Fiscal Pol(l)icy – Voting and Optimal Unemployment Insurance

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Abstract

I investigate what level of unemployment benefits is supported by median voters and whether it maximizes social welfare, as well as how benefit design affects this relationship. The analysis uses a search and matching model of the labor market with household heterogeneity and incomplete markets. In the model calibrated to the U.S. economy, the optimal level of unemployment insurance is less than 1 percent of the pre-unemployment wage. This level of unemployment benefits coincides with the one chosen by the median voter if unemployment benefits are proportional to prior earnings. In a system with constant benefits, households select a replacement rate of 7.9 percent of average net earnings, leading to a welfare loss of 0.08 percent in terms of consumption-equivalent variation. This result arises because flat benefits receive support from many low-productivity households, who benefit substantially from better protection. If households do not anticipate increased unemployment due to higher benefits, a majority supports full insurance of unemployment risk, even if only a small minority of households is unemployed at a time.

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1. Introduction

Unemployment insurance (UI) serves as both a social safety net and an important policy tool for business cycle stabilization.[1] It also accounts for one of the biggest fiscal commitments in the U.S., totaling $33.2 billion in 2024 (U.S. Department of the Treasury 2025). Including special transfers, the unemployment benefits paid to households peaked at over $500 billion in 2020. Yet, in almost all developed countries, its design is handled through the political process rather than delegated to an expert committee. Voter-determined UI can lead to higher unemployment and reduce fiscal capacity if the majority supports overly generous benefits, and can lead to financial hardship and increased inequality if it is not generous enough. Further, if UI is too low, households might try to avoid unemployment at all costs, which, in turn, might lead to misallocation of labor, causing productivity losses in the aggregate economy (see e.g., Hsieh and Klenow 2009). The gap between a democratically selected UI system and the optimal design shapes whether UI primarily stabilizes consumption or instead leads to higher unemployment.

Economic theory prescribes an optimal UI policy as a tool helping to smooth consumption as much as possible while minimizing the disincentives to work. However, voters are more likely than experts to be swayed by imperfect information, ideology, and heuristics when determining political outcomes.[2] These frictions can be pronounced in the context of UI because a large majority finances the benefits for a small minority. If employed workers are more concerned with taxation of their current income than the risk of becoming unemployed, voting could lead to under-provision of UI. This feature, the *tyranny of the majority*, is a well-known problem in majority-voting systems because a person who slightly benefits from a policy has a vote that carries the same weight as a person who substantially loses from the same policy.

Another concern is that political proposals before an election are usually more about short-term popularity than long-run societal welfare.[3] For example, in many countries, business cycle stabilization through monetary policy is under the remit of an independent central bank, preventing time-consistency problems. The long-lasting persistence of pay-as-you-go pension systems in countries with aging populations further illustrates the frictions of the political system in this context. As recent studies argue for the importance of fiscal policy as a tool for business cycle stabilization,[4] I aim to quantify the welfare costs of democracy when voters affect the level of UI.

[1] See e.g., Landais et al. (2018b), Mitman and Rabinovich (2015), and Pissarides (2000, p. 21).

[2] For instance, empirical studies have shown that media exposure affects voter turnout (Gentzkow 2006) and that candidate ideology can influence electoral outcomes (Hall 2015).

[3] The idea of *Political Business Cycles* was introduced by Nordhaus (1975) and extended to the context of government budgets (Rogoff 1990) and has strong empirical support, e.g., in Besley and Case (1995).

[4] See e.g., Eggertsson (2011) in the context of the Zero Lower Bound on interest rates and Auclert et al. (2024) using heterogeneous agent models.

In this paper, UI serves as one example among the broader class of redistributive fiscal policy instruments. For many of those, there is a first-best alternative which cannot be implemented due to political realities. As argued above, political frictions can arise from misaligned incentives of voters and policymakers, information frictions, time horizons, and many others. No matter the reason, voting can lead to suboptimal policies. Understanding the implications these political realities have can guide institutional design to ensure outcomes from a political process are more closely aligned with the first-best options.

To analyze this issue, this paper develops a model of voter behavior incorporating both labor market frictions via search and matching and imperfect insurance against idiosyncratic earnings risk. The labor market is modeled based on the Diamond-Mortensen-Pissarides (DMP) framework (Diamond 1981; Mortensen and Pissarides 1994; Pissarides 1985) while the incomplete-markets component comes from a class of models developed in Bewley (undated), Huggett (1993), and Aiyagari (1994), denoted BHA models in the following. A model combining the DMP and BHA frameworks generates rich heterogeneity across employment, income, and wealth, allowing for voting based on household tradeoffs across these dimensions. While unemployed households directly gain from higher benefits, even employed households might benefit from increased UI because households with low income and wealth have limited ability to self-insure against the risk of becoming unemployed. Conversely, richer unemployed households might prefer lower unemployment benefits because they would need to pay higher taxes once they find a new job. Because of this tradeoff across several dimensions, the outcome of the voting process is not clear a priori. By comparing the voting outcome to the welfare-optimal benefit level, I can calculate the welfare loss from voting. This will yield insights into when voter preferences align with optimal fiscal policy design and how to mitigate welfare costs that might arise from voting. I further investigate the importance of the design of UI by comparing a scheme with proportional benefits to an alternative in which benefits are constant.

In the model calibrated to the U.S. economy, I find that the welfare-maximizing equilibrium provides essentially no UI. This results from higher benefits increasing workers' outside option and thus making it more costly for firms to hire. This, in turn, leads to lower employment and output. Output costs turn out to be at least three times larger than the gains from redistributing from employed to unemployed households. Further, labor productivity risk is more severe than unemployment risk due to its higher persistence and the absence of an insurance technology. If households account for the labor market consequences of changing unemployment benefits, the median voter chooses a low level of unemployment benefits. This level coincides with the welfare-optimal level of unemployment benefits, which is essentially zero. However, if households do not internalize the increase in unemployment caused by higher benefits, they

vote for full insurance of unemployment risk. This is welfare-maximizing in partial equilibrium, but leads to the worst possible outcome in general equilibrium.

Under constant unemployment benefits, the welfare-maximizing benefit level remains close to zero while households select a replacement rate of 7.9 percent relative to average net earnings. Under this UI design, benefits primarily support households with low idiosyncratic labor productivity who have limited ability to self-insure. Therefore, more households vote for higher benefits because they are better protected if they become unemployed in the future. Relative to the optimal benefit level, aggregate welfare losses from the higher benefit level remain low at 0.08 percent in terms of consumption-equivalent variation. This illustrates that the design of social insurance systems can substantially change the political support for different policies and whether the political decisions coincide with the ones maximizing welfare.

Related Literature I contribute to the literature at the intersection of optimal unemployment insurance and dynamic political economy models. This paper also relates to research on labor markets with household heterogeneity and incomplete markets.

There is a long-standing literature on optimal UI in a principal-agent framework where the policymaker faces the tradeoff between greater insurance for risk-averse households and decreased search effort (see e.g., Baily 1978; Hopenhayn and Nicolini 1997). Shimer and Werning (2008) highlights the role of liquidity to self-insure against the risk of unemployment. This channel becomes even more important in the model I present, as it considers heterogeneity in terms of wealth and income as well. Landais et al. (2018a,b) and Mitman and Rabinovich (2015) also consider the effect of changes in benefits on firms' hiring decisions. The latter paper accounts for dynamic responses of wages to changes in benefits, which is not the case in the former paper due to its wage-setting mechanism. While I abstract from the households' moral hazard channel, I consider the firms' hiring channel as the main mechanism through which higher unemployment benefits have welfare costs. Another channel that has been studied is the expansionary demand effect of UI due to nominal rigidities. This effect increases the optimal benefit level (e.g., Kekre 2023).

A second related area of research is the literature on dynamic political economy models. Most papers in this area build on the dynamic version of the model in Meltzer and Richard (1981). Many of these papers build models in which the government collects proportional taxes and redistributes revenues lump-sum (see e.g., Aiyagari and Peled 1995; Corbae et al. 2009; Krusell and Ríos-Rull 1999) or uses the government's revenue for spending on public goods (Bachmann and Bai 2013). Of these, Aiyagari and Peled (1995) and Corbae et al. (2009) are the papers most closely related to this paper, as they use a similar mechanism to generate wealth and income inequality. These papers highlight the tradeoff between insuring households against idiosyncratic shocks and the efficient supply of labor and capital, as the taxes to finance insurance payments

are distorting with respect to both factors of production. The model in this paper mainly differs along three dimensions. First, the friction does not individually distort either labor or capital supply through taxes, but instead through firms' hiring decisions. Second, changes in the unemployment benefits and tax rates are state contingent, i.e., changes in the tax rate only affect employed households and changes in benefits only affect unemployed households (directly). Third, on top of wealth and income, I also add employment as a third dimension of heterogeneity that households have to consider in their voting decision.

In order to evaluate both labor market dynamics and voting, I construct a model closely related to the strand of the literature studying labor markets with household heterogeneity and incomplete markets. Hansen and Imrohoroğlu (1992) develops a model with exogenously determined idiosyncratic employment risk and evaluates different UI policies. Krusell et al. (2010) replaces the exogenous job creation and destruction process with a DMP block. Unlike the model in Hansen and Imrohoroğlu (1992) and the model I study, the model in Krusell et al. (2010) assumes unemployed households receive home production. Studying my research question in that paper's setting would not work as it does not include a government. The model in Krusell et al. (2010) is the one most similar to mine, but I also consider persistent differences in households' idiosyncratic productivities.

