \int_{a^\tau}^{a_M} \frac{\partial^2 U^e(a|\tau_1)}{\partial (a^\tau)^2} d_t a^\tau g_t(a) \partial a, \\
& + \int_{\underline{a}_t}^{a^\tau} \frac{\partial U^e(a|\tau_0)}{\partial a^\tau} d_t g_t(a) \partial a + \int_{a^\tau}^{a_M} \frac{\partial U^e(a|\tau_1)}{\partial a^\tau} d_t g_t(a) \partial a - d_t \underline{a}_t \, U^e(\underline{a}_t) g(\underline{a}), \\
& + \left(\frac{\partial U^e(a^\tau|\tau_0)}{\partial a^\tau} - \frac{\partial U^e(a^\tau|\tau_1)}{\partial a^\tau}\right) g_t(a^\tau) d_t a^\tau + \left(U^e(a^\tau|\tau_0) - U^e(a^\tau|\tau_1)\right) d_t g_t(a^\tau) d_t a^\tau.
\end{aligned}
$$

Imposing the FOC of the government and solving for $d_t a^\tau$ gives:

$$
d_t a^\tau = \frac{-\int_{\underline{a}}^{a^\tau} \frac{\partial U^e(a|\tau_0)}{\partial a^\tau} d_t g_t(a) \partial a - \int_{a^\tau}^{a_M} \frac{\partial U^e(a|\tau_1)}{\partial a^\tau} d_t g_t(a) \partial a}{\int_{\underline{a}}^{a^\tau} \frac{\partial^2 U^e(a|\tau_0)}{\partial (a^\tau)^2} g_t(a) \partial a + \int_{a^\tau}^{a_M} \frac{\partial^2 U^e(a|\tau_1)}{\partial (a^\tau)^2} g_t(a) \partial a - \frac{l_t}{\Psi_a} \frac{\partial \bar{w}_t}{\partial a^\tau} U^e(\underline{a}_t) g(\underline{a}) + \left(\frac{\partial U^e(a^\tau|\tau_0)}{\partial a^\tau} - \frac{\partial U^e(a^\tau|\tau_1)}{\partial a^\tau}\right) g_t(a^\tau) + \left(U^e(a^\tau|\tau_0) - U^e(a^\tau|\tau_1)\right) d_t g_t(a^\tau)} > 0, \tag{D.33}
$$

where I have used that $\frac{\partial U^e(a|\tau_1)}{\partial a^\tau} < 0$ (see the proof of Proposition 4), $d_t g(a) < 0$ by equation (D.28), $\frac{\partial^2 U^e}{\partial \tau \partial a} > 0$ and $\frac{\partial U^e}{\partial \tau} < 0$ (see the proof of Proposition 1), and $d_t \underline{a}_t = \tau_0 \frac{l d_t \bar{w}}{\Psi_a}$ with $d_t \bar{w} = \frac{\partial \bar{w}}{\partial a^\tau} d_t a^\tau$.

Now consider a *pro-worker* government that maximizes $\bar{U}_t^w = m_t^0 u_0^w + m_t^1 u_1^w$, with $m_t^0 + m_t^1 = G_t(\underline{a})$.[7] Differentiation in terms of a^τ gives:

$$
\frac{\partial \bar{U}_t^w}{\partial a^\tau} = \frac{\partial m^0}{\partial a^\tau}(u_0^w - u_1^w) + u_1^w g_t(\underline{a}) \frac{\partial \underline{a}}{\partial a^\tau}
$$

Imposing the FOC and differentiating in terms of t gives:

$$
d_t a^\tau = \frac{-d_t g_t(\underline{a}) \frac{\partial \underline{a}}{\partial a^\tau} u_1^w}{\frac{\partial^2 m_t^0}{\partial (a^\tau)^2}(u_0^w - u_1^w) + g_t'(\underline{a}) \frac{\partial^2 \underline{a}}{\partial (a^\tau)^2} u_1^w} > 0 \tag{D.34}
$$

where I have used that $d_t g_t(\underline{a}) < 0$, $g_t'(\underline{a}) < 0$, $\frac{\partial u^w}{\partial \tau} > 0$, $\frac{\partial^2 m^0}{\partial (a^\tau)^2} < 0$, and $\frac{\partial^2 \underline{a}}{\partial (a^\tau)^2} < 0$.

Conditions (D.33) and (D.34) imply that $d_t a^\tau > 0$ for any $\lambda \in [0, 1]$. Thus, if the initial distribution is such that i) $a_0^\tau > \underline{a}_1(a_0^\tau)$ and ii) $\underline{a}_0 > \hat{a}_0$, then the regulatory threshold increases over time.

[7] In this case, it is easier to work with the alternative expression for workers' welfare. See the welfare equivalence result in Section E.1.3

Condition ii) in the proposition implies that $IC_0 = 0$ and $OC_0 > 0$. However, note that:

$$d_t OC_t = \left(U_a^e \underbrace{\frac{\partial \hat{a}}{\partial a^\tau}}_{<0} + U_d^e \underbrace{\frac{\partial \hat{d}}{\partial a^\tau}}_{<0} - \tau_0 \hat{l} \underbrace{\frac{\partial \bar{w}}{\partial a^\tau}}_{>0} - \underbrace{\frac{\partial \mathbb{E} u^w}{\partial a^\tau}}_{>0} \right) \underbrace{d_t a^\tau}_{>0} < 0. \tag{D.35}$$

Thus, there is a $t = \tilde{t}$ at which the OC_t becomes binding. Note that from that point onwards the regulatory threshold cannot continue increasing as the OC will be violated. Hence, the economy reaches a steady state regulation a^* that satisfies condition (D.31). ■

D.5 Political mechanism: Proportional representation

This section presents a politico-economy microfoundation for the political equilibrium described in the paper. I show that the government's problem (presented in Section 3.7) can be rationalized as a probabilistic voting model along the lines of Persson and Tabellini (2000, pp. 52-58), where the political weight λ depends on the primitives of the model. Figure 17 illustrates the timeline.

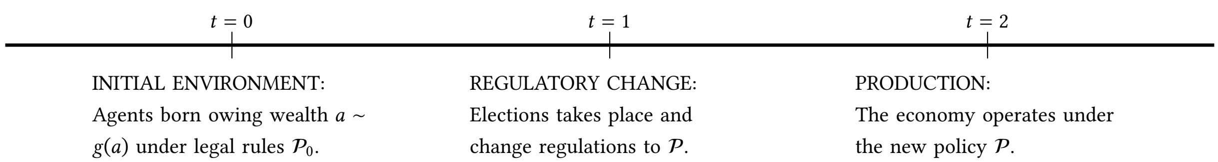


Figure 17: Timeline.

As shown in Section 3.5, given $\mathcal{P}_0$, there are two groups of voters: workers (W) with wealth $a < \underline{a}_0$, and entrepreneurs (E) with $a \geq \underline{a}_0$. Their utilities are represented by (3.1) and (3.4), respectively. The political preferences of agents are defined based on the *ex-ante* competitive equilibrium. Given $\mathcal{P}_0$ and $g(a)$, agents vote understanding what their position in society would be and how a more stringent labor regulation would affect them relative to this initial position. Section 3.6 provides more details on belief formation.

The electoral competition takes place between two parties, A and B. Both parties simultaneously and non-cooperatively announce their electoral platforms, $\mathcal{P}_A$ and $\mathcal{P}_B$, subject to the labor market equilibrium condition. The policies $\mathcal{P}_A$ and $\mathcal{P}_B$ map firm's assets to a specific strength of regulation (x_0 or x_1, with $x \in \{\tau, F\}$). Thus the proposed political platform of the parties is constrained to the set of functions: $\mathcal{P} : [0, a_M] \rightarrow \Theta$, where $\Theta \equiv \{(\tau_0, F_0), (\tau_1, F_0), (\tau_0, F_1), (\tau_1, F_1)\}$ is the set of labor regulations that can be implemented at each firm.

Under a multidimensional policy, Downsian electoral competition is known to produce cycling problems that arise because parties' objective functions are discontinuous in the policy space. Probabilistic voting smooths the political objective function by introducing uncertainty from the parties' point of view (Lindbeck and Weibull, 1987). Specifically, there is uncertainty about the political preferences of each voter. As in Fischer and Huerta (2021), there is a continuum of agents (a, v). Voter (a, v) in group $j \in \{W, E\}$ votes for party A if:

$$U^j(a|\mathcal{P}_A) > U^j(a|\mathcal{P}_B) + \delta + \sigma_v^j(a), \tag{D.36}$$

where δ reflects the general popularity of party B, which is assumed to be uniformly distributed on $[-1/(2\psi), 1/(2\psi)]$. The value of δ becomes known after the policy platforms have been announced. Thus, parties announce their policy platforms under uncertainty about the results of the election. The variable $\sigma_v^j(a)$ represents the ideological preference of voter (a, v) for party B. The distribution of $\sigma_v^j(a)$ differs across workers and entrepreneurs, which is assumed to be uniform on $[-1/(2\chi^j), 1/(2\chi^j)]$. Note that neither group is biased towards either party, but that they differ in their ideological homogeneity represented by the density χ^j. Parties know the group-specific ideological distributions before announcing their platforms. The term $\delta + \sigma_v^j(a)$ captures the relative 'appeal' of candidate B, that is, the inherent bias of voter v with wealth a in group j for party B, irrespective of the proposed political platforms.

