

What Hinders Structural Reforms*

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Abstract

This paper builds a macroeconomic political economy model to show that political costs associated with structural reforms hinder reform implementation. I first illustrate the main mechanism in a two-period model and then embed it into an infinite-horizon heterogeneous-agent model which is calibrated to Spain. In the model, the effects of product market deregulation create their own resistance, and the resistance generates endogenous political costs to impair deregulation. In addition, adverse initial conditions are associated with more reform progress, which is consistent with the empirical literature. A higher proportion of liquidity-constrained agents and a higher use of fixed-term contracts raise market regulation. By contrast, gradual implementation, compensation schemes, labour market reform, and strong government leadership in negotiation help deregulation. Lastly, I use the model to discuss why product markets are more deregulated in some European countries than in others.

JEL Classification: D72, E02, E60, P11

Keywords: structural reforms, product market deregulation, political economy

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1 Introduction

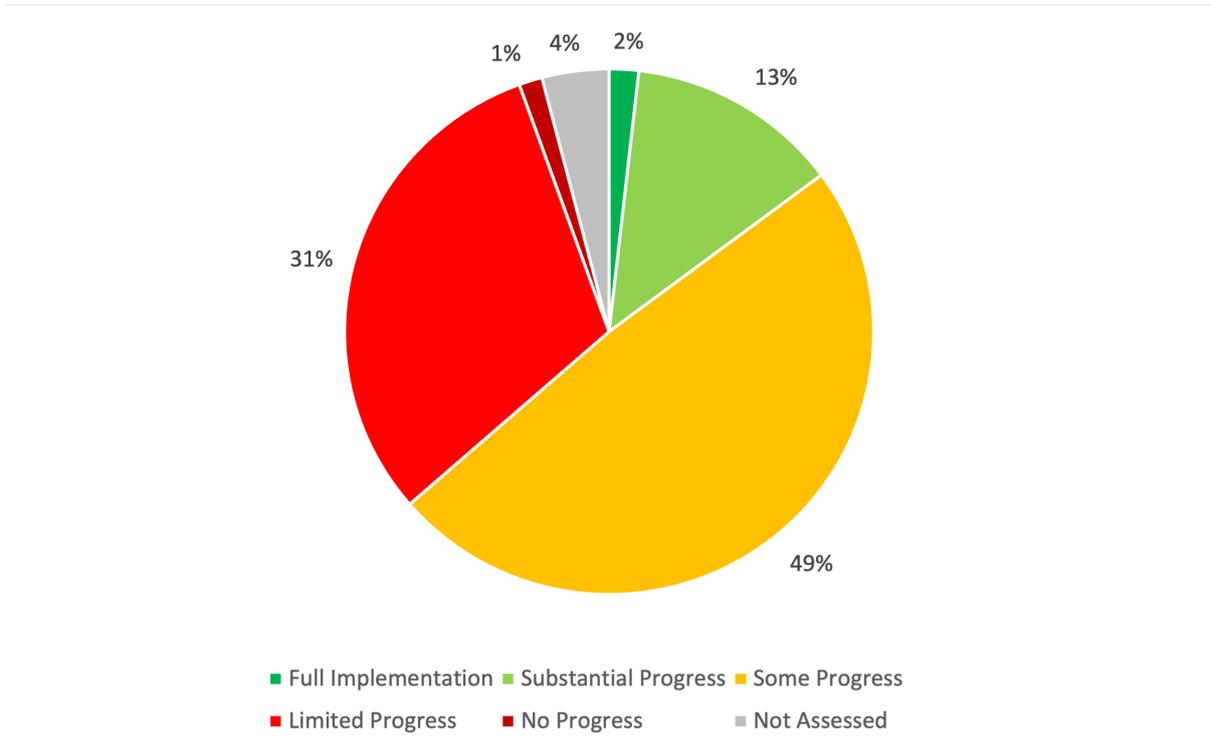
Structural reforms that deregulate product and labour markets frequently feature in policy recommendations by the ECB, the World Bank, and the OECD as a promising mid-to long-term policy tool to promote growth and attain debt sustainability. Most recently, the former president of the ECB, Mario Draghi, has emphasised the importance of structural reforms for southern European countries hit by the debt crisis of 2010 [Draghi, 2017]. The similar idea of deregulating market entry and promoting competition was also a central pillar of the Washington Consensus which guided the policy recommendation to many Latin American countries since the end of 1980s to restore macroeconomic stability and maintain fiscal discipline [Williamson, 1990].

Despite the widely-believed potential benefits, the implementation of structural reforms often makes weak progress in reality. Figure 1a shows the progress of all reform recommendations in the European Commission’s annual country reports for all countries in the European Union throughout 2011-2020. Only 15% of reform measures recommended by the Commission are implemented substantially or fully over the 10-year period. The rest are at best adopted but implemented in very limited scales, which are assessed as making ‘some progress’ by the Commission. Among them, the progress in deregulating markets and encouraging competition is typically weak. No measures in this aspect are fully implemented, and only 8% of them are making substantial progress, as shown in Figure 1b.

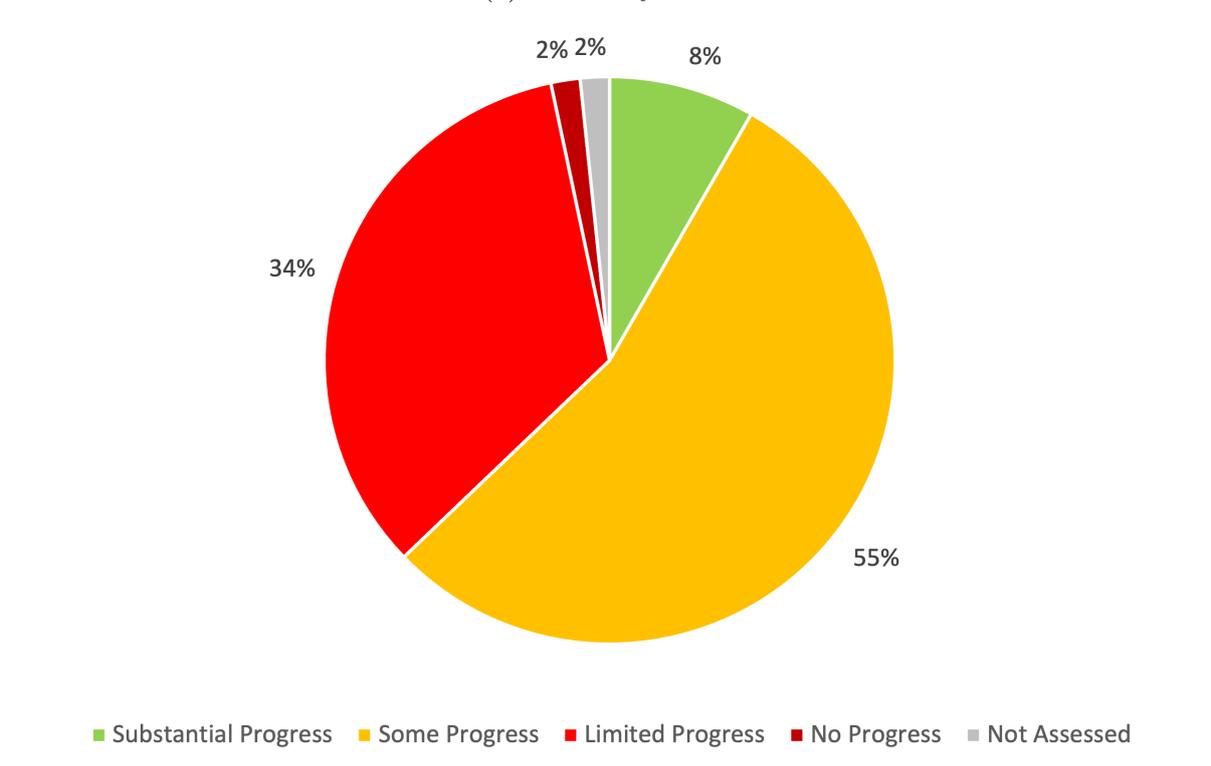
What explains this discrepancy between policy recommendation and implementation? This paper builds a political macroeconomic model to show that the political costs for the governments associated with reforms can hinder reform implementation. These political costs originates from the political actions participated by potential losers who expect to lose out if the government reforms. A key contribution of my paper is that I endogenise the political costs such that how much political costs that potential losers can impose on the government by participating in political actions depends upon how much they expect to lose from deregulation. The governments may not be able to reform, because this induces excessive political costs.

The arguments in my paper potentially apply to a range of structural reform measures. In my model, as a concrete example, I focus on the deregulation of the product market which increases the real income and create more job opportunities for all workers on the aggregate level by making the market more competitive. However, on the individual level, the policy creates potential losers and winners among workers who influence the governments’ decision on the regulation level to be implemented by imposing political costs for the governments.

I first illustrate the main mechanism in a two-period model with hand-to-mouth workers. In the model, the government can choose to deregulate the product market in period



(a) All Policy Areas



(b) Competition Policy

Figure 1: Country-specific Recommendation Implementation in European Union 2011-2020. The progress is assessed by the European Commission. Source: [European Commission \[2022\]](#) and the author's calculation.

1, which is captured by a cut in the entry cost for the product market. The policy is implemented in period 2 and encourages new entrants into the market. This results in a more competitive market where the average price mark-up charged by firms drops in the second period. The lower price mark-up increases real income for workers. However, a more competitive market forces more incumbent firms to downsizing or closure. This increases the job insecurity for the insider workers of the incumbent firms, which is captured by the probability of being dismissed. Once a worker is dismissed, she is subject to a significant income loss from the job displacement. In addition, there are some non-pecuniary costs associated with the more competitive market that hurt workers' welfare directly.¹ Therefore, the insiders potentially lose from deregulation in expectation in period 1. Meanwhile, in period 1, workers form a subjective view of the level of regulation that should be implemented in the market before the government decides and announces the actual level of regulation to be implemented in the same period, and this subjective view is tainted by a self-serving bias. Given that the insiders expect themselves to lose if the market becomes more deregulated due to the higher job insecurity and the associated income and welfare loss, they oppose low regulation level in their views.

On the other hand, the outsiders benefit from the fully-deregulated market in expectation in period 1. The lower price mark-up will raise their real income and the new entrant firms will offer them better employment opportunities in period 2. The outsiders also form a subjective view of the level of regulation that should be implemented in the market in period 1 as the insiders do. Thus, they support full deregulation due to their personal gains.

The governments choose the regulation level to be implemented in period 2 by balancing between maximising workers aggregate welfare and minimising the political costs to this regulation as possible. The costs comes from the political actions such as demonstrations, riots, lobbying, and negative media coverage that workers potentially take to impose costs to the government. Importantly, the likelihoods and the scales of these political actions depend not only on how well-organised and integrated the insiders are as a political force, but also on how much the actual policy deviates from the level of regulation that the insiders think as fair to be implemented, and how sensitive the insiders are towards this deviation. The government internalises the costs of these potential political reactions when deciding the regulation level. Then the governments have to keep some regulation in the market. If the government attempts to deregulate further from this regulation level, aggregate workers' welfare may increase but the insiders expects to lose more. This increases their participation of political actions which induces higher costs for the government. Then the higher political cost will hinder the proposal to further deregulate.

¹This can be due to the distress toward higher wage inequality and having to exert more effort in work, as explained in more detail in section 2.2.

Next, I extend the model to an infinite-horizon heterogeneous agent political economy model (HAPEM). In this version of the model, workers have infinite horizon and a majority of them can use a risk-free asset to hedge against their idiosyncratic risk of losing jobs. The model shows that workers with assets no longer worry about the cost of increased job insecurity from deregulation. Therefore, they support full deregulation of the market regardless of their current employment status. However, the rest minority of the workers are still liquidity-constrained and cannot hedge against the job-losing risk. This means that the liquidity-constrained insiders are still negatively affected by the deregulation. Moreover, the increased job insecurity following deregulation also affects the perspective of the infinite-horizon liquidity-constrained outsiders as they will be more likely to be dismissed once they find a job in the deregulated market, despite that they are more likely to find a job immediately after the deregulation. Therefore, all types of workers who cannot hedge against the idiosyncratic job insecurity will resist the full deregulation. Even if they constitute only a small fraction of the entire population in the calibrated model, their opposition is strong enough to block full deregulation. The actual level of regulation is determined by the strength of the opposition to deregulation from these liquidity-constrained workers relative to the support for deregulation from the workers who can trade assets. Attempts to deregulate from this level will meet excessive political opposition for the government and the opposition hinders the deregulation as in the two-period model.

In addition, I show that economy with higher initial regulation levels faces weaker opposition to reform and are able to make more progress in deregulation in the model. By contrast, a well-deregulated market may actually expect some reform reversals. This result resonates with the empirical finding in literature such as [Da Silva et al. \[2017\]](#) and [IMF \[2004\]](#) that adverse initial conditions and recessions are positively correlated with higher reform intensities, especially for the product market.

Two novel insights emerge from the model. First, a higher share of liquidity-constrained workers in the economy raises the implemented regulation level. This is because the liquidity-constrained workers are unable to avoid the negative consequences of the reform, and a higher share of them endogenously enhances their political resistance against deregulation. This is consistent with the observation made by [Haggard and Kaufman \[1989\]](#) that illiquid assets holders are more likely to oppose economic adjustments because they are unable to circumvent the adverse consequences.

Second, the market is more regulated if the fixed-term contract is more prevalent in the labour market. The empirical work by [Aparicio-Fenoll \[2015\]](#) shows that this contract greatly increases the job insecurity for workers after deregulation. I extend the model so that a fraction of workers are employed under this type of contract. The model shows that the liquidity-constrained workers under this contract are mobilised to insist on a highly regulated market. Hence, the resistance to deregulation is stronger, which leads

to a higher implemented regulation level.

In terms of policy, I show that several measures can be potentially useful in weakening the opposition to deregulation and promoting the reform. These include compensating those who are most affected by the deregulation, labour market reform that reduces the use of the fixed-term contract, more gradual implementation, and strong government leadership in negotiation with the resisting group.

Lastly, I discuss how the key determinants for the regulation level in the model offer potential explanation of why product markets in some European countries are more deregulated than in others as shown in Figure 2. These determinants include the share of liquidity-constrained agents, the use of fixed-term contract, the relative job insecurity, and the relative political influences of unions. The version of the model that account for the heterogeneity in these aspects is able to predict a ranking of the regulation level that is consistent to the ranking of the actual product market regulation indicator.