Conceptually, the most closely related paper is Wright (1986), which also studies the effect of voting on UI, mostly analytically. Crucially, that paper does not consider externalities from increased UI (through changes in the labor supply, search and matching, or search effort). It shows that voting is time-inconsistent and may lead to worse outcomes compared to welfare-optimal policy. Here, I study the interaction between voting and equilibrium job creation when households differ in terms of employment, income, and wealth.

Organization The remainder of this paper is organized as follows. A model of the labor market with household heterogeneity is presented in Section 2 and calibrated in Section 3. Section 4 presents and discusses welfare-optimal and voting equilibria, as well as the mechanisms behind them. Section 5 explores an alternative UI design with constant benefits. Section 6 concludes.

2. A Model of the Labor Market with Precautionary Savings

This section introduces a discrete-time model combining labor market frictions via search and matching and imperfect insurance against idiosyncratic labor productivity risk. The framework is similar to the approach in Krusell et al. (2010).

2.1. Search and Matching

There is a continuum of infinitely lived households of measure 1 indexed by $i \in [0, 1]$. Households are either employed (denoted $\bar{e}$) or unemployed (denoted $\bar{u}$). Unemployed households search for jobs at no cost. There is no on-the-job search. A representative firm posts vacancies at cost κ each period. Households and jobs at the firm are matched randomly using a matching function $m(\tilde{u}, \tilde{v})$. $m(\tilde{u}, \tilde{v})$ is increasing in both inputs and satisfies homogeneity of degree one, where $\tilde{u}$ and $\tilde{v}$ are the numbers of unemployed households and vacancies, respectively. Let $\theta \equiv \frac{\tilde{v}}{\tilde{u}}$ denote labor market tightness. By homogeneity of degree one, each household's probability of finding a job is given by:

$$p(\theta) \equiv \frac{m(\tilde{u}, \tilde{v})}{\tilde{u}} = m(1, \theta) \tag{1}$$

Correspondingly, the firm's probability of filling a vacancy is given by:

$$q(\theta) \equiv \frac{m(\tilde{u}, \tilde{v})}{\tilde{v}} = m(\theta^{-1}, 1) \tag{2}$$

Jobs are destroyed with exogenous probability δ each period.

2.2. Households

Each household maximizes expected lifetime utility subject to a borrowing constraint:

$$V(Z, a, u, e) = \max_{c, a'} \mathcal{U}(c) + \beta \mathbb{E}\left[V(Z', a', u', e') | Z, u, e\right] \tag{3}$$

$$\text{s.t.} \quad c + a' = (1 + r_{mf})a + y(Z, e, u) \quad \text{and} \quad a' \geq \bar{a}$$

where $\mathcal{U} : \mathbb{R}^+ \to \mathbb{R}$ is an increasing and concave utility function, β is the discount factor, r_{mf} is the interest rate the households face, Z denotes Total Factor Productivity (TFP), a is the level of asset holdings, u denotes the employment status, e denotes the idiosyncratic labor productivity, and $\bar{a}$ is the borrowing limit. The unconditional expectation of idiosyncratic labor productivity is normalized to 1, i.e., $\mathbb{E}[e] = 1$. The household's labor income $y(Z, e, u)$ depends on the employment status and the idiosyncratic labor productivity in the following way:

$$y(Z, e, u) = \begin{cases} (1 - \tau) \times w(Z, e) & \text{if} \quad u = \bar{e} \\ b \times e & \text{if} \quad u = \bar{u} \end{cases} \quad \text{and} \quad w(Z, e) = W(Z) \times e \tag{4}$$

An employed household ($u = \bar{e}$) supplies one unit of labor and receives a wage $w(Z, e)$ subject to a labor tax τ. The wage is proportional to the idiosyncratic labor productivity e and depends on the aggregate wage level $W(Z)$, which is determined by Nash bargaining. An unemployed household ($u = \bar{u}$) receives unemployment benefits $b \times e$, which are

also proportional to the idiosyncratic labor productivity e. This reflects a relationship between the unemployment benefits and the wage prior to unemployment.

2.3. Labor Unions

Labor unions negotiate wages on behalf of the households. In particular, because households have different idiosyncratic labor productivities, the labor union negotiates an aggregate wage level $W(Z)$ and pays each household according to its idiosyncratic labor productivity (see equation (4)). This has two consequences. First, the union is risk-neutral, implying that the firm does not mechanically get a bigger share of the surplus through differences in risk aversion. Second, the wage of each household does not depend on its level of asset holdings. While asset-dependent wages could be a channel amplifying inequality, this channel has been shown to be quantitatively small (Krusell et al. 2010).

Aggregating over all households, the value functions of the union for employed and unemployed members, $\tilde{W}(Z)$ and $\tilde{U}(Z)$, respectively, are defined as follows:

$$\tilde{U}(Z) = b + \beta \mathbb{E}\left[p(\theta)\tilde{W}(Z') + (1 - p(\theta))\tilde{U}(Z')|Z \right] \tag{5}$$

$$\tilde{W}(Z) = W(Z) + \beta \mathbb{E}\left[(1-\delta)\tilde{W}(Z') + \delta\tilde{U}(Z')|Z \right] \tag{6}$$

2.4. Firms

The representative firm operates a technology which is linear in labor.[5] This is a departure from the model in Krusell et al. (2010), which uses a Cobb-Douglas production function. However, this departure is not crucial for the results of the model, as that paper collects the firm's profits and returns on capital in a similar way (see Section 2.5). There is a single labor market, and the firm cannot distinguish a household's idiosyncratic labor productivity before hiring. Therefore, job creation and destruction happen independently of a household's idiosyncratic labor productivity. Thus, in expectation and in the aggregate, one employed household produces Z units of output. The firm is owned by households through a mutual fund; therefore, the firm has the same discount factor β as the households. The value of a vacancy $\tilde{V}(Z)$ and the value of a job $J(Z)$ are defined as follows:

$$\tilde{V}(Z) = -\kappa + \beta \mathbb{E}\left[q(\theta)J(Z') + (1 - q(\theta))\tilde{V}(Z')|Z \right] \tag{7}$$

$$J(Z) = Z - W(Z) + \beta \mathbb{E}\left[(1-\delta)J(Z') + \delta\tilde{V}(Z')|Z \right] \tag{8}$$

[5] The model can be equivalently represented with a continuum of firms. In this alternative formulation, each firm would hire households with different idiosyncratic labor productivities such that the aggregation for wages and production would happen at the firm level through the Law of Large Numbers.

2.5. Mutual Fund

To simplify issues related to the combination of portfolio choice and idiosyncratic risk, households can only invest in a mutual fund. The competitive mutual fund collects savings from households and invests in the firm and government bonds:

$$\Pi_{mf} = \Pi_{Firm} + r_G B_G - r_{mf} A$$

where Π_{mf} is the profit of the mutual fund, Π_{Firm} is the profit of the firm, B_G is the amount of government bonds, and A is the amount of assets invested in the mutual fund. The mutual fund earns an interest rate r_G on government bonds and pays an interest rate r_{mf} to households.

2.6. Government

The government issues bonds and collects taxes to finance unemployment insurance and government spending:

$$B'_G + \tau \times L \times W(Z) = (1 + r_G) B_G + G + b \times U \tag{9}$$

where L is the number of employed households, G is (wasteful) government spending, U is the number of unemployed households, τ is the tax rate, and b denotes unemployment benefits.

2.7. Equilibrium

Households pick consumption c and savings a' according to the following first-order optimality condition for equation (3):

$$\mathcal{U}_c(c) \geq \beta \mathbb{E}\left[V_{a'}(Z', a', u', e') | Z, u, e\right] \tag{10}$$

which holds with equality if the borrowing constraint is not binding. The envelope condition for the value function is given by:

$$V_a(Z, a, u, e) = (1 + r_{mf}) \mathcal{U}_c(c) \tag{11}$$

As usual in the search and matching literature, the free entry condition implies that the firm posts vacancies until the value of a vacancy is zero:

$$\tilde{V}(Z) = 0 \tag{12}$$

Further, as is standard in the literature, wages $W(Z)$ are determined by Nash bargaining, where the expected joint surplus of a match is given by:

$$S(Z) \equiv J(Z) - \tilde{V}(Z) + \tilde{W}(Z) - \tilde{U}(Z)$$

Nash bargaining implies that the union and the firm pick the wage to maximize the Nash product:

$$W(Z) = \arg\max_{W} \left[\tilde{W}(Z) - \tilde{U}(Z)\right]^{\eta} \left[J(Z) - \tilde{V}(Z)\right]^{1-\eta}$$

where η is the bargaining power of the union. Splitting the surplus according to Nash bargaining yields the following Nash bargaining solution:

$$\frac{\tilde{W}(Z) - \tilde{U}(Z)}{\eta} = \frac{J(Z) - \tilde{V}(Z)}{1-\eta} = S(Z) \tag{13}$$