I study the policy outcome under an electoral rule corresponding to proportional representation. Thus, a party requires more than 50% of total votes to win the election. To characterize the political outcome, it is useful to identify the 'swing voter' ($v = V$) in each group $j \in \{W, E\}$ and for each value of wealth a in that group, that is, the voter in group j with wealth a who is indifferent between the two parties:

$$\sigma_V^j(a) = U^j(a|\mathcal{P}_A) - U^j(a|\mathcal{P}_B) - \delta. \tag{D.37}$$

All agents endowed with wealth a whose ideological preference is such that $\sigma_v^j(a) < \sigma_V^j(a)$ vote for party A, while the rest vote for party B. Therefore, conditional on δ, the fraction of agents in group j with wealth a that vote for party A is:

$$\begin{aligned} \pi_A^j(a|\delta) &= Prob[\sigma_v^j(a) < \sigma_V^j(a)], \\ &= \chi^j[U^j(a|\mathcal{P}_A) - U^j(a|\mathcal{P}_B) - \delta] + \frac{1}{2}. \end{aligned} \tag{D.38}$$

The probability that party A wins the election, p_A, is then given by:

$$p_A = Prob\left[\int_{\underline{a}_0}^{a_M} \pi_A^W(a|\delta)\partial G(a) + \int_{\underline{a}_0}^{a_M} \pi_A^E(a|\delta)\partial G(a) \geq \frac{1}{2}\right],$$

where the probability is taken with respect to the general popularity measure δ. Rearranging terms leads to:

$$
\begin{aligned}
p_A = Prob\Bigg[&\chi^W \int_{\underline{a}_0}^{a_M} [U^W(a|\mathcal{P}_A) - U^W(a|\mathcal{P}_B)]\partial G(a) + \chi^E \int_{\underline{a}_0}^{a_M} [U^E(a|\mathcal{P}_A) - U^E(a|\mathcal{P}_B)]\partial G(a) \\
&- \delta[\chi^W G(\underline{a}_0) + \chi^E(1 - G(\underline{a}_0))] \geq 0\Bigg], \\
= Prob&\left[\delta \leq \frac{\chi^W \int_{\underline{a}_0}^{a_M} [U^W(a|\mathcal{P}_A) - U^W(a|\mathcal{P}_B)]\partial G(a) + \chi^E \int_{\underline{a}_0}^{a_M} [U^E(a|\mathcal{P}_A) - U^E(a|\mathcal{P}_B)]\partial G(a)}{\chi^W G(\underline{a}_0) + \chi^E(1 - G(\underline{a}_0))}\right], \\
= Prob&\left[\delta \leq \frac{\chi^W[\bar{U}^W(\mathcal{P}_A) - \bar{U}^W(\mathcal{P}_B)] + \chi^E[\bar{U}^E(\mathcal{P}_A) - \bar{U}^E(\mathcal{P}_B)]}{\bar{\chi}}\right],
\end{aligned}
$$

where I have defined:

$$
\begin{aligned}
\bar{U}^W(\mathcal{P}) &\equiv \int_{\underline{a}_0}^{a_M} U^W(a|\mathcal{P})\partial G(a), \\
\bar{U}^E(\mathcal{P}) &\equiv \int_{\underline{a}_0}^{a_M} U^E(a|\mathcal{P})\partial G(a), \\
\bar{\chi} &\equiv \chi^W G(\underline{a}_0) + \chi^E(1 - G(\underline{a}_0)).
\end{aligned}
$$

Therefore, the probability that party A wins the election is:

$$
p_A = \psi \left[\frac{\chi^W}{\bar{\chi}}(\bar{U}^W(\mathcal{P}_A) - \bar{U}^W(\mathcal{P}_B)) + \frac{\chi^E}{\bar{\chi}}(\bar{U}^E(\mathcal{P}_A) - \bar{U}^E(\mathcal{P}_B))\right] + \frac{1}{2}
$$

Denote the relative political weight of workers and entrepreneurs by $\lambda^W \equiv \psi\frac{\chi^W}{\bar{\chi}}$ and $\lambda^E \equiv \psi\frac{\chi^E}{\bar{\chi}}$, respectively. Since both parties maximize the probability of winning the election, the Nash equilibrium is characterized by:

$$
\begin{aligned}
\mathcal{P}_A^* &= \arg\max_{\mathcal{P}_A}\{\lambda^W(\bar{U}^W(\mathcal{P}_A) - \bar{U}^W(\mathcal{P}_B)) + \lambda^E(\bar{U}^E(\mathcal{P}_A) - \bar{U}^E(\mathcal{P}_B))\}, \\
\mathcal{P}_B^* &= \arg\max_{\mathcal{P}_B}\{\lambda^W(\bar{U}^W(\mathcal{P}_B) - \bar{U}^W(\mathcal{P}_A)) + \lambda^E(\bar{U}^E(\mathcal{P}_B) - \bar{U}^E(\mathcal{P}_A))\}.
\end{aligned}
$$

As a result, the two parties' platforms converge in equilibrium to the same policy function $\mathcal{P}^*$ that maximizes the weighted welfare of workers and entrepreneurs:

$$
\mathcal{P}^* = \arg\max_{\mathcal{P}}\{\lambda^W \bar{U}^W(\mathcal{P}) + \lambda^E \bar{U}^E(\mathcal{P})\}, \tag{D.39}
$$

subject to the labor market equilibrium condition in problem (3.11).

In order to interpret problem (D.39), rewrite the political weights as follows:

$$\lambda^W = \frac{\psi}{G(\underline{a}_0) + \frac{\chi^E}{\chi^W}(1 - G(\underline{a}_0))},$$
$$\lambda^E = \frac{\psi}{\left(\frac{\chi^W}{\chi^E} - 1\right) G(\underline{a}_0) + 1}.$$

Note that the political weights depend on both exogenous and endogenous variables. First, they are a function of the dispersion of the ideological preferences of both groups, measured by χ^j. Second, they are a function of the variability of party's B general popularity, ψ. Finally, they depend on the minimum wealth to obtain a loan, $\underline{a}_0$, under the initial policy $\mathcal{P}_0$. As explained in Section 3.5, that threshold is endogenously determined as a function of the primitives of the model.[8]

The political weights λ^j have an structural interpretation: they measure the relative dispersion of ideological preferences within group j. The ratio χ^W/χ^E determines the number of swing voters in each group. For instance, when χ^W increases the political weight of workers λ^W raises, but λ^E decreases. Intuitively, workers become more responsive to labor regulation announcements in favor or against them. As a result, the vote of entrepreneurs become less responsive to regulatory announcements compared to workers. Thus, workers become more politically powerful relative to entrepreneurs and the equilibrium platform becomes more *pro-worker*.

In order to write problem (D.39) as in Section 3.7, I normalize the political weights by choosing $\psi = \frac{\chi^w G(\underline{a}_0) + \chi^E(1-G(\underline{a}_0))}{\chi^W + \chi^E}$. Thus, $\lambda^W + \lambda^E = 1$. Define $\lambda \equiv \lambda^W$, then the problem can be rewritten as

$$\mathcal{P}^* = \arg\max_{\mathcal{P}} \{\lambda \bar{U}^W(\mathcal{P}) + (1-\lambda)\bar{U}^E(\mathcal{P})\},$$

subject to the labor market equilibrium condition.

This corresponds to the "government's problem" presented in the body of the paper. Thus, when λ increases, the government chooses a policy platform that favors relatively more workers (*pro-worker*). If λ decreases the government becomes more *pro-business*. In particular, when $\chi^W \to +\infty$ then $\lambda \to 1$ and the government weights only workers. In contrast, if $\chi^E \to +\infty$ then $\lambda \to 0$ and the government cares only about entrepreneurs.

[8]Specifically, $\underline{a}_0$ depends on: i) the loan recovery rate or creditor protection ϕ, ii) the initial strength of labor regulation (τ_0, F_0), iii) the international interest rate ρ, iv) the parameters of the production function α, β, and v) the wealth distribution $g(a)$.

D.6 Equilibrium regulation under majoritarian representation

There are two parties, R (right-wing) and L (lef-wing), that compete for office under majoritarian representation. Both parties simultaneously and non-cooperatively propose their *asset-based* labor regulations, $\tau_R : [0, a_M] \to \{\tau_0, \tau_1\}$ and $\tau_L : [0, a_M] \to \{\tau_0, \tau_1\}$.

Consider three electoral districts: 1) workers and entrepreneurs in larger firms ($a > \bar{a}_0$), 2) workers and entrepreneurs in small firms ($a < \tilde{a}_0$), and 3) the "residual group", composed by workers and entrepreneurs in medium-sized firms ($a \in [\tilde{a}_0, \bar{a}_0]$). The party that wins more districts wins the election. Assume that $G(\tilde{a}_0) + 1 - G(\bar{a}_0) < \frac{1}{2}$, so no party can win the election just by capturing the votes from groups 1 or 2.

Following Pagano and Volpin (2005), agents with assets a from each group $j \in \{1, 2, 3\}$ have ideological preferences for party L given by $\sigma_j(a) = \bar{\sigma}_j + \epsilon_j(a)$, where $\epsilon_j(a)$ is uniformly distributed on $[-1/(2\chi_j), 1/(2\chi_j)]$. Further, assume that $-\bar{\sigma}_1 < \bar{\sigma}_3 = 0 < \bar{\sigma}_2$. Thus, group 1 of workers and entrepreneurs in large firms are biased towards the right-wing party R, while group 2 of agents in small firms favor more the left-wing party L. The residual group 3 does not have on average an ideological preference for either party. A voter in group $j \in \{1, 2, 3\}$ votes for party R if:

$$U^j(a|\tau_R) > U^j(a|\tau_L) + \delta + \sigma_j(a),$$

where, as in Section D.5, δ represents the general popularity of party L which is assumed to be uniformly distributed on $[-1/(2\psi), 1/(2\psi)]$.

A sufficient condition to guarantee the existence of an equilibrium is that $\bar{\sigma}_1$ and $\bar{\sigma}_2$ are sufficiently large (as in Persson and Tabellini, 1999). Under these conditions, the residual group is pivotal. Thus, electoral competition takes place only in district 3. Therefore, parties maximize the probability of obtaining the majority of votes in district 3, which is equivalent to solving:

$$\max_{\tau : [0, a_M] \to \{\tau_0, \tau_1\}} \left\{ \psi \cdot \int_{\tilde{a}_0}^{\bar{a}_0} \left[U^w(a) + U^e(a) \right] g(a) \partial a + \frac{1}{2} \right\} \tag{D.40}$$

Proposition 10 *Suppose that $g' < 0$. If the average ideological bias parameters of groups 1 and 2 satisfy: $\bar{\sigma}_1 > \max\{c_1^e(\varepsilon), c_1^w(\varepsilon)\}$ and $\bar{\sigma}_2 > \max\{c_2^e(\varepsilon), c_2^w(\varepsilon)\}$ for ε small:*

$$c_1^e(\varepsilon) = U^e(a_M|a^\tau = a_M + \varepsilon) - U^e(\overline{a}_0|a^\tau = \overline{a}_0) + \frac{1}{2\psi} + \frac{1}{\chi_1} \tag{D.41}$$

$$c_1^w(\varepsilon) = U^w(a_M|a^\tau = a_M) - U^w(\overline{a}_0|a^\tau = \overline{a}_0 + \varepsilon) + \frac{1}{2\psi} + \frac{1}{\chi_1} \tag{D.42}$$

$$c_2^e(\varepsilon) = U^e(\tilde{a}_0|a^\tau = \tilde{a}_0 + \varepsilon) - U^e(\underline{a}_0|a^\tau = \underline{a}_0) - \frac{1}{2\psi} - \frac{1}{\chi_2} \tag{D.43}$$

$$c_2^w(\varepsilon) = U^w(\tilde{a}_0|a^\tau = \tilde{a}_0) - U^e(\underline{a}_0|a^\tau = \underline{a}_0) - \frac{1}{2\psi} - \frac{1}{\chi_2} \tag{D.44}$$

Then, the equilibrium labor regulation under majoritarian representation is tiered, where the regulatory threshold satisfies $a^\tau_{pe} \in (\tilde{a}_0, \underline{a}_0]$.