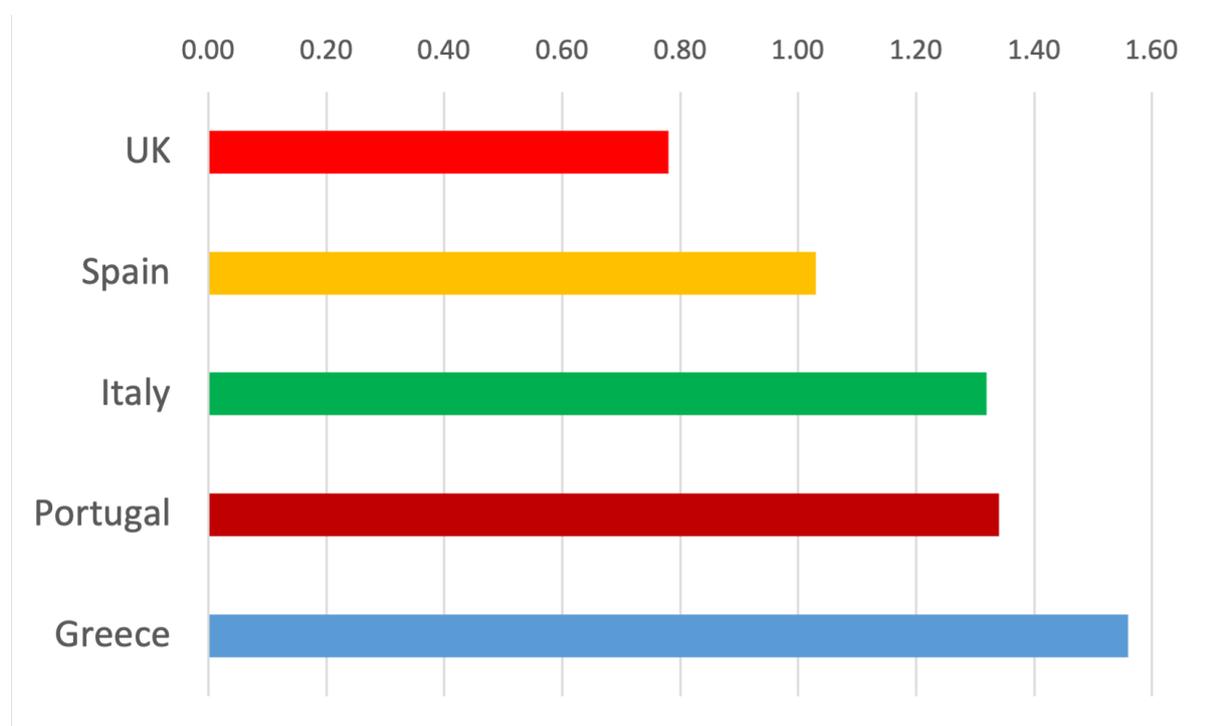


Figure 2: Product Market Regulation Indicators in 2018 of selected European countries. Source: [OECD \[2018\]](#).

This paper is related to three strands of literature. The modelling of the effects of the product market deregulation is inspired by [Blanchard and Giavazzi \[2003\]](#). Recent DSGE literature models macroeconomic effects of different types of structural reforms in more detail, such as the contributions by [Eggertsson et al. \[2014\]](#) and [Cacciatore et al. \[2016\]](#). My model focuses on the heterogeneous effects of product market deregulation on different types of households instead, which is important in considering the political support and resistance to structural reforms.

Second, the political economy component of my models are adapted from the recent contribution of [Passarelli and Tabellini \[2017\]](#). Their paper discusses the political economy motives for public debt accumulation, whereas this paper shows that a similar framework can be used to discuss the implementation issues for structural reforms.

The idea that political economy concerns block reforms dates back to [Olson \[1965\]](#). More recent discussions can be found in [Fernandez and Rodrik \[1991\]](#), [Alesina and Drazen \[1991\]](#), [Jain and Mukand \[2003\]](#), [Aghion and Schankerman \[2004\]](#), [Beetsma and Poplawski-Ribeiro \[2008\]](#), [Saint-Paul et al. \[2016\]](#). The empirical contributions such as [Da Silva et al. \[2017\]](#) provide motivation and support the predictions of my model. This paper contributes to this literature in three ways. Firstly, the political economy components in previous models assume either voting or lobbying mechanisms. Thus, the political influences are typically exogenous in these models. By contrast, my model enables the political pressure on the governments to vary endogenously in response to the structure of the economy and effects of the policy. Secondly, resistance to reforms in previous models typically arises in a more ad-hoc and exogenous way. This paper sets up a general equilibrium framework with more detailed modelling of the benefits and costs from deregulation for workers. This enables the interaction between the effects of deregulation and the political constraints. Third, my model endogenously pins down a level of regulation, which few models before did. Depending on the initial condition, partial deregulation and even reform reversals can occur in my models. By contrast, deregulation is either fully implemented or completely blocked in previous models, which is at odds with most cases in reality.

Lastly, the HAPEM model in this paper is an extension to the Bewley-Huggett-Aiyagari framework of heterogeneous agent models [[Bewley, 1977](#), [Huggett, 1993](#), [Aiyagari, 1994](#)]. The major difference to these models are that in my model, the Markov transition probabilities are endogenous to the policy. To the best of my knowledge, my HAPEM model is also the first to embed a political economy framework other than voting in this type of models.

The rest of the paper is organised as follows. [Section 2](#) illustrates the main mechanism in a simple two-period model. [Section 3](#) extends the model to an infinite-horizon heterogeneous agent model for additional insights. [Section 4](#) considers the alternative measure for job insecurity associated with the fixed-term contracts and its implication to the model. [Section 5](#) concludes.

2 Two-Period Model

This section constructs a simple 2-period model with hand-to-mouth agents to illustrate how product market deregulation affects individual workers differently to generate diverging views on the optimal level of regulation, and how these views translate into political

forces that shape the regulation that the governments eventually implement. I first describe the effects of deregulation for firms and workers. Then I specify how workers decide their respective desired policy and political participation, and how governments make policy in response to this.

2.1 Producers

There are m_t incumbent producers in the economy, each producing a different brand of goods Y_t^i according to the technology

$$Y_t^i = N_t^i:$$

The aggregate output Y_t is a composite of different brands of goods:

$$Y_t = \left[\sum_{i=1}^{m_t} (Y_t^i)^{\frac{1}{\sigma_t}} \right]^{1-\sigma_t};$$

where $\sigma_t = g(m_t)$ is the elasticity of substitution between different brands of goods. I also assume that $g'(\cdot) > 0$ so that σ_t is increasing with the number of brands in the economy. Thus the demand for each brand is

$$Y_t^i = \frac{1}{m_t} \left(\frac{P_t^i}{P_t} \right)^{-\sigma_t} Y_t;$$

where P_t^i is the price that the producer i charges for her goods. The corresponding aggregate price index P_t is

$$P_t = \left[\frac{1}{m_t} \sum_{i=1}^{m_t} (P_t^i)^{1-\sigma_t} \right]^{\frac{1}{1-\sigma_t}};$$

Each period, the firm chooses the price and the number of employment to maximise the real profit

$$\left(\frac{P_t^i}{P_t} - w_t^i \right) N_t^i;$$

subject to their demand and production technology. This implies that the optimal price charged by the typical individual producer i is:

$$\frac{P_t^i}{P_t} = \frac{\sigma_t(m_t)}{\sigma_t(m_t) - 1} w_t^i = [1 + \mu_t(m_t)] w_t^i;$$

where $\mu_t(m_t)$ is the price mark-up that the firm charges over the marginal cost of production w_t^i . Note that the mark-up is the same across all firms as it negatively depends upon the total number of firms in the economy only. The higher the number of firms m_t , the higher the elasticity σ_t . From the equation above, this implies lower mark-up μ_t .

At the start of period 2, new firms can choose to enter the market by paying an entry

cost $\&$. This cost captures the level of regulation in the product market and is thus the policy variable of our interest. For simplicity and without loss of generality, the entry cost $\&$ is assumed to be proportional to the output. A lower entry cost $\&$ leads to more entry of new firms and drives down profit per firm. The entry of the market occurs until the expected profit is equal to the entry cost:

$$\left(\frac{P_2^i}{P_2} - w_2^i\right) Y_2^i = \& Y_2^i: \quad (1)$$

In an equilibrium where all firms are symmetric and make the same pricing decision, w_t^i is equalised across all firms. The relative price $\frac{P_t^i}{P_t} = 1$. Then the above can be rewritten as

$$w_2 = 1 - \&:$$

Thus, a decrease in the entry cost $\&$ encourages new firm entry and reduces the market-wide mark-up μ_t through an increase in the elasticity of substitution σ_t . This increases the real wage paid to incumbent workers. This captures the positive effects on real income from deregulating the product markets.

2.2 Workers

There are workers with a total mass of 1 in the economy and all workers live for two periods. A proportion n_t^{in} of them are insider employees of the incumbent firms. The rest $1 - n_t^{in}$ of workers are outsiders of the market.

In order to capture the uncertainty regarding the workers' job market status, I assume Markov transition probabilities for the workers' idiosyncratic employment status in each period. If a worker is an inside worker in period 1, the probability that she remains to be an insider in period 2 is

$$Pr(\textit{insider}; t = 2 | \textit{insider}; t = 1) = q_i(\&);$$

where $\frac{\partial q_i(\&)}{\partial \&} > 0$. This captures the effect that deregulations in the product market increases the job insecurity of the insider workers. The reason is that deregulation increases the competition in the market. This typically pushes some incumbent firms out of the market. Meanwhile, surviving firms may have to downsize due to either a smaller market share or adopting more efficient operation procedures. These factors contribute to higher risk of job displacement for insider workers. This corroborates with the discussion in [Blanchard and Giavazzi \[2003\]](#). [Aparicio-Fenoll \[2015\]](#) and [Anderton and Lupidio \[2019\]](#) support this argument with empirical evidence using data from European countries. The probability of the insider workers experiencing a job displacement and becoming an outsider is thus $Pr(\textit{outsider}; t = 2 | \textit{insider}; t = 1) = 1 - q_i(\&)$.

Alternatively, if the worker is an outsider in period 1, the probability of her remaining to be an outsider in period 2 is

$$Pr(\text{outsider}; t = 2 | \text{outsider}; t = 1) = q_o(\delta);$$

where $\frac{\partial q_o(\delta)}{\partial \delta} > 0$. Accordingly, the probability of the outsider workers to be employed in the industry is thus $Pr(\text{insider}; t = 2 | \text{outsider}; t = 1) = 1 - q_o(\delta)$. This means that the worker is more likely to be employed in the industry following a market deregulation. This is consistent with the empirical finding that product market deregulation increases the overall employment rate and job finding rate [Bertrand and Kramarz, 2002, Nicoletti and Scarpetta, 2005]. Therefore, the transition matrix of workers' employment status can be summarised as:

	insider in $t + 1$	outsider in $t + 1$
insider in t	$q_i(\delta)$	$1 - q_i(\delta)$
outsider in t	$1 - q_o(\delta)$	$q_o(\delta)$

In period 1, a particular worker j maximises her expected lifetime CRRA utility

$$V_1^j = \frac{(C_1^j - (C_1)^h)^1}{1 - \beta} + \beta E_t \frac{(C_2^j - (C_2)^h)^1}{1 - \beta};$$

where C_1^j and C_2^j are consumption of the worker for period 1 and 2 respectively, and C_1 and C_2 are aggregate consumption in the two periods. β is the discounting factor. h measures the degree of risk-aversion.

h is the habit formation parameter in the "keeping up with the Joneses" fashion. It measures the extent to which the worker cares about the relative position of her consumption to the average level in the economy. This means that the utility decreases with higher average consumption level. This assumption captures the non-pecuniary costs from product market deregulation. For the unemployed outsiders, their mental well-being is strongly positively correlated with the unemployment rate of the reference group, as reported by Clark [2003]. This is because workers want to deviate less from the social norm defined by the reference group. In our case, the reference is the average consumption of the economy. If the product market competition is higher, the average consumption will be higher and the overall unemployment rate is lower in equilibrium. Then the status of being unemployed hurts more when there is less of it around.

For insider workers, the higher level of competition can present some mental costs as well. For example, Colantone et al. [2019] demonstrates that a more competitive import sector is associated with higher levels of distress experienced by the workers in the sector. Guadalupe [2007] shows that wage inequality is higher with higher product market competition. Griffith [2001] documents that a more competitive market induces higher managerial efforts.

In period 2, the worker maximises her period 2 utility $V_2^j = \frac{(C_2^j - (C_2)^h)^1}{1}$ only. The maximisation of utility in both periods are subject to the constraint

$$C_t^j = \begin{cases} \infty & \\ w_t & \text{if insider} \\ 0 & \text{if just displaced} \\ b_t & \text{otherwise} \end{cases}$$

where w_t is the real wage given by firms in period t . $b_t = w_t$ is the unemployment benefit.

$\in (0;1)$ is the unemployment benefit replacement ratio. Each period, each insider worker provides 1 unit of labour only and earn the wage rate. Those who experienced a job displacement in the current period to become an outsider lose all their income. This is to capture the large losses from job displacement as documented by [Burdett et al. \[2020\]](#), for example. Otherwise, if the worker has been an outsider since at least the previous period, she receives the unemployment benefit.

2.3 Fair Policy, Aggrievements, and Political Actions

In period 1, the government decides the entry cost for the market ℓ which comes into effect in period 2.² The procedure for deciding ℓ can be divided into 3 stages. [Figure 3](#) illustrates this sequence of interactions between the governments and the workers.

In stage 1, each worker expects a certain level of entitled welfare achieved by the policy that she considers as ‘fair’, before the governments choose the policy. In stage 2, the government decides the policy by internalising workers’ political reactions based upon their own subjectively ‘fair’ policy. In stage 3, after the government announces the actual policy, workers will compare the expected welfare under the actual policy to her subjective ‘fair’ policy. If her welfare realised by the governments’ actual policy is lower than the welfare that she feels entitled to, the worker will be aggrieved. The aggrieved workers will decide whether or not to take political actions by weighing the benefits of doing so against the costs.

This subsection describes how workers form their subjectively fair policy in stage 1, and how they react to the actual policy in stage 3. The next subsection describes how the governments internalise workers’ potential reactions when they make the actual policy decision in stage 2.

Since the “fair policy” for each member of the same employment status is the same, I consider the decisions made by each group $k \in \{in; out; disp\}$ for simpler notation, which corresponds to insider, outsider, and displaced workers respectively. The “fair” policy ℓ^k

²In this two-period model, any change to the entry cost in period 2 will not have any effect, unless a further period exists.

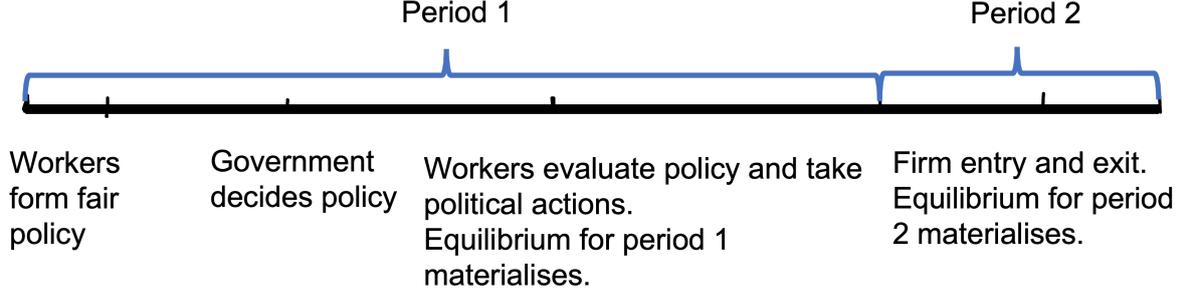


Figure 3: The sequence of interactions between the governments and workers in the two-period model

is derived from maximising a modified aggregate social welfare

$$W_1^k = \prod_i \omega_{ik} V_1^i; i \in \{in; out; disp\} \quad (2)$$

in stage 1, where the weight that the particular group k attaches to its own welfare, $\omega_{kk} = \alpha + (1 - \alpha) n_1^k$, whilst the other groups $i \neq k$ receive the weight $\omega_{ik} = (1 - \alpha) n_1^i$. $\alpha \in (0;1)$ captures the self-serving bias of the group. In other words, the members of each group think their welfare is more representative in the entire economy than others'. This bias generates conflicts of interests between different groups of workers.