Combining equations (5) - (8), (12), and (13) yields the following expression for the wage:

$$W(Z) = \eta Z + (1-\eta)b + \eta\kappa\theta \tag{14}$$

The firm's profits are correspondingly given by:

$$\Pi_{Firm}(Z) = L(Z - W(Z)) - \kappa\theta U$$

where θU corresponds to the total number of vacancies because L is the number of filled jobs, and U is the number of unemployed households. This can be expressed as the job creation condition:

$$\frac{\kappa}{q(\theta)} = \beta\mathbb{E}\left[(1-\eta)(Z' - b) - \eta\kappa\theta' + (1-\delta)\frac{\kappa}{q(\theta')}|Z\right] \tag{15}$$

Unemployment evolves according to the following process:

$$U' = (1 - p(\theta))U + \delta(1 - U)$$

As the mutual fund operates in perfect competition, the interest rate r_{mf} must ensure that the mutual fund makes zero profits:

$$\Pi_{mf} = 0 \quad \Rightarrow \quad r_{mf} = \frac{\Pi_{Firm}(Z) + r_G B_G}{A}$$

Let $F(Z, a, u, e)$ denote the distribution of households over assets, employment status, and idiosyncratic labor productivity and let Φ denote the transition function of the distribution of households. Φ includes the matching process, the unemployment law

of motion, the TFP law of motion, the idiosyncratic labor productivity law of motion, and the households' decision rules.

$$F(Z', a', u', e') = \Phi(F(Z, a, u, e)) \tag{16}$$

Further, markets clear in the asset, labor, and goods markets:

$$A^s \equiv \int_0^1 a \, di = A \tag{17}$$

$$U + L = 1 \tag{18}$$

$$\text{where} \quad U \equiv \int_0^1 \mathbb{1}\{u = \bar{u}\} \, di \quad \text{and} \quad L \equiv \int_0^1 \mathbb{1}\{u = \bar{e}\} \, di$$

$$Y \equiv ZL = C + G + \kappa\theta U \tag{19}$$

Let $s \equiv (Z, a, u, e) \in \mathcal{S}$ denote the state of each household, where $\mathcal{S} \equiv \mathbb{R}^2 \times \{\bar{u}, \bar{e}\} \times \mathbb{R}$ is the state space.

DEFINITION 1 (RECURSIVE STATIONARY EQUILIBRIUM). A recursive stationary equilibrium is a set of value functions $(V : \mathcal{S} \to \mathbb{R}; \tilde{V}, J, \tilde{U}, \tilde{W} : \mathbb{R} \to \mathbb{R})$, decision rules $(c, a' : \mathcal{S} \to \mathbb{R}; B'_G : \mathbb{R} \to \mathbb{R})$, prices (r_{mf}, r_G, W), vacancies (v), matching probabilities (p, q), a distribution of households over assets, employment, and idiosyncratic productivity $(F : \mathcal{S} \to \mathbb{R})$, and a transition function $(\Phi : F \to F)$ such that:

1. For a given set of prices, households' decision rules solve their respective optimization problems (equations (10) and (11)),
2. The firm and unions optimize given value functions and decision rules (equations (5) - (8)),
3. The free entry condition holds (equation (12)),
4. The matching probabilities are consistent with the matching function (equations (1) and (2)),
5. The wage function is determined by the Nash bargaining solution (equation (14)),
6. The government budget constraint holds (equation (9)),
7. Asset, labor, and goods markets clear (equations (17) - (19)),
8. The distribution of households is generated by the matching process, unemployment law of motion, and households' decision rules (equation (16)), and
9. The distribution of households is stationary:

$$F'(Z, a, u, e) = F(Z, a, u, e) \quad \forall \, (Z, a, u, e) \in \mathcal{S}$$

2.8. Welfare

Let $V(Z, a, u, e, b)$ denote the household's value function under benefit level b and $F(Z, a, u, e, b)$ the corresponding stationary distribution of households. As different

levels of unemployment benefits affect precautionary savings motives and equilibrium unemployment, the stationary distribution will depend on the benefit level, which I capture by denoting the distribution as $F(Z, a, u, e, b)$. Welfare is defined as the average lifetime value of all households:

$$\mathcal{W}(b) \equiv \int_0^1 V(Z, a, u, e, b)\, di = \int V(Z, a, u, e, b)\, dF(Z, a, u, e, b)$$

Assuming the government is utilitarian, the government chooses the optimal level of unemployment benefits to maximize welfare:

$$b^W = \arg\max_{b \in \mathcal{B}} \mathcal{W}(b)$$

For easier interpretation, I measure welfare in terms of consumption-equivalent variation (CEV). Relative to a baseline level of no unemployment benefits, $b = 0$, the CEV measures the percentage change in every household's consumption yielding the same welfare as under the baseline level. Further, I define the replacement rate as the ratio of unemployment benefits to the net wage:

$$R \equiv \frac{b}{(1-\tau)W(Z)} \tag{20}$$

Because of the government's budget constraint, an increase in b will increase R more than one-to-one as τ rises with b. This increases the numerator and decreases the denominator in equation (20). As is typical in DMP models, no solution exists if $b > Z$, as this would imply that $W(Z) < b$. Although technically possible, I will not consider cases where $R \geq 1$ (compared to the previous case, this includes taxes), as this would imply that the government pays more than the net wage to unemployed households. In either case, households would prefer being unemployed over having a job.

When setting the optimal benefit level, the government faces an insurance-efficiency tradeoff. Higher UI implies that unemployed households, who are poorer and consume less, are better insured against this risk through a stronger social safety net. It would be welfare-improving to take some income from employed households, who consume on average more, and give it to unemployed households because these have a higher marginal utility of consumption. However, by doing so, the joint surplus of a match, $S(Z)$, decreases due to the better outside option of households. For a fixed cost of posting vacancies, firms will post fewer vacancies as a consequence, decreasing equilibrium labor market tightness and therefore increasing unemployment. Through this channel, output decreases and the government has to decide how much output it wants to sacrifice for a more equal distribution of consumption.

2.9. Voting

Voting takes place in a procedure similar to Meltzer and Richard (1981). Let $\mathcal{B}$ denote the set of levels of unemployment benefits available to households. I assume that $\mathcal{B}$ is finite. Given state $s = (Z, a, u, e)$, a household votes for a single level of unemployment benefits $b \in \mathcal{B}$ if:

$$V(Z, a, u, e, b) > V(Z, a, u, e, \tilde{b}) \quad \forall \tilde{b} \in \mathcal{B} \backslash b \tag{21}$$

If there exists a subset $\mathcal{A} \subseteq \mathcal{B}$ such that:

$$V(Z, a, u, e, b) = V(Z, a, u, e, \hat{b}) \text{ and } V(Z, a, u, e, b) > V(Z, a, u, e, \tilde{b}) \ \forall b, \hat{b} \in \mathcal{A} \ \forall \tilde{b} \in \mathcal{B} \backslash \mathcal{A}$$

then the probability that a household votes for option $b \in \mathcal{A}$ is split equally among all options in $\mathcal{A}$. This will result in votes being split equally among options in $\mathcal{A}$. A household's voting decision is defined as the probability that a household votes for option b from the set of options $\mathcal{B}$ as the function $\psi_{\mathcal{B}}(b, s)$, where $\psi_{\mathcal{B}} : \mathcal{B} \times \mathcal{S} \to [0, 1]$. Aggregate voting behavior is described as follows:

$$\Psi_{\mathcal{B}}(b, \tilde{b}) = \int \psi_{\mathcal{B}}(b, s) \, dF(Z, a, u, e, b \mid b = \tilde{b}) \quad \text{where} \quad \tilde{b} \in \mathcal{B} \tag{22}$$

$\Psi_{\mathcal{B}}(b, \tilde{b})$ defines the share of votes for option b for a given distribution of households that was constructed using benefit level $\tilde{b}$. By definition, all votes add up to the mass of households:

$$\int_{\mathcal{B}} \Psi_{\mathcal{B}}(b, \tilde{b}) \, db = 1 \tag{23}$$

DEFINITION 2 (RECURSIVE STATIONARY MEDIAN VOTER EQUILIBRIUM). A recursive stationary median voter equilibrium is a set of value functions $(V : \mathcal{S} \to \mathbb{R}; \tilde{V}, J, \tilde{U}, \tilde{W} : \mathbb{R} \to \mathbb{R})$, decision rules $(c, a' : \mathcal{S} \to \mathbb{R}; B'_G : \mathbb{R} \to \mathbb{R})$, prices (r_{mf}, r_G, W), vacancies (v), matching probabilities (p, q), a distribution of households over assets, employment, and idiosyncratic productivity $(F : \mathcal{S} \to \mathbb{R})$, a transition function $(\Phi : F \to F)$, a voting function $(\psi_{\mathcal{B}} : \mathcal{B} \times \mathcal{S} \to [0, 1])$, a level of unemployment benefits (b^*), and a set of potential unemployment benefits $(\mathcal{B})$ such that:

1. The value functions, decision rules, prices, vacancies, matching probabilities, and distribution of households are consistent with Definition 1 for the given level of unemployment benefits b^*,
2. The voting function $\psi_{\mathcal{B}}(b, s)$ is consistent with the value function (equation (21)),
3. Aggregate voting behavior $\Psi_{\mathcal{B}}(b, b^*)$ is consistent with the distribution of households and complete (equations (22) and (23)), and
4. The level of unemployment benefits chosen is consistent with the aggregate voting behavior:

$$\int_{\{b \in \mathcal{B} : b \geq b^*\}} \Psi_{\mathcal{B}}(b, b^*) \, db \geq 0.5 \quad \text{and} \quad \int_{\{b \in \mathcal{B} : b \leq b^*\}} \Psi_{\mathcal{B}}(b, b^*) \, db \geq 0.5$$

The last condition in Definition 2 states that at least half of the households vote for a benefit level that is at least as high as the current level b^* and at least half of the households vote for a benefit level that is at most as high as the current level b^*. As shown in Azzimonti et al. (2006), the preferences in a similar environment are single-peaked and therefore the voting outcome yields a unique stationary median voter equilibrium. Further, households do not have an incentive to vote strategically to influence the outcome of the vote closer to their preferred option.