Proposition 10 defines the lower bounds on the average ideological parameters of groups 1 and 2 that guarantee that competition takes place only on district 2. The equilibrium labor regulation is *tiered*, with the regulatory threshold covering a range of "intermediate" values, $a^\tau \in (\tilde{a}_0, \overline{a}_0]$.

The intuition for this result is that entrepreneurs running medium-sized firms can benefit from a regulation that imposes greater labor costs to larger firms because it decreases the equilibrium wage. From the point of view of workers in medium-sized firms, they benefit from receiving higher protection. However, they do not support a highly protective regulation (i.e. a very low regulatory threshold) as it induces a large decline in the wage rate. Overall, the pivotal group of entrepreneurs and workers demand stricter regulations on relatively large firms, which lead in equilibrium to a *tiered* labor policy. This result rationalizes the fact that size-contingent labor regulation emerges either in countries with proportional or majoritarian electoral systems.

D.6.1 Equilibrium regulation under majoritarian representation: Proofs

D.6.1.1 Proof of Proposition 12

Proposition 12 *Suppose that* $g' < 0$. *If the average ideological bias parameters of groups 1 and 2 satisfy:* $\bar{\sigma}_1 > \max\{c_1^e(\varepsilon), c_1^w(\varepsilon)\}$ *and* $\bar{\sigma}_2 > \max\{c_2^e(\varepsilon), c_2^w(\varepsilon)\}$ *for* ε *small:*

$$c_1^e(\varepsilon) = U^e(a_M|a^\tau = a_M + \varepsilon) - U^e(\overline{a}_0|a^\tau = \overline{a}_0) + \frac{1}{2\psi} + \frac{1}{\chi_1} \tag{D.45}$$

$$c_1^w(\varepsilon) = U^w(a_M|a^\tau = a_M) - U^w(\overline{a}_0|a^\tau = \overline{a}_0 + \varepsilon) + \frac{1}{2\psi} + \frac{1}{\chi_1} \tag{D.46}$$

$$c_2^e(\varepsilon) = U^e(\tilde{a}_0|a^\tau = \tilde{a}_0 + \varepsilon) - U^e(\underline{a}_0|a^\tau = \underline{a}_0) - \frac{1}{2\psi} - \frac{1}{\chi_2} \tag{D.47}$$

$$c_2^w(\varepsilon) = U^w(\tilde{a}_0|a^\tau = \tilde{a}_0) - U^e(\underline{a}_0|a^\tau = \underline{a}_0) - \frac{1}{2\psi} - \frac{1}{\chi_2} \tag{D.48}$$

Then, the equilibrium labor regulation under majoritarian representation is tiered, where the regulatory threshold satisfies $a^{\tau}_{pe} \in (\tilde{a}_0, \underline{a}_0]$.

Proof:

I start by showing that the equilibrium regulation is *tiered* at $a^{\tau}_{pe} \in (\tilde{a}_0, \underline{a}_0]$, then I show that conditions $\bar{\sigma}_1 > \max\{c^e_1(\varepsilon), c^w_1(\varepsilon)\}$ and $\bar{\sigma}_2 > \max\{c^e_2(\varepsilon), c^w_2(\varepsilon)\}$, are sufficient for the existence of an equilibrium.

First, note that the policy that solves (D.40) is monotone. The same arguments used to show Proposition 5 apply. Thus, there is a size threshold $a^{\tau} \in [\underline{a}_0, a_M]$ such that $\tau(a) = \tau_0$ if $a < a^{\tau}$ and $\tau(a) = \tau_1$, otherwise.

Second, if $g' < 0$, then the objective function is concave, and thus, there is a unique solution to problem (D.40), a^{τ}_{pe} (see the proof of Proposition 3).

Third, from Proposition 1, $\frac{\partial U^w(a)}{\partial \bar{w}} < 0$ and $\frac{\partial^2 U^e(a)}{\partial a \partial \bar{w}} > 0$ for any $a \geq 0$. Also, from Lemma 1, $\frac{\partial w}{\partial a^{\tau}} > 0$. Thus, by choosing $a^{\tau} = \overline{a}_0 + \varepsilon$ with ε small, a candidate can implement the minimum possible wage, which benefits all entrepreneurs with wealth $a \in [\tilde{a}_0, \overline{a}_0]$. However, because $\frac{\partial^2 U^e(a)}{\partial a \partial \bar{w}} > 0$, entrepreneurs with lower wealth can benefit the most from a reduction in wages. Thus, it may be that the regulatory threshold that maximizes the welfare of the residual entrepreneurs is below $\overline{a}_0$, but never equal or lower than $\tilde{a}_0$. In sum, the regulatory threshold must belong to $(\tilde{a}_0, \overline{a}_0]$.

Fourth, from Proposition 2, $\frac{\partial U^w(a)}{\partial \bar{w}} > 0$ and $\frac{\partial^2 U^w(a)}{\partial a \partial \bar{w}} > 0$ for $a \geq \tilde{a}_0$. Thus, the regulatory threshold that maximizes $\int_{\tilde{a}_0}^{\overline{a}_0} U^w(a) g(a) \partial a$ must satisfy that $a^{\tau} \leq \overline{a}_0$. Also, because $\frac{\partial^2 U^w(a)}{\partial a \partial \bar{w}} > 0$ for $a \geq \tilde{a}_0$, workers in larger firms benefit the most from receiving a higher effective wage. Hence, it must be that $a^{\tau} \in (\tilde{a}_0, \overline{a}_0]$, otherwise the decrease in the equilibrium wage will hurt workers in larger firms. Overall, the solution to problem (D.40) satisfies $a^{\tau} \in (\tilde{a}_0, \overline{a}_0]$.

To guarantee that competition takes place only in district 2, it is sufficient that agents from group 1 always vote for party R and those from group 3 vote for L. Since $\frac{\partial^2 U^e(a)}{\partial a \partial \bar{w}} > 0$ and $\frac{\partial \bar{w}}{\partial a^{\tau}} > 0$, the minimum achievable utility for agents in group 1 is given by $U^e(\overline{a}_0 | a^{\tau} = \underline{a}_0)$, while the maximum utility is $U^e(a_M | a^{\tau} = a_M + \varepsilon)$ with ε small. Therefore, a sufficient condition for entrepreneurs in group 1 to always vote for R is that:

$$U^e(\overline{a}_0 | a^{\tau} = \underline{a}_0) > U^e(a_M | a^{\tau} = a_M + \varepsilon) + \frac{1}{2\psi} + \frac{1}{2\chi_1} - \bar{\sigma}_1,$$

which determines the first threshold $c^e_1(\varepsilon)$.

From the point of view of workers, the minimum attainable utility for agents in group 1 is $U^w(\overline{a}_0 | a^{\tau} = \overline{a}_0 + \varepsilon)$ for ε small, while the maximum utility for that group is $U^w(a_M | a^{\tau} = a_M)$ (because $\frac{\partial^2 U^w(a)}{\partial a \partial \bar{w}} > 0$ and $\frac{\partial U^w(a)}{\partial \bar{w}} > 0$ for $a > \tilde{a}_0$). Thus, a sufficient condition for workers in group 1 to vote for R is:

$$U^w(\bar{a}_0|a^\tau = \bar{a}_0 + \varepsilon) > U^w(a_M|a^\tau = a_M) + \frac{1}{2\psi} + \frac{1}{2\chi_1} - \bar{\sigma}_1,$$

which gives the second threshold $c_1^w(\varepsilon)$. Thus, if $\bar{\sigma}_1 > \max\{c_1^e(\varepsilon), c_1^w(\varepsilon)\}$ for ε small, the agents from group 1 vote for R. An analogous procedure can be used to obtain the critical thresholds for group 2. ■

D.7 Modeling labor-mobility frictions

An important assumption in the baseline model is that workers are initially randomly matched to firms, and after a regulatory change occurs, labor-mobility frictions prevent them from freely moving between firms. Examples of such mobility frictions include job search costs, previously signed contract terms, or geographic barriers. Under this assumption, a *tiered* labor regulation creates a wedge between the effective wage ($\bar{w}$) faced by regulated and unregulated firms. Without these mobility frictions, any difference between effective wages would be eliminated in equilibrium due to the flow of workers from firms with lower to higher effective wages. As a result, labor regulation would be neutral, and thus, size-contingent regulations would not emerge in equilibrium.

In this section, I address this concern by extending the model to include a variable degree of labor-mobility frictions. Then, I study how the equilibrium regulation responds to these frictions. Two results emerge from this extension. First, a minimal degree of labor-mobility frictions is sufficient to justify the implementation of a *tiered* labor regulation. Second, the equilibrium labor regulation becomes more protective (i.e. the regulatory threshold is lower) when labor-mobility frictions are tighter.

D.7.1 A frictionless world

If labor-mobility frictions are not present, the flow of workers from firms with lower to those with higher effective wages eliminates any difference between effective wages in equilibrium. Formally, the following wage-equilibrium condition must hold:

$$\tau_0 w = \tau_1 w(\tau_1). \tag{D.49}$$

Equation (D.49) establishes that the wage rate paid in firms with high protection ($w(\tau_1)$) must be such that the effective wages in unregulated and regulated firms equalize in equilibrium. Therefore, labor regulation is neutral, and a size-contingent regulation does not emerge in equilibrium.

D.7.2 Labor-mobility frictions

I follow Adamopoulos et al. (2024) and model labor-mobility frictions as barriers on the wage income. In particular, workers in regulated firms face a wage barrier υ. This barrier captures all the factors that prevent the reallocation of workers from unregulated to regulated firms after a regulatory change. The effective wage rate is a function of labor regulation, $\tau \in \{\tau_0, \tau_1\}$, and mobility barrier υ:

$$\bar{w}(\tau, \upsilon) = \begin{cases} \tau_0 w & \text{if } \tau = \tau_0, \\ \tau_1(1-\upsilon)w & \text{if } \tau = \tau_1, \end{cases} \tag{D.50}$$

where w is given by the labor market equilibrium condition of problem (3.11). The labor-mobility parameter satisfies $\upsilon \in [0, 1-\tau_0/\tau_1]$. When $\upsilon = 0$, there is no labor mobility as in the baseline case. If $\upsilon = 1-\tau_0/\tau_1$, then workers can freely move between firms and condition (D.49) holds. An interpretation of υ is that it measures the fraction of workers who can freely move between firms relative to those who are randomly matched to firms.

D.7.3 Equilibrium policy under imperfect mobility

First, observe that as long as there is some degree of mobility friction, $\upsilon < 1-\tau_0/\tau_1$, a wedge between the effective wage in regulated and unregulated firms exists, given by $[\tau_1(1-\upsilon)-\tau_0]w > 0$. This property is sufficient for the proof of Proposition 3 to hold, which is a key result for the rest of the propositions presented in Section 5. Thus, the equilibrium regulation remains *tiered*. Overall, even a minimum degree of mobility barriers is enough for the emergence of a *tiered* regulation, as it ensures the creation of cross-subsidies from large to small firms.