The optimisation gives a subjective reservation utility for the particular group $R_1^k = V(\ell^k)$. Note that this utility is not necessarily politically feasible, as workers disregard political pressure from the other groups that the government faces.

In stage 3, after the announcement of the actual entry cost, workers' aggrivements arise if and only if their individual welfare achieved by the actual policy falls short of the reservation utility R_1^k :

$$A_1^k(\ell) = \frac{\beta^k}{2} \max[0; R_1^k - V_1^k(\ell)]^2;$$

where $\beta^k > 0$, so that the aggrivements increase with the positive gap between the reservation and actual utility.

If the worker is aggrieved toward the policy, the worker decides whether or not to participate in political actions by weighing the benefits against the costs of doing so. Here, political actions incorporate a wide range of activities from street demonstration, riots, and unrest that cause social harm, to lobbying party members and media coverage that put pressure on policy makers. Realised political actions impose costs for the governments. The benefit from participating in political actions is an emotional gain that increases with aggrivements, $A_t^k(\ell)$. Moreover, the benefit increases with the number of people from the same group that participate in the action, $\mathcal{P}_t^k n_1^k$, where \mathcal{P}_t^k is the participation probability for an individual worker k . With increasing participation, workers feel their objection to the policy widely shared and anticipate higher chances of changing

policy to their favour.

The cost of participating in protests comprises of two components. There is a cost common to all workers, c . This can be the potential legal punishment and repression following a street protest from workers, or monetary spending for lobbying and media coverage. Secondly, there is an idiosyncratic cost, $k_{i,t}$, for a particular worker i . $k_{i,t}$ is assumed to be uniformly distributed with mean zero and density $\frac{1}{2^k}$. k measures how organised a particular group is in initiating political actions.

Therefore, the worker will choose to take actions if the benefit of doing so is higher than the cost:

$$\mathcal{P}_1^k n_1^k A_1^k(\delta) - c - k_{i,t} \geq 0:$$

This implies that the participation rate

$$\mathcal{P}_1^k = Pr(k_{i,t} \leq \mathcal{P}_1^k n_1^k A_1^k(\delta) - c) = \frac{1}{2} + \frac{\mathcal{P}_1^k n_1^k A_1^k(\delta) - c}{2^k}.$$

Solving for \mathcal{P}_1^k we get

$$\mathcal{P}_1^k = \frac{k - c}{2^k - n_1^k A_1^k(\delta)} \equiv \mathcal{P}_1^k(\delta); \quad (3)$$

where I assume $k > \max\{n_1^k A_1^k(\delta) - c; c\}$, so that $0 < \mathcal{P}_1^k < 1$.

It is easy to show that $\frac{\partial \mathcal{P}_1^k}{\partial A_1^k(\delta)} > 0$, $\frac{\partial \mathcal{P}_1^k}{\partial n_1^k} > 0$, $\frac{\partial \mathcal{P}_1^k}{\partial k} < 0$, so that the probability of participation is increasing if the aggrievement of the group, $A_1^k(\delta)$, or the size of the group, n_1^k , is higher, and if the group is more organised (i.e. lower k).

Moreover, $\frac{\partial \mathcal{P}_1^k}{\partial A_1^k(\delta)} > 0$, $\frac{\partial \mathcal{P}_1^k}{\partial n_1^k} > 0$, $\frac{\partial \mathcal{P}_1^k}{\partial k} < 0$, so that the reactions of workers are more sensitive to aggrievement when the aggrievement is already higher and when the group is larger and more organised.

2.4 Government

In stage 2, the government trades off the social benefit of the policy against the cost caused by potential political reactions from the workers due to these policy. Thus, the government maximises

$$W_1 = \sum_i (V_1^i - \beta_i \mathcal{P}_1^i); \quad (4)$$

subject to the equilibrium conditions of the economy, where $\beta_i \geq 0$ captures the cost for the government inflicted by political actions of a particular worker i . Given that the only heterogeneity in this model is workers' employment status, this can be conveniently rewritten as

$$W_1 = n_1^{in}(V_1^{in} - \beta^{in} \mathcal{P}_1^{in}) + n_1^{out}(V_1^{out} - \beta^{out} \mathcal{P}_1^{out}) + n_1^{disp}(V_1^{disp} - \beta^{disp} \mathcal{P}_1^{disp}):$$

2.5 Equilibrium

In equilibrium, the markets for consumption goods and labour clear:

$$Y_t = C_t = \sum_{i=0}^Z C_t^i$$

$$n_t = \sum_{j=1}^{\mathcal{N}^t} N_t^j$$

An equilibrium consists of consumption, prices, labour, wages, the subjectively fair policies $\{\delta\}$, the government policy $\{\delta\}$, and the political participation rates $\{\mathcal{P}_t^k\}$, such that

1. the individual utilities and firm profits are maximised;
2. the fair policies maximise the modified aggregate social welfare functions for each group (2);
3. the government policy maximises the social welfare function (4), subject to costs from workers' political actions;
4. workers choose whether or not to participate in political actions given the government policy, the subjectively fair policy, and the participation of other group members.

2.6 Parameterisation

In order to explore implication of the model on product market deregulation, the parameters values are specified in Table 1. The discount factor β is chosen to be 0.96 for an annual interest rate of 4%. The risk aversion parameter γ is set to 0.9. The unemployment benefit replacement ratio β^u is set to 0.4. The value of μ_1 implies an initial mark-up of 20%. All these parameter values are standard in literature.

In terms of the transition probability $q_i(\delta)$, Aparicio-Fenoll [2015] estimated a linear probability model for the relationship between the probability of becoming unemployed and the product market competition using the Spanish labour market flow data. Market competition there is measured by the profit margin $\frac{P-MC}{P}$, where P is the price and MC is the marginal cost. The higher the profit margin, the less competitive the market is. From equation (1), δ in the model measures exactly the profit margin. Therefore, I define $q_i(\delta)$ as an increasing linear function with respect to δ :

$$q_i(\delta) = \alpha_0 + \alpha_1 \delta$$

and use the estimates in Aparicio-Fenoll [2015] to set $\beta = 0.136$. β is chosen so that $q_i(\beta = 0.2) = 0.92$. In other words, with an average profit margin of 0.2, the probability of remaining employed is 0.92. These are within the range of the average mark-up and job transition probability estimates for Spain.³

As for $q_o(\beta)$, there is no existing direct empirical estimates of how it correlates with the profit margin or mark-up to the best of my knowledge. Hence, $q_o(\beta)$ is calculated by exploiting the labour market flow equations in steady state:

$$q_o(\beta) = 1 - \frac{(1 - q_i(\beta))(1 - u_2(\beta))}{u_2(\beta)};$$

where $u_2(\beta)$ is the unemployment rate in period 2 that satisfies

$$u_2(\beta) = 0.14 + 0.06 \times (\beta - 0.2); \quad (5)$$

This implies that the period 2 equilibrium unemployment rate falls by 0.06 percentage points following a 1 percentage point reduction in mark-up, which is consistent with the finding by Bertinelli et al. [2013] from the simulation of a DSGE model calibrated to the European labour markets. In addition, the calibration implies that with an aggregate profit margin of 0.2, the unemployment rate is 0.14, which is consistent with the average unemployment rate in Spain over the period 2004-2012 [International Labour Organization, 2022]. Appendix A.1 shows the details of the derivation of $q_o(\beta)$. The transition probabilities are plotted against the profit margin in Figure 4.

The empirical estimate for the positional concern, h , can vary widely in literature across age and different goods [Carlsson et al., 2007, Akay and Martinsson, 2012]. It governs the strength of the non-pecuniary costs of deregulation. I set it to 0.3 in the baseline which is within the range estimated in literature and show the robustness of the results afterwards.

α measures how selfish workers are when forming their subjectively fair policy. This is set to 0.7, which is in line with the estimates of altruism from experiments data in Andreoni and Miller [2002] and Fisman et al. [2007].

There is less guidance from the empirical side on how to calibrate the political participation parameters. I calibrate λ , γ , and δ symmetrically for the insiders and the outsiders. The choice of these parameters first have to satisfy the condition stated underneath Equation (3) to ensure that the participation probabilities are between 0 and 1. In addition, the baseline values imply political participation rate within the range [0.02;0.03]. This replicates the range of fractions of countries with social unrest within a

³From Soares [2020]’s estimates using data from 2004 to 2012, the aggregate profit margin in Spain is around 0.2. From Ward-Warmedinger and Macchiarelli [2013]’s estimates using data from 1998 to 2008, the probability of transiting from employment to either unemployment or out of labour force in Spain is 0.08.

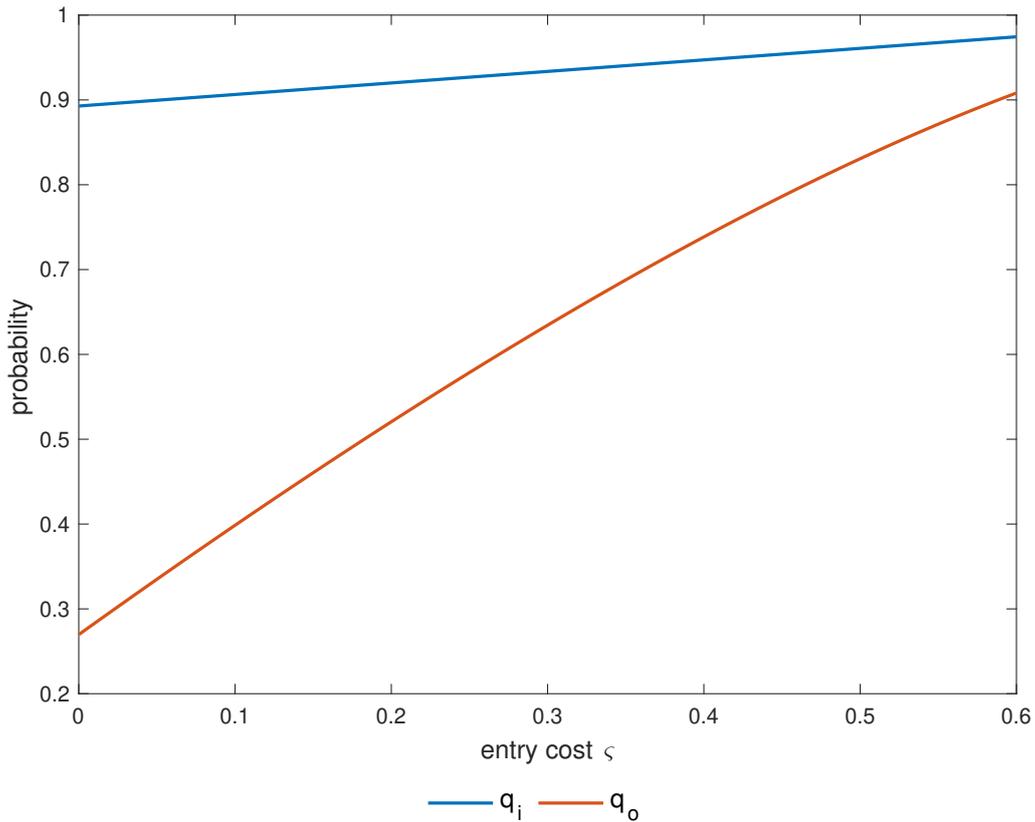


Figure 4: Transition probabilities of employment status

year in Europe during the period 2010-2020 reported in [Appendino et al. \[2020\]](#), which gives an approximate measure of the frequency of the social unrest in Europe. The values of β are such that the weight attached to the loss from political actions in government's loss function (4) is around 2.25 times of the weight attached to the aggregate welfare of all workers in the economy, which is a standard choice for government venality in lobby models such as [Bridgman et al. \[2007\]](#) and [Adamopoulos \[2008\]](#).

2.7 Results: What Determines the Market Regulation

With the baseline calibration, consider a reform proposal that decreases the level of product market entry cost ℓ . This attracts more producers to enter the market, making the incumbent product market more competitive.

For insiders who are employed in the incumbent industry, the more competitive market reduces the price mark-up, which in turn increases their real wages. However, this pecuniary gain is compromised by two costs. Firstly, the deregulation increases the job insecurity for them, which is reflected by the decrease in the probability of remaining employed in the current job q_i in Figure 4. Once they are dismissed from the current job, they lose all current income. Secondly, deregulation increases the non-pecuniary cost

Parameter	Value	Interpretation
	0.96	discount factor
	0.9	risk aversion
σ_1	5	elasticity of substitution in period 1
	0.4	unemployment benefit replacement ratio
β_0^i	0.893	parameter for probability q_i
β_1^i	0.136	parameter for probability q_i
h	0.3	positional concern
	0.7	self-serving bias
	1000	political influence
c	19.2	constant cost of political actions
	20	standard deviation of idiosyncratic costs
λ	100	parameter for aggrievement

Table 1: Parameter Values of the Two-period Model

from higher wage inequality and having to make more efforts in work. The insiders have to trade off the gains and the losses. If the gains in the real wage are not enough to recover the two costs, the insiders are more likely to advocate more regulated markets when forming their belief of the ‘fair’ level of ℓ .

On the other hand, for the outsiders, deregulation increases the unemployment benefits as a pecuniary gain. Meanwhile, they are more likely to be employed in the incumbent industry, as reflected by the decrease in the probability of remaining an outsider q_o in Figure 4. Once they are employed in the incumbent industry, they will be able to earn higher income. These gains are weighed against the higher cost to well-being from potentially remaining an outsider when there are lower unemployment in the economy. Nevertheless, it is more likely for the gains to outweigh the loss for the outsiders. Thus, they are more likely to advocate more deregulated markets when forming their belief of the ‘fair’ level of ℓ .

This intuition is confirmed by the numerical simulation of the model. Table 2 reports the preferred mark-up implied by the subjectively fair policy of the insider, displaced, and outsider workers in period 1 respectively. It shows that the insiders prefer a higher mark-up than that preferred by the displaced workers and the outsiders, which implies that insiders prefer more regulated markets. Although this will decrease their real income, a higher ℓ increases the prospect for them to keep their jobs and reduces the non-pecuniary costs from higher competition. By contrast, more competitive markets is more attractive for the outsiders regardless of whether the worker is just dismissed or not, because not only their income but also the probability for them to get employed increases.

Meanwhile, though the total output is maximised with a fully deregulated market (i.e. $\ell = 0$), this is not pursued by the government even if the political constraints are absent (i.e. by setting $\beta_{in} = \beta_{out} = 0$). Although the fully deregulated market maximises

\hat{in}	96	mark-up preferred by the insiders
\hat{disp}	1	mark-up preferred by the displaced
\hat{out}	1	mark-up preferred by the outsiders
i	66	efficient mark-up
a	56	actual mark-up

Table 2: Preferred and Actual Mark-ups (%) implied by corresponding entry costs δ , baseline

the aggregate consumption and output, this will not maximise the social welfare function because it hurts the welfare of insider workers too much. Therefore, if the government makes policy like a benevolent social planner without the political constraints, the efficient policy implemented still lies between the desired policy of both groups of workers. This implies that the reason for impeded product market deregulation might simply be that further deregulation does not make the market more efficient. This resonates the 'second-best' argument in [Rodrik \[2004\]](#) that fixing a subset of inefficiencies in an economy may actually reduce welfare. In our model, it is not optimal even for a benevolent social planner to fully deregulate the market because there are both price mark-up and involuntary unemployment around.

