

Fiscal Progressivity and the Time Consistency of Monetary Policy*

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Abstract

This paper studies how progressive fiscal policy influences the conduct of monetary policy in a tractable heterogeneous agent economies. A priori, progressive labor taxation is undesirable because it generates costly distortions. Nonetheless, it is an effective instrument to mitigate the inflation bias of monetary policy because it achieves a redistributive purpose. I analyze this commitment channel of progressive labor taxes through the lens of political conflicts. When agents vote on monetary and fiscal instruments, progressivity is decisive in curbing the inflation bias because it generates distributional conflicts: lower-productivity agents support higher labor taxes to preserve the consumption value of money holding and shift the burden of tax distortions to higher-productivity agents. Anticipating the reduction in inflation, agents unanimously desire to adopt a progressive fiscal system.

Keywords: *Monetary-Fiscal Policy, Progressive Labor Income Taxes, Inflation Bias, Time Consistency, Political Economy, Heterogeneous Agents.*

JEL classification: E02, E42, E52, E61, E62.

1 Introduction

Monetary policy decisions have distributional consequences on income and wealth, but it is usually argued that a central bank should not be responsible for addressing them. Fiscal policy, though, with the appropriate set of targeted instruments, should take care of these redistributive consequences. This idea is, for instance, promoted by a former Chair of the Federal Reserve:

“Policies designed to affect the distribution of wealth and income are, appropriately, the province of elected officials, not the Fed (...) Monetary policy is a blunt tool which certainly affects the

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distribution of income and wealth (...) Other types of policies are better suited to addressing legitimate concerns about inequality.” (Bernanke - 2015)

This paper proposes a model with heterogeneous agents to investigate how monetary policy, fiscal policy and inequality are dynamically intertwined. In contrast to the views that promote a separation of objectives and instruments, the present analysis shows how fiscal policy, with its capacity to tailor the incidence of taxes, contributes to the support of efficient monetary decisions.

Specifically, monetary policy suffers from time-inconsistency, as identified by Kydland and Prescott (1977) and Calvo (1978). Nominal quantities (interest rates, money holding) are sensitive to expectations, however policies are implemented once expectations are locked in. This intertemporal conflict gives rise to an *inflation bias* which generates welfare losses. Several institutional arrangements have been proposed to address this issue.¹ This paper studies a novel one, namely the commitment channel of progressive fiscal policy.

The analysis is conducted in a stylized environment that highlights the time inconsistency of monetary decisions and the influence of fiscal progressivity on the inflation bias. I present a nominal economy with overlapping-generation agents, where within-generation heterogeneity stems from differences in productivity. The government finances an exogenous level of public good by taxing labor income or increasing the supply of currency. The labor tax plan is captured by two parameters: level and progressivity. As in Farhi (2010) or Ferriere (2015), fiscal progressivity is subject to *tax inertia*: it needs time to be adjusted, and therefore is set prior to the *level* of taxes to be collected.² Importantly, progressive labor taxes introduce both redistribution across taxpayers and productive efficiency concerns. The analysis distinguishes these two dimensions and shows that the commitment channel of progressive labor taxes is effective in mitigating the inflation bias only if policymakers are concerned about the distribution of consumption.

Consider first the policy choices of a benevolent policymaker without distributional concerns.³ Under commitment, the optimal policy mix features no progressivity and a balanced taxation of labor income and money holding. This plan uniformly spreads tax distortions over time and population. Under a lack of commitment, real money holdings are pre-determined to policy decisions, hence there is the temptation to rely predominantly on the inflation tax. The equilibrium outcome then is characterized by a classic inflation bias and welfare losses: agents anticipate policymakers’ willingness to resort to the inflation tax and reduce their demand for money accordingly. In both cases, progressivity is not desirable because it generates only costly labor supply distortions.

To study the influence of distributional conflicts on the relative stance of monetary and fiscal instruments, I consider a two-stage political game. Under *tax-inertia*, the progressivity of fiscal policy is determined in the first stage, i.e., one period prior to tax collection. The second stage takes place contemporaneously to the provision of the public good: majority voting determines the relative mix of inflation and labor taxes, given the progressivity of labor taxes and the distribution of money holding across the population.

¹Many contributions have analyzed how to overcome the time inconsistency of optimal plans through a reputation mechanism, a trigger strategy, or the appropriate management of debt maturity.

²*Tax inertia* refers to the idea that the legislative process for fiscal policy is complex and some structural elements of the tax code, e.g. progressivity, requires more time to be adjusted. Appendix A provides empirical elements supporting this assumption: despite regular adjustments in tax codes, countries are characterized by time invariant redistributive structures.

³The absence of redistributive concerns stems from individual linear utility of consumption, as explained in Section 2.

The voting protocol highlights how progressive labor taxes shape strategic preferences. With proportional labor taxes (no progressivity), agents unanimously support the inflation tax, in order to collect revenue from the inelastic tax base. With progressive labor taxation, redistributive conflicts emerge. Lower-productivity agents favor higher labor taxes to preserve the consumption value of their money holding and shift the burden of distortionary taxation to higher-productivity agents. These agents stand on the receiving end of the *tax-shifting* effect and vote for relatively more inflationary policies, so as to minimize the personal exposure to distortionary taxation.⁴ Under a progressive tax plan, the decisive voter favors positive labor taxes, in order to exploit the *tax-shifting* effect, thereby reducing the magnitude of the inflation tax.

At the first stage of the game, agents form preferences about progressive labor taxation, anticipating the outcome of the vote and the associated policy mix. They weigh the disincentive effect of progressivity and their exposure to labor taxes against the beneficial effect of curbing the inflation tax. The central result of the analysis is the unanimous support for a strictly positive level of labor tax progressivity. Indeed, despite different exposure to labor taxes, progressive labor taxes provide valuable *dynamic incentives* to all by reducing the inflation bias.

Overall, this paper provides an analytical characterization of the commitment channel of progressive fiscal policy on individual preferences for the monetary-fiscal policy mix. The structure of the analysis disentangles efficiency considerations from distributive concerns. The analysis identifies the beneficial *dynamic incentives* provided by progressive labor income taxes against the inflation bias of monetary policy. These results are derived in a stylized environment, to isolate the distinctive forces that influence the conduct of monetary policy under progressive fiscal policy. A final section presents a numerical extension with incomplete markets and idiosyncratic productivity risk, to highlight how the commitment channel interacts with a classic insurance channel of progressive fiscal policy.⁵

Literature. This paper studies the credibility problem of monetary decisions in an environment with fiscal policy and heterogeneous agents. Albanesi (2007) provides a link between income inequality and inflation as the outcome of a distributional conflict underlying monetary policy choices. The present analysis further emphasizes that the incidence of fiscal policy, captured by the progressivity of labor income taxes, is critical to understand monetary policy outcomes.