Second, greater labor mobility gives rise to a less protective regulation, i.e. a higher regulatory threshold, as established in Lemma 5. The intuition is that when workers can more easily move between firms, a regulatory change induces a smaller gap between the effective wages of large and small firms. Thus, the cross-subsidy effect of a *tiered* regulation is diminished.

Lemma 5 *The equilibrium size threshold a^τ_{pe} is increasing in labor mobility $\upsilon \in [0, 1-\tau_0/\tau_1)$.*

Proof: First, note that $\frac{\partial a^\tau}{\partial \upsilon} = \frac{\partial a^\tau}{\partial w}\frac{\partial w}{\partial \upsilon}$. Lemma 1 shows that $\frac{\partial a^\tau}{\partial w} > 0$. Thus, all is left to show is that $\frac{\partial w}{\partial \upsilon} > 0$. Following an analogous procedure to that used to prove Lemma 1 gives that:

$$\frac{\partial w}{\partial \upsilon}\left(l_s^1 \int_{\underline{a}}^{a^\tau} \underbrace{\frac{\partial l^0(a)}{\partial w}}_{<0} \partial G(a) + l_s^0 \int_{a^\tau}^{a_M} \underbrace{\frac{\partial l^1(a)}{\partial w}}_{<0} \partial G(a) - l_s^1(l^0(\underline{a}) + l_s^0) g(\underline{a}) \underbrace{\frac{\partial \underline{a}}{\partial w}}_{>0} - m^0 l_s^1 \underbrace{\frac{\partial l_s^0}{\partial w}}_{>0} - m^1 l_s^0 \underbrace{\frac{\partial l_s^1}{\partial w}}_{>0} \right) = \underbrace{(l_s^0 l^1(a^\tau) - l_s^1 l^0(a^\tau))}_{<0} g(a^\tau) - m^1 l_s^0 \int_{a^\tau}^{a_M} \underbrace{\frac{\partial l^1(a)}{\partial \upsilon}}_{>0} \partial G(a) + m^1 l_s^0 \underbrace{\frac{\partial l_s^1}{\partial \upsilon}}_{<0},$$

which implies that $\frac{\partial w}{\partial v} > 0$. Note that I have used equation (D.50) to obtain that:

$$\frac{\partial l^j}{\partial v} = \begin{cases} \frac{\partial l^j}{\partial w}\frac{\partial w}{\partial v} & \text{if } j = 0, \\ \frac{\partial l^j}{\partial w}\frac{\partial w}{\partial v} + \frac{\partial l^j}{\partial v} & \text{if } j = 1. \end{cases}$$

A similar expression is obtained for $\frac{\partial l_s^j}{\partial v}$. This concludes the proof. ■

D.8 Regulations on capital use

This section extends the model to explore regulations on capital use, which in many countries are also size-contingent. Examples of such regulations include special tax treatments, credit subsidies, and restrictions on business expansion. The main finding is that the results obtained for labor regulation cannot be directly expanded to regulations on capital use. Thus, reframing the entire analysis as general redistribution or as subsidies to SMEs is not straightforward. A distinctive feature of labor regulation is that it constitutes a transfer from a specific employer to her employees. This property is fundamental to obtaining the preferences summarized in Table 2, giving rise to a *tiered* regulation in equilibrium. On the other hand, regulation on capital use affects the size of regulated firms but does not involve direct employer-to-employee transfers, a feature that significantly changes the theoretical analysis.

Unlike labor regulation, the emergence of a *tiered* regulation on capital use depends on at least three factors. First, the progressivity of government transfers program. Second, whether regulation restricts firm size, provides a special tax treatment for smaller firms, or subsidizes credit for more financially constrained firms. Third, the political orientation of the government. Future research may expand the analysis to gain a deeper understanding of size-contingent regulations on capital use that are widespread worldwide.

D.8.1 Modeling regulation

Regulation comprises a variable tax τ on capital use, which may be size contingent and *asset-based.* Specifically, an entrepreneur with assets a must pay a tax $\tau(a) \cdot q(a)$ to operate a firm. The utility of an entrepreneur with a is given by:

$$U^e(a;\tau) = f(k,l) - w \cdot l - (1+\rho) \cdot d - \tau \cdot q(a), \tag{D.51}$$

where $q(a)$ is an increasing function in assets that captures the type of regulation to be detailed below. The resources collected through taxes are transferred to workers. Transfers, $T(a)$, depend on the scale sector the worker works for. The utility of workers in firms facing a tax $\tau(a)$ is given by:

$$U^w(a;\tau) = w \cdot l - \frac{l}{l_s}\varsigma(l_s) + T(a), \tag{D.52}$$

The government has a balanced budget. Thus, total transfers, $\bar{T}$, satisfy:

$$\bar{T} \cdot G(\underline{a}_0) = \int_{\underline{a}_0}^{a_M} \tau(a) \cdot q(a) g(a) \partial a. \tag{D.53}$$

The transfers to workers in a firm with assets a are given by: $T(a) = \omega(a) \cdot \bar{T}$, where the transfers' weights satisfy: $\omega' \leq 0$ and $\int_{\underline{a}_0}^{a_M} \omega(a) g(a) \partial a = 1$. The rate at which $\omega(a)$ decreases with a captures the progressiveness of the transfer program.

D.8.1.1 Size-restrictions Governments may impose a tax on firms growing too large. For example, Japan and France impose restrictions on the expansion of the retail sector (see Bertrand and Kramarz, 2002, for a discussion of the French case). Under these rules, retail businesses must follow a special procedure to obtain a license for the expansion of existing retail businesses or for the opening of new stores beyond a size threshold. In this case, $q(a) = k(a)$. Thus, firms pay a tax proportional to their size.

D.8.1.2 Financial subsidies Many countries such as South Korea and the US, provide large financial subsidies to smaller firms (Guner et al., 2008). These regulations are captured by setting $q(a) = -\rho d(a)$, which corresponds to a reduction in credit costs of regulated firms. The effective credit cost of a firm with debt $d(a)$ is given by $[1 + \rho(1 - \tau(a))] \cdot d(a)$.

D.8.1.3 Special tax treatments In many developed and developing countries, SMEs enjoy special tax treatments, such as a reduction of property tax payments or corporate tax rates (e.g. US, UK, Belgium, Germany). Additionally, in many countries, tax enforcement increases with size (for recent evidence, see Bachas et al., 2019). These types of policies can be represented by defining $q(a) = a$ or $q(a) = k(a)$, which correspond to a tax on capital while maintaining the model simple. Another more general approach would be to set $q(a) = f(k,l) - wl - (1 + \rho)d$ to capture a tax on profits, but that makes the model less tractable.

D.8.2 Tiered regulation?

In this section, I explore whether there is scope for the implementation of a *tiered* regulation. I examine two policies: i) size-dependent taxes on capital and a credit subsidy to smaller firms. Section D.8.4 provides theoretical support for the discussion presented in this section.

D.8.2.1 Tax on capital

Consider a regulation with $q(a) = k(a)$ and such that:

$$\tau(a) = \begin{cases} 0 & \text{if } a < a^{\tau}, \\ \bar{\tau} & \text{if } a \geq a^{\tau}, \end{cases}$$

where the regulatory threshold a^{τ} is relatively large, meaning that stricter regulations apply only to large firms. Would such a policy be sustainable in equilibrium? (compared to a flat policy with zero taxes for everyone, i.e. $a^{\tau} = a_M$).

First, consider the impact on entrepreneurs' utilities. Regulating large firms increases their net cost of capital, reducing both their optimal operational scale and their demand for labor. The decreased labor demand leads to a lower equilibrium wage, which significantly benefits smaller firms. However, the cost for large firms may not be "relatively low" as in the case of labor regulation. Large firms face two drawbacks due to regulation: i) an increased cost of capital that also reduces their access to credit, and ii) a decline in their optimal size. Whether a *pro-business* government implements a *tiered* regulation or not depends on how high are these costs relative to the cross-subsidy effect that benefits smaller firms. If a *pro-business* government opts for a *tiered* regulation, it is likely to choose a relatively large regulatory threshold and a low $\bar{\tau}$.

Second, consider the effects on workers' utilities. Workers in smaller firms benefit from a *tiered* regulation. Despite it reduces wages, it enables their firms to expand employment. Also, they benefit from receiving transfers. Their support for a *tiered* regulation increases as the transfers program becomes more progressive. On the other hand, workers in large firms are more likely to suffer under such regulation, as employment and wages decline. They only benefit from receiving transfers. When the transfer system is less progressive, they are less opposed to a *tiered* regulation. Therefore, a *pro-worker* government is more inclined to implement a *tiered* regulation when transfers are less progressive. In the case of capital taxation, a *tiered* regulation can only benefit workers in smaller firms at the expense of workers in large firms. Conversely, in the case of labor policy, a *tiered* regulation can benefit both groups and thus, is more likely to be implemented by a *pro-worker* government.

D.8.3 Credit subsidies

Regulation is given by $q(a) = -\rho d(a)$ and such that:

$$\tau(a) = \begin{cases} \bar{\tau} & \text{if } a < a^{\tau}, \\ 0 & \text{if } a \geq a^{\tau}, \end{cases}$$

where the regulatory threshold is relatively low, i.e., only smaller firms receive a credit subsidy. Would such a policy be preferable compared to a policy which do not subsidize credit at all (i.e. $a^\tau = \underline{a}_0$)?

First, note that this type of policy operates in a different way relative to a capital tax. Raising the regulatory threshold (a^τ) enhances access to credit for smaller firms, allowing them to expand investment and hiring. The increased demand for labor raises the equilibrium wage. As a result, large firms suffer from credit subsidies, while only subsidized firms benefit. In contrast to a capital tax, larger firms can more easily adapt to credit subsidies because their credit capacity remains robust. Specifically, such policies do not directly impact their capital cost as a capital tax would. Thus, a *pro-business* government is likely to implement credit subsidies for smaller firms, as they promote growth in the small-scale sector at a relatively low cost to larger firms.

From the perspective of workers, they now finance credit subsidies through taxes because $q(a) < 0$, and thus, $T(a) < 0$. The weights of transfers are adjusted to capture the progressivity of the tax system, with $\omega' > 0$. Thus, workers with higher labor income pay proportionality larger taxes. Workers in smaller firms benefit from credit subsidies as their firms expand employment and the wage rate increases. While workers in larger firms benefit from the higher wages, they must finance a larger fraction of credit subsidies through taxes. If the tax code is too progressive, workers in large firms may actually suffer from credit subsidies to smaller firms. Therefore, a *pro-worker* government is more likely to provide credit subsidies when the tax system is less progressive.