Like the government, households trade off more insurance against higher taxes and lower output when casting their vote on the level of UI. However, voters face these tradeoffs at an individual level. Unemployed households will benefit directly from higher benefits and thus are more likely to vote for more generous UI. Employed households, on the other hand, are worse off due to an increase in benefits, as they have to bear higher taxes and will thus likely reject higher benefits. Moreover, all households anticipate that higher UI will increase unemployment and decrease output. However, households also consider the effects of changes in benefits and taxes upon finding or losing a job in the future. It may therefore be possible that some employed households with low idiosyncratic labor productivity vote for high unemployment benefits, despite being employed, since UI reduces their risk if they stay unemployed for a long time. Conversely, the effect of increased taxes may dominate for unemployed households with high labor productivity because they expect to pay substantially more in taxes once they find a job. It is therefore not clear to what extent employment status predicts households' policy preference over unemployment benefits.

3. Calibration and Computation

This section describes the calibration strategy and the computational methods used to solve the model. Further, it presents and discusses the equilibrium of the calibrated model economy.

3.1. Calibration

One period corresponds to six weeks. As is standard in the business cycle literature, I set $\beta = 0.995$ to obtain an annual discount rate of 4 percent. The utility function has the constant relative risk-aversion (CRRA) form, $\mathcal{U}(c) = \frac{c^{1-\sigma}}{1-\sigma}$ with $\sigma = 1$, such that $\mathcal{U}(c) = \log(c)$. As in Krusell et al. (2010), the borrowing limit is set to $\bar{a} = 0$ such that households cannot accumulate debt. The interest rate on government bonds is set to $r_G = 0.0025$ to match an annual risk-free real interest rate of 2 percent. The supply of government bonds, B_G, is set to match a debt-to-GDP ratio of 120 percent in the U.S. Similarly, government spending, G, is set to match 18 percent of GDP (excluding unemployment benefit payments; U.S. Department of the Treasury 2025).

Shimer (2005) estimates the average monthly job-finding probability to be $p_m(\theta) = 0.45$. The corresponding vacancy-filling probability is estimated by den Haan et al. (2000) as $q_m(\theta) = 0.71$. This implies a steady-state labor market tightness of $\theta = \frac{p_m(\theta)}{q_m(\theta)} = 0.634$. This is in line with the direct estimate of 0.539 by Hall (2005) using the Job Openings and Labor Turnover Survey (JOLTS). As Hagedorn and Manovskii (2008) notes, this discrepancy is expected as the data in Hall (2005) only cover a recession and a recovery, which was slower than usual, and some vacancies are not captured in JOLTS. Further, Hagedorn and Manovskii (2008) estimates a monthly job separation rate of $\delta_m = 0.026$. Using $U = \frac{\delta_m}{\delta_m + p_m(\theta)}$ yields an unemployment rate of $U = 0.055$. Similar to Hagedorn and Manovskii (2008), I convert these monthly estimates to the corresponding probabilities for six weeks. This results in $p(\theta) = 0.592$, $q(\theta) = 0.934$ and $\delta = 0.0345$.[6]

The output per period is normalized to $Y = 1$. In order to achieve this, $Z = \frac{1}{1-U} = 1.058$. Following Shimer (2005) and Krusell et al. (2010), I use a Cobb-Douglas matching function:

$$m(\tilde{u}, \tilde{v}) = \mu \tilde{u}^{\gamma} \tilde{v}^{1-\gamma} \tag{24}$$

In equation (24), I set $\gamma = 0.72$ and $\mu = 0.67$, where the latter parameter scales the matching function to ensure that the steady-state labor market tightness is consistent with the job-finding and vacancy-filling probabilities.[7] As in Shimer (2005), I set the level of unemployment benefits to match an average replacement rate of 40 percent of gross wages, $b/W = 0.4$.

The idiosyncratic labor productivity process is calibrated to match earnings data from the Panel Study of Income Dynamics (PSID), following Krueger et al. (2016) using an AR(1) process. Unlike Krueger et al. (2016), I use a standard AR(1) process without permanent shocks:

$$\log(e') = \rho_e \log(e) + \varepsilon_e \quad \text{where} \quad \varepsilon_e \sim N(0, \sigma_e^2) \tag{25}$$

The estimates for the parameters in equation (25) are $\rho_{e,annual} = 0.9695$ and $\sigma^2_{e,annual} = 0.0522$. As PSID data are annual, I use the following transformation to convert the estimates to a frequency of six weeks, similar to Krueger et al. (2016):

$$\rho_{e,6weeks} = \rho^{1/8}_{e,annual} \quad \text{and} \quad \sigma^2_{e,6weeks} = \frac{1 - \rho^2_{e,6weeks}}{1 - \rho^2_{e,annual}} \sigma^2_{e,annual}$$

The corresponding parameters for six weeks are $\rho_{e,6weeks} = 0.9961$ and $\sigma^2_{e,6weeks} = 0.0067$. Lastly, I discretize the idiosyncratic productivity process using Rouwenhorst's method

[6] The converted job-finding probability is $p(\theta) = 1 - (1 - p_m(\theta))^{6/4} = 0.592$ and the vacancy-filling probability is given by $q(\theta) = \frac{p(\theta)}{\theta} = 0.934$. Lastly, the job separation rate can be calculated via $\delta = p(\theta)\frac{U}{1-U} = 0.0345$.

[7] To avoid cases where the job-finding or vacancy-filling probabilities would be larger than 1, I further enforce that the number of matches is $\min\{m(\tilde{u}, \tilde{v}), \tilde{u}, \tilde{v}\}$. This guarantees $p(\theta), q(\theta) \in [0, 1]$ and $p(\theta) = \theta q(\theta)$.

(Rouwenhorst 1995) into a seven-state Markov chain (see Kopecky and Suen 2010, for a detailed discussion of the method).

The remaining parameters, r_{mf}, τ, η, and κ, are calibrated to ensure market clearing and that the government budget constraint, the free-entry condition of the firm, and the zero-profit condition of the mutual fund hold. The internal calibration of these parameters can be seen in Table 1.

TABLE 1. Internal Calibration of Parameters

Parameter	Name	Value	Target
r_{mf}	Mutual fund return	0.0045	Asset market clearing
τ	Tax rate	0.3517	Government budget constraint
η	Union's bargaining power	0.8998	Zero-profit condition
κ	Per-period vacancy cost	0.1058	Free entry condition

The return of the mutual fund is close to the interest rate that would prevail under complete markets ($r_{cm} = \beta^{-1} - 1 = 0.0050$). This is because the labor productivity process is not volatile enough to generate a strong precautionary savings motive. Therefore, the economy should, in aggregate, behave similarly to a complete market economy (i.e., a basic DMP model with risk-averse agents). The tax rate of $\tau = 0.3517$ is relatively high and mostly used to finance government spending and interest payments on government bonds, while paying for unemployment benefits accounts for a small share of overall government expenditures. The union's bargaining power, $\eta = 0.8998$, is high compared to other studies (e.g., Shimer 2005 uses $\eta = 0.72$ to account for the Hosios Rule, Hosios 1990, Mitman and Rabinovich 2015 uses $\eta = 0.078$). Because of the mutual fund structure, this parameter is mainly used to make sure the zero-profit condition holds. A lower bargaining power parameter would imply that the mutual fund receives more income from increased firm profits. Thus, to overcome this issue, one could increase the difference between the mutual fund return and the interest rate on government bonds by decreasing r_G (annualized) below 2 percent. Doing so does not affect the main results. The vacancy posting cost is broadly in line with Shimer (2005), which uses $\kappa = 0.213$, and Hagedorn and Manovskii (2008), which estimates the vacancy cost to be 58 percent of weekly labor productivity when accounting for different period lengths of the models. Note that the Hosios (1990) Rule does not apply here as households are risk-averse and therefore maximizing output is not equivalent to maximizing welfare (see Mitman and Rabinovich 2015, for a detailed discussion of the rule's applicability in this context).

3.2. Computation

Computationally, as described in Krusell et al. (2010), solving a model combining the DMP and BHA frameworks is more complicated than solving standard BHA models,

as the latter involve a fixed-point problem in a single dimension (the interest rate). However, the model I consider (and the one in Krusell et al. 2010) involves a fixed point in multiple variables. To solve the model, I divide it into blocks that I can solve separately. For given parameter values $(r_{mf}, \tau, \eta, \kappa)$, I first solve the household's problem using the Endogenous Gridpoint Method (Carroll 2006). I then compute the stationary distribution of households and aggregate asset supply. I update the parameter values based on the residuals of the asset-market-clearing condition, the government budget constraint, the firm's free-entry condition, and the mutual fund's zero-profit condition until they are jointly satisfied.