A related analysis is led by Farhi, Sleet, Werning, and Yeltekin (2012) in the context of capital taxation with imperfect commitment. Progressive capital taxation emerges as an optimal choice because it contains the build-up of inequalities and the temptation to reduce them with a capital levy. By contrast, monetary decisions subject to similar time inconsistency problems cannot be made progressive or targeted. The present analysis focuses alternatively on progressive labor taxes. It identifies a commitment channel of progressive fiscal policy to constrain discretionary monetary decisions and support efficient dynamic policy plans. This channel is distinct from the insurance channel of progressive income taxes originally studied by Conesa and Krueger (2006) and Heathcote, Storesletten, and Violante (2017).

⁴Rich agents' relative preferences for inflationary policies is documented in Easterly and Fischer (2001) and extensively studied in Albanesi (2007). The present analysis relates the progressivity of the tax system to individual preferences for inflation.

⁵While the analysis emphasizes intra-generational conflicts over the policy mix, Appendix A.2.3 presents an extension that includes in addition intergenerational conflicts.

Finally, there is a growing literature studying monetary policy in heterogeneous agents economies, e.g. Auclert (2019), Kaplan, Moll, and Violante (2018) and Gornemann, Kuester, and Nakajima (2021). This literature highlights how the effects of monetary decisions depend on the conduct of fiscal policy. Indeed, fiscal policy ultimately determines how, in response to changes in monetary policy, resources are redistributed to agents with different marginal propensity to consume. The present analysis stresses additionally that appropriate fiscal policy can curb the time inconsistency of monetary policy and implement dynamically an appropriate policy mix.

The rest of the paper is organized as follows. Section 2 describes the analytical environment. Section 3 characterizes efficient policy choices implemented by a benevolent policymaker with and without commitment. Section 4 then develops a political game to highlight the implications of distributional conflicts over policy choices. Section 5 develops a numerical extension with idiosyncratic risk and incomplete markets to generalize result and study the interplay of the commitment channel with the partial insurance provided by progressive labor taxes. Section 6 concludes. An Appendix published online presents additional materials related to the analysis and mathematical proofs of lemmas.

2 Economic Environment

Consider an overlapping generation economy with heterogeneous agents. Time is discrete and infinite, prices are flexible. The environment is designed to highlight the incidence of fiscal and monetary decisions and the influence of fiscal progressivity on the time inconsistency of monetary policy.

2.1 Environment

2.1.1 Private Economy

Every period, a continuum of mass 1 of agents is born and lives two periods. Agents differ in lifetime labor productivity z , distributed on the compact set $[z_l, z_h]$, with $0 < z_l < z_h \leq 1$. The cumulative distribution function is noted $F(z)$.

Agents supply labor n_y and save when young, supply labor n_o and consume c_o when old. This structure introduces an explicit motive for saving without resorting to additional frictions. Because the consumption good is perishable, there is a nominal asset available for storing wealth: fiat money.⁶ Production is linear and preferences are linear-quadratic.⁷ Labor supply decisions solve:

$$\max_{n_y, n_o, c_o} c_o - \frac{n_o^2}{2} - \frac{n_y^2}{2}, \quad (1)$$

⁶It is in effect very similar to the “*morning - afternoon*” structure developed in Chari and Kehoe (1990). These elements reflect a stylized version of a life-cycle model with an asset demand choice, while abstracting from intertemporal substitution in consumption, which is not central to the analysis. Appendix A.2.2 discusses generalization of results to the availability of additional assets.

⁷Curvature in the utility function would capture either a desire for consumption smoothing, for insurance or for redistribution. In the absence of the two former effects, the present analysis neatly disentangles policy choices with and without redistributive concerns, as is made clear in Sections 3 and 4. Section 5 discusses the generalization of results to utility functions with curvature, idiosyncratic productivity risk and incomplete markets.

subject to young and old age budget constraints:

$$m = zn_y, \quad (2)$$

$$c_o = zn_o - \lambda(zn_o)^{1+\alpha} + m\tilde{\pi}'. \quad (3)$$

In youth, agents supply labor n_y and save labor income $y_y = zn_y$ with money, whose real value is noted m . In old age, agents supply labor n_o , produce output $y_o = zn_o$ and pay labor taxes $\tau(y_o) = \lambda(y_o)^{1+\alpha}$. By printing money, the government collects seigniorage revenue, which is a tax on money holding. The real value of money net of inflation writes $m\tilde{\pi}$, where $\tilde{\pi}$ is the inverse gross inflation rate: a low value of $\tilde{\pi}$ corresponds to a high inflation rate. The expected inverse inflation rate is noted $\tilde{\pi}^e$.

The labor income tax schedule $\tau(y) = \lambda y^{1+\alpha}$ is parametrized by progressivity $\alpha \geq 0$ and level $\lambda \geq 0$. Formally, a tax plan is progressive if marginal rates are higher than average taxes at all level of income: $\frac{\partial \tau(y)/\partial y}{\tau(y)/y} = 1 + \alpha$.⁸ When $\alpha = 0$, the tax plan implements a flat tax rate λ , and for any $\alpha > 0$, the tax plan is progressive. Note that these fiscal plans do not generate positive transfers, i.e., $\tau(y) \geq 0$, for all $y > 0$. This property allows to focus on redistributive conflicts between labor income tax and seigniorage and not on the redistributive conflicts driven by labor taxation.⁹

The solution to individuals' optimization problem is straightforward: the following expressions characterize agent z production decisions in youth and old, $y_y(z, \pi^e) = zn_y(z, \pi^e)$ and $y_o(z, \alpha, \lambda) = zn_o(z, \alpha, \lambda)$:

$$y_y(z, \pi^e) = z^2 \tilde{\pi}^e \quad y_o(z, \alpha, \lambda) = z^2 \left[1 - \frac{\partial \tau(y_o)}{\partial y_o} \right]. \quad (4)$$

These decisions are driven by real returns to work, defined as the product of individual productivity z and marginal tax rates. In particular, high anticipated inflation (i.e., low $\tilde{\pi}^e$) induces agents to reduce labor supply and money demand when young. The same logic applies to old age production decisions subject to labor income taxation.