D.8.4 Regulations on capital use: theoretical support

In this section, I study the effects of changing the regulatory threshold (a^τ) on entrepreneurs' and workers' utilities. I focus on a tax on capital, thus $q(a) = k(a)$. The results extend to credit subsidies. Consider a firm subject to strict regulation ($a \geq a^\tau$). Differentiating (D.51) and (D.52) in terms of a^τ:

$$\frac{\partial U^e}{\partial a^\tau} = \left(\overbrace{[f_k(k,l) - \underbrace{(1+\rho+\tau)}_{\text{capital cost effect}}]}^{>0} \cdot \underbrace{\overbrace{\frac{\partial d}{\partial w}}^{<0}}_{\text{credit effect}} - l \right) \underbrace{\overbrace{\frac{\partial w}{\partial a^\tau}}^{>0}}_{\text{wage effect}},$$

$$\frac{\partial U^w}{\partial a^\tau} = \frac{l(\gamma-1)}{\gamma} \cdot \underbrace{\overbrace{\frac{\partial w}{\partial a^\tau}}^{>0}}_{\text{wage effect}} + (\gamma-1) l_s^{\gamma-1} \cdot \overbrace{\underbrace{\frac{\partial l}{\partial a^\tau}}_{\text{employment effect}} \frac{\partial w}{\partial a^\tau}}^{<0} + \underbrace{\overbrace{\frac{\partial T}{\partial a^\tau}}^{<0}}_{\text{transfer effect}},$$

where $\frac{\partial T(a)}{\partial a^\tau} = -\omega(a) \cdot \frac{\bar{\tau} g(\underline{a}_0)}{G(\underline{a}_0)}$. Thus, the results above respond to the progressivity of the transfer program, as captured by the shape of $\omega(a)$. The equations above support the theoretical effects discussed in Section D.8.2.

D.9 Two-dimensional labor reform

This section deals with a two-dimensional labor reform. The government can simultaneously change the variable (τ) and fixed cost component (F) of labor regulation. From Proposition 3, problem (3.11) reduces to finding two size thresholds, a^τ and a^F, above which regulation becomes stricter. To simplify the exposition define: $a^1 \equiv \min\{a^\tau, a^F\}$ and $a^2 \equiv \max\{a^\tau, a^F\}$. Further, define:

$$(\tilde{\tau}, \tilde{F}) \equiv (\tau_1, F_0)\, \mathbf{1}[a^\tau \geq a^F] + (\tau_0, F_1)\, \mathbf{1}[a^\tau < a^F].$$

Thus, aggregate entrepreneurs' welfare ($\lambda = 0$) is written as:

$$\bar{U}^e(a^\tau, a^F) = \int_{\underline{a}_0}^{a^1} U^e(a|\tau_0, F_0)\partial G + \int_{a^1}^{a^2} U^e(a|\tilde{\tau}, \tilde{F})\partial G + \int_{a^2}^{a_M} U^e(a|\tau_1, F_1)\partial G,$$

while aggregate workers' welfare ($\lambda = 1$) is given by:

$$\bar{U}^w(a^\tau, a^F) = \int_{\underline{a}_0}^{a^1} U^w(a|\tau_0, F_0)\partial G + \int_{a^1}^{a^2} U^w(a|\tilde{\tau}, \tilde{F})\partial G + \int_{a^2}^{a_M} U^w(a|\tau_1, F_1)\partial G.$$

The government's problem is written as follows:

$$\begin{aligned}
&\max_{(a^\tau, a^F)\in[\underline{a}_0, a_M]^2} \{\bar{U}(a_1, a_2) \equiv \lambda \bar{U}^w(a_1, a_2) + (1-\lambda)\bar{U}^w(a_1, a_2)\} \\
&s.t \qquad m(\tau_0, F_0)\cdot l_s(\tau_0, F_0) = \int_{\underline{a}_0}^{a^1} l(a|\tau_0, F_0)\partial G, \\
&\qquad\qquad m(\tilde{\tau}, \tilde{F})\cdot l_s(\tilde{\tau}, \tilde{F}) = \int_{a^1}^{a^2} l(a|\tilde{\tau}, \tilde{F})\partial G, \\
&\qquad\qquad m(\tau_1, F_1)\cdot l_s(\tau_1, F_1) = \int_{\underline{a}_0}^{a^1} l(a|\tau_1, F_1)\partial G, \\
&\qquad\qquad \sum_{(\tau, F)\in\Theta} m(\tau, F) = G(\underline{a}_0),
\end{aligned}$$

where $m(\tau, F)$ corresponds to the mass of workers subject to the labor regulation $(\tau, F) \in \Theta$, with $\Theta = \{(\tau_0, F_0), \tau_1, F_0, \tau_0, F_1, \tau_1, F_1\}$. Also, recall that a^1 and a^2 are defined in terms of (a^τ, a^F). The first three conditions equalize labor supplied and demanded under the different regulatory regimes. The final condition asks that the sum of workers subject to different regulatory regimes must equal the total mass of workers, $G(\underline{a}_0)$. As in the unidimensional case, these conditions uniquely define $m(\tau, F)$ and the equilibrium wage w.

The following proposition describes the equilibrium regulation.

Proposition 13 *$\bar{U}(a^\tau, a^F, \lambda)$ achieves a global maximum in $[\underline{a}_0, a_M]^2$ at some size thresholds $a^\tau_{pe} \in (\underline{a}_0, a_M)$ and $a^F_{pe} \in (\underline{a}_0, a_M)$ characterized by:*

$$(a^\tau_{pe}, a^F_{pe}) = \sup_{(a^\tau, a^F)} \bar{U}(a^\tau, a^F, \lambda). \tag{D.54}$$

Proof: The same arguments used to prove item 1 of Proposition 4 apply in the two-dimensional case. Thus, $\bar{U}(a^\tau, a^F)$ is a bounded and continuous function in $[\underline{a}_0, a_M]^2$, satisfying:[9]
i) $\bar{U}(\underline{a}_0, \underline{a}_0) = \bar{U}(a_M, a_M) > 0$, ii) $\frac{\partial \bar{U}(\underline{a}_0^+, a^F)}{\partial a^\tau} > 0, \forall a^F \in [\underline{a}_0, a_M]$, and iii) $\frac{\partial \bar{U}(a^\tau, \underline{a}_0^+)}{\partial a^F} > 0, \forall a^\tau \in [\underline{a}_0, a_M]$.

In consequence, $\bar{U}(a^\tau, a^F)$ achieves a global maximum. Moreover, properties i) to iii) imply that the global maximum is achieved at some $a^\tau_{pe} \in (\underline{a}_0, a_M)$ and $a^F_{pe} \in (\underline{a}_0, a_M)$. ■

As in the unidimensional case, the proposition states that the equilibrium regulation is *tiered* in both dimensions regardless of the political orientation of the government. Thus, in equilibrium there are three possible regulatory regimes: (τ_0, F_0), $(\tilde{\tau}, \tilde{F})$, and (τ_1, F_1).

Figure 18 illustrates the case in which $a^\tau_{pe} > a^F_{pe}$, i.e. $(\tilde{\tau}, \tilde{F}) = (\tau_1, F_0)$. First, smaller firms with assets $a \in [\underline{a}_0, a^\tau_{pe})$ are subject to weak labor regulation in both components, (τ_0, F_0). Second, there is a range of medium-sized firms with assets $a \in [a^\tau_{pe}, a^F_{pe})$ that face a high variable cost of labor, but a low fixed cost, (τ_1, F_0). Finally, larger firms with $a > a^F_{pe}$ are subject to the most strict labor regulation, (τ_1, F_1).

This design of labor regulation resembles the French labor code, which establishes different thresholds above which variable and fixed cost components increase. For instance, firms with more than 10 workers are subject to stricter regulation regarding economic dismissal and are subject to a monthly payment of social security. Additionally, firms hiring more than 50 employees are subject to several regulations that are expected to increase the fixed cost of labor use. For example, they must establish a committee on health and safety, they must set up a staff committee with a minimum budget of 0.3% of total payroll, they incur higher liability in case of a workplace accident, they must set up a profit-share plan, and their workers can appoint a union representative (Gourio and Roys, 2014; Garicano et al., 2016).

D.10 Modeling individual and collective dismissal protection

In this section, I modify the baseline model to distinguish between individual and collective dismissal regulations, also known as Employment Protection Legislation (EPL). The main finding

[9] I omit the dependence of $\bar{U}$ on λ to simplify notation.

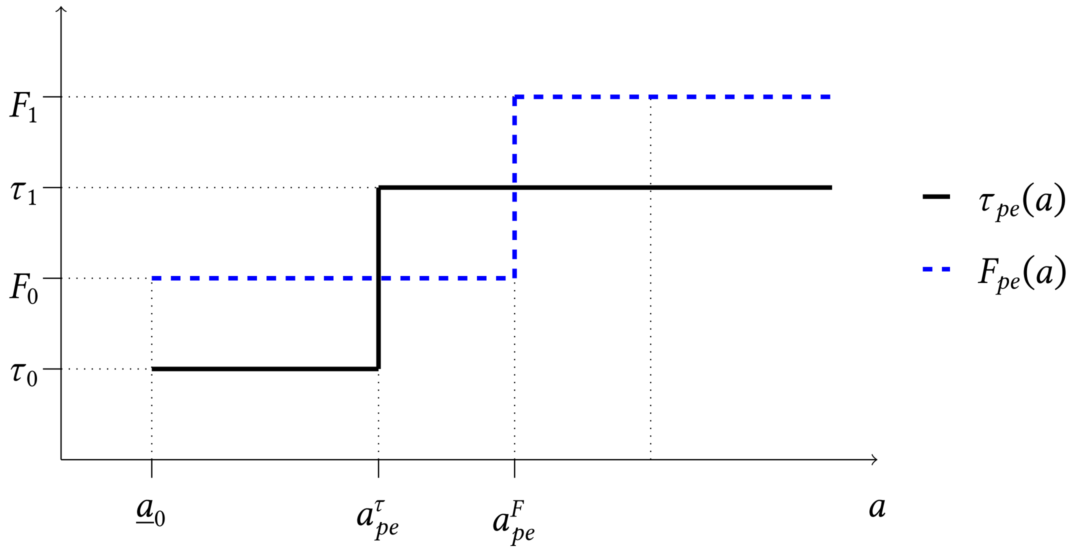


Figure 18: Equilibrium labor regulation, $\mathcal{P}_{pe}(a) = (\tau_{pe}(a), F_{pe}(a))$.

is that the equilibrium policy is *tiered* in both dimensions. This result rationalizes the type of labor regulation implemented in countries like France and Austria, where different regulatory thresholds apply for individual and collective dismissals (see Section C.1).

D.10.1 Timeline

The timeline is that of Figure 2. The main change occurs in Stage 3 of period $t = 2$. Figure 19 illustrates the timing in period $t = 2$.