3.3. Calibration Results

FIGURE 1. Average Consumption by Labor Productivity and Employment Status

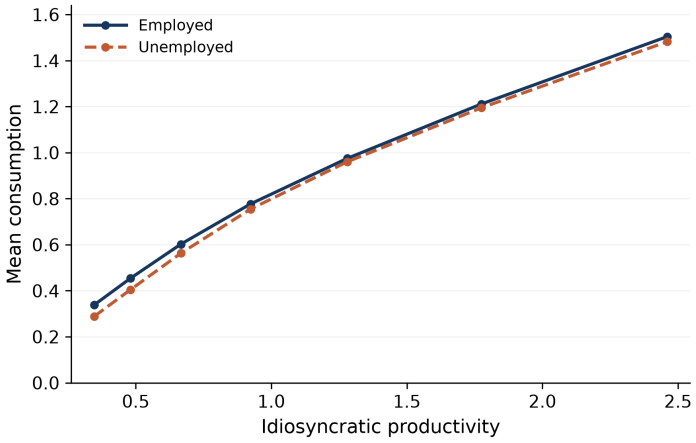


Figure 1 shows the average consumption choice by productivity state and employment status. As expected, consumption is increasing in labor productivity and is higher for employed than unemployed households. Two things are noteworthy. First, the change between any two labor productivity states is higher than the difference between the average consumption of employed and unemployed households within the same labor productivity state. Second, the difference in average consumption between employed and unemployed households is slightly bigger at low labor productivity.

Labor productivity is a stronger predictor of consumption than employment because of the different natures of idiosyncratic risks the household faces. The household reacts more strongly to labor productivity shocks as they are more persistent and there is limited room for insurance, i.e., only through savings. The high persistence of the labor productivity process ($\rho_e = 0.9961$) means that the process takes substantial time to revert to its mean. Thus, the household has to change consumption significantly in order to smooth it if it is hit by a labor productivity shock. Conversely, the risk of unemployment is low, and even if the household becomes unemployed, unemployment

is much less persistent as the probability of finding a job is $p(\theta) = 0.592$. Therefore, the expected duration of unemployment is $\mathbb{E}[T_u] = \frac{1}{p(\theta)} = 1.689$ periods. Further, the insurance device helps the household significantly as it is conditional on unemployment (when marginal utility is high), and it also depends on labor productivity, so even highly productive households are not subject to an enormous drop in income. This adds little incentive to save for insurance against unemployment, as becoming unemployed is not severe enough.

Unemployment causes larger consumption drops for households with lower productivity, as they are poorer. A persistent income process causes wealth and income distributions to be highly correlated. Therefore, highly productive households usually have more assets that they can use to smooth their consumption. On the other hand, households with low labor productivity are usually closer to the borrowing constraint and therefore cannot do the same as they have few assets.

FIGURE 2. Asset Distribution by Employment Status

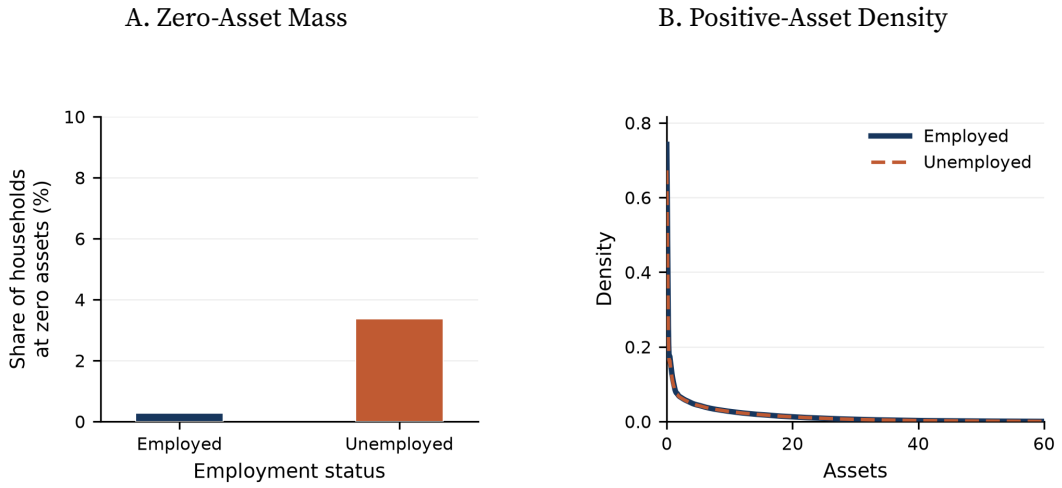


Figure 2 presents the asset distribution the model generates conditional on employment status. Panel 2A presents the mass at the borrowing constraint, while panel 2B shows the remainder of the asset distribution. For both employed and unemployed households, there is a quantitatively small, but noticeable, fraction at the borrowing constraint. This is not the case in Krusell et al. (2010) since that paper does not include idiosyncratic labor productivity. The asset distributions are remarkably similar for employed and unemployed households. Unemployed households have more than ten times the mass at the borrowing constraint while employed households have slightly more mass for the rest of the distribution.

The asset distributions for employed and unemployed households are similar because unemployment is not persistent enough and insurance against it is available. Since, conditional on labor productivity, consumption decisions are similar for both employed and unemployed households, so are their savings decisions. Because of this,

and the fact that unemployment and labor productivity risks are independent, asset holdings are similar as well. On top of that, households do not need to use much of their assets during unemployment for consumption smoothing because unemployment is usually short ($\mathbb{E}[T_u] = 1.689$). This creates the small difference in distributions in Figure 2, which only becomes substantial at the borrowing constraint.

The model in Krusell et al. (2010) fails to generate substantial differences in wealth distributions between employed and unemployed households. As that model abstracts from idiosyncratic labor productivity risk, comparing its results to Figure 2 highlights the role of this dimension of heterogeneity. This comparison illustrates that including idiosyncratic labor productivity increases inequality within the group of employed or unemployed households, respectively, but not inequality between these groups. The calibration shows that the model generates higher risks from labor productivity than unemployment. Voters now must decide on the benefit level, balancing these risks.

4. Welfare and Voting Analysis

Having calibrated the model, I discuss whether voters pick the level of unemployment benefits that maximizes social welfare. First, I discuss the labor market equilibria under different benefit levels and how these affect labor market variables as well as tax and interest rates. Next, I compare welfare under optimal UI policy and the median voter equilibrium, decompose the results into job-creation and insurance channels, and explore which households support which policy.

4.1. Labor Market Response to Changes in Unemployment Benefits

In order to evaluate the welfare effects of changes in UI, I first derive the equilibrium labor market response to changes in unemployment benefits b. To do so, I use the parameters from Section 3.1 and find the equilibrium labor market tightness from the job creation condition (equation (15)) and back out the unemployment rate. I use these to compute the prices for which the new labor market tightness and unemployment benefits are consistent with a stationary equilibrium according to Definition 1.

Table 2 presents the resulting labor market outcomes for different levels of benefits with the replacement rate R ranging between 0.1 and 99.9 percent. The case with a replacement rate of $R = 0.617$ corresponds to the baseline case with a gross replacement rate of $b/W = 0.4$. Further, increasing UI decreases equilibrium labor market tightness θ through the firm's hiring channel and thus decreases the job-finding probability and increases unemployment. The lowest level of unemployment benefits yields an unemployment rate of just 4.80 percent, and the highest level gives 8.12 percent.

TABLE 2. Labor Market Outcomes for Varying Benefit Levels

R	θ	$p(\theta)$	Unemployment	τ	r_{mf}
0.001	1.0643	0.6846	0.0480	0.3238	0.00443
0.100	0.9926	0.6713	0.0489	0.3280	0.00445
0.300	0.8504	0.6429	0.0508	0.3367	0.00447
0.500	0.7124	0.6118	0.0533	0.3460	0.00449
0.617	0.6338	0.5921	0.0550	0.3517	0.00450
0.700	0.5789	0.5633	0.0577	0.3572	0.00451
0.900	0.4544	0.4437	0.0721	0.3791	0.00453
0.999	0.3995	0.3900	0.0812	0.3928	0.00453

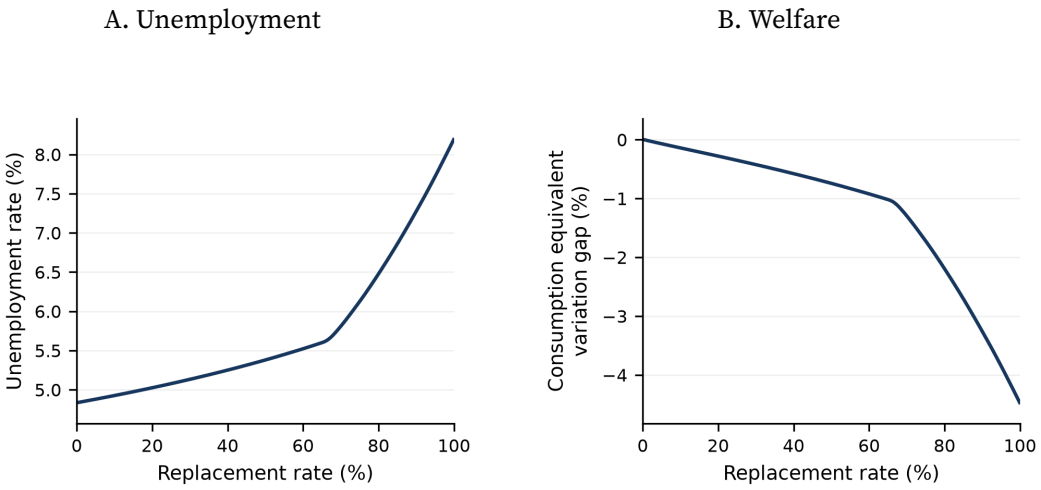
In order to fund the increase in benefits, taxes also rise with R. As the government uses most of the tax revenue to finance non-UI spending and interest payments, the tax rate only varies moderately and is always between 32 and 40 percent. When unemployment benefits rise, taxes have to fund the increase and provide benefits to the additional unemployed households that were previously employed. Tax rates therefore rise faster if R is large because it gets more expensive to fund an increase in unemployment benefits as more households become unemployed.