Given the dynamic nature of the model, I define welfare functions $V_h(\cdot)$ at each age $h \in \{y, o\}$. When old, given real money holding m , an agent of type z exposed to a tax plan (α, λ) and inverse inflation rate $\tilde{\pi}$ derives utility according to:

$$V_o(z, m, \alpha, \lambda, \tilde{\pi}) = y_o(z, \alpha, \lambda) - \lambda y_o(z, \alpha, \lambda)^{1+\alpha} - \frac{(y_o(z, \alpha, \lambda)/z)^2}{2} + m\tilde{\pi}. \quad (5)$$

Similarly, for young type z agent, considering a labor tax plan (α, λ) and expected inflation rate $\tilde{\pi}^e$:

$$V_y(z, \alpha, \lambda, \tilde{\pi}^e) = y_y(z, \alpha, \lambda) - \lambda y_o(z, \alpha, \lambda)^{1+\alpha} - \frac{(y_o(z, \alpha, \lambda)/z)^2}{2} + y_y(z, \tilde{\pi}^e)\tilde{\pi}^e - \frac{(y_y(z, \tilde{\pi}^e)/z)^2}{2}. \quad (6)$$

The difference between these expressions outlines the credibility problem of policy plans. When young,

⁸This definition of progressivity is standard, and similar approaches are being adopted by Benabou (2002), Heathcote, Storesletten, and Violante (2017) or Holter, Krueger, and Stepanchuk (2019). Note that for any $\alpha \in [-1, 0]$, the tax plan is *regressive*. I do not consider this parameter space because it does not arise as a candidate policy choice in the analysis.

⁹The seminal analysis of Meltzer and Richard (1981) studies redistributive conflicts induced by progressive labor taxation.

agents internalize the disincentive effect of inflation on labor supply, whereas when old, real money holding m is predetermined and inflation operates as a non-distortionary tax, by contrast to labor taxation. As the analysis is conducted in a deterministic environment, expectations reflect future policy choice $\tilde{\pi}^e = \tilde{\pi}$.¹⁰

Note that the distribution of real money holding in the population is non-degenerate. Formally, from (2) and (4), individual demand for money of young agents writes:

$$m(z, \tilde{\pi}^e) = z^2 \tilde{\pi}^e. \quad (7)$$

In old age, individual money holdings is given by the following distribution:

$$\phi(z, \Phi) = \frac{z^2}{E(z^2)} \Phi, \quad (8)$$

where Φ is aggregate real money holding. Importantly, money demand (7) is sensitive to expected policy choice, while money holding (8) of old agents is inelastic.

2.1.2 Government

Every period, the government finances a real and exogenous level of public good g , by collecting labor income taxes on old agents or by printing money. The real budget constraint of the government writes:

$$\int_z \lambda y_o(z, \alpha, \lambda)^{1+\alpha} dF(z) + \frac{\Delta M}{P} = g, \quad (9)$$

where the first term reflects labor income taxes, ΔM is the change in total money supply M , and P is the price level. The structure imposes within-generation budget constraint, so as to neatly focus on intragenerational conflicts and the dynamic determinants of the relative tax mix.¹¹

The change in the elasticity of money holding over time is the essence of the time inconsistency of monetary decisions. Still, the choice of taxes affects the distribution of wealth and consumption across agents. This dimension is potentially magnified in the presence of progressive income taxation $\alpha \geq 0$.

2.2 Progressive Tax Plans

Note $t(z, \alpha, \lambda)$, the labor *tax function* for an agent of type z , and $T(\alpha, \lambda)$ the *aggregate tax function*, defined as the *tax plan* evaluated at the production decision (4):

$$t(z, \alpha, \lambda) = \lambda y_o(z, \alpha, \lambda)^{1+\alpha} \quad T(\alpha, \lambda) = \int_z t(z, \alpha, \lambda) dF(z). \quad (10)$$

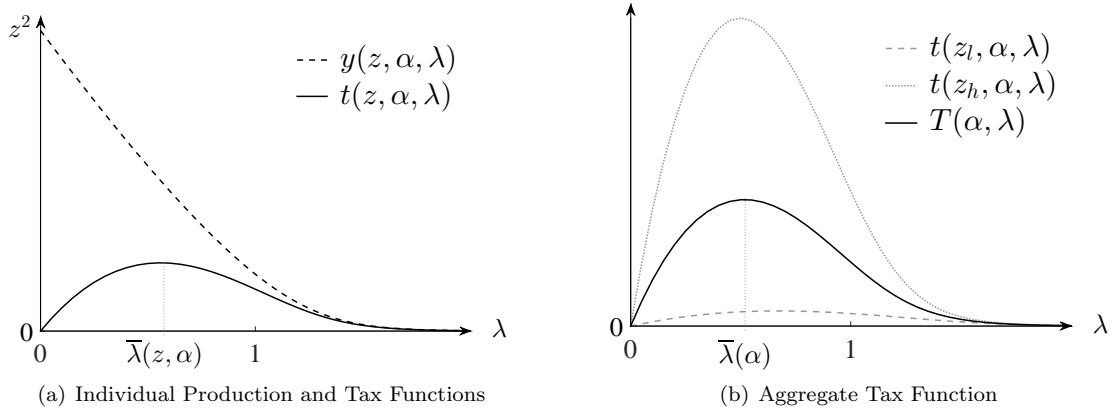
In the absence of progressivity i.e., when the tax plan implements a flat tax rate, the Laffer curve

¹⁰In a stochastic environment, these expressions would be modified to account for the realization of an exogenous shock and the expectations over the shock from a young agent's perspective. Generalization of the results to idiosyncratic productivity shocks is discussed in Section 5.

¹¹Appendix A.2.3 discusses how results generalize to environments with additional intergenerational conflicts over policy choices.

properties of labor tax functions (10) are well known.¹² This property extends to the individual and aggregate tax functions for positive level of progressivity $\alpha > 0$. Figure 1 represents the production function (4), the individual and aggregate tax functions (10) under a tax plan (α, λ) . In particular, individual tax functions reach of maximum at $\bar{\lambda}(z, \alpha) = \frac{1}{2(1+\alpha)(\frac{z^2}{2})^\alpha}$. By analogy, the peak of the aggregate tax function is labeled $\bar{\lambda}(\alpha)$.¹³

Figure 1: Production and Tax Functions with Progressivity ($\alpha > 0$)



The left panel represents the production decision and tax function for an agent of type z when the tax plan features progressive labor taxes, i.e., $\alpha > 0$. Appendix B.2 formally shows that individual tax functions are single peaked, strictly concave on the upward sloping part and increasing in productivity z . The right panel outlines how tax functions aggregate over the population.