Now if we introduce political economy concerns, the government needs to balance political pressure from different worker groups. In our baseline case, the actual level of deregulation implemented is different from the efficient mark-up, even if the political participation parameters are the same for both groups. This is different to lobby models where the actual policy will not deviate from the socially optimal policy if the political powers of the rival groups are the same. The reason is that the political pressure that a group exerts on the government depends upon not only the exogenous political participation parameters, but also how the group endogenously react to the policy, which is captured by the political participation probabilities \mathcal{P}_i^k . This is endogenously determined by the size of the group and how aggrieved the group is towards a particular level of regulation. In the baseline case, the outsiders are more aggrieved and will impose a higher political cost on the government if the efficient policy (66% of mark-up) is implemented because it is too far away from what they think is desirable for the society (1% of mark-up). Therefore, the government sets a lower actual mark-up (56%) to prevent too much dissatisfaction from the outsiders.

Nevertheless, the political participation technology is also important in determining the implemented regulation level. [Table 3](#) shows four alternative scenarii where the insider workers possess better participation technology. In these circumstances, the actual implemented regulation level is higher than the efficient regulation level. Imagine that the incumbent workers belong to a union that can mobilise workers or has links to lobbying groups. This means that they may incur lower cost in organising protests (lower \hat{in}),

	actual mark-up
baseline	56
lower participation cost for insiders ($\alpha_{in} = 0.9$ α_{out})	84
more organised insiders ($\alpha_{in} = 0.5$ α_{out})	80
more sensitive insiders ($\beta_{in} = 1.5$ β_{out})	70
more influential insiders ($\gamma_{in} = 2$ γ_{out})	73

Table 3: Actual Policy (in mark-up, %) and Political Influence

that they are more organised (lower α_{in}), that they are more able to incite workers to take political actions (higher β_{in}), or higher political influence or social cost from their actions (higher γ_{in}). These all leads to higher entry cost being implemented to their favour. This conforms to the observation in practice that oppositions to reforms often comes from sectors that are more incorporated into the political systems, smaller business, and organised labour force [Haggard and Webb, 1993].

In summary, we show that the product market cannot be fully deregulated for two reasons. Firstly, full deregulation may not be efficient because it reduces the aggregate social well-being. Secondly, this may inflict too much political backlash from the insiders of the market.

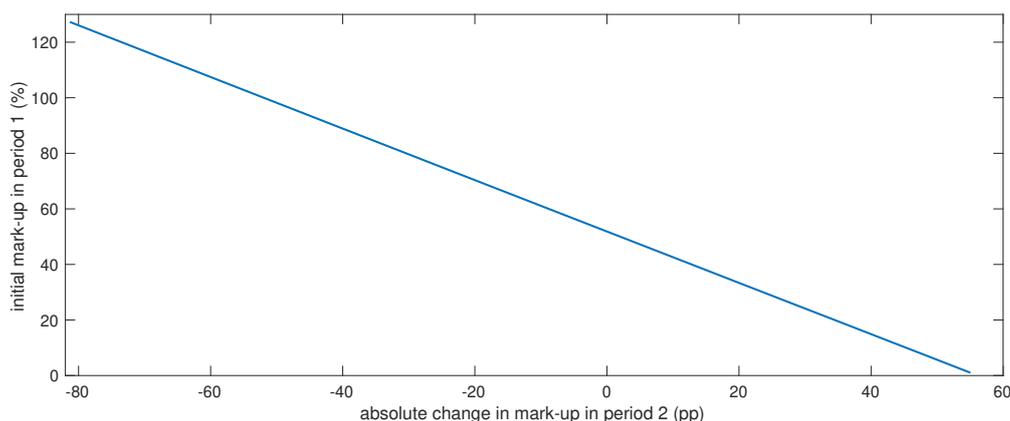
Moreover, the regulation level is fixed at an inefficient level because the governments need to balance political costs incurred from the political reactions of groups that advocate different policy. As a result, a considerable level of regulation can still remain (56% of mark-up in this case). Any attempt to deregulate further from this level is not optimal for the government politically and thus will be hindered. Furthermore, if the insider workers' reactions are more sensitive to market deregulation, or they are incorporated into the political system, they are able to maneuver the government to implement tighter market control and make deregulation more difficult.

2.8 Initial Conditions and Ex-ante Uncertainty

In addition to the factors discussed in the previous section, one of the most discussed aspects that potentially influences the deregulation progress in literature is the initial condition of the economy. Da Silva et al. [2017] and IMF [2004] demonstrate that weak initial conditions significantly promotes reform efforts. The main explanation is that the opposition is weaker in the economy where the condition is further away from the best practice. A related hypothesis that is based upon similar rationale is that deep crises foster more reform, which is supported empirically by Alesina et al. [2006] and Høj et al. [2006].

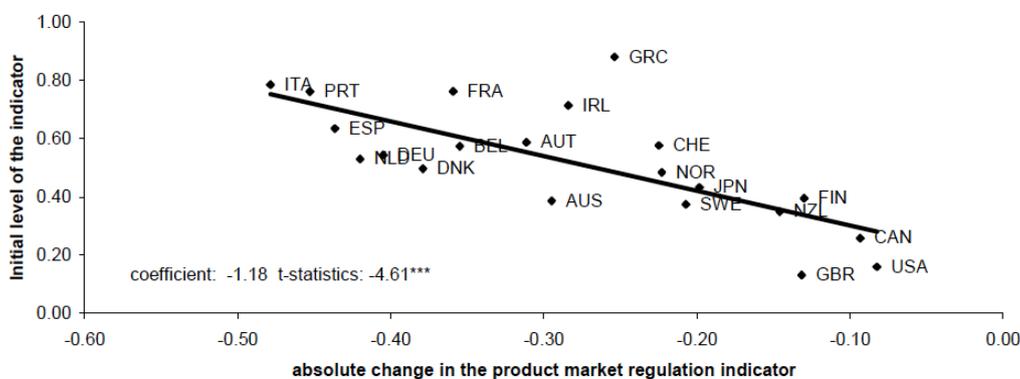
The implication of the model in terms of this hypothesis is examined in Figure 5a. The figure plots the initial mark-up of the economy in period 1 against the change in the actual level of mark-up in period 2 that the government is implementing relative to

the initial mark-up in the economy. The higher initial mark-up in period 1 represents a weaker initial condition. The figure shows that if the initial condition is weaker, more deregulation will be implemented in period 2. For example, with around 120% of initial mark-up in period 1, the government will be able to reduce the mark-up by around 76 percentage points in period 2. By contrast, if the economy starts with a low level of mark-up such as 20%, there will actually be a reform reversal in period 2 that increases the mark-up by around 38 percentage points. This negative relationship qualitatively replicates the experience of the OECD countries in Figure 5b.



(a) Model

Period 1995-2003



(b) Data from Høj et al. [2006], OECD countries, 1995-2003

Figure 5: Initial Conditions and Deregulation, 2-period Model

The intuition is that with a higher initial mark-up, the opposition to deregulation is weakened in three aspects. Firstly, the total number of insiders is smaller as the unemployment rate is higher. This means that both types of workers will attach smaller weight to the welfare of insiders when forming their subjectively fair policy by maximising (2), as long as $\alpha < 1$. This implies that the insider workers will be more sympathetic to the opinion of the outsiders, and the outsiders will be more insistent on their own views. Second, the government will attach smaller weight to the welfare and political influence of the insiders. The reason for the latter is that the government face less penalty by deviating

from the subjectively fair policy of the insiders, because their political participation will be smaller given their smaller size overall, as implied by equation (3). Third, given that the wage rate is lower in a more regulated market, the opportunity cost of losing job, which is the wage rate, is smaller. Therefore, the insiders are more willing to trade off more job security for potentially higher wage rate. As a result, they will be less aggrieved if the government deregulate more. This enables the government to move the policy more to the outsiders' favour.

Another important argument to explain the sluggish reform progress is that agents are uncertain *ex ante* about whether they will benefit or lose from the reform [Fernandez and Rodrik, 1991]. This argument is one of the reasons why the insider workers oppose deregulation in the model. In period 2, they will benefit from higher wages if they remain in their initial job, but lose by paying large displacement costs if they are dismissed. This means that their expected income *ex ante* is not necessarily increasing with deregulation, which thus motivates their oppositions. Meanwhile, the other source of their opposition comes from the direct non-pecuniary costs from deregulation which is captured by the positional concerns. To what extent does the result depend upon the strength of the non-pecuniary costs? Figure 6 shows the actual implemented mark-up against the strength of the non-pecuniary costs. Higher h will reduce the appeal of the deregulation for both types of workers, so the actual implemented mark-up increases with h . Moreover, even if $h = 0$ so that there is no non-pecuniary cost, the *ex ante* uncertainty faced by insiders will still be enough to mobilise them to block full deregulation.

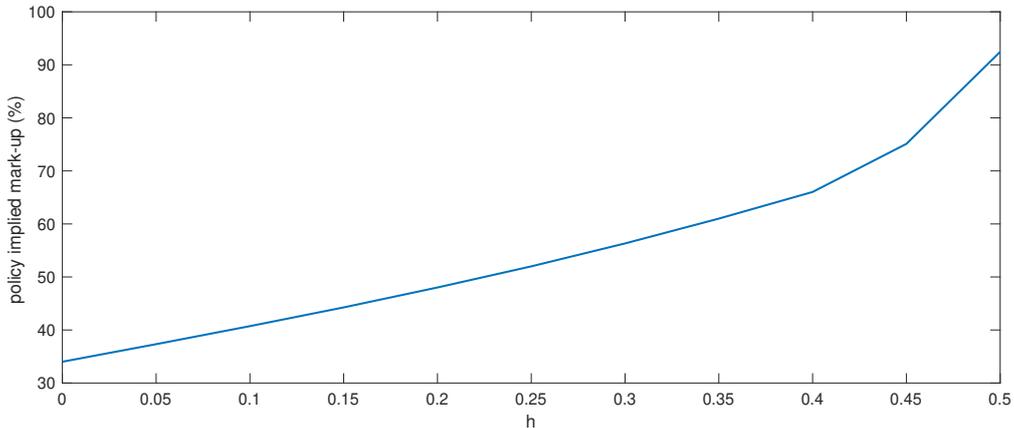


Figure 6: Robustness with respect to the strength of non-pecuniary costs h

3 In nite Horizon Heterogeneous-Agent Model

In this section, I extend my analyses in the previous section to an infinite-horizon Heterogeneous-Agent Political Economy Model (HAPEM). This complements the simple

2-period model in two aspects. First, the deregulation affects the workers' welfare beyond 2 periods so that the positive effects on employment from deregulation, which only the outsiders care about in the 2-period model, becomes relevant for the insider workers as well. Even if they are more likely to be dismissed after the deregulation, it is also more likely that they will be re-employed in the incumbent industry if they become outsiders. Similarly, the higher job insecurity from deregulation becomes relevant in the trade-off of the outsiders. Second, a proportion of workers are able to trade risk-free assets to allocate their income inter-temporally and hedge against their idiosyncratic job insecurity. As we will see, this eliminates the job insecurity concern for the insiders and potentially facilitates further deregulation.

3.1 Model Set-up

The set-up of the HAPEM model is based upon the Bewley-Huggett-Aiyagari framework and preserves the features of the 2-period model in Section 2 in many aspects. In a small open economy, a total mass of 1 of workers maximise their expected lifetime CRRA utility

$$V_t^j = \frac{(C_t^j = (C_t)^h)^{1-h}}{1-h} + E_t[V_{t+1}^j(a_{t+1}; \text{ }_{t+1}; \text{ }_{t+1}^d)]:$$

A proportion $1 - \text{ }_t$ of them can trade a risk-free asset. Thus their budget constraints are

$$\begin{aligned} C_t^j + a_{t+1}^j &= w_t \text{ }_t(1 - \text{ }_t^d) + b_t(1 - \text{ }_t)(1 - \text{ }_t^d) + (1 + r)a_t^j \\ a_{t+1}^j &\geq -\bar{a}: \end{aligned}$$

The first constraint is the budget constraint, where a_t is the holding of risk-free bond by the j -th worker in period t . r is the net world real interest rate paid on the savings. _t is an indicator variable which takes the value of 1 if the worker is an insider, and 0 if the worker is an outsider. _t^d is an indicator variable which takes the value of 1 if the worker is dismissed from the incumbent firms in period t , and 0 otherwise. The second constraint is a borrowing constraint, where $\bar{a} \geq 0$ is the upper bound of borrowing that a worker can take.

The remaining _t of workers are hand-to-mouth. Given that they cannot allocate consumption inter-temporally, their maximisation problem is identical to those faced by the workers in the two-period model, which is described in Section 2.2.

The Markov transition matrix for idiosyncratic shocks on _t is identical to that specified for the 2-period model in Section 2.2.

The specification of producers is identical to those in Section 2.1, except that the

market entry condition becomes

$$\sum_{k=t}^{\infty} \left(\frac{P_k^i}{P_t} - W_k^i \right) Y_k^i = \ell Y_t^i.$$

In terms of the formation of the subjectively ‘fair’ policy, workers will maximise the modified aggregate social welfare

$$W_t(\ell; a_t; \{t; \{d\}) = \sum_{s \in S} \omega_{k;t} V_t^i(\ell; a_t; \{t; \{d\}), \quad (6)$$

where $k; i \in S$ and S is the set of all possible combination of states $\{a_t; \{t; \{d\}$. The weight $\omega_{kk;t} = \beta + (1 - \beta)n_t^k$, whilst $\omega_{ik;t} = (1 - \beta)n_t^i$ for $i \neq k$. The maximisation problem gives the the desired entry cost $\ell_t(a_t; \{t; \{d\})$ and the corresponding subjective reservation utility $R_t(a_t; \{t; \{d\}) = V(\ell_t(a_t; \{t; \{d\}))$ for workers under every state $s \in S$.

In this case, workers’ aggrivements towards the actual policy are also state-dependent:

$$A_t(\ell; a_t; \{t; \{d\}) = \frac{\beta (a_t; \{t; \{d\})}{2} \max[0; R_t(a_t; \{t; \{d\}) - V_t(\ell; a_t; \{t; \{d\})]^2.$$

Each period, workers will choose to participate in political actions by weighing the benefits of doing so against the cost:

$$\mathcal{P}_t(\ell; a_t; \{t; \{d\}) n_t(a_t; \{t; \{d\}) A_t(\ell; a_t; \{t; \{d\}) - c(a_t; \{t; \{d\}) - \beta \mathcal{P}_t(a_t; \{t; \{d\}) \geq 0.$$

This implies a participation rate of political actions for workers under each state

$$\mathcal{P}_t(\ell; a_t; \{t; \{d\}) = \frac{(a_t; \{t; \{d\}) - c(a_t; \{t; \{d\})}{2 (a_t; \{t; \{d\}) - n_t(a_t; \{t; \{d\}) A_t(\ell; a_t; \{t; \{d\})}.$$

Meanwhile, the government maximises

$$W_t = \sum_{s \in S} [V_t(\ell; a_t; \{t; \{d\}) - (a_t; \{t; \{d\}) \mathcal{P}_t(\ell; a_t; \{t; \{d\})]. \quad (7)$$

3.2 Stationary Equilibrium

A stationary equilibrium consists of value functions $V : S \rightarrow R$, individual choices of consumption and asset holdings, prices, labour, wages, a measure Φ , the subjectively fair policies $\{\ell\}$, the government policy $\{\ell\}$, and the political participation rates $\{\mathcal{P}_t^k\}$, such that

1. V satisfies the workers’ Bellman equations, and a_{t+1}^i and C_t^i are the associated policy functions, given $r; W_t$;
2. the choices of P_t^j and N_t^j maximise the producers’ profits;

3. markets for consumption goods and labour clear:

$$Y_t = C_t = \int_0^1 C_t^j d\Phi$$

$$n_t = \int_{j=1}^{\mathcal{N}_t} N_t^j$$

4. let Q be the transition function, for all $s \in S$,

$$\Phi(S) = \int Q(s_t; S) d\Phi;$$

5. fair policies maximise the modified aggregate social welfare functions for each group (6);
6. the government policy maximises the social welfare function (7), subject to costs from workers' political actions;
7. the workers choose whether or not to participate in protests given the government policy, subjectively fair policy, and the participation of other group members.