The last variable of interest is the interest rate. As unemployment benefits increase, so does the interest rate of the mutual fund. This is because higher UI decreases the risk of a substantial consumption drop when becoming unemployed. Therefore, households have a weaker precautionary saving motive, and as a result, the interest rate households face (r_{mf}) has to rise towards the interest rate prevailing under complete markets. However, r_{mf} does not fully converge to the complete markets interest rate even in the limiting case where $R \to 1$. In that case, households would be fully insured against the risk of unemployment, but the idiosyncratic labor productivity risk would still be present, and no device is available to fully insure against this risk.

4.2. Optimal Policy and Voting Equilibria

Figure 3 presents the equilibrium unemployment rate (panel 3A) and welfare effect (panel 3B) in response to changes in unemployment benefits. As the replacement rate rises, welfare decreases and the effect is strongest at high replacement rates. This happens because unemployment rises faster at high replacement rates, which is indicated by the welfare and unemployment graphs having a similar shape. There is also a kink at a replacement rate of 70 percent, where the vacancy-filling probability reaches one. At higher replacement rates, every vacancy is filled and the number of matches is constrained by the number of vacancies. Because of that, unemployment rises and welfare decreases faster at replacement rates above 70 percent.

FIGURE 3. Welfare Effects of Changes in Unemployment Benefits



In the tradeoff between higher insurance and higher output, the output effect always dominates. As seen from Figure 1, the drop in consumption from losing a job is small compared to the difference in consumption between labor productivity states in the baseline calibration of Section 3.1. Employed and unemployed households have similar marginal utilities of consumption, and therefore there is little room for welfare gains from redistribution between them. In contrast, increasing unemployment benefits is highly distortive as it creates substantial unemployment and hence output losses. The U.S. baseline calibration results in a welfare loss of 0.95 percent in terms of CEV relative to the optimal level of no unemployment benefits.

FIGURE 4. Voting Equilibrium

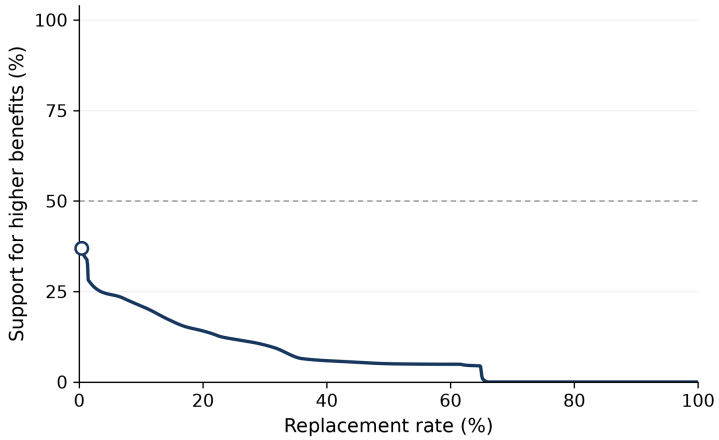


Figure 4 shows the aggregate voting outcome between different replacement rates R. The figure shows the share of households that would prefer a higher level of unemployment benefits at each net replacement rate. The median voter equilibrium is the rate where this share crosses 50 percent. If the share is always below 50 percent, as it is in Figure 4, the equilibrium replacement rate is $R = 0$. Conversely, if it is always

above 50 percent, the equilibrium replacement rate would be $R = 1$. The equilibrium replacement rate is indicated by the blue circle. The electorate selects the option of near-zero unemployment benefits. At this level less than 40 percent of households prefer a benefit level above the status quo.[8] As benefits rise, the share of households supporting even higher benefits declines until, at a replacement rate of 65 percent, no household prefers higher benefits. The equilibrium level of no unemployment benefits chosen by households coincides with the welfare-maximizing level.

4.3. Mechanisms and Voter Support

The coincidence of the optimal benefit level and median voter equilibrium at no UI raises the question of which channel drives the result. The model features two distinct mechanisms: the insurance effect, where households trade higher benefits against higher taxes (see Section 2.9), and the output effect, whereby higher UI depresses output through higher unemployment. In order to understand the impact of these channels, I decompose the optimal benefit level and median voter equilibria into the contributions of each mechanism individually. When only the output effect is at play, both solutions result in zero UI. In contrast, the predictions from the insurance effect can go in either direction. If households care more about tax costs than insurance gains, the two mechanisms reinforce each other, predicting minimal benefits. However, if the value of additional insurance is higher, it partially counteracts the output channel's downward pressure on unemployment benefits.

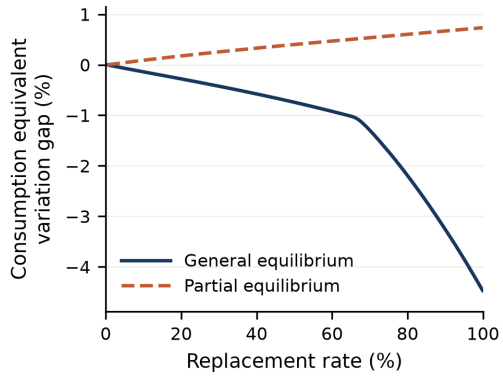
To gauge the welfare effect of insurance only, I shut down the channel on unemployment by solving the model and keeping labor market tightness (and thus the unemployment rate) fixed. Doing so also helps me to consider a median voter equilibrium where households do not internalize the general equilibrium effects of changes in unemployment benefits. In that specification, there are no aggregate negative consequences of increasing UI anymore. As in Wright (1986), the optimal policy in this case is to fully insure households against the risk of unemployment. The unemployment benefits should approach post-tax wages such that optimally $R \to 1$.

Panel 5A presents the welfare effects of changes in unemployment benefits for a fixed unemployment rate (partial equilibrium). Consistent with Wright (1986), higher benefits increase overall welfare by moving consumption from employed to unemployed households. A concave utility function implies that increasing unemployment benefits has the strongest welfare effect at low replacement rates because the difference in marginal utilities between employed and unemployed households is the highest. Compared to the scale in Figure 3, the gains from increased insurance against unemployment risk are substantially smaller than the welfare losses from increased unemployment. Full insurance of unemployment risk can at most achieve welfare

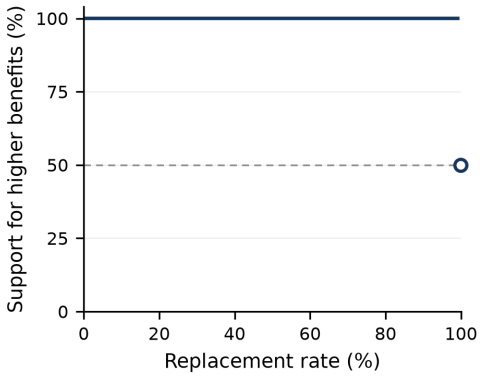
[8] I checked that preferences are indeed single-peaked under all evaluated policies.

FIGURE 5. Welfare and Voting with Fixed Unemployment

A. Welfare



B. Voting Equilibrium



gains of around 1 percent in terms of CEV, while the welfare losses due to aggregate effects of increased UI reach 1 percent CEV at much lower replacement rates.

Panel 5B illustrates the median voter equilibria in partial equilibrium. Contrary to the general equilibrium case, households always vote for higher benefits, arriving at a voting equilibrium with a replacement rate of $R = 1$, consistent with the partial-equilibrium welfare-maximizing solution. All employed households support full insurance of unemployment risk. Given that most households do not directly benefit from increased UI, this seems counterintuitive. In fact, all employed households directly lose through higher taxes. However, they vote in this way due to their precautionary savings motive. Higher benefits decrease precautionary savings, and financing UI is not as costly as only a small fraction of households is unemployed at a time. In the tradeoff between lower precautionary savings and higher taxes, the latter effect never dominates for any household, not even for those with high idiosyncratic productivity who bear a major part of the cost of financing increased benefits. The insurance gain is strong enough to overcome the *tyranny of the majority*.

The differences between the partial and general equilibrium considerations highlight the crucial role of households' expectations when voting on UI. If households correctly account for the change in the unemployment rate as a consequence of changes in unemployment benefits, they will vote for the welfare-maximizing solution. However, if they do not incorporate this effect and only consider the direct insurance consequences, the equilibrium replacement rate will be too high, which has enormous output costs. Thus, the median voter equilibrium is consistent with the welfare-optimal level of unemployment benefits only if households correctly account for the general equilibrium effects.

Households weigh the insurance gains and equilibrium costs differently because of their different individual circumstances. Returning to general equilibrium, I will

analyze the impact of employment status and wealth on households' voting decisions. Unemployed households may vote differently because their expected gains from higher UI are higher than those of employed households, making it more likely for them to vote for higher benefits. For wealth, the main consideration is that households with more wealth are better able to smooth consumption when becoming unemployed. Increased proportional taxes on their usually high wages should reduce their individual gains from higher benefits. Conversely, poorer households should see larger relative gains from increased UI and therefore provide stronger support for increased benefits.