Importantly, as in Werning (2007), introducing progressive labor taxes $\alpha > 0$ generates costly distortions. To highlight this point, consider a **static** labor taxation program: for a given level of taxes to be collected, progressivity is only costly, because it increases marginal tax rates, labor supply distortions and weighs on individual and aggregate welfare. This is formalized in the following lemma.

Lemma 1. *Consider the static problem of financing a public good using labor taxes only. Both in homogeneous ($z_l = z_h$) and heterogeneous agent economies ($z_l < z_h$), the optimal plan prescribes no progressivity, i.e., $\alpha = 0$.*

Proof. See Appendix B.3. ■

2.3 Assumptions

The following assumptions are used to characterize policy outcomes. The first imposes a restriction on the distribution of productivity, with the usual property that the mean agent has higher productivity than the median one.

¹²The Laffer curve shape of tax functions reflects the classic competing *behavioral response* and the *mechanical effects* of raising taxes. If $\alpha = 0$, the individual tax function writes $t(z, 0, \lambda) = z^2(1-\lambda)\lambda$ and the aggregate tax function $T(0, \lambda) = E(z^2)(1-\lambda)\lambda$. These functions are strictly concave, positive for $\lambda \in [0, 1]$ and reach a global maximum at $\lambda = 1/2$.

¹³These elements are formally established in Appendix B.2.

Assumption 1. Let $z_m = F^{-1}(\frac{1}{2})$ be the median productivity level. It satisfies:

$$z_m \leq E(z). \quad (\mathbf{A.1})$$

As government expenses play no particular role in this environment, I impose the following upper limit on g to guarantee the existence of interior solutions to taxation programs.¹⁴

Assumption 2. g is non stochastic and satisfies:

$$0 < g < \frac{E(z^2)}{4}. \quad (\mathbf{A.2})$$

More importantly, fiscal choices (α, λ) are constrained by the presence of *tax inertia* in fiscal progressivity α , as in Farhi (2010) or Ferriere (2015). *Tax inertia* refers to the idea that some structural elements of the tax code requires more time to be adjusted. This concept is particularly relevant for dimensions related to the incidence of fiscal policy.¹⁵

Assumption 3. Fiscal progressivity α is set one period prior to tax collection. (\mathbf{A.3})

In other words, the progressivity of the labor tax plan in place for a given cohort of old agents is required to be set in young age. It is predetermined to the choice of the monetary-fiscal policy mix.

2.4 Equilibrium Definition

All economic outcomes are characterized as *Stationary Rational Expectation Equilibrium* (SREE). Accordingly, we need to define the relevant state variables, market clearing conditions and the link between money printing rate σ , inflation $\tilde{\pi}$ and seigniorage $\frac{\Delta M}{P}$.

The state vector is noted $\mathcal{S} = (\Phi_{-1}, \alpha)$: Φ_{-1} refers to aggregate money holding of old agents, from which the whole distribution of money holding derives using (8). Further, consistently with Assumption 3, the progressivity parameter α of the labor tax plan is predetermined to policy decisions.

The condition for money market clearing requires that $\Phi(\mathcal{S})$, aggregate money demand, matches the supply of money:

$$\Phi(\mathcal{S}) = \int m(z, \mathcal{S}) dF(z) = \frac{M(\mathcal{S})}{P(\mathcal{S})} \quad \forall \mathcal{S}, \quad (11)$$

where $P(\mathcal{S})$ is the state dependent money price of goods and $M(\mathcal{S})$ the nominal stock of money. Using this expression, the inverse gross inflation rate writes:

$$\tilde{\pi}(\mathcal{S}) = \frac{P(\mathcal{S}_{-1})}{P(\mathcal{S})} = \frac{\Phi(\mathcal{S})}{\Phi(\mathcal{S}_{-1})} \frac{1}{1 + \sigma(\mathcal{S})}. \quad (12)$$

¹⁴This restriction ensures there are enough resources in the economy in any circumstance to finance the public good. It is derived under the scenario of no labor taxation and top of seigniorage Laffer curve, as in Persson and Tabellini (1994).

¹⁵In particular, this assumption is motivated by empirical elements presented in Appendix A.1 that document a relatively time-invariant country specific component in fiscal redistribution.

Using these expressions, the government budget constraint (9) rewrites:

$$\int_z t(z, \alpha, \lambda(\mathcal{S})) dF(z) + \Phi(\mathcal{S}) \frac{\sigma(\mathcal{S})}{1 + \sigma(\mathcal{S})} = g. \quad (13)$$

These expressions imply a one-to-one mapping between the rate of money creation $\sigma(\mathcal{S})$ and the realized inverse inflation $\tilde{\pi}(\mathcal{S})$.¹⁶ Accordingly, the equilibrium definition is stated with the government setting the inverse inflation rate $\tilde{\pi}(\mathcal{S})$.

Definition 1. *A Stationary Rational Expectations Equilibrium (SREE) is given by:*

1. *Production and savings decisions of private agents $(y_y(z, \mathcal{S}), y_o(z, \mathcal{S}), m(z, \mathcal{S}))$, solve (1) subject to budget constraints (2) and (3), given monetary and fiscal choices $(\alpha(\mathcal{S}), \lambda(\mathcal{S}), \tilde{\pi}(\mathcal{S}))$, for all \mathcal{S} .*
2. *A collective choice mechanism determines $(\alpha(\mathcal{S}), \lambda(\mathcal{S}), \tilde{\pi}(\mathcal{S}))$ subject to the government budget constraint (13) and tax inertia in progressivity α , for all \mathcal{S} .*
3. *All markets clear (good, money), for all \mathcal{S} .*

Item 2 of the equilibrium definition refers to a generic collective choice mechanism. Sections 3 and 4 contrast two different choice mechanisms, in order to understand the determinants of policy choices with and without distributional concerns.

The following lemma establishes the existence of stationary decisions for any set of policy parameters $(\alpha, \lambda, \tilde{\pi})$ that satisfies the government budget constraint (9). This intermediate result allows to focus on the determinants and properties of the policy mix, and save on elements related to the existence of equilibria.