3.3 Algorithm for Solving the Model

The model is solved numerically. I firstly solve for the stationary equilibrium under each discretised grid of entry cost ℓ . This gives the value functions for workers under each state and the stationary distribution for each value of ℓ . Then I use these to aggregate and obtain the individual modified social welfare and government's objective functions. The desired and actual implemented policy can be then obtained by maximising these objectives.

Specifically, the algorithm is as follows:

1. Create grids for assets a and entry cost ℓ . Given each grid of ℓ , make guesses \tilde{C} for average consumption C .
2. Calculate elasticity η , wage w , and unemployment benefits b . Calculate transition probabilities q_i and q_o . Calculate the corresponding consumption and utility for each grid of assets a_{t+1} held by the non-hand-to-mouth workers.
3. Solve for individual policy functions of non-hand-to-mouth workers $a_{t+1}^j(\ell; a_t; \eta; \eta^d)$, $C_t^j(\ell; a_t; \eta; \eta^d)$ by value function iteration methods. Get the associated value functions $V_t(\ell; a_t; \eta; \eta^d)$.

4. Compute the stationary distribution using the policy functions. Get aggregate consumption C .
5. Check whether the aggregate consumption C converges to the initial guess \tilde{C} . If yes, move to the next step. If not, go back to Step 1 to update the guess \tilde{C} .
6. Calculate the value functions for hand-to-mouth workers.⁴
7. For each grid of ℓ , calculate the subjective weights π_{ik} using the stationary distributions, and aggregate the value functions using those weights to get the modified aggregate social welfare for workers under each state $(a_t; \tilde{a}_t; \tilde{a}_t^d)$. Maximise these welfare functions to get the subjectively ‘fair’ policy $\ell(a_t; \tilde{a}_t; \tilde{a}_t^d)$ and the associated reservation utility $R(a_t; \tilde{a}_t; \tilde{a}_t^d)$ for each type of workers.
8. Compute aggrivements $A(\ell; a_t; \tilde{a}_t; \tilde{a}_t^d)$ and the associated participation rate of political actions $\mathcal{P}(\ell; a_t; \tilde{a}_t; \tilde{a}_t^d)$ using the reservation utility and the individual welfare values obtained in the previous step.
9. Compute the government’s objective function. Maximise this objective function to get the implemented policy ℓ^a .

3.4 Market Regulation in the HAPEM

In order to evaluate the model numerically, the model is calibrated by the same way as the two-period model in the previous section. All parameters are kept the same except for the political participation parameters. They are adjusted to meet the same targets for the two-period model, so that the political participation rate are within the range $[0.02; 0.03]$, and that the weight attached to the loss from political actions in government’s loss function is around 2.25 times of the weight attached to the aggregate welfare of all workers in the economy. In addition, the world interest rate r is set to 3.95%, which is consistent to the range of the EU government bond yields at the onset of the Greek debt crisis in 2010. The borrowing constraint \bar{b} is set to 0. The proportion of hand-to-mouth workers α is set to 0.18, which is consistent with the estimates for Spain in [Bracco et al. \[2021\]](#). The calibrated parameters are reported in Table 4.

Figure 7 plots the desired levels of mark-up implied by the corresponding entry cost ℓ for each type of workers with various employment status and asset holdings. It shows that the workers who are not hand-to-mouth will advocate full deregulation (i.e. mark-up of 1.01%) regardless their current employment status and asset holdings, whereas the hand-to-mouth workers prefer tighter market regulation. Workers with access to asset markets will be able to hedge away their idiosyncratic risks of employment. As a result,

⁴The details are in Appendix B.

Parameter	Value	Interpretation
	0.96	discount factor
	0.9	risk aversion
	0.4	unemployment benefit replacement ratio
i_0	0.893	parameter for probability q_i
i_1	0.136	parameter for probability q_i
h	0.3	positional concern
	0.7	self-serving bias
	27000	political influence
c	19.2	constant cost of political actions
	20	standard deviation of idiosyncratic costs
l	5	parameter for aggrievement
r	0.0395	world interest rate
a	0	borrowing constraint
	0.18	proportion of hand-to-mouth workers

Table 4: Calibration of the HAPEM

the relevant trade off for them is between the higher income and higher non-pecuniary costs. In this case, the strong income effect attracts them to advocate full deregulation. By contrast, the hand-to-mouth workers, especially the insiders, are still preoccupied with the higher job insecurity following the deregulation, which motivates them to advocate higher entry cost.

In the meantime, the hand-to-mouth outsiders and displaced workers will not advocate full deregulation as they do in the 2-period model. This is because with infinite horizon, they account for the higher job insecurity due to deregulation in their trade-off, even if this is not directly relevant for them in the next period. Although full deregulation is likely to be welfare-improving for them in the next period as in the 2-period model, they also care about the potential higher risk of losing their job in periods thereafter in a highly competitive market once they are employed. Since that they cannot hedge against this risk, they prefer some regulation rather than full deregulation.

Imagine the economy starts from a market where the mark-up is around 20%. If we run a opinion poll in this steady state for workers, asking what policy they think should be implemented. The result presumably looks like Figure 8. This reflects the stationary distribution of workers with different views of the fair policy. 82% of them advocate full deregulation (in dark blue). The rest advocate higher mark-ups which corresponds to the proportion of hand-to-mouth workers in the economy. The efficient policy that a benevolent social planner would implement is actually full deregulation in this case. However, the political pressure coming from the hand-to-mouth workers will force the government to implement a policy that implies a mark-up of 3% instead. Different to the case in the two-period model where the majority of the population as insiders forms the anti-deregulation coalition, the anti-reform coalition here is formed by the minority of

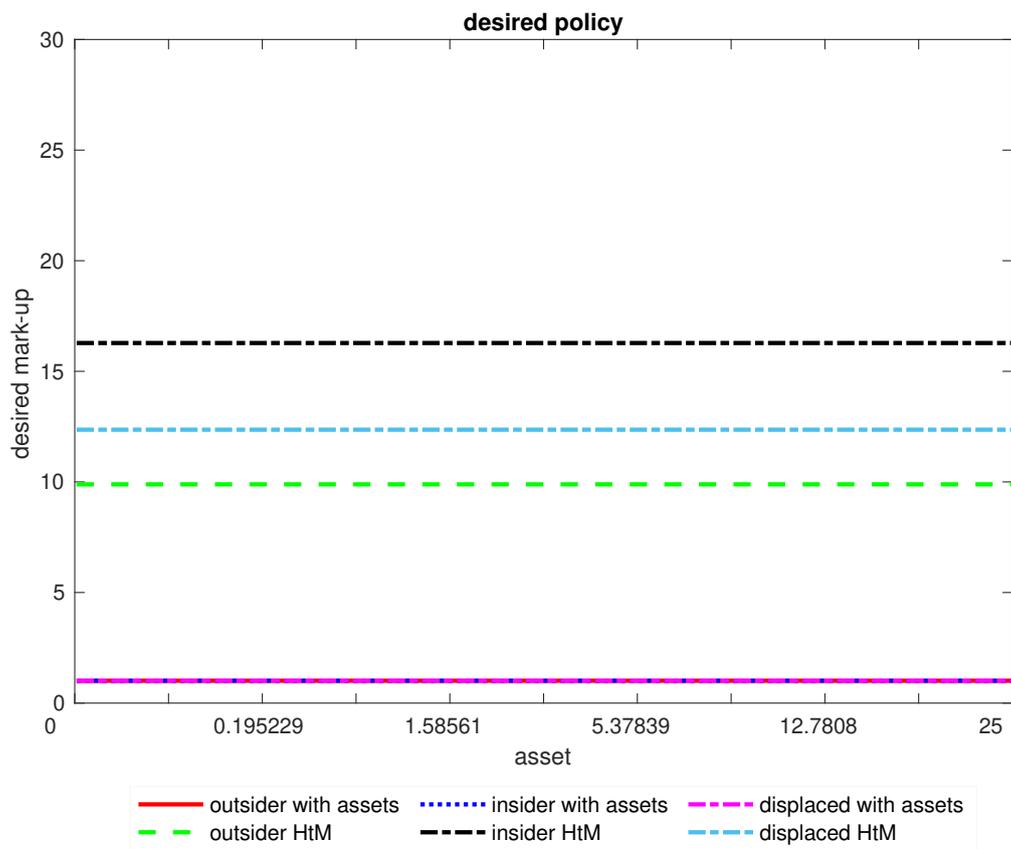
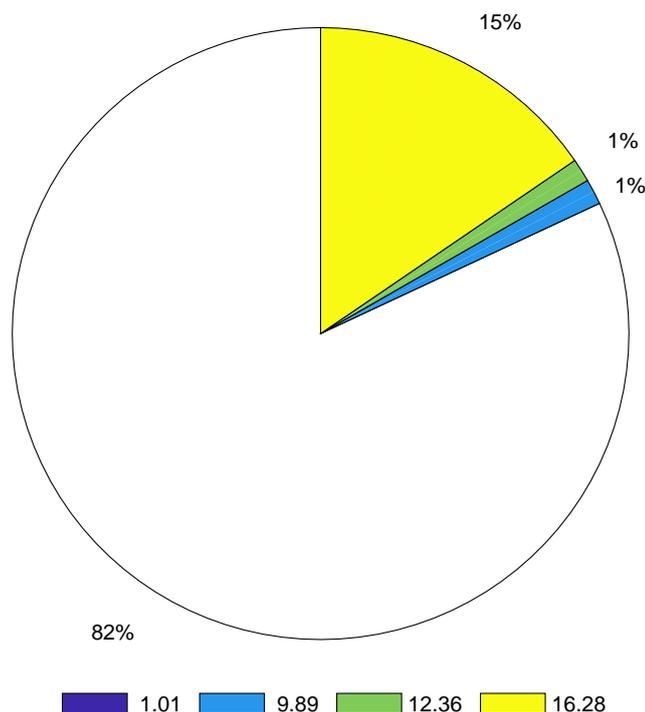


Figure 7: Desired level of mark-up for each types of agents in HAPEM. Unseen lines are overlapped at the bottom.

the population. This corroborates with the vested interest argument that dates back to [Olson \[1965\]](#). The cost of the policy concentrates on a small proportion of the economy whereas the benefit is spread among a larger population. The group that incurs the loss, small yet organised, will act to impede further reform. Moreover, the fact that the hand-to-mouth workers form the anti-reform coalition resonates with the observation made by [Haggard and Kaufman \[1989\]](#) that illiquid assets holders are more likely to oppose economic adjustments because they are unable to circumvent the adverse consequences.

opinion poll: what policy(mark-up, %) should be implemented?



Efficient mark-up: 1%. Actual implemented mark-up: 3%.

Figure 8: Opinion poll of the desired mark-up (%) when the current market has a mark-up of 20%.

Similar to the two-period model, if the insider workers can organise political actions more easily as captured by the more advantageous political participation parameters, the resistance to deregulation from the hand-to-mouth insiders are strengthened as political pressure to the government. Consequently, the implemented mark-up is higher as shown in [Table 8](#) in [Appendix D](#).

3.5 What Else Affects the Regulation Level

The discussions so far demonstrates that the implemented regulation is inefficiently high in the HAPEM model. Even if it is socially optimal to fully deregulate the market, the governments do not deregulate further once the economy reaches the 3% implementable mark-up. In this section, I first consider how the proportion of hand-to-mouth workers, which measures the economy's ability to circumvent the cost of deregulation as a whole, influences the implementable regulation level. Then I consider the role of initial conditions and non-pecuniary costs in the HAPEM model.

From the results in the previous section, we notice that the hand-to-mouth workers form the anti-reform coalition because they cannot hedge away their idiosyncratic employment shocks due to the lack of liquid financial assets. Therefore, the proportion of workers who have access to the risk-free assets potentially plays a crucial role in determining the strength of the opposition to market deregulation. Figure 9 and 10 compare the desired policy and the distribution of opinions on the fair policy when $\alpha = 0.18$ and $\alpha = 0.4$ respectively. The second case of high α corresponds to countries like Greece and Portugal as estimated by Bracco et al. [2021]. When the proportion of hand-to-mouth workers is higher, the actual implemented mark-up increases from 3% in the baseline to 16%. In this case, there is a larger population of hand-to-mouth workers and they become more powerful as a political force. This means that the analyses in section 2.8 partly applies here. Workers and the government will attach higher weight to the welfare of the hand-to-mouth workers in forming their subjective fair policy and the actual policy. Although this effect is not strong enough to persuade workers with assets to oppose full deregulation, the hand-to-mouth workers advocate even higher mark-ups. Meanwhile, the hand-to-mouth workers can mobilise larger political actions if they feel aggrieved toward the policy. Therefore, the government will implement higher mark-ups to avoid potentially large political repercussions of the actions from the hand-to-mouth agents.

Meanwhile, the initial conditions, captured by the initial mark-up in the economy, still affect the reform progress. Figure 11a plots the initial mark-up of the economy against the absolute change in the actual level of implemented mark-up relative to the initial mark-up in the economy. As in Section 2.8, we still observe a negative correlation between the two, which is consistent with the data. Although workers with assets continue to support full deregulation regardless of the initial conditions, it is the hand-to-mouth workers that put pressure on the government against deregulation. Therefore, the intuitions discussed in Section 2.8 and above apply here.

If we focus on the relative role of job insecurity and non-pecuniary costs that generate opposition to deregulation, we indeed see that low non-pecuniary costs may actually make market full deregulation possible. Figure 12 compares the poll opinions and the actual policy when $h = 0$, $h = 0.3$, and $h = 0.5$. As expected, a higher h leads to

(a) = 0:18 (baseline)

(b) = 0:4

Figure 9: Proportion of HtM workers and Desired policy. Unseen lines are overlapped at the bottom.

Efficient mark-up: 1%. Actual implemented mark-up: 3%.

(a) $\theta = 0.18$ (baseline)

Efficient mark-up: 1%. Actual implemented mark-up: 16%.

(b) $\theta = 0.4$

Figure 10: Proportion of HtM workers and poll of desired mark-up (%) when the current market has a mark-up of 20%.