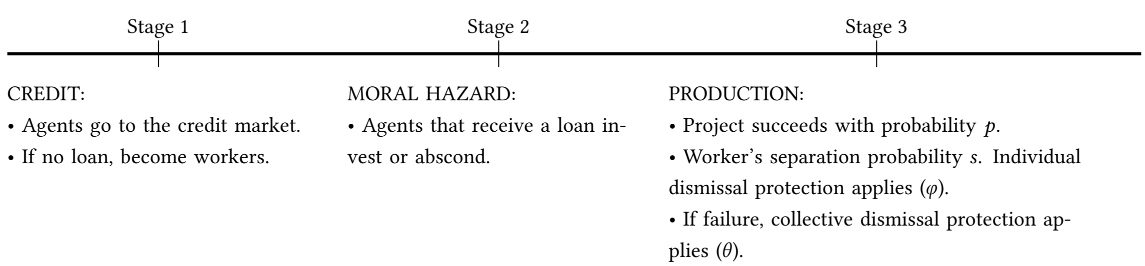


Figure 19: Timing at $t = 2$.

Below, I detail the events that take place at Stage 3. Firms succeed with probability $p \in (0, 1)$. In that case, they produce output $f(k, (1 - s)l)$, where $k = a + d$ is the capital invested by an entrepreneur with wealth a, who asks for a loan d, and hires l units of labor.

There is an exogenous job separation probability, $s \in [0, 1]$. Thus, $(1 - s)l$ is the "effective" labor used for production when a firm hires l units of labor. When an individual worker is fired, with probability s, entrepreneurs must pay her a fraction $\varphi \in [0, 1]$ of her labor income, given by

φwl.[10] Hence, $\varphi \in \{\varphi_0, \varphi_1\}$ with $\varphi_1 > \varphi_0$, captures the strictness of individual dismissal regulations.

With probability $1 - p$, production fails and bankruptcy procedures take place. The legal system recovers only a fraction $\eta \in [0, 1]$ of total invested capital which is distributed among creditors, i.e. banks and workers. First, a fraction $\theta \in [0, 1]$ of labor income wl is paid to workers. Then, the remainder, $\eta k - \theta wl$, goes to banks.[11] Hence, $\theta \in \{\theta_0, \theta_1\}$ can be interpreted as the strength of employees' rights in bankruptcy or, more broadly, as the strictness of collective dismissal regulations. Alternatively, it can be understood as a measure of seniority rights of employees of an insolvent firm. Therefore, when $\theta = 0$, the worker is junior to all creditors, while if $\theta = 1$ she is the most senior of the claimants.

In sum, the strength of EPL in a given firm is represented by the pair (φ, θ), which measures the strictness of individual and collective dismissal regulations, respectively.

D.10.2 Payoffs

Banks The expected profits of a bank that lends d to an entrepreneur with wealth a, that hires l units of labor, that operates a firm with EPL (φ, θ), and faces an interest rate r is:

$$U^b(a, d, l|\varphi, \theta) = p(1 + r)d + (1 - p)[\eta k - \theta wl] - (1 + \rho)d. \tag{D.55}$$

Entrepreneurs The utility of an entrepreneur with wealth a, that borrows d, and hires l units of labor is:

$$U^e(a, d, l|\varphi, \theta) = p[f(k, (1 - s)l) - (1 - s)wl - s\varphi wl - (1 + r)d]. \tag{D.56}$$

Workers The utility of workers is written as in the main text with the difference that the effective wage is given by $\bar{w}(\varphi, \theta) \equiv [p((1 - s) + s\varphi) + (1 - p)\theta] \cdot w$. The statics on $\bar{w}$ when labor regulation improves are qualitatively similar to that in the base model:

$$\frac{\partial \bar{w}}{\partial \varphi} = spw + [p((1 - s) + s\varphi) + (1 - p)\theta] \frac{\partial w}{\partial \varphi}, \tag{D.57}$$

$$\frac{\partial \bar{w}}{\partial \theta} = (1 - p)w + [p((1 - s) + s\varphi) + (1 - p)\theta] \frac{\partial w}{\partial \theta}. \tag{D.58}$$

Recall that in the baseline model: $\frac{\partial \bar{w}}{\partial \tau} = w + \tau \frac{\partial w}{\partial \tau}$.

[10] This can be interpreted as in Saint-Paul (2002), firms are hit by a random shock that destroys the match between workers and entrepreneurs with probability s, in which case the firm pays a firing cost φwl.

[11] I assume that $\eta k - \theta wl \geq 0$, which simplifies the exposition. If $\eta k - \theta wl < 0$, then all capital recovered goes to workers and banks receive nothing. In that case, the analysis becomes simpler and all results still hold.

D.10.3 Equilibrium

An important difference relative to the baseline model is that banks charge differentiated interest rates because the loss they incur in bankruptcy depends on the share of investment and labor financed through debt. Imposing the zero-profits condition in (D.55) gives:

$$1 + r = \frac{1+\rho}{p} - \frac{1}{pd}(1-p)[\eta k - \theta_0 w l], \tag{D.59}$$

where $1 + r$ is the interest rate charged to an entrepreneur that operates a firm with debt d, investment $k = a + d$, and labor l. Using (D.59) in (D.56) gives that:

$$U^e(a, d, l|\varphi, \theta) = pf(k, l) - \bar{w}l - (1-p)\eta k - (1+\rho)d. \tag{D.60}$$

The equation is similar to expression (3.1), with the difference that the maximum return of capital is given by: $1 + \underline{r} = 1 + \rho - (1-p)\eta + \phi$. The similar qualitative properties of equations (D.57), (D.58), and (D.60) relative to the baseline model are sufficient to prove all the propositions.[12]

D.11 Asset-based policy: self-reporting

Sections 5 and 6.1 have shown that the equilibrium labor regulation is *tiered* regardless on whether regulations are defined based on assets or labor. Also, the *asset-based welfare* is larger than the *labor-based welfare* due to the distortions generated by strategic behavior under a *labor-based* policy. Why in practice governments do not implement labor regulations contingent on assets?

In the baseline model of Section 3, I have assumed that firms' assets are observable. But in reality firms can decide how many assets to report. Consider an economy where the government can implement a labor policy contingent in assets, but where firms report their assets. In this case, firms may want to under-state their assets in order to operate under a less protective regulation. However, under-reporting involves a cost: since banks constrain credit depending on assets, under-reporting means that agents have less access to credit than if they reported truthfully. Thus, under-reporting means: i) more flexible labor regulation, but at the cost of ii) lower investment.

If effect ii) dominates, then no entrepreneur would have incentives to lie about its assets holdings. If that is the case, an *asset-based* policy would not create any distortion on welfare and would be preferable over a *labor-based* policy. Lemma 6 shows that this is not the case. Given some asset threshold a^τ above which labor regulation becomes stricter, there is a range of entrepreneurs with

[12] Details are available upon request. Propositions 1 and 2 require a condition similar to Assumption 1: $1 + \rho > \frac{\alpha\phi}{\beta(1-s)^2(1-\alpha-\beta)} + \eta(1-p)$.

$a \geq a^{\tau}$ that claim to have slightly less wealth than a^{τ}. Thus, they under-report their size. As a result, they receive less credit and invest less in a firm than if they reported truthfully, but they gain from reduced labor costs. As in the case of a *labor-based* policy, strategic behavior distorts welfare by constraining the extent to which a *tiered* labor regulation can generate "cross-subsidies" through wages.

Lemma 6 *There exists a critical value $\bar{\epsilon} > 0$ such that agents with $a \in [a^{\tau}, a^{\tau} + \bar{\epsilon})$ report having slightly less assets than a^{τ}.*

Proof: Consider an agent endowed with wealth $a = a^{\tau} + \epsilon$, where $\epsilon > 0$. Thus, if she reports her assets truthfully, she invests $k = a^{\tau} + \epsilon + d(a^{\tau} + \epsilon)$, and hires $l = l(a^{\tau} + \epsilon)$ units of labor. The utility she obtains from reporting a is given by:

$$U^e(a|\tau_1) = f(k, l) - \bar{w}(\tau_1)l - F - (1 + \rho)d.$$

Otherwise, if she under-reports her size and says that she owns slightly less than a^{τ}, then her utility is given by:

$$U^e(a^{\tau}|\tau_0) = f(k^{\tau}, l^{\tau}) - \bar{w}(\tau_0)l - F - (1 + \rho)d^{\tau},$$

where $k^{\tau} = a^{\tau} + d(a^{\tau})$, $l^{\tau} = l(a^{\tau})$, and $\bar{w}(\tau) = \tau \cdot w$. Define the following auxiliary function:

$$h(\epsilon) \equiv U^e(a|\tau_1) - U^e(a^{\tau}|\tau_0) = f(k, l) - f(k^{\tau}, l^{\tau}) - \bar{w}(\tau_1)l + \bar{w}(\tau_0)l^{\tau} - (1 + \rho)[d - d^{\tau}]. \qquad \text{(D.61)}$$

First, note that:

$$h(\epsilon)\Big|_{\epsilon=0} = \bar{w}(\tau_0)l^{\tau} - \bar{w}(\tau_1)l < 0,$$

where I have used that $\bar{w}(\tau_0) < \bar{w}(\tau_1)$ and $l > l^{\tau}$. Second, differentiate $h(\epsilon)$ in terms of ϵ:

$$\begin{aligned}\frac{\partial h(\epsilon)}{\partial \epsilon} &= U^e_k(a|\tau_1)\frac{\partial k}{\partial \epsilon} + U^e_l(a|\tau_1)\frac{\partial l}{\partial \epsilon} + U^e_d(a|\tau_1)\frac{\partial d}{\partial \epsilon}, \\ &= f_k(k, l)\left(1 + \frac{\partial d}{\partial \epsilon}\right) + \underbrace{[f_k(k, l) - (1 + \rho)]}_{\geq 0}\frac{\partial d}{\partial \epsilon} \geq 0,\end{aligned}$$

where I have used that $\frac{\partial d}{\partial \epsilon} = \frac{\partial d}{\partial a}\frac{\partial a}{\partial \epsilon} > 0$, since $\frac{\partial d}{\partial a} > 0$. Finally, since $h(0) < 0$, $h' > 0$ and h is continuous in ϵ, there is a unique $\bar{\epsilon} > 0$ such that $h(\bar{\epsilon}) = 0$. Thus, any agent with assets $a \in [a^{\tau}, a^{\tau} + \bar{\epsilon})$ is better off by reporting slightly less assets than a^{τ}. ∎

E Appendix: Additional Definitions, Results, and Discussion

E.1 Tiered labor regulation: Additional definitions and results

In this section, I provide some important definitions and results under a *tiered* labor regulation $\mathcal{P} = (\tau(a), F_0)$, with $\tau(a) = \tau_0$ if $a < a^\tau$ and $\tau(a) = \tau_1$ for $a \geq a^\tau$ (see Section 5).