Lemma 2. *Let $(\alpha, \lambda, \tilde{\pi}) \in \{0, [0, 1], [0, 1]\} \times \{\mathbb{R}_+^*, \mathbb{R}, [0, 1]\}$ be a set of time-invariant policy choices that satisfies the government budget constraint. For any $(\alpha, \lambda, \tilde{\pi})$ in this set, there is a stationary rate of money creation, inflation expectations and policy decisions of private agents consistent with individual optimization and market clearing conditions.*

Proof. See Appendix B.4. ■

3 Productive Efficiency under Benevolent Policymaker

Which policy mix $(\lambda, \tilde{\pi})$ is implemented by a benevolent policymaker, when there is *inertia* in tax progressivity? What is the desirable level of progressivity then?

The policy mix is derived both under commitment and policy discretion. Importantly, because individual utility is linear-quadratic and the objective function utilitarian, there is no concern for the distribution of consumption. Hence, these benchmarks establish whether progressivity can mitigate the welfare consequences of taxation when the policymaker has an exclusive focus on productive efficiency.

¹⁶Indeed, $\Phi(\mathcal{S}_{-1}) = \Phi_{-1}$, i.e., aggregate real money holding of current old agents, is predetermined. Further, money demand of current young $\Phi(\mathcal{S})$, is, as verified below, independent of the current rate of money creation $\sigma(\mathcal{S})$. In other words, the demand for money of young agents is not sensitive to contemporaneous policy choices, only to the rate of progressivity that applies next period.

First, consider policy choices under **commitment**: a policymaker sets $(\lambda^c, \alpha^c, \tilde{\pi}^c)$ one period prior to implementation, and inflation expectations reflect these choices, i.e., $\tilde{\pi}^e = \tilde{\pi}^c$. Accounting for equilibrium money demand, revenue obtained from seigniorage is $\frac{\Delta M}{P(\mathcal{S})} = E(z^2)\tilde{\pi}^c(1 - \tilde{\pi}^c)$, and the government budget constraint (13) reads:

$$\int_z t(z, \alpha^c, \lambda^c) dF(z) + E(z^2)\tilde{\pi}^c(1 - \tilde{\pi}^c) = g. \quad (14)$$

Accordingly, under commitment, a benevolent policymaker solves:

$$\max_{\alpha, \lambda, \tilde{\pi}} \int_z V_y(z, \alpha, \lambda, \tilde{\pi}) dF(z), \quad (15)$$

subject to the government budget constraint (14), the individual demand for money (7), production decisions (4), and non-negativity constraints $\alpha \geq 0$, $\lambda \geq 0$, $\tilde{\pi} \geq 0$.

Under a lack of commitment, a regime called **discretion**, the policymaker no longer internalizes how choices influence inflation expectations and money demand. It decides sequentially on the policy mix $(\lambda^d(\mathcal{S}), \tilde{\pi}^d(\mathcal{S}))$, given aggregate real money holding Φ and labor tax progressivity $\alpha^d \geq 0$. Given the generational incidence of policy choices, contemporaneous discretionary decisions influence only the welfare of current old agents. Formally, given $\mathcal{S} = (\Phi, \alpha^d)$, the policymaker under discretion solves:

$$\max_{\lambda, \tilde{\pi}} \int_z V_o(z, \phi_{-1}, \alpha^d, \lambda, \tilde{\pi}) dF(z), \quad (16)$$

subject to the government budget constraint (9), the distribution of money holding (8), the production decisions (4), and non-negativity constraints $\lambda \geq 0$, $\tilde{\pi} \geq 0$.

The following proposition characterizes equilibrium policy choices under commitment and discretion. It highlights the credibility problem of monetary policy and the non-desirability of progressive labor taxes.

Proposition 1. *Under assumptions (A.1) to (A.3), there is a SREE where a utilitarian policymaker chooses the following policy plans:*

- i. *Policy choices under commitment are: $\alpha^c = 0$, $\lambda^c = 1 - \tilde{\pi}^c$.*
- ii. *Policy choices under discretion are: $\tilde{\pi}^d > 0$, $\lambda^d = 0$, for any $\alpha^d \geq 0$.*

Lifetime welfare for any agent z is lower under discretion than under commitment.

Proof. The existence of SREE under both regimes derives from Lemma 2.

i. By Lemma 1, we can rule out $\alpha^c > 0$ because for any level of labor taxes raised, welfare is higher with no progressivity. Policy solves (15) subject to (14), (7), (4) and $\alpha^c = 0$. This problem is symmetric in the choice variables λ and $1 - \tilde{\pi}$. Accordingly, any interior solution to this program, guaranteed by (A.2), satisfies $\lambda^c = 1 - \tilde{\pi}^c$.

ii. Under discretion, real money holding is predetermined to tax decisions $(\lambda^d(\mathcal{S}), \tilde{\pi}^d(\mathcal{S}))$. The policymaker first collects revenue with seigniorage because it is not distortionary, and uses labor taxation only if

necessary.¹⁷ Formally, from the government budget constraint, if $\lambda^d = 0$ then $\sigma^d = \frac{g}{\Phi_{-1}\tilde{\pi}}$. Using (12), the resulting inverse inflation rate writes $\Pi(\mathcal{S}) = \frac{\Phi(\mathcal{S})-g}{\Phi_{-1}}$, constrained to be non-negative. In this expression, $\Phi(\mathcal{S}) = \int_z m(z, \mathcal{S})dF(z)$ reflects inflation expectations of the young generation, which is unaffected by the current choice over the relative tax mix under discretion. Overall, $\tilde{\pi}^d(\mathcal{S}) = \max\{\Pi(\mathcal{S}), 0\}$ and $\lambda^d(\mathcal{S}) > 0$ if and only if $\tilde{\pi}^d(\mathcal{S}) = 0$. In equilibrium, the stationary aggregate demand for money satisfies $\Phi = \int_z z^2 \tilde{\pi}^d dF(z)$ where $\tilde{\pi}^d = \frac{\Phi-g}{\Phi}$. Assumption (A.2) guarantees the existence of a positive level of aggregate real money holding, so that the policy implemented relies exclusively on the inflation tax.

Finally, because the allocation under discretion is feasible under commitment, and no distributional considerations could contrast these plans, the lifetime welfare of any agent z is higher under commitment than under discretion. ■

Under commitment, the policymaker wants to spread equally the burden of taxation across agents and over time: government revenue comes equally from labor taxes and seigniorage. This policy plan is time-inconsistent: as real money holdings are predetermined to tax choices, ex post inflation is beneficial because it operates much like a non-distortionary lump-sum tax. Accordingly, inflation is higher under discretion than under commitment: this is a classic illustration of the *inflation bias* under a lack of commitment. The welfare losses under discretion stem from the anticipation of inflationary policies and its negative effect on young agents' labor supply and money demand.