(a) Model

(b) Data from [H j et al. \[2006\]](#), OECD countries, 1995-2003

Figure 11: Initial Conditions and Deregulation, HAPEM model.

higher subjectively fair policy preferred by the hand-to-mouth, whereas the opinions of workers with assets hardly change. Thus, the actual policy implies a higher than baseline mark-up of 22%. By contrast, if there is no non-pecuniary cost (i.e. $\delta = 0$), all workers advocate full deregulation which is implemented. Note that this is driven by the fact that workers are not purely selfish in forming their subjectively fair policy. Figure 18 in Appendix C shows that if workers are purely selfish, the hand-to-mouth workers will still oppose full deregulation. In other words, though full deregulation is not the best for themselves, the hand-to-mouth workers acknowledge that it is socially desirable in this scenario. Therefore, they are persuaded to accept full deregulation. The resistance to reform is eliminated by the concession willingly made by these workers. In other words, deregulation has to be costly enough for at least some workers for effective resistance to arise.

4 Alternative Measure of Job Insecurity

The analyses so far calibrate the transition probability $q(\delta)$ as the probability of losing jobs and we see that this concern alone may not be able to generate powerful enough opposition to full market deregulation. However, as argued by Aparicio-Fenoll [2015], this measure is not able to capture the job insecurity experienced by workers who never lose their jobs. In most European countries, many new hires are under fixed-term contracts which last no more than 3–5 years. Afterwards, the firm must either dismiss the worker or offer the worker with an open-ended contract that comes with high termination costs for the firm. Many of those who fail to secure an open-ended contract may find another job immediately after the previous job. However, they may have to incur high transition costs such as job search. Moreover, the lower job security offered by fixed-term contracts decrease workers' satisfaction [Booth et al., 2002]. Therefore, opposition from employees under this type of contracts can be stronger. I consider the implication of this higher job insecurity to deregulation in my HAPEM model in this section.

4.1 Set-up and Calibration

Suppose now that a proportion π of workers are under the fixed-term contract if they get employed and thus subject to higher job insecurity. There are three possible employment status for these workers. They are either an insider worker on a fixed-term contract, an insider worker whose fixed-term contract will not be renewed in the next period, or an outsider worker. Assume that $q^f(\delta)$ is the probability that the insider worker will be able to get another fixed-term contract with the current employer at the end of her current contract. Otherwise, she transits into the state of contract not renewed with probability $1 - q^f(\delta)$.

Efficient mark-up: 1%. Actual implemented mark-up: 1%.

(a) $h = 0$

Efficient mark-up: 1%. Actual implemented mark-up: 3%.

(b) $h = 0:3$ (baseline)

Efficient mark-up: 1%. Actual implemented mark-up: 22%.

(c) $h = 0:5$

Figure 12: Strength of non-pecuniary costs and poll of the desired mark-up (%) when the current market has a mark-up of 20%.

For insiders who learn that their contract will not be renewed, they have to pay a transition cost that is equal to their wage and start job search while still on their current job. Then with probability $q_m(\&)$, they do not immediately find another employment, so they transit into an outsider. Otherwise, with probability $1 - q_m(\&)$, they find another employment that offer them a fixed-term contract. For the outsiders, with probability $q_b(\&)$, they remain to be outsiders. Otherwise, with probability $1 - q_b(\&)$, they find an insider job. Thus, the transition matrix is as the following:

	insider	contract not renewed	outsider
insider	$q_f^f(\&)$	$1 - q_f^f(\&)$	0
contract not renewed	$1 - q_m(\&)$	$q_m(\&)$	0
outsider	$1 - q_b(\&)$	0	$q_b(\&)$

Table 5: Transition matrix of employment status for workers under fixed-term contracts. Each row denotes the status in period t . Each column denotes the status in period $t+1$.

These workers' utility maximisation problem resembles what is defined in Section 3.1, except that $\mathbb{1}_t^d$ is 1 if the worker is in the state of 'contract not renewed' and 0 otherwise.

The rest $1 - \beta$ of workers are employed with open-ended contracts if they are insiders. Their transition of employment status is identical to the workers in the HAPEM model described in the previous section⁵. For simplicity, I assume that the open-ended and fixed-term contract workers are equally likely to be hand-to-mouth. In other words, within workers of each contract type, half of them are hand-to-mouth. The rest of the model remains identical to the baseline HAPEM in section 3.

The calibration of this model is reported in Table 6. In terms of the transition probability $q_f^f(\&)$, I calibrate a linear function similar to $q(\&)$:

$$q_f^f(\&) = \beta_0^f + \beta_1^f \&:$$

and I choose β_1^f to match the estimates of Aparicio-Fenoll [2015] using the Spanish data. Meanwhile, the value of β_0^f implies that $q_f^f(\&= 0:065) = 0:171$, which is consistent to the means of the corresponding measures in the same paper. The probability of the remaining employed for insiders with open-ended contracts, $q_o(\&)$, is the same as the baseline models:

$$q_o(\&) = 0:92 + 0:136 \& \quad (\& \in [0:2]):$$

⁵It is legitimate to consider a model without segregation of contract types. Then all workers can fall into 4 employment status. They can be an insider with a permanent contract, an insider with a fixed-term contract, an insider whose fixed-term contract will not be renewed, or an outsider. Then those with a fixed-term contract will become permanent employees with probability q_f^f . The permanent employees are subject to much lower job insecurity, measured by the probability of becoming outsiders as calibrated in our previous sections. However, there is no reliable empirical guidance to calibrate all transition probabilities involved in such a model. Therefore, I keep the simple setting of segregated contract types here.

In addition, the unemployment rate continues to vary with θ according to equation (5). Then the transition probabilities

$$q_b(\theta) = 1 - \frac{(1 - q(\theta))(1 - u(\theta))}{u(\theta)}$$

$$q_m(\theta) = \frac{(1 - q_b(\theta))(2 - q_f(\theta))}{(1 - u(\theta) - 1)(1 - q_f(\theta))}.$$

The details of the derivation for q_m are shown in Appendix A.2. Figure 13 shows the transition probabilities against the entry cost θ . Compared with Figure 4, we see that insiders now face higher job insecurity.

Figure 13: Transition probabilities of employment status in the HAPEM with fixed-term contracts.

The proportion of fixed-term contract workers, α_F , is chosen to be 0.26 according to the data reported by Eurostat [2022a] and OECD [2022] for Spain in 2018. The strength of non-pecuniary cost, h , is set to 0 to highlight the role of job insecurity in this case. The political participation parameters are adjusted to match the same targets as in the two-period model and the baseline HAPEM. The rest of parameters remain unchanged from the HAPEM without fixed-term contracts in the previous section.

Parameter	Value	Interpretation
	0:96	discount factor
	0:9	risk aversion
	0:4	unemployment bene t replacement ratio
β_0	0:893	parameter for probability q
β_1	0:136	parameter for probability q
β_0^f	0:831	parameter for probability q^f
β_1^f	1:352	parameter for probability q^f
h	0	positional concern
	0:7	self-serving bias
	35000	political in uence
c	38:4	constant cost of political actions
	40	standard deviation of idiosyncratic costs
λ	0:6	parameter for aggrievement
r	0:0395	world interest rate
a	0	borrowing constraint
	0:18	proportion of hand-to-mouth workers
F	0:26	proportion of fixed-term workers

Table 6: Calibration of the HAPEM with Fixed-term Contracts

4.2 Market Regulation with High Job Insecurity

Figure 14a shows the desired mark-up for each type of workers. Similar to the base-line case in Figure 7, workers who have access to the risk-less bond hedge against their idiosyncratic risks and advocate full deregulation. By contrast, hand-to-mouth workers constitute resisting forces against deregulation. Those who can only be employed under fixed-term contracts advocate extremely high mark-ups. The intuition is that the insiders with fixed-term contracts now face higher marginal rise in job insecurity from deregulation than workers with open-ended contracts. This also affects the prospect of the displaced workers and outsiders indirectly if they become insiders in the future. Therefore, all types of fixed-term contract workers prefer less competitive markets.

On the other hand, hand-to-mouth workers who can be employed with open-ended contracts actually support full deregulation regardless of their employment status. This is because workers are not purely selfish when forming their subjectively fair policy. Figure 14b shows the subjectively fair policy if workers are purely selfish (i.e. $\lambda = 1$). The hand-to-mouth workers under open-ended contracts actually support higher mark-ups than they would do in the previous case. With less selfish workers, they acknowledge that full deregulation is welfare improving for the society as a whole, so that they are willing to reduce their reservation regulation level.

Figure 15 shows the opinion poll of the population corresponding to Figure 14a. 95% of workers prefer full deregulation. This is also the efficient policy that the benevolent social planner would implement. However, the actual implemented mark-up is 45% despite that

(a) $\alpha = 0.7$ (baseline)

(b) $\alpha = 1$

Figure 14: Desired level of mark-up for each types of agents in HAPEM. Workers under fixed-term contracts are denoted with '(H)' (for high insecurity). Workers under open-ended contracts are denoted with '(L)' (for low insecurity). Displaced (H) are insider workers whose contract will not be renewed. Displaced (L) are outsider workers who are just dismissed. In both panels, lines for insider HtM (H), displaced HtM (H), and outsider HtM (H) are overlapped at the top, and other unseen lines are stacked at the bottom.

only 5% of the population wants highly regulated markets. This shows that even if the non-pecuniary cost of deregulation is absent, if a small proportion of workers are heavily affected by the job insecurity associated with the use of fixed-term contract, they may form a powerful opposition to deregulating the market.

Similar to the HAPEM without fixed-term contracts, Table 9 in Appendix D shows that the market is more regulated if the insider workers can be more easily mobilised with better political participation parameters.

Efficient mark-up: 1%. Actual implemented mark-up: 45%.

Figure 15: Opinion poll of desired mark-up (%) when the current market has a mark-up of 20%.

4.3 Policy to Promote Deregulation

What should governments do to promote product market deregulation? The good news for the economy with very weak initial condition is that they are still able to make good progress. Figure 16 shows that the link between weak initial conditions and more deregulation progress still holds in this case. However, reducing mark-up to lower than

52% will actually be reversed later on⁶.

Meanwhile, this result sheds light on when the gradualism approach works. If the economy starts at a highly regulated market, for example, with 67% of the mark-up, it will still not be able to reach a mark-up lower than 52% eventually even if the implementation is spread out over a relatively long period. However, in order to reach the mark-up of 52%, the government will propose initially to deregulate to a mark-up of 54%, according to the model simulation. Once the economy reaches this new steady state, 52% is implementable in the next period. In other words, the government needs to spread the deregulation process over several phases, which corresponds to the 'grandfathering' gradualism approaches in practice. However, once the 52% of mark-up is achieved, this strategy reaches its limit.

Figure 16: Initial Conditions and Deregulation, HAPEM with Fixed-term Contracts

What the government can do proactively, however, is to try to compensate the potential losers of the deregulation. The previous section suggests that the major resistance to reform comes from the insiders who concern about the higher job-losing risk and the associated income loss. Therefore, the government can reduce the resistance by promising compensation if the insiders lose their jobs after deregulation. This effectively means that

⁶This is because when the initial mark-up is 52%, the absolute change in mark-up that the government can make is 0 in the next period. Any initial mark-up lower than that will incur reform reversals. This also implies that in our earlier case, the implemented mark-up of 45% risks being reversed back to 52% later on.

⁷This means that some groups are initially exempted from the reform.

the government insures the insiders against potential costs from deregulation. I simulate this scenario by a 2% reduction in the proportion of hand-to-mouth agents. This drives down the proportion of workers who are affected by the deregulation⁸ and pushes the implemented mark-up down to 33% from 45% in the baseline.

Similarly, labour market reform measures that reducing the use of the fixed-term contract β_F by 2% reduces the implemented mark-up to 41%. This works in the similar way as the compensation scheme to directly weaken the opposition.

Another popular practice is to conduct formal discussion between the governments and social partners in the hope that the social partners are willing to make concessions. I simulate such a strategy in the model as a reduction of the self-serving bias parameter α . When $\alpha = 0$, all workers in the economy are fully aligned with the benevolent social planner's objective and full deregulation can be implemented. However, my experiments show that the baseline implementable mark-up of 45% only starts to decline when α is less than 0.18⁹. This implies that any discussions that reduces α from 0.7, which is the baseline value, to above 0.18 are ineffective. In other words, the talk needs align workers' objectives closely enough to that of the governments¹⁰. This resonates [Tompson and Dang \[2010\]](#)'s observation that strong government leadership, which means its readiness to act unilaterally or sanction non-cooperative parties, plays a key role in the success of these discussions.

4.4 Application: Understanding the Heterogeneity in Regulation in Europe

In section 3 and this section, I demonstrate that the markets are more regulated with higher proportion of hand-to-mouth agents and higher use of fixed-term contracts β_F . Given the heterogeneity of these two measures across European countries, they may help us to understand why some countries are more deregulated than others.

Figure 17 shows the strength of product market regulation of 5 European countries in 2018 and compares them with the model's predictions. Among the 5 countries, Spain is the benchmark country that I calibrate the model with. The rest of the chosen countries are representative in terms of their α and β_F values relative to Spain. Spain has a relatively low α and the highest β_F among all European countries. The upper panel in Table 7 report α in 2017 estimated by [Bracco et al. \[2021\]](#) and β_F estimated by [OECD \[2022\]](#) of the 5 selected countries. UK has roughly the same proportion of hand-to-mouth households, but much lower use of the fixed-term contract. Portugal and Greece feature much higher α instead, but mildly lower β_F . Lastly, Italy has a relatively higher α and a

⁸Figure 19 in Appendix C shows the corresponding poll.

⁹See Figure 20 in Appendix C for the poll of opinions when $\alpha = 0.18$.

¹⁰If we consider the government itself being a benevolent social planner if they are not subject to political costs, as we do here in the model.

	Proportion of HtM	Proportion of Fixed-term μ_F
Spain	0.18	0.26
UK	0.19	0.04
Italy	0.29	0.16
Portugal	0.43	0.20
Greece	0.44	0.11
	Trade Union Density	Probability of transiting to permanent contract from fixed-term contract
Spain	0.13	0.08
UK	0.23	0.13
Italy	0.33	0.07
Portugal	0.15	0.19
Greece	0.19	0.02

Table 7: Proportion of HtM workers, use of fixed-term contract, trade union density, and transition probability in selected European countries. Source: Bracco et al. [2021] for μ_F , OECD [2022] for μ_F , OECD [2020] for trade union density, Eurostat [2022b] for the transition probability.

relatively lower μ_F .

The product market regulation in the upper section of Figure 17 is measured by their Product Market Regulation Index (PMR Index) composed by the OECD [2018]. I normalise these indices by the highest index value among the 5 countries, which is that of Greece. The UK is the most deregulated market among the five, followed by Spain, Italy, Portugal, and Greece.

The model predictions of regulation plotted in the lower section of Figure 17 are produced by matching the values of μ and μ_F in the model to those reported in Table 7 while keeping other parameters unchanged. The actual implemented mark-ups predicted by the model are normalised by the highest mark-up predicted, which is Portugal in this case. The figure demonstrates that the model is able to produce a ranking that is broadly consistent to the data. UK remains to be the most deregulated market, followed by Spain and Italy. Portugal and Greece are the most regulated markets. However, the ranking of the last two countries are switched because Greece has lower incidence of fixed-term contracts than Portugal but similar proportion of HtM agents.