Section E.1.1 defines the endogenous probabilities to be matched to a firm with weak and strong labor regulation given $\mathcal{P}$. Section E.1.2 provides an explicit expression for the individual expected workers' welfare $\mathbb{E}u^w$. Section E.1.3 presents a workers' utility equivalence result, that allows to write the government problem either in terms $\mathbb{E}u^w$ or U^w. Section E.1.4 illustrates the competitive equilibrium when $\mathcal{P}$ is implemented (*ex-post competitive equilibrium*).

E.1.1 Matching probabilities

Denote by m^i the mass of workers in a firm subject to a regulation τ_i, with $i \in \{0, 1\}$. Then, m^0, m^1, and w solve the following system of equations:

$$m^0 \cdot l_s(\tau_0) = \int_{\underline{a}_0}^{a^\tau} l(a|\tau_0) g(a) \partial a, \tag{E.1}$$

$$m^1 \cdot l_s(\tau_1) = \int_{a^\tau}^{a_M} l(a|\tau_1) g(a) \partial a, \tag{E.2}$$

$$m^0 + m^1 = G(\underline{a}_0). \tag{E.3}$$

The endogenous probabilities to be matched to a firm with weak (p^0) and strong (p^1) regulations are given by:

$$p^0 = \frac{m^0}{G(\underline{a}_0)}, \tag{E.4}$$

$$p^1 = \frac{m^1}{G(\underline{a}_0)}. \tag{E.5}$$

E.1.2 Individual expected workers' welfare

Define $u_0^w \equiv u^w(l_s^0)$ and $u_1^w \equiv u^w(l_s^1)$, where l_s^i is the individual labor supply when the worker is subject to a regulation τ_i (given by equation (3.5)). Workers are matched to a firm with weak (τ_0) and strong (τ_1) regulation according to the endogenous probabilities p^0 and p^1, respectively (given by equations (E.4) and (E.5)). Thus, the expected utility of an individual worker , $\mathbb{E}u^w$, is given by:

$$\begin{aligned}\mathbb{E}u^w &= p^0 u_0^w + p^1 u_1^w,\\ &= (p^0\ \tau_0 l_s^0 + p^1\ \tau_1 l_s^1)w + F_0 - p^0\varsigma(l_s^0) - p^1\varsigma(l_s^1).\end{aligned} \tag{E.6}$$

E.1.3 Workers' utility equivalence

The total workers utility $\bar{U}^w$ under a *tiered* labor regulation with threshold a^τ can be written in terms of individual expected utilities $\mathbb{E}u^w$ (equation (E.6)) or in terms of the utility of the group of workers in each firm $U^w(l)$ (equation (A.10)). The following equivalence condition must hold:

$$\mathbb{E}u^w \cdot G(\underline{a}_0) = \int_{\underline{a}_0}^{a^\tau} U^w(a|\tau_0, F_0)\partial G(a) + \int_{a^\tau}^{a_M} U^w(a|\tau_1, F_0)\partial G(a). \tag{E.7}$$

Thus, the government's problem can be written in terms of either the left-hand side or the right-hand side measure for aggregate workers' welfare. In this paper, I use the expression on the right-hand side because of two reasons: i) it allows me to obtain Proposition 3, and thus, to simplify the government's problem, and ii) it allows me to characterize the political preferences in terms of the preferences across different groups of workers, which admits a more intuitive interpretation of the results.

E.1.4 Ex-post competitive equilibrium under a tiered labor regulation

This section characterizes the ex-post competitive equilibrium that arises as a result of implementing a *tiered* labor regulation $\mathcal{P}$. As a result of a more protective labor regulation, there is stronger competition in the labor market. Thus, the equilibrium wage under the new regulation $\mathcal{P}$ is lower than under the initial regulation $\mathcal{P}_0 = (\tau_0, F_0)$, i.e. $w = w(\mathcal{P}) < w_0 = w(\mathcal{P}_0)$. Figure 20 illustrates the ex-post competitive equilibrium. I consider a relatively protective labor regulation $a^\tau \in (\underline{a}_1, \overline{a}_1)$, where $\overline{a}_1$ is the level of assets required to operate an efficient firm when regulation is τ_1. Agents are sorted into four groups.

First, agents who do not have enough assets to start a firm become workers ($a < \underline{a}_0$). Those working for firms with assets $a < a^\tau$ receive a lower effective wage, $\tau_0 w < \tau_0 w_0$, while those in firms with $a \geq a^\tau$ receive a higher effective wage, $\tau_1 w > \tau_0 w_0$. The endogenous probability to be matched to a firm with weak (τ_0) and strong (τ_1) labor protection are p_0 and p_1, respectively (determined by equations (E.4) and (E.5)). Thus, the expected labor payment for each unit of labor supplied is $(p_0\tau_0 + p\tau_1)w$.

Second, SMEs with $a \in [\underline{a}_0, a^\tau)$ face lower labor costs after a regulatory change, and thus, have easier access to credit and operate at a more efficient scale.

Third, entrepreneurs operating larger medium-sized firms with assets $a \in [a^\tau, \overline{a}_1)$ are subject to stricter labor regulation, receive less credit, and thus, have to shrink.

Finally, more capitalized entrepreneurs ($a \leq \overline{a}_1$) remain financially unconstrained and continue operating optimally even when they pay higher effective wages.

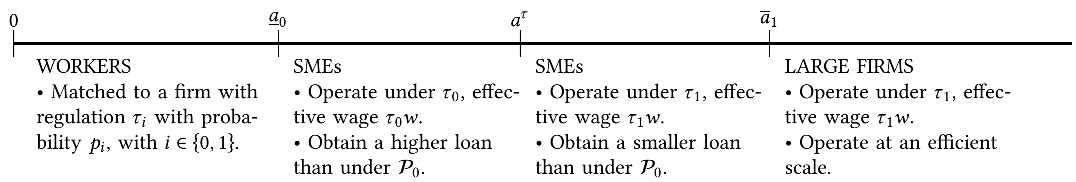


Figure 20: Ex-post competitive equilibrium.

E.2 Competitive equilibrium under a general labor regulation design

In this section, I define the competitive equilibrium under an arbitrary labor regulation $\mathcal{P}$. Agents' occupational choice depends critically on four equilibrium thresholds: the minimum wealth required to obtain a loan under the four possible regulatory regimes, $\underline{a}_{i,j} \equiv \underline{a}(\tau_i, F_j)$ with $(i,j) \in \{0,1\} \times \{0,1\}$

To formalize the conditions that define the equilibrium, I start by defining three important sets depending on agents' assets. First, the set of agents subject to a regulatory regime (τ_i, F_i): $A_{i,j} = \{a \in [0, a_M] \,:\, \mathcal{P}(a) = (\tau_i, F_j)\}$. Second, the set of individuals subject to (τ_i, F_i), who are excluded from the credit market, and thus, who become workers: $\underline{A}_{i,j} = \{a \in A_{i,j} \,:\, a < \underline{a}(\tau_i, F_j)\}$. Third, the set of individuals who face regulations (τ_i, F_i) but who have access to credit, and thus, become entrepreneurs: $\overline{A}_{i,j} = \{a \in A_{i,j} \,:\, a \geq \overline{a}(\tau_i, F_j)\}$. Denote by $l_s^{i,j}$ the optimal individual labor supply under regulations (τ_i, F_i), by $l^{ij}(a)$ the individual labor demand, and by $d^{i,j}(a)$ the level of debt. The following definition formalizes the competitive equilibrium under the arbitrary labor regulation $\mathcal{P}$.

Definition 2 *Given the labor regulation $\mathcal{P}$, a competitive equilibrium for $(i,j) \in \{0,1\} \times \{0,1\}$ is such that: 1) agents with wealth $a \in \underline{A}_{i,j}$ become workers and supply $l_s^{i,j}$, 2) agents with $a \in \overline{A}_{i,j}$ become entrepreneurs and invest $k^{i,j}(a) = a + d^{i,j}(a)$ in a firm, 3) the equilibrium thresholds $\underline{a}_{i,j}$, the level of debt $\underline{d}_{i,j}$ and labor $\underline{l}_{i,j}$ associated to those thresholds, and the equilibrium wage w solves the following system of equations:*

$$\Psi(\underline{a}_{i,j}, \underline{d}_{i,j}, \underline{l}_{i,j}|\tau_i, F_j) = 0, \ \forall (i,j) \in \{0,1\} \times \{0,1\} \tag{E.8}$$

$$\Psi_d(\underline{a}_{i,j}, \underline{d}_{i,j}, \underline{l}_{i,j}|\tau_i, F_j) = 0, \ \forall (i,j) \in \{0,1\} \times \{0,1\} \tag{E.9}$$

$$\frac{\partial U^e(\underline{a}_{i,j}, \underline{d}_{i,j}, \underline{l}_{i,j}|\tau_i, F_j)}{\partial l} = 0, \ \forall (i,j) \in \{0,1\} \times \{0,1\} \tag{E.10}$$

$$\sum_{(i,j)\in\{0,1\}\times\{0,1\}} \int_{a\in\underline{A}_{i,j}} l_s^{i,j} g(a)\partial a = \sum_{(i,j)\in\{0,1\}\times\{0,1\}} \int_{a\in\overline{A}_{i,j}} l^{i,j}(a) g(a)\partial a \tag{E.11}$$

The probability to be matched to a firm with regulations (τ_i, F_j) *is given by:*

$$p^{i,j} = \frac{\int_{a\in\underline{A}_{i,j}} g(a)\partial a}{\sum_{(i,j)\in\{0,1\}\times\{0,1\}} \int_{a\in\underline{A}_{i,j}} g(a)\partial a} \tag{E.12}$$

The restriction in the government's problem (3.11) presented in Section 3 takes as given the triplet $(\underline{a}_{i,j}, \underline{d}_{i,j}, \underline{l}_{i,j})$ evaluated at $(0,0)$. Thus, the set of agents subject to (τ_i, F_j), excluded from the credit market, who become workers is redefined as $\underline{\tilde{A}}_{i,j} = \{a \in A_{i,j} \ : \ a < \underline{a}_0\}$. Similarly, the set of individuals facing (τ_i, F_j), who get credit, and thus, become entrepreneurs is redefined as $\overline{\tilde{A}}_{i,j} = \{a \in A_{i,j} \ : \ a \geq \overline{a}_0\}$. Therefore, condition (E.11) is rewritten as:

$$\sum_{(i,j)\in\{0,1\}\times\{0,1\}} \int_{a\in\underline{\tilde{A}}_{i,j}} l_s^{i,j} g(a)\partial a = \sum_{(i,j)\in\{0,1\}\times\{0,1\}} \int_{a\in\overline{\tilde{A}}_{i,j}} l^{i,j}(a) g(a)\partial a \tag{E.13}$$

E.3 Labor market under inflexible wages

This section defines the equilibrium in the labor market when wages are inflexible as in Section D.2. The government chooses the labor regulation by taking the wage as given and equal to the equilibrium wage under $\mathcal{P}_0$: $w_0 = w(\mathcal{P}_0)$. Since wages cannot adjust to changes in labor regulation, when τ increases it generates unemployment. I denote by u the endogenous fraction of agents that remain unemployed. I assume that unemployed agents get zero utility. The equilibrium labor market conditions are:

$$\begin{aligned} m^0 \cdot l_s(\tau_0) &= \int_{\underline{a}_0}^{a^\tau} l(a|\tau_0)\partial G(a), \\ m^1 \cdot l_s(\tau_1) &= \int_{a^\tau}^{a_M} l(a|\tau_1)\partial G(a), \\ m^0 + m^1 + u &= G(\underline{a}_0). \end{aligned}$$

Given w_0, this is a system of three equations and three unknowns: m^0, m^1, and u. Note that in this case, the endogenous probabilities to be matched to a firm with weak or strong regulation, i.e. $\frac{m^0}{G(\underline{a}_0)}$ and $\frac{m^1}{G(\underline{a}_0)}$ respectively, adjust to account for unemployment.