Progressivity in labor income tax is not desirable, neither to reduce the deadweight loss of taxation nor to mitigate the inflation bias under discretion. As seen in Lemma 1, progressivity raises marginal tax rates, hence labor supply distortions and welfare losses. Both under commitment and discretion, a benevolent policymaker interested only in minimizing distortions avoids progressive labor taxation. This result comes from the productive efficiency objective of the utilitarian planner. The next section investigates whether progressive labor taxation is desirable and effective in mitigating the inflation bias when distributive considerations are influencing policy choices.

4 Political Economy Analysis

This section develops a political economy to incorporate distributive conflicts into the selection of policy instruments. In contrast to Section 3, pre-committing to progressivity is part of an optimal policy plan and mitigates the inflation bias. Progressive labor taxation plays a dual role. For a given level of labor taxes, it distributes the overall burden of taxation toward richer agents, hence contributing to reducing consumption inequality. As such, when policy reflects distributional conflicts, this *tax-shifting* effect balances the optimal policy mix away from excessive seigniorage.¹⁸ From a life-cycle perspective, progressive labor taxation is supported unanimously by the population because it provides *dynamic incentives* against the inflation bias.

¹⁷Given aggregate real money holding $\Phi_{-1} \geq 0$, the government under discretion with $\alpha^d = 0$ solves: $\max_{\lambda, \sigma} \int_z V_o(z, \phi_{-1}, 0, \lambda, \tilde{\pi})dF(z)$ subject to $E(z^2)(1-\lambda)\lambda + \sigma\Phi_{-1}\tilde{\pi} = g$, where $\phi_{-1} \equiv \phi(z, \Phi_{-1})$ is given by (8). One can show that the solution to this program gives $\lambda = 0$. For $\alpha^d > 0$, first recall from Lemma 1 that distortions are lower with no progressivity: if the government were to raise positive labor taxes with $\alpha^d > 0$, it would do as well for $\alpha^d = 0$.

¹⁸In other words, the political economy analysis generates policy plans that are qualitatively similar to those of a benevolent policymaker with explicit desire for redistribution. This is verified in Section 5.

4.1 The Decision Protocol

Policy is set through a two-stage political game, under *tax inertia* for progressivity. When young, agents decide the progressivity of labor taxes α^P that will prevail next period. When old, majority voting determines the mix of labor taxes and seigniorage.

The voting protocol reflects how individual preferences over tax policies are influenced by the level of fiscal progressivity. Intuitively, progressive fiscal policy would modify the willingness to rely exclusively on the inelastic seigniorage tax base (Proposition 1) if it generates sufficient distributive conflicts across the population. The political game considers that the choice of α^P in young age is set *behind a veil of ignorance*, but it reflects individual preferences and its effects on the outcome of the vote next period.

A politico-economic equilibrium is characterized by policy choices $(\alpha^P, \lambda^P, \tilde{\pi}^P)$ consistent with Definition 1 and the decision protocol described above. Because the decisions of young agents internalize their effects on the outcome of the vote, the game is analyzed backward.

4.2 Stage 2 - Vote over the Policy Mix

In old age, agents vote over the tax mix $(\lambda, \tilde{\pi})$ given the distribution of money holding and predetermined progressivity of labor income taxes. The protocol for majority voting is standard: two political candidates, only interested in being elected, offer a tax platform and commit to implement it once in office.¹⁹ This choice protocol displays how progressive labor taxes shape policy conflicts across the population, which in turn influence the outcome of the vote over the monetary-fiscal policy mix.

4.2.1 Individual Ranking of Policy Alternatives and Outcome of the Vote

An agent of type z evaluates policy plans $(\lambda, \tilde{\pi})$ compatible with the government budget constraint (9), given labor income progressivity α and aggregate money holding Φ_{-1} . Note $\tilde{\pi}(\lambda, \alpha, \Phi_{-1})$, the inverse inflation rate required to satisfy the government budget constraint as a function of the level of labor taxes $\lambda \geq 0$. An agent of type z ranks policies $\{\lambda, \tilde{\pi}(\lambda, \alpha, \Phi_{-1})\}$ according to the following value function:

$$\tilde{V}_o(z, \Phi_{-1}, \alpha, \lambda) \equiv V_o(z, \phi(z, \Phi_{-1}), \alpha, \lambda, \tilde{\pi}(\cdot)). \quad (17)$$

The derivative of this function with respect to λ outlines the trade-offs involved when choosing the policy mix. Using the envelope conditions (4), it writes:

$$\frac{d\tilde{V}_o(z, \alpha, \Phi_{-1}, \lambda)}{d\lambda} = -\frac{\partial \tau(\cdot)}{\partial \lambda} + \phi(z, \Phi_{-1}) \frac{d\tilde{\pi}(\cdot)}{d\lambda}, \quad (18)$$

where $\tau(y_o(z, \alpha, \lambda)) = \lambda y_o(z, \alpha, \lambda)^{1+\alpha}$.

The two terms in (18) reflect the costs and benefits to agent z of increasing the level of labor taxes. Positive labor taxation is distortionary and costly: this is captured by the marginal tax rate term $\frac{\partial \tau(\cdot)}{\partial \lambda}$. On the other hand, an increase in labor taxes decreases the magnitude of the inflation tax and preserves money

¹⁹For detailed references, see for instance Persson and Tabellini (2002), Chapters 2 and 3.

holding as a source of consumption.²⁰ This effect is captured by the marginal consumption benefit from real money holding $m(z) = \phi(z, \Phi_{-1})$, net of the change in inflation $\frac{d\tilde{\pi}(\cdot)}{d\lambda}$. This last term captures the strategic dimension embedded in the evaluation of policy alternatives. Indeed, use (12) and (13) to derive $\frac{d\tilde{\pi}(\cdot)}{d\lambda}$, and rewrite the former expression as:

$$\frac{d\tilde{V}_o(z, \alpha, \Phi_{-1}, \lambda)}{d\lambda} = \underbrace{-\frac{\partial\tau(\cdot)}{\partial\lambda}}_{\text{tax distortions}} + \underbrace{\frac{z^2}{E(z^2)} \frac{dT(\alpha, \lambda)}{d\lambda}}_{\text{tax shifting}}. \quad (19)$$

This expression makes clear the shape of agent z value function is not sensitive to Φ_{-1} , $\tilde{\pi}$ or g . The willingness of type z agent to raise labor taxes is tied to the distributional consequences generated by different level of progressivity α .²¹ This is the *tax-shifting* effect.