FIGURE 6. Support for Higher Benefits by Employment Status and Wealth

A. Employment Status

B. Wealth Quintile

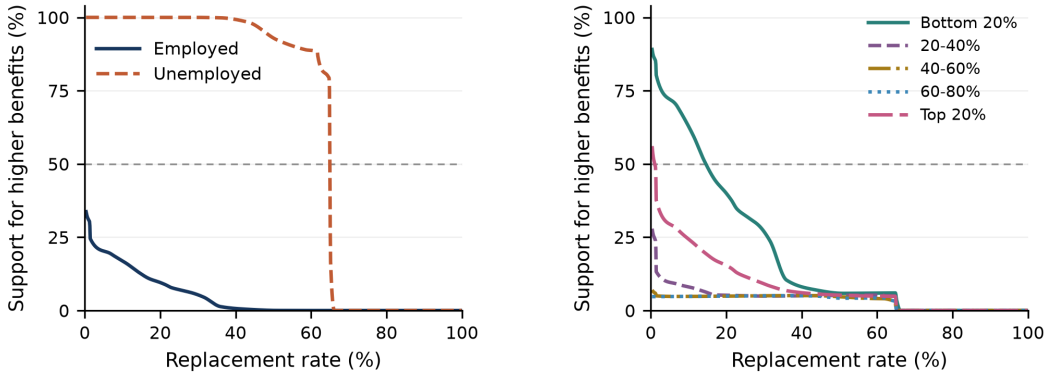


Figure 6 presents the conditional voting decisions by employment status (panel 6A) and wealth quintile (panel 6B) in an illustration similar to Figure 4. As expected, unemployed households support much more generous UI than employed ones, with a large majority supporting replacement rates above 60 percent. However, at a replacement rate of 65 percent, the aggregate costs outweigh the benefits even for unemployed households and no one supports higher benefits anymore. For employed households, the support is more mixed with many supporting no UI. There are also some employed households supporting positive benefits because they realize that they would particularly benefit from insurance if they become unemployed. However, the support for higher benefits quickly falls as the replacement rate increases. The large share of employed households in the population means that the overall voting equilibrium is primarily driven by their voting decisions.

The voting decisions by wealth are presented in panel 6B. As expected, the poorest households provide the strongest support for providing higher benefits because they cannot self-insure against unemployment. Considering only the bottom wealth quintile, households would prefer a replacement rate of 15 percent. Moving along the wealth distribution, support for higher benefits decreases from the first to the fourth quintile. However, the wealthiest 20 percent of households support higher

benefits than households in the second quintile. Support from both ends of the wealth distribution means that voting on UI is not merely a divide between rich and poor.

However, it seems counterintuitive that wealthier households, who typically earn higher wages and thus bear a major part of the financing costs, support higher benefits than households in the middle of the wealth distribution. There is another consideration, asset returns, which is negligible for households with low assets but relevant for wealthy households. Because increased benefits decrease the incentive to self-insure, households want to hold fewer assets, putting upward pressure on interest rates. This channel only benefits the very rich in a meaningful way but is strong enough to explain why more wealthy households support higher benefits than ones in the middle of the wealth distribution who mainly consider financing costs and aggregate employment. Across the wealth distribution, households have quite different reasons for their voting decisions. Households low in the wealth distribution gain from increased insurance. Well-off households in the middle gain little from increased UI because they can self-insure. Wealthy households gain from slightly higher returns on a large asset stock.

5. Flat Unemployment Benefits

This section considers a different design of UI with flat unemployment benefits. A common concern about UI systems with proportional benefits is their fairness. If the purpose of UI is to secure basic livelihoods rather than living standards, making benefits a fixed fraction of a household's pre-unemployment wage will over-insure households with high wages (and thus wealthy ones) while not providing enough insurance to households that are less well-off. Therefore, proportional unemployment benefits may be regressive. This regressivity can be directly addressed by paying all unemployed households the same level of benefits. Several countries such as the U.K., Finland, and Sweden use fixed unemployment benefits or a hybrid system combining fixed and proportional benefits. These systems raise the question of whether a more progressive UI system may change optimal benefits and the median voter's preferences.

In the case of flat unemployment benefits:

$$y(Z, e, u = \bar{u}) = b \quad \perp\!\!\!\perp e$$

This means that unemployed households receive constant unemployment benefits b that do not depend on their idiosyncratic labor productivity e. This benefit rule specifically helps households with low labor productivity, as these have high marginal utility of consumption. At the same time, the system only differs in how benefits are distributed, and it does not create a different equilibrium output effect. If the new UI

design provides enough insurance to low-productivity households, it could raise the welfare-maximizing benefit level as well as households' support for providing UI.

I recalibrate the model with the same structural parameters as in Section 3.1 using the same average gross replacement rate of $b/W = 0.4$. Mirroring the analysis in Section 4, I define the following average-worker replacement rate:

$$\tilde{R} \equiv \frac{b}{(1-\tau)W}$$

which corresponds to the replacement rate of a household with average idiosyncratic labor productivity, $e = 1$, and equals benefits relative to average net earnings. The individual replacement rate is given by $\tilde{R}/e$. In the baseline calibration, $\tilde{R} = 0.618$. Here, because benefits are not capped, it is possible that households, particularly those with low idiosyncratic labor productivities, receive higher unemployment benefits than their post-tax wages. However, they cannot choose to remain unemployed.

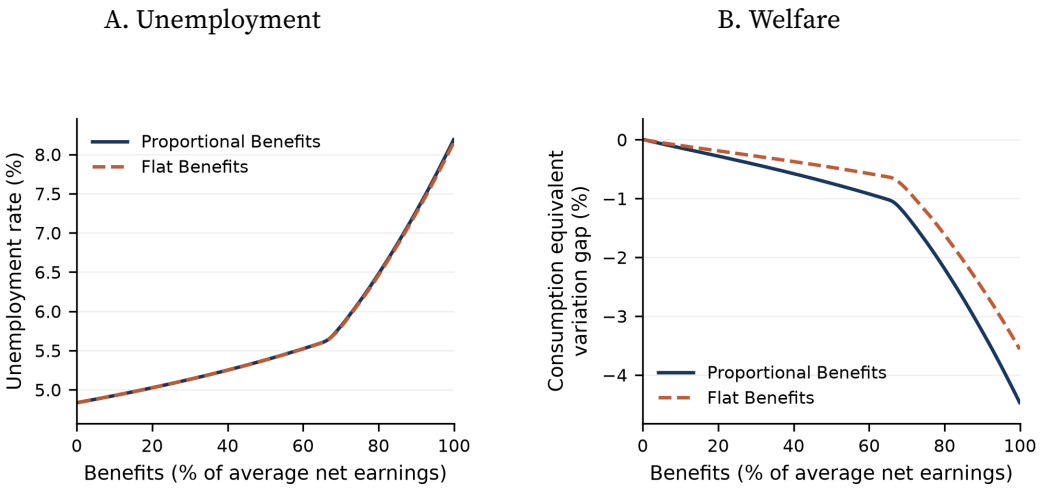
Unlike in the model with proportional unemployment benefits, the difference between the consumption of employed and unemployed households increases with labor productivity (see Appendix Figure A-1). This is not surprising as the fixed benefits make households in the lower productivity states better off while households in higher productivity states are worse off. Indeed, unemployed households with lower labor productivity consume more than their employed counterparts.

Looking at wealth, the asset distributions are again similar for employed and unemployed households. However, the share of households at the borrowing constraint increases from 0.5 to 7.8 percent relative to proportional benefits. Further, the asset distribution is more dispersed, and there is more mass in the right tail of the distribution. Appendix Figure A-2 presents the equilibrium asset distribution under flat benefits. There are more households at the borrowing constraint because flat benefits make the risk of becoming unemployed less severe for households with lower labor productivity. They can afford to save less, and hence more households end up with no assets. On the other hand, for households in the higher productivity states, the risk of becoming unemployed gets more severe. Their precautionary savings motive becomes stronger and increases their savings, so that they can smooth consumption if they become unemployed. This is reflected in the interest rate of $r_{mf} = 0.0045$ prevailing in the economy, which is lower than in the baseline case ($r_{mf} = 0.0047$). The result is consistent with the idea of Hubbard et al. (1995) that a stronger social safety net crowds out private savings at low labor incomes and increases wealth inequality.

5.1. Welfare and Voting Equilibria

Figure 7 presents the equilibrium unemployment rate (panel 7A) and welfare (panel 7B) when varying the average-worker replacement rate. As in the proportional benefits

FIGURE 7. Welfare Effects of Changes in Flat Unemployment Benefits



case, unemployment increases and welfare decreases with more generous UI. The labor market equilibrium is identical because the changed UI system does not change the hiring technology. As before, at a replacement rate of $\tilde{R} = 0.70$ the vacancy-filling probability approaches 1, so higher benefits increase unemployment and decrease welfare faster than below that threshold. The welfare-maximizing policy is still to provide almost no UI. The aggregate costs of higher unemployment still outweigh the benefits of providing insurance to unemployed households. However, increasing benefits has a smaller effect on aggregate welfare than under the proportional system. This is because the progressive system provides relatively more support to households with lower labor productivities, who have higher marginal utilities of consumption.