This inconsistency can potentially be resolved by factoring in the other two factors that are important in determining the implemented policy in the model, the job insecurity and the relative political power. For example, the lower panel in Table 7 shows that the probability of transiting from fixed-term contract to permanent contract, which is measured by the transition probability q^f in the model, is significantly lower in Greece (2% in 2018) than in Spain (8% in 2018), according to Eurostat [2022b]. Meanwhile, the same measure is significantly higher in Portugal (17% in 2018). This implies that the job insecurity for fixed-term workers is potentially lower in Greece but higher in

Figure 17: Product market regulation, data vs. model, with α and β in the model matched to each country. Source: [OECD \[2018\]](#) and author's calculation

Portugal compared to Spain. This should strengthen the opposition to reform in Greece but weaken it in Portugal.

Although this probability is roughly the same in Italy and Spain, the trade union density is much higher in Italy than in Spain, which is also reported in the lower panel of Table 7. This measures the proportion of employees who are union members, and is often used as an indicator for the strength of unions. Thus, this suggests potentially higher political influence from insider workers in Italy than in Spain in the model. This moves the actual policy to the insiders' favour and can result in higher level of regulation predicted for Italy than Spain by the model.

To the best of my knowledge, there is no empirical studies for how mark-ups affect the transition probability q_i^f in other countries other than Spain. Moreover, there is no corresponding measure for union density in the model. Therefore, I do not match the model parameter values in these dimensions quantitatively. Nevertheless, Figure 21 in Appendix C shows that the predicted ranking from the model can be more consistent with the data if the additional heterogeneity in union density and transition probability is qualitatively accounted for in the model.

5 Conclusion

This paper shows that the progress in product market deregulation can be blocked by resistance to reforms by embedding political economy considerations in a 2-period model and a heterogeneous-agent model. The higher job insecurity and the associated income and welfare loss following deregulation lead to hand-to-mouth workers, especially the industry insiders among them, to oppose market deregulation. This resistance can create effective political pressure for governments to maintain inefficient regulation levels and delay deregulation.

The resistance, however, is lower if the initial condition of the economy is weak and if there is higher proportion of agents who can avoid the idiosyncratic costs of deregulation by, for example, allocating income across time with financial assets. By contrast, the use of fixed-term contract increases the job insecurity of insiders and strengthens opposition. Gradual implementation, compensating the losers, labour market reform, and strong government leadership in negotiations are shown to be useful in weakening the opposition to deregulation. These considerations are potentially relevant for understanding the heterogeneous product market regulation levels in Europe.

There are several avenues for future research. Firstly, the political consideration is an important dimension in the debate after the Greek debt crisis about whether structural reforms and fiscal consolidation are complementary. The framework in this paper can be used to explore this question and discuss the optimal design of such programs. Second, in the HAPEM model, only stationary equilibrium is considered by workers in forming their subjectively desired policy. Transitions between steady states can be interesting and offer more insights for our questions. For example, the credibility of fully implementing and maintaining the reform proposal can be discussed in this context. Lastly, future empirical work can formally test the predictions of my models. Current empirical work focuses on the role of political participation and influence in deregulation. However, it is interesting to see how job insecurity, the proportion of hand-to-mouth agents, and the use of the fixed-term contracts affect the product market regulations empirically.

References

- T. Adamopoulos. Land Inequality and the Transition to Modern Growth. *Review of Economic Dynamics* 11(2):257{282, 2008.
- P. Aghion and M. Schankerman. On the Welfare Effects and Political Economy of Competition-enhancing Policies. *Economic Journal* 114(498):800{824, 2004.
- S. R. Aiyagari. Uninsured Idiosyncratic Risk and Aggregate Saving. *The Quarterly Journal of Economics* 109(3):659{684, 1994.
- A. Akay and P. Martinsson. Positional Concerns through the Life Cycle: Evidence from Subjective Well-Being Data and Survey Experiments, 2012. IZA Discussion Papers 6342, Institute of Labor Economics (IZA).
- A. Alesina, S. Ardagna, and F. Trebbi. Who Adjusts and When? On the Political Economy of Reforms. *IMF Staff Papers*, 53(si), 2006.
- A. F. Alesina and A. Drazen. Why Are Stabilizations Delayed? *American Economic Review* 81(5):1170{1188, 1991.
- R. Anderton and B. D. Lupidio. Effects of Labour and Product Market Regulation on Worker Flows: Evidence for the Euro Area Using Micro Data. *Working Paper Series* 2312, European Central Bank. 2019.
- J. Andreoni and J. Miller. Giving According to GARP: An Experimental Test of the Consistency of Preferences for Altruism. *Econometrica* 70(2):737{753, 2002.
- A. Aparicio-Fenoll. The Effect of Product Market Competition on Job Security. *Labour Economics* pages 145{159, 2015.
- M. Appendino, P. Barrett, K. Nguyen, and J. de Leon Miranda. Measuring Social Unrest Using Media Reports, 2020. *IMF Working Papers* 2020/129, International Monetary Fund.
- R. M. W. J. Beetsma and M. Poplawski-Ribeiro. The Political Economy of Structural Reforms under a Deficit Restriction. *Journal of Macroeconomics* 30(1):179{198, 2008.
- L. Bertinelli, O. Cardi, and P. Sen. Deregulation Shock in Product Market and Unemployment. *Journal of Economic Dynamics and Control* 37(4):711{734, 2013.
- M. Bertrand and F. Kramarz. Does Entry Regulation Hinder Job Creation? Evidence from the French Retail Industry. *The Quarterly Journal of Economics* 117(4):1369{1413, 2002.

- T. Bewley. The Permanent Income Hypothesis: A Theoretical Formulation *Journal of Economic Theory*, 16(2):252{292, 1977.
- O. Blanchard and F. Giavazzi. Macroeconomic Effects of Regulation and Deregulation in Goods and Labor Markets. *The Quarterly Journal of Economics* 118(3):879{907, 2003.
- A. L. Booth, M. Francesconi, and J. Frank. Temporary Jobs: Stepping Stones or Dead Ends? *Economic Journal*, 112(480):189{213, 2002.
- J. Bracco, L. Galeano, P. Juarros, D. Riera-Crichton, and G. Vuletin. Social Transfer Multipliers in Developed and Emerging Countries The Role of Hand-to-Mouth Consumers. *Policy Research Working Paper*, the World Bank Group 2021.
- B. Bridgman, I. D. Livshits, and J. C. MacGee. Vested Interests and Technology Adoption. *Journal of Monetary Economics* 54(3):649{666, 2007.
- K. Burdett, C. Carrillo-Tudela, and M. Coles. The Cost of Job Loss *Review of Economic Studies* 87(4):1757{1798, 2020.
- M. Cacciatore, R. A. Duval, G. Fiori, and F. Ghironi. Short-term Pain for Long-term Gain: Market Deregulation and Monetary Policy in Small Open Economies *Journal of International Money and Finance* 68(C):358{385, 2016.
- F. Carlsson, O. Johansson-Stenman, and P. Martinsson. Do You Enjoy Having More Than Others? Survey Evidence of Positional Goods *Economica*, 74(296):586{598, 2007.
- A. E. Clark. Unemployment as a Social Norm: Psychological Evidence from Panel Data. *Journal of Labor Economics* 21(2):289{322, 2003.
- I. Colantone, R. Crino, and L. Ogliari. Globalization and Mental Distress. *Journal of International Economics* 119(C):181{207, 2019.
- A. D. Da Silva, A. Givone, and D. Sondermann. When Do Countries Implement Structural Reforms?, 2017. Working Paper Series 2078, European Central Bank.
- M. Draghi, 2017. Introductory Remarks by Mario Draghi, President of the ECB at the ECB Conference "Structural Reforms in the Euro Area", Frankfurt am Main, 18 October 2017.
- G. B. Eggertsson, A. Ferrero, and A. Ra o. Can Structural Reforms Help Europe? *Journal of Monetary Economics* 61(C):2{22, 2014.

- European Commission. Country-specific Recommendations Database, 2021 Semester Cycle (March) (Accessed on 2 August 2022), 2022. https://ec.europa.eu/economy_finance/country-specific-recommendations-database/.
- Eurostat. Employees with A Contract of Limited Duration (Annual Average) - Spain, 20-64 Years, as Percentage of Total Employment, 2022a. Eurostat Database. Online data code: TPS00073. Data retrieved on July 25, 2022.
- Eurostat. Transition from Fixed Term Contracts to Permanent Contracts - Annual Averages of Quarterly Transitions, Estimated Probabilities - 24-64 Years, Total, 2022b. Eurostat Database. Online data code: LFSLONG_E09. Data retrieved on July 25, 2022.
- R. Fernandez and D. Rodrik. Resistance to Reform: Status Quo Bias in the Presence of Individual-Specific Uncertainty. *American Economic Review* 81(5):1146-1155, 1991.
- R. Fisman, S. Kariv, and D. Markovits. Individual Preferences for Giving. *American Economic Review* 97(5):1858-1876, 2007.
- R. Griffith. Product Market Competition, Efficiency and Agency Costs: An Empirical Analysis, 2001. IFS Working Papers W01/12, Institute for Fiscal Studies.
- M. Guadalupe. Product Market Competition, Returns to Skill and Wage Inequality. *Journal of Labor Economics* 25:439-474, 2007.
- S. Haggard and R. Kaufman. The Politics of Stabilization and Structural Adjustment, 1989. NBER Chapters, in: *Developing Country Debt and the World Economy*, pages 263-274, National Bureau of Economic Research, Inc.
- S. Haggard and S. B. Webb. What Do We Know about the Political Economy of Economic Policy Reform? *World Bank Research Observer* 8(2):143-168, 1993.
- M. Huggett. The Risk-free Rate in Heterogeneous-agent Incomplete-insurance Economies. *Journal of Economic Dynamics and Control* 17(5-6):953-969, 1993.
- J. Huj, V. Galasso, G. Nicoletti, and T.-T. Dang. The Political Economy of Structural Reform: Empirical Evidence from OECD Countries. OECD Economics Department Working Papers 501, 2006.
- IMF. Fostering Structural Reforms in Industrial Countries, 2004. *World Economic Outlook*.
- International Labour Organization. Unemployment, Total (% of Total Labor Force) (National Estimate) - Spain, 2022. ILOSTAT database. Data retrieved on February 8, 2022.

- S. Jain and S. W. Mukand. Redistributive Promises and the Adoption of Economic Reform. *American Economic Review* 93(1):256{264, 2003.
- G. Nicoletti and S. Scarpetta. Product Market Reforms and Employment in OECD Countries, 2005. OECD Economics Department Working Papers 472, OECD Publishing.
- OECD. The Economy-wide PMR Indicators. (Accessed on 27 July 2022), 2018.
- OECD. Trade Union Dataset. (Accessed on 27 July 2022), 2020.
- OECD. Temporary Employment (Indicator). DOI: 10.1787/75589b8a-en (Accessed on 27 July 2022), 2022.
- M. Olson. *The Logic of Collective Action* Harvard University Press, 1965.
- F. Passarelli and G. Tabellini. Emotions and Political Unrest. *Journal of Political Economy*, 125(3):903{946, 2017.
- D. Rodrik. *Rethinking Growth Policies in the Developing World*, 2004. Draft of the Luca d'Agliano Lecture in development Economics delivered at October, 8.
- G. Saint-Paul, D. Ticchi, and A. Vindigni. A Theory of Political Entrenchment. *Economic Journal*, 126(593):1238{1263, 2016.
- A. C. Soares. Price-cost Margin and Bargaining Power in the European Union. *Empirical Economics* 59(5):2093{2123, 2020.
- W. Tompson and T.-T. Dang. *Advancing Structural Reforms in OECD Countries: Lessons from Twenty Case Studies*, 2010. OECD Economics Department Working Papers 757, OECD Publishing.
- M. Ward-Warmedinger and C. Macchiarelli. *Transitions in Labour Market Status in the European Union*, 2013. IZA Discussion Papers 7814, Institute of Labor Economics (IZA).
- J. Williamson. What Washington Means by Policy Reform. *Latin American Adjustment: How Much Has Happened* pages 90{120, 1990.

Appendices

A Derivation of Transition Probabilities

A.1 Probability q_b in the Baseline Model

In the baseline model, the labour market flows in steady state satisfy the following condition:

$$(1 - q)n^{in} = (1 - q_b)n^{disp} + (1 - q_b)n^{out}; \quad (8)$$

where the left-hand side of the equation is the outflow from the incumbent industry, and the right-hand side is the inflow to the incumbent industry.

Meanwhile, we know that

$$n^{disp} = (1 - q)n^{in}$$

and that

$$n^{in} + n^{disp} + n^{out} = 1:$$

Using these two conditions, we can rewrite equation (8) as

$$(1 - q)n^{in} = (1 - q_b)(1 - q)n^{in} + (1 - q_b)(1 - n^{in} - (1 - q)n^{in}):$$

Simplify to get

$$(1 - q)n^{in} = (1 - q_b)(1 - n^{in})$$

Recognise that the unemployment rate

$$u = n^{disp} + n^{out} = 1 - n^{in}:$$

Thus, the simplified equation can be further rewritten as

$$(1 - q)(1 - u) = (1 - q_b)u:$$

Therefore, we have

$$q_b = 1 - \frac{(1 - q)(1 - u)}{u}.$$

A.2 Probability q_m in Section 4

In the HAPEM model with fixed-term contracts presented in section 4, the labour market flow in steady state for workers under open-ended contracts is identical to what is described in the subsection above in this appendix. This pins down the probability of

remaining an outsider, q_b , as before

$$q_b = 1 - \frac{(1 - q_f)(1 - u)}{u}$$

The labour market flow in steady state for fixed-term contracts satisfies the following instead

$$(1 - q_f)n^{in} = (1 - q_m)n^{disp} + (1 - q_b)n^{out}; \quad (9)$$

where n^{disp} denotes those whose contract will not be renewed at the end of the current period. In steady state, it is

$$n^{disp} = (1 - q_f)n^{in}$$

Therefore, we can rewrite (9) as

$$(1 - q_f)n^{in} = (1 - q_m)(1 - q_f)n^{in} + (1 - q_b)n^{out}$$

Recognise that $n^{out} = \frac{F}{u}$, the equation becomes

$$(1 - q_f - (1 - q_m)(1 - q_f))n^{in} = (1 - q_b)\frac{F}{u}$$

Therefore,

$$\frac{n^{in}}{u} = \frac{\frac{F}{u}(1 - q_b)}{(1 - q_f - (1 - q_m)(1 - q_f))} = \frac{\frac{F}{u}(1 - q_b)}{q_m(1 - q_f)} \quad (10)$$

In addition, we know that

$$n^{in} + n^{disp} + n^{out} = F;$$

which can be rewritten as

$$n^{in} + (1 - q_f)n^{in} + \frac{F}{u} = F;$$

Thus,

$$(2 - q_f)\frac{n^{in}}{u} = F\left(\frac{1}{u} - 1\right);$$

which means

$$\frac{n^{in}}{u} = F\frac{1-u}{2 - q_f} \quad (11)$$

Then from equation (10) and (11), we can get

$$\frac{\frac{F}{u}(1 - q_b)}{q_m(1 - q_f)} = F\frac{1-u}{2 - q_f}$$

Solve this to get

$$q_m = \frac{(1 - q_o)(2 - q^f)}{(1 - u - 1)(1 - q^f)}.$$

B Value Functions for Hand-to-mouth Workers in HAPEM

For the hand-to-mouth workers in the HAPEM model, the value function for the insider, outsider, and displaced workers in steady state are respectively

$$\begin{aligned} V^{in} &= U^{in} + [qV^{in} + (1 - q)V^{disp}] \\ V^{out} &= U^{out} + [q_oV^{out} + (1 - q_o)V^{in}] \\ V^{disp} &= U^{disp} + [q_bV^{out} + (1 - q_b)V^{in}]; \end{aligned}$$

where V^{in} , V^{out} , and V^{disp} are values for being insider, outsider, and displaced workers, and U^{in} , U^{out} , and U^{disp} are their corresponding per-period utilities respectively.