The following Lemma derives two essential results to characterize the outcome of the vote. First, the ranking of policy alternatives is monotone: this is the so-called *single-peaked* property of the value function (17). The lemma further characterizes the dependence of individual bliss policies on progressivity.

Lemma 3. *Individual preferences over policy choices are single-peaked, with bliss policy choice noted $\lambda^p(z, \alpha)$.*

- i. *When $\alpha = 0$, all agents share the same bliss policy: $\lambda^p(z, 0) = 0$.*
- ii. *For $\alpha > 0$, agents disagree over the policy mix and individual bliss policies are ordered by productivity type. Formally, there is a productivity cut-off $\bar{z}(\alpha) = \left[\frac{E(z^{2(1+\alpha)})}{E(z^2)} \right]^{\frac{1}{2\alpha}}$, with $z_l < \bar{z}(\alpha) < z_h$, such that:*
 - *For all $z < \bar{z}(\alpha)$, $\lambda^p(z, \alpha)$ is positive and strictly decreasing in z , and $\lim_{z_l \rightarrow 0} \lambda^p(z_l, \alpha) = \bar{\lambda}(\alpha)$.*
 - *For all $z \geq \bar{z}(\alpha)$, $\lambda^p(z, \alpha) = 0$.*

Proof. See Appendix B.5. ■

Lemma 3 establishes two key elements. First, progressivity is critical to generate redistributive conflicts within a generation. Second, individual bliss policies are ordered by productivity type z .

In the absence of progressivity, $\alpha = 0$, agents vote unanimously to rely exclusively on the inflation tax.²² Yet with progressive labor taxation, this unanimity no longer holds. Figure 2 provides a graphical illustration of bliss policies $\lambda^p(z, \alpha)$ when $\alpha > 0$. The lower individual productivity, the higher the support for labor taxation, because it collects relatively more taxes on higher-productivity agents, at low individual costs. This is the *tax-shifting* effect induced by progressivity. Similarly, high-productivity agents support inflationary policies. The population is split in two, according to the cut-off value $\bar{z}(\alpha)$. Any agent with productivity $z > \bar{z}(\alpha)$ would not support positive labor taxes. Interestingly, when the productivity z_l of

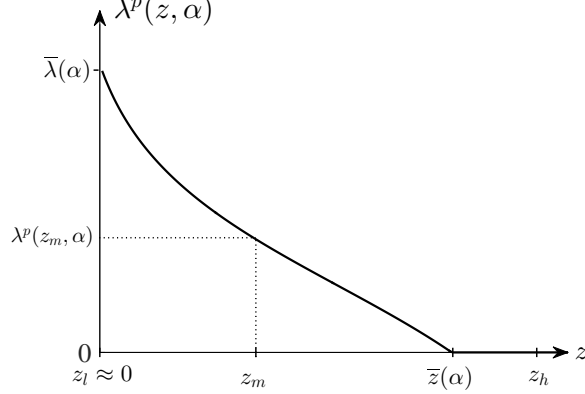
²⁰ Again, the analysis stresses that the relevant levels of labor tax lie on the upward sloping part of the Laffer curve, so that $\frac{d\tilde{\pi}(\cdot)}{d\lambda} < 0$. Whenever λ lies on the downward sloping part of the aggregate Laffer curve, i.e., $\lambda \geq \bar{\lambda}(\alpha)$, then $\frac{d\tilde{V}_o(\cdot)}{d\lambda} < 0$. See equation (19).

²¹ Still, the level of inflation needed to clear the government budget constraint does depend on the seigniorage tax base Φ_{-1} or level of public good g .

²² This result is stronger than the outcome of the optimal policy plan under discretion (Proposition 1). Indeed, not only aggregate productive efficiency prescribes the exclusive use of the inflation tax, but agents unanimously support seigniorage to take advantage of the inelastic tax base.

the least productive agents is very small, the associated bliss policy is the top of the aggregate Laffer curve $\bar{\lambda}(\alpha)$.²³

Figure 2: Individual Bliss Policies - Stage 2 Vote ($\alpha > 0$)



This figure represents bliss policies as a function of productivity z . The lower productivity, the higher the desire for labor taxation. In turn, the associated level of inflation is increasing in z : higher-productivity agents internalize they would bear the largest share of labor taxes, hence they favor more inflationary policies. As bliss policies are ordered by productivity type, the median productivity agent z_m is the decisive voter.

Altogether, these results provide a characterization of the outcome of the vote $\{\lambda^p(\alpha, \Phi_{-1}), \bar{\pi}^p(\alpha, \Phi_{-1})\}$.

Proposition 2. *Majority voting selects a unique policy mix. The decisive voter is the median productivity agent, so that $\lambda^p(\alpha, \Phi_{-1}) = \lambda^p(z_m, \alpha)$, with the following characteristics:*

- For $\alpha = 0$, the implemented policy relies exclusively on the inflation tax: $\lambda^p(\alpha, \Phi_{-1}) = 0$.
- For any $\alpha > 0$, the policy implements positive labor taxes $\lambda^p(\alpha, \Phi_{-1}) > 0$, possibly complemented with the inflation tax.

Proof. The assumption of permanent lifetime productivity ensures individual type z and real money holding $\phi(z, M)$ are perfectly correlated, i.e., that agents differ *de facto* only along one dimension. Moreover, because preferences are single-peaked over a unidimensional policy space, majority voting induces a unique Condorcet winner. The outcome of the vote is the bliss policy of the median voter. Because bliss policies are ranked by productivity type (Lemma 3), the decisive voter is the median-productivity agent.