E.4 Discussion: inflexible versus flexible wages

In this section, I briefly discuss the differences between the equilibrium policies under flexible and inflexible wages. Section 5 shows that when wages are flexible, firms that are not subject to stricter regulation benefit from reduced wages. In that case, right-wing governments are willing to impose stricter regulation to larger firms as a way to cross-subsidize the small business sector. Left-wing governments keep smaller firms under weak regulation to protect their workers, so they also implement a *tiered* labor regulation. On the other hand, Section D.2 shows that, when real wages are inflexible, only more leftist governments are willing to implement a *tiered* labor regulation. From the point of view of more right-wing governments, increasing τ is too costly for firms. Thus, they keep weak labor regulation across the board.

Based on these results, one should expect that a *tiered* labor regulation is more likely to emerge in countries where wages are more flexible and under more leftist governments. In contrast, in countries where wages are more rigid (e.g. high minimum wages) the ability of wages to offset the effects of labor regulation is more limited. Thus, governments are less likely to impose a *tiered* labor regulation in such countries. Related to these results, Garicano et al. (2016) show that aggregate welfare losses from size-contingent labor regulations are increasing in the degree of wage rigidity.

E.5 Political affiliations

As shown in Section 5, the equilibrium size threshold above which labor regulation becomes stricter depends on the political orientation of the government. Therefore, whether the policy-maker is left or right-wing matters in terms of ex-post welfare for each group of agents. In this section, I study the political affiliations of the different groups of agents (either left or right-wing) if they can anticipate the policy to be implemented by a leftist ($\lambda = 1$) or a right-wing ($\lambda = 0$) government. Given the initial regulation, $\mathcal{P}_0$, agents can anticipate the equilibrium policy that a left or right-wing government will implement at $t = 1$, and thus, their ex-post expected welfare at $t = 2$.

The political affiliations of the different interest groups as function of their firms assets are summarized in Figure 21. There are three cases depending on the location of $\tilde{a}_0$, as illustrated by panels a) to c). In the figure, 'W' and 'E' stand for 'workers' and 'entrepreneurs', respectively. 'LW' and 'RW' stand for 'left-wing' and 'right-wing', respectively.

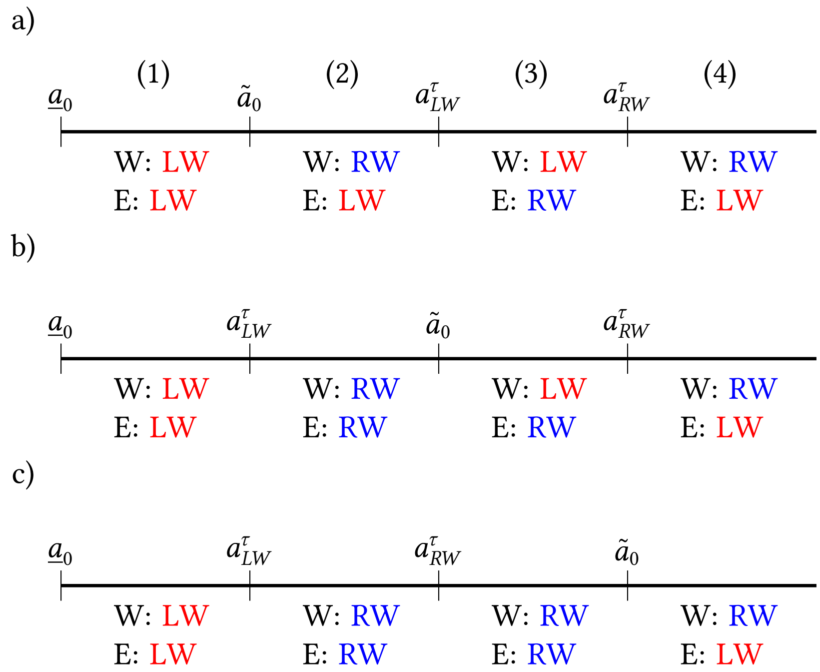


Figure 21: Political affiliations.

Firstly, the figure shows that there are four ranges of agents with different political affiliations, enumerated as 1, 2, 3 and 4. In all cases, there are two groups of workers that have opposing interests. Those matched to the smallest firms (group 1) support a left-wing labor policy as opposed to those in largest firms (group 4). The intuition is as follows. Workers in group 1 do not want protection because a higher effective wage hurts their firms which are forced to shrink and hire less labor. A left-wing government provides protection to a large set of workers, but not to those in the smallest firms (those in group 1). This pushes down the equilibrium wage benefiting the smallest firms, and thus, their workers. Workers in group 4 can anticipate that even the most right-wing government will protect them. Thus, they are against more leftist governments that set a lower size threshold which leads to a lower wage and hurts them.

Secondly, there is a middle class of workers and entrepreneurs with heterogeneous political preferences (groups 2 and 3). In Panel a), when $\tilde{a}_0 < a^{\tau}_{LW}$, workers in firms with $a \in [\tilde{a}_0, a^{\tau}_{LW})$ know that even the most leftist government is not going to provide them with higher protection. Thus, since they are better off under a higher effective wage, they support a right-wing government which sets a lower size threshold. As opposed to their workers' interests, entrepreneurs running those firms support a leftist government which is not going to impose stricter regulations on their firms, but is going to do so for the rest of the firms, leading to a lower equilibrium wage.

Thirdly, the political preferences are reversed for agents in firms with $a \in (a^{\tau}_{LW}, a^{\tau}_{RW})$. In this case, workers can receive higher protection if they support a left-wing government, but their entrepreneurs suffer from higher wages. Interestingly, as $\tilde{a}_0$ increases relative to a^{τ}_{LW} and a^{τ}_{RW} (Panel b) and Panel c)), fewer workers want protection and more middle-class agents support a right-wing government.

Overall, the model predicts heterogeneous political preferences for a leftist or right-wing government across groups of workers and entrepreneurs. Those agents in the smallest and largest firms have well-defined political affiliations. However, there is a middle-class with heterogeneous preferences depending on the different configurations of the parameters. Cross class coalitions arise in equilibrium.

F Appendix: Additional Figures

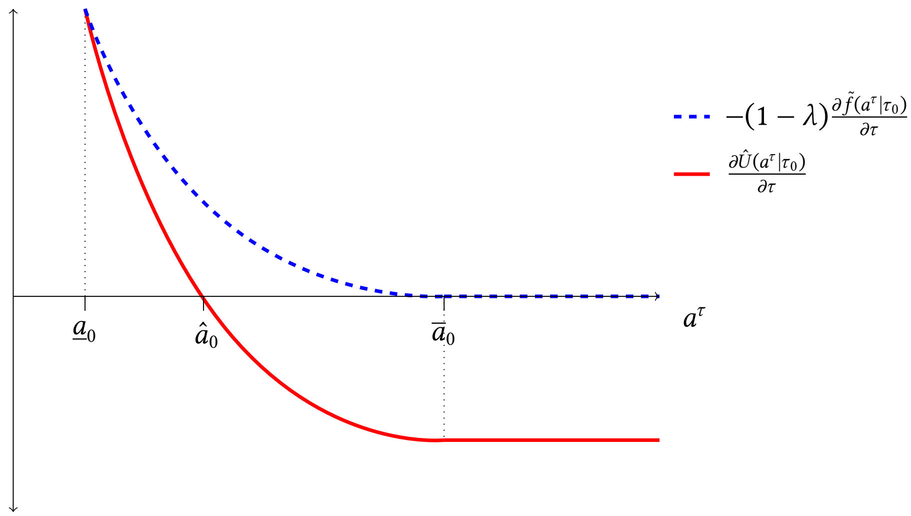


Figure 22: FOC as function of a^τ under inflexible wages when $\lambda \leq \frac{1}{2+1/(\gamma-2)}$.

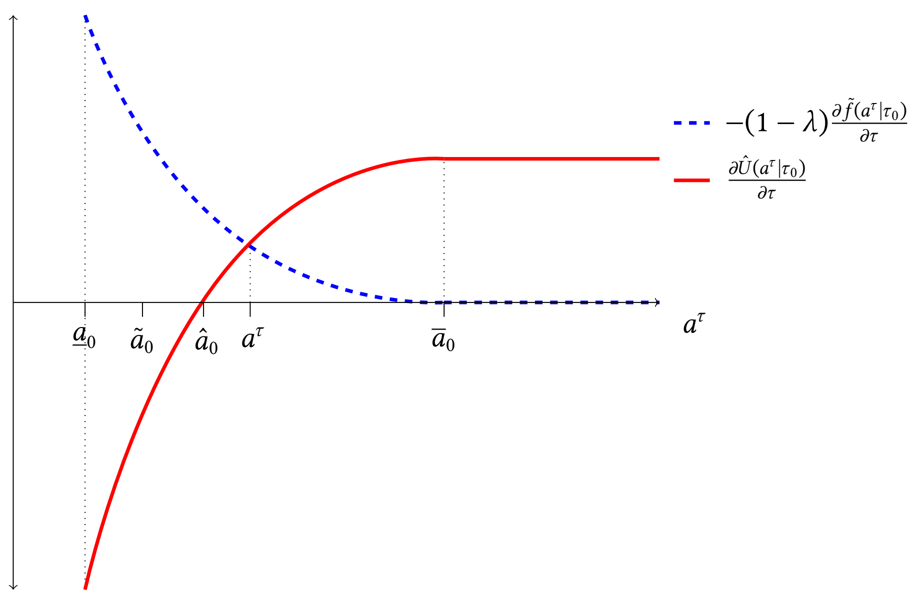


Figure 23: FOC as function of a^τ under inflexible wages when $\lambda > \frac{1}{2-1/\gamma}$.