FIGURE 8. Voting Equilibrium with Flat Unemployment Benefits

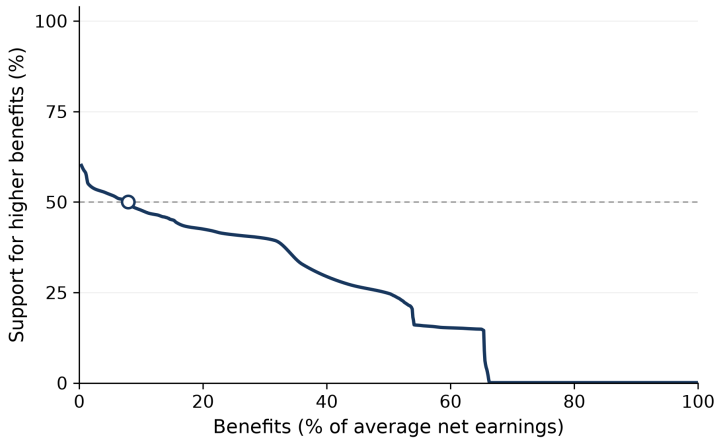


Figure 8 illustrates the voting equilibrium, showing at each $\tilde{R}$ what fraction of households would prefer more generous unemployment benefits. Under flat benefits, households select an interior equilibrium average-worker replacement rate of 7.9 percent. Compared to the welfare-maximizing level of UI, households vote for a higher level of

UI. Relative to the welfare-maximizing equilibrium, overall welfare is lower by 0.08 percent in terms of CEV, mainly driven by a higher unemployment rate of 4.91 percent compared to 4.84 percent. The fact that flat benefits change some households' political preferences enough to sustain a positive benefit level raises the question of which households support this equilibrium UI provision.

5.2. Voter Support under Flat Benefits

Under flat benefits, households' labor productivities shape their voting decisions. Proportional benefits provide the same replacement rate for every household, regardless of labor productivity, while flat benefits replace a larger share of prior earnings for households with low labor productivity. The main difference between the UI schemes is that individual replacement rates, $\tilde{R}/e$, vary across households with different idiosyncratic labor productivities. Changes in the voting patterns of households with different productivities should account for a substantial share of the change in the voting equilibrium. In particular, low-productivity households, both employed and unemployed, benefit most from higher benefits: unemployed households directly and employed ones through future protection. Therefore, low-productivity households should support higher benefits more strongly under flat benefits, while high-productivity households should be more opposed.

FIGURE 9. Support for Higher Flat Benefits by Labor Productivity

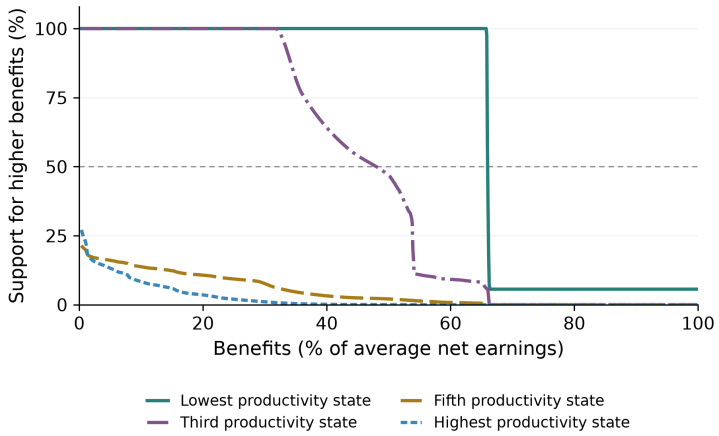


Figure 9 illustrates the voting decisions for households with different idiosyncratic productivities, showing the political preferences of the highest and lowest idiosyncratic productivity states as well as every other state in between. Households with low idiosyncratic productivity support a range of high benefits, while support for any positive level of benefits is low among the higher productivity households. At the voting equilibrium of $\tilde{R} = 0.079$, all households in the lowest and third-lowest productivity states would support higher benefits, while only 15 and 11 percent of households

in states five and seven, respectively, would support higher benefits. This support pattern occurs because households with low labor productivities gain substantial protection from increased benefits while having limited ability to self-insure. On the other hand, high-productivity households receive lower individual replacement rates while financing a substantial share of the increased costs of UI. This strong support among low-earning households helps to explain how support for positive benefits can be sustained. At low average-worker replacement rates, more households in the highest productivity state support higher benefits than in the fifth productivity state. This is again due to the wealth channel of increased interest rates described in Section 4.3 and reflects the correlation between wealth and income.

Support at the voting equilibrium comes from many working households, particularly low-productivity ones. At the equilibrium average-worker replacement rate, 93 percent of unemployed households support higher taxes, as do 48 percent of employed households. Employed households remain decisive because they represent the vast majority of voters. Yet, employed households primarily benefit through future insurance in case they lose their job. A flat-benefit system changes support among voters, particularly across households with different labor productivities, while employment status and wealth remain relevant.

6. Conclusion

This paper asks which level of UI a median voter selects and how this choice differs from the socially optimal level. I use a search and matching model with incomplete markets and household heterogeneity and show that the welfare-optimal UI policy provides essentially no unemployment benefits because welfare losses from higher unemployment far exceed the insurance gains. When households correctly anticipate higher unemployment and the labor market reacts strongly to benefit hikes, the median voter's choice indeed coincides with the socially optimal level. Under a system with constant benefits, households select a benefit level replacing 7.9 percent of the average wage after taxes with welfare losses below 0.1 percent in terms of CEV. Finally, if voters do not incorporate increased unemployment into their expectations, a majority would choose full insurance, which worsens welfare outcomes.

The focus of this paper lies on the job creation channel as a negative consequence of increased UI. Individual search effort is an additional element that introduces further welfare costs on its own. Including search effort would amplify the effect of UI on unemployment, reinforcing the support for low unemployment benefits. Nevertheless, future versions of the model in this paper ought to add heterogeneity in search effort in order to understand the interaction between the job creation and search effort channels. I also did not explore demand-side effects such as nominal rigidities, which could make benefits expansionary and thus raise the optimal benefit level.

One area limiting the results produced by the model in this paper is the asset distribution of employed and unemployed households, even with low unemployment benefits. Correlating a household's productivity with its job-finding probability (or separation rate) can generate more wealth inequality between the two groups. Such a correlation arises from, for example, endogenous individual search effort. Future studies can analyze whether this can generate substantially different wealth distributions for employed compared to unemployed households.

As I show, households' expectations significantly shape the level of UI supported by the median voter. This channel explains why democratic choices can deviate from the socially optimal outcome. Alternative voting mechanisms, voter turnout heterogeneity, and voting costs are all slight modifications to the voting procedure that could yield different voting results. Although applied studies have documented these mechanisms in a static setting, their performance in dynamic political-economy models has not been explored.

Informing voters is crucial. Therefore, policymakers must communicate complex interactions, such as labor market tradeoffs. As shown in the model, informed voters can support the socially optimal UI level, even if majority-minority conflicts are present. However, the benefit design remains crucial as a flat benefit system causes households to vote for a higher benefit level than optimal. While this does not call for expert oversight, some safeguards in the system are needed to ensure general equilibrium effects are considered. By building on this paper and tackling the open questions described, future studies will further improve our understanding of how voter behavior and labor market dynamics jointly determine policy outcomes. Accounting for additional channels not modeled here, such as search effort and demand-side effects, will lay the groundwork for more effective democratic institutions.

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Appendix

FIGURE A-1. Consumption under Flat Unemployment Benefits

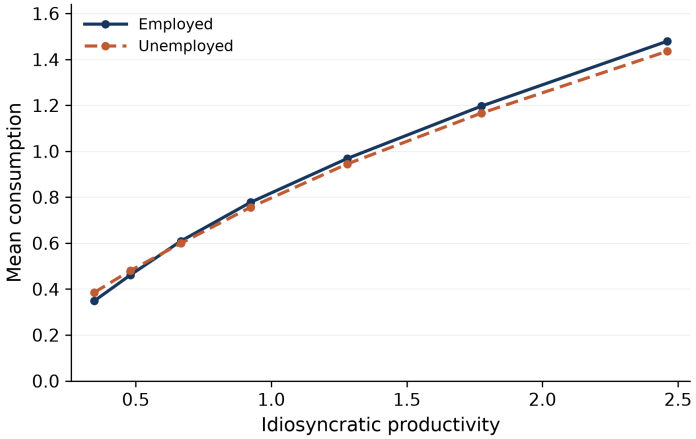
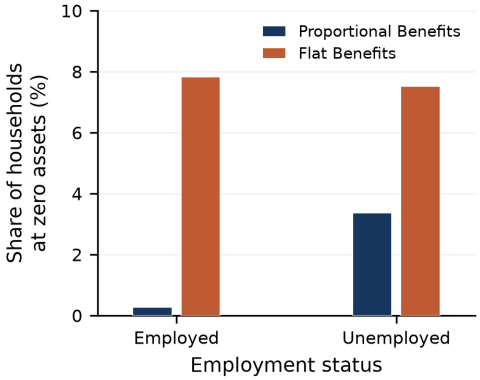


FIGURE A-2. Asset Distributions at the Benchmark

A. Zero-Asset Shares



B. Positive-Asset Density