Solve these 3 equations for the values will give

$$V^{in} = \frac{1 - q_o}{1 - q_i - q_o} \frac{q_o}{2(1 - q - q_b)} (U^{in} + (1 - q)U^{disp} + \frac{2(1 - q)q_b}{1 - q_o} U^{out}):$$

Then the value for being an outsider can be calculated as

$$V^{out} = \frac{U^{out} + (1 - q_b)V^{in}}{1 - q_o}.$$

Finally, the value for being dismissed is

$$V^{disp} = U^{disp} + [q_bV^{out} + (1 - q_b)V^{in}]:$$

In the HAPEM model with fixed-term contracts, the values of being hand-to-mouth workers under permanent contracts remain the same as above. For the hand-to-mouth workers under fixed-term contracts, the value functions are

$$\begin{aligned} V^{in} &= U^{in} + [q^f V^{in} + (1 - q^f) V^{disp}]; \\ V^{out} &= U^{out} + [q_b V^{out} + (1 - q_b) V^{in}]; \\ V^{disp} &= U^{disp} + [q_m V^{out} + (1 - q_m) V^{in}]; \end{aligned}$$

where V^{disp} and U^{disp} correspond to the value and per-period utility of workers whose

contract will not be renewed. Solve this system to get

$$V^{\text{in}} = \frac{(1 - q_o)[U^{\text{in}} + (1 - q^f)U^{\text{disp}} + \frac{2(1 - q^f)q_m}{1 - q_o}U^{\text{out}}]}{1 - q_i - q_o - 2(1 - q^f)q_m + 2(q_b - q_m)[q^f + (1 - q^f)]}:$$

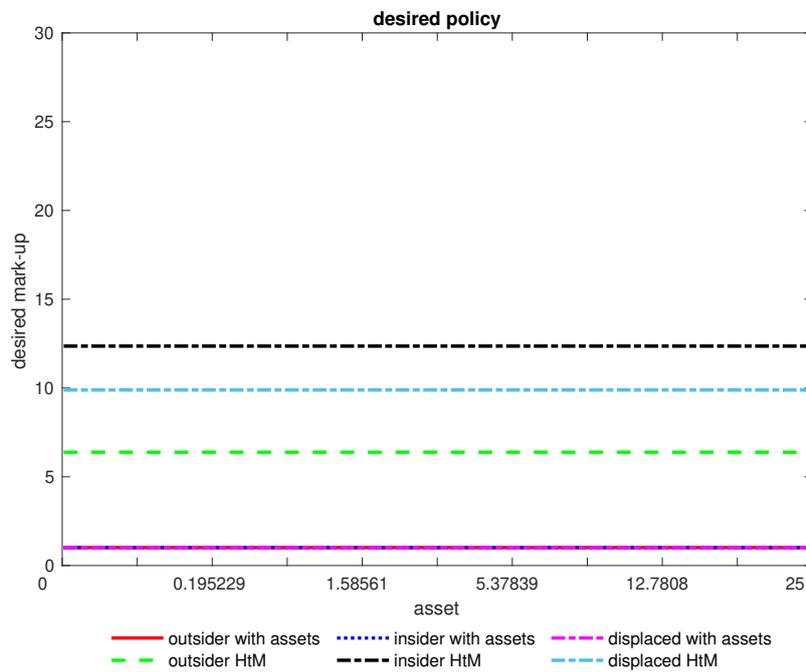
It follows that

$$V^{\text{out}} = \frac{U^{\text{out}} + (1 - q_b)V^{\text{in}}}{1 - q_o}$$

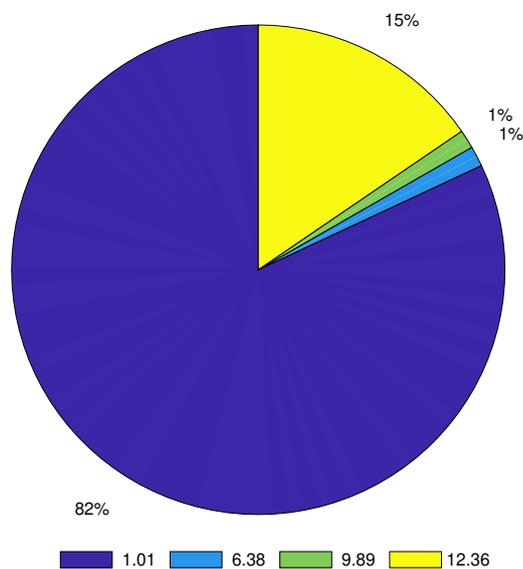
and

$$V^{\text{disp}} = U^{\text{disp}} + [q_m V^{\text{out}} + (1 - q_m)V^{\text{in}}]:$$

C Additional Figures



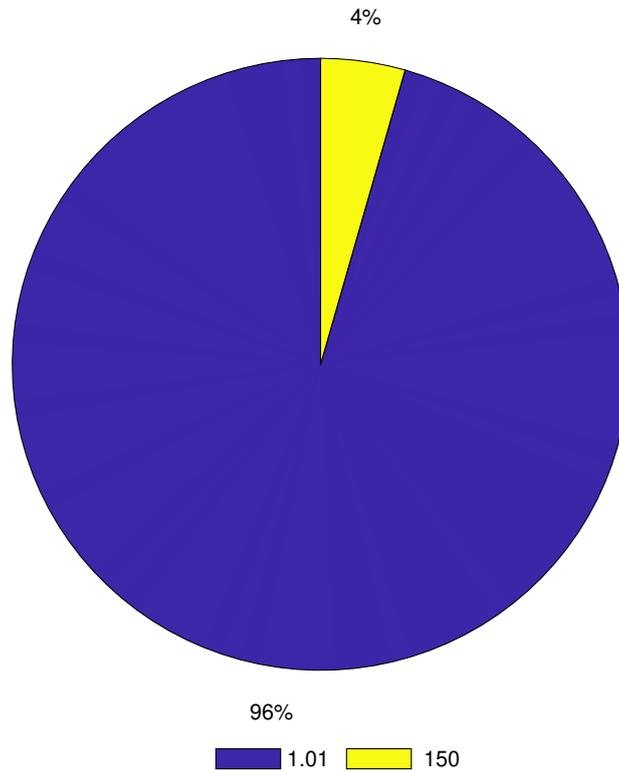
opinion poll: what policy(mark-up, %) should be implemented?



Efficient mark-up: 1%. Actual implemented mark-up: 1%.

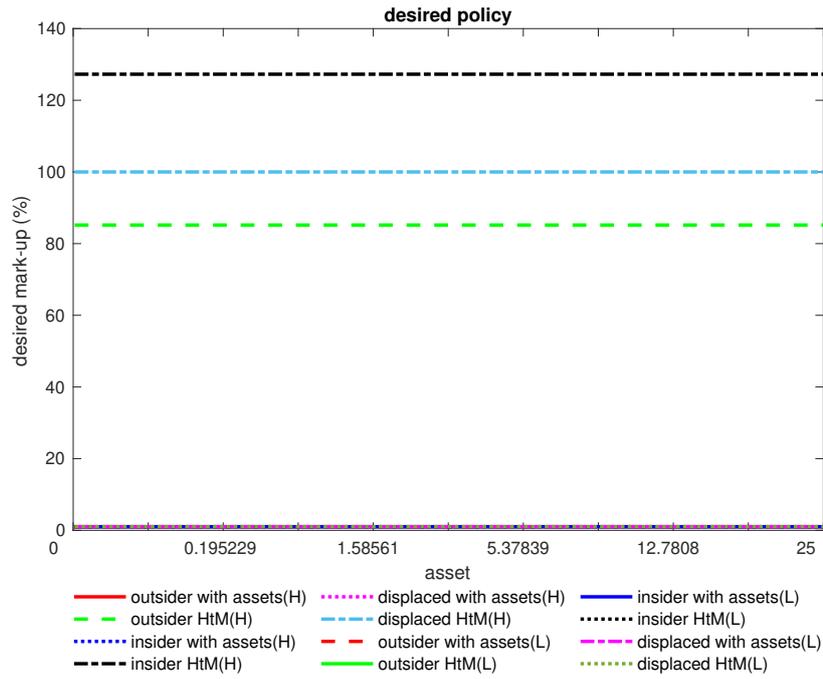
Figure 18: Level and poll of desired mark-up (%) when $h = 0$ and $\beta = 1$ in the HAPEM model without fixed-term contracts. Unseen lines in the top panel are overlapped at the bottom. The current market has a mark-up of 20%. Note that the full deregulation is still implemented though because the opposition is not strong enough to pose high political cost for the government.

opinion poll: what policy(mark-up, %) should be implemented?

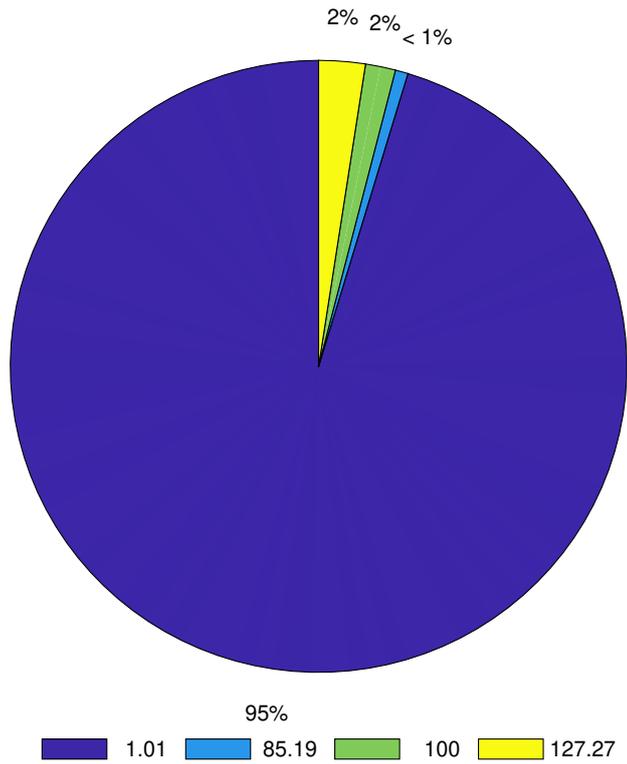


Efficient mark-up: 1%. Actual implemented mark-up: 33%.

Figure 19: Opinion poll of desired mark-up (%) when the current market has a mark-up of 20% and the government promises compensation scheme in the HAPEM with fixed-term contract.



opinion poll: what policy(mark-up, %) should be implemented?



Efficient mark-up: 1%. Actual implemented mark-up: 37%.

Figure 20: Desired level and poll of desired mark-up (%) when $\alpha = 0.18$ in the HAPEM model with fixed-term contracts. Unseen lines in the top panel are overlapped at the bottom.

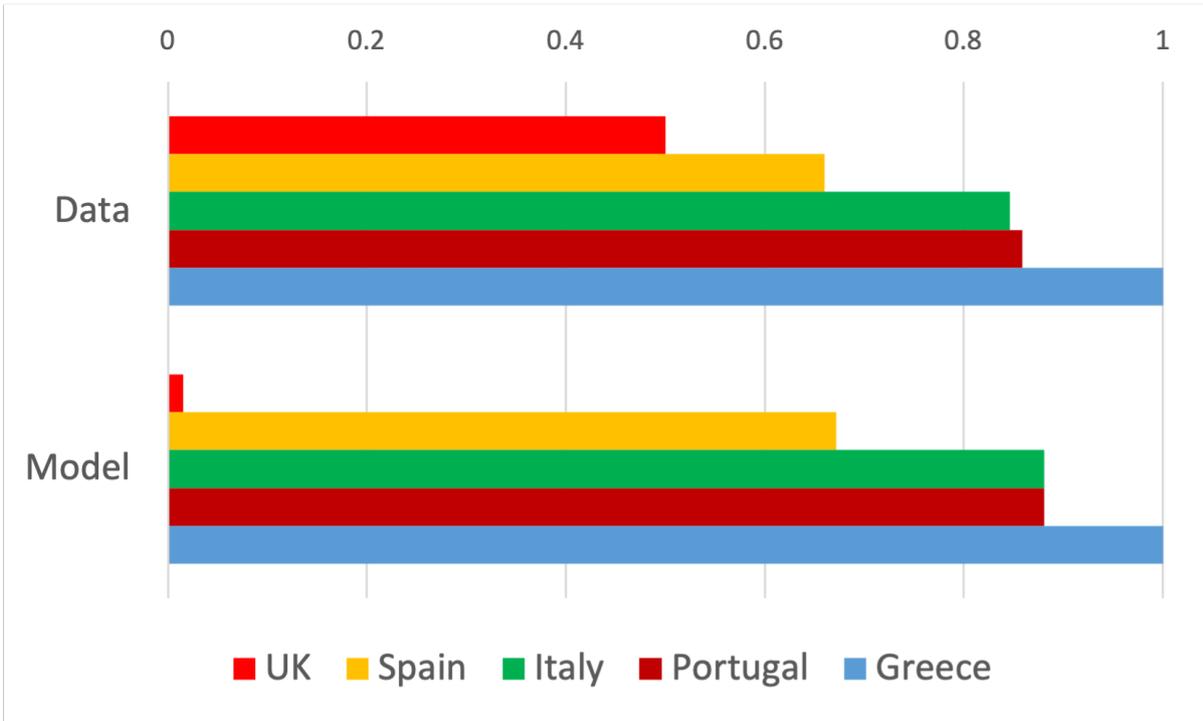


Figure 21: Product market regulation, data vs. model, with β , F , union density, and probability of transition in the model matched to each country. Source: OECD [2018] and author's calculation. For this exercise, I vary the political influence parameter for employees in the model, ρ_e , to reflect the impact of union density. Given that the union density is the lowest for Spain, I match the ratio of ρ_e for other countries relative to that for Spain to the ratio of the union density of the country relative to that of Spain. Meanwhile, based on the probability reported in Table 7, I assume β_1^f , the sensitivity of q_i^f with respect to regulation, to be slightly higher in Greece, and slightly lower in the UK and Portugal.

D Additional Tables

	actual mark-up
baseline	3
lower participation cost for insiders ($i_{in} = 0.9$ out)	6
more organised insiders ($i_{in} = 0.5$ out)	5
more sensitive insiders ($i_{in} = 5$ out)	7
more influential insiders ($i_{in} = 2$ out)	5

Table 8: Actual Policy (in mark-up, %) and Political Influence, HAPEM without fixed-term contracts

	actual mark-up
baseline	45
lower participation cost for insiders ($i_{in} = 0.9$ out)	67
more organised insiders ($i_{in} = 0.9$ out)	52
more sensitive insiders ($i_{in} = 1:1$ out)	52
more influential insiders ($i_{in} = 1:1$ out)	49

Table 9: Actual Policy (in mark-up, %) and Political Influence, HAPEM with fixed-term contracts