Lemma 3 establishes that whenever the labor tax plan is not progressive ($\alpha = 0$), then agents unanimously vote for no labor taxes. For any $\alpha > 0$, using Jensen inequality:

$$\frac{E(z^{2(1+\alpha)})}{E(z^2)^{1+\alpha}} \geq 1 \Rightarrow \bar{z}(\alpha)^{2\alpha} \geq E(z^2)^\alpha \Rightarrow \bar{z}(\alpha)^2 \geq E(z^2), \quad (20)$$

and by the definition of the variance $E(z^2) = V(z^2) + E(z)^2$, one gets:

$$\bar{z}(\alpha) > E(z) \geq z_m, \quad (21)$$

²³When $z_l \approx 0$ and $\alpha > 0$, the average labor tax rate tends to 0 for any λ , while the average tax rate implied by inflation is strictly positive.

where the last inequality comes from (A.1). For any $\alpha > 0$, the median-productivity agent z_m is below the cut-off value $\bar{z}(\alpha)$ and supports positive labor taxes. ■

Without labor income tax progressivity, agents vote unanimously against labor taxes, because associated labor supply distortions systematically outweigh the benefits of collecting proportional labor taxes over the whole population. When $\alpha > 0$, the outcome of the vote is one of positive labor taxes: the *tax-shifting* effect is strong enough that the median agent does want to raise positive labor taxes. Overall, any level of progressivity $\alpha > 0$ contributes to curb the inflation tax.

4.2.2 Influence of Fiscal Progressivity on the Policy Mix

Proposition 2 has established that majority voting implements positive labor taxes if and only if the labor tax plan is progressive. It is essential then to characterize the implied aggregate labor tax function $T(\alpha, \lambda^p(\alpha, \Phi_{-1}))$, and conversely, how the inflation tax is sensitive to labor income tax progressivity α .²⁴

Lemma 4. *The aggregate tax function $T(\alpha, \lambda^p(\alpha, \Phi_{-1}))$ is positive for all $\alpha \geq 0$, admits a global maximum, and eventually converges to 0 as the level of progressivity gets to infinity.*

Proof. See Appendix B.6. ■

Figure 3 represents the breakdown of government revenues induced by majority voting as a function of α . As the median-productivity agent is decisive, it is important to understand how his willingness to raise labor taxes is modified when α increases. As is clear now, when $\alpha = 0$, no labor tax is collected. A positive level of progressivity induces the median agent to rely on the *tax-shifting* effect and raise labor taxes. As the level of progressivity increases further, increasing labor supply distortions leads to a decrease in the total amount of labor taxes collected. Note that these curves should not be read as standard Laffer curve. Indeed, as shown next section, individuals have favorite level of progressivity that lies on both the upward and downward sloping part of these curves.

4.3 Stage 1 - The Determinants of Fiscal Progressivity

The previous section shows that the tax mix $\{\lambda^p(\cdot), \tilde{\pi}^p(\cdot)\}$ implemented under majority voting features positive labor taxes if and only if $\alpha > 0$. Yet, progressivity is costly per se (Lemma 1) and has significant distributional consequences (Proposition 2). This section investigates whether young agents would support to pre-commit to positive progressivity, and so to benefit from the expected reduction in inflation.

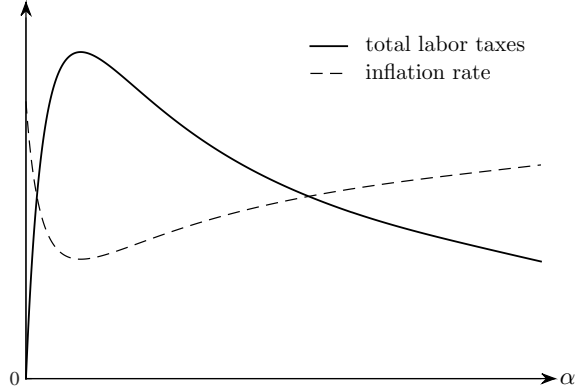
Young agents decide on progressivity behind a *veil of ignorance*, i.e., before agents learn their individual productivity z .²⁵ To establish $\alpha^p > 0$ in equilibrium, I first study individual preferences over progressivity. The value function of a young agent with productivity z satisfies:

$$\tilde{V}_y(z, \alpha) \equiv V_y(z, \alpha, \lambda^p, \pi^p), \quad (22)$$

²⁴Formally, $T(\alpha, \lambda^p(\alpha, \Phi_{-1}))$ is the aggregate labor tax function (10) evaluated at the vote outcome $\lambda^p(\alpha, \Phi_{-1}) = \lambda^p(z_m, \alpha)$.

²⁵In the political literature, the veil of ignorance refers to a choice mechanism where parties involved in the decision process do not know about their particular abilities, tastes and position within the social order of society.

Figure 3: Government Revenue as a Function of Progressivity under Majority Voting



This figure represents the tax mix implemented under majority voting as a function of progressivity α . The plain line represents $T(\alpha, \lambda^P(\alpha, \Phi_{-1}))$, the aggregate level of labor taxes. The dashed line represents the inflation rate needed to meet the government budget constraint. These curves do not read as Laffer curves but rather reveal the trade-offs faced by the decisive voter. When $\alpha = 0$, unanimity for the inflation tax gives rise to high inflation and no labor taxes. When α increases, the median agent supports higher labor taxes, up to a point where labor supply distortions become too costly to raise more labor taxes. In the limit, no labor taxes are collected.

where $\lambda^P \equiv \lambda^P(\alpha, \Phi_{-1})$ and $\tilde{\pi}^P \equiv \pi^P(\alpha, \Phi_{-1})$ is the policy mix implemented next period under majority voting (Proposition 2). Φ_{-1} is next period aggregate seigniorage tax base, formed contemporaneously as the sum of individual demand for money. From (7) and (8), it satisfies:

$$\Phi_{-1} = E(z^2)\tilde{\pi}^P(\alpha, \Phi_{-1}). \quad (23)$$

Value function (22) has two components: the demand for asset in youth is influenced by expected inflation, whereas production in old age is distorted by the labor income tax plan. The derivative of (22) w.r.t. α outlines variation in welfare for an agent with productivity z . Using the envelope conditions (4):

$$\frac{d\tilde{V}_y(z, \alpha)}{d\alpha} = - \underbrace{\frac{\partial \tau(\cdot)}{\partial \alpha} - \frac{\partial \tau(\cdot)}{\partial \lambda} \frac{d\lambda^P(\cdot)}{d\alpha}}_{\text{labor income tax}} + \underbrace{y_y(\cdot) \frac{d\tilde{\pi}^P(\cdot)}{d\alpha}}_{\text{inflation tax}}. \quad (24)$$

The first two terms reflect the welfare losses associated with progressive labor taxes: the direct disincentive effect of progressivity and the overall distortions induced by labor taxes. The magnitude of the latter depends on the relative position of agent z within the productivity distribution, i.e., its exposure to the *tax-shifting* effect identified in Section 4.2. The third term is the marginal cost of inflation: the influence of α on the inflation tax precisely captures the dynamic implications of progressivity to balance the policy mix away from excessive inflation.

To understand how progressivity operates, consider the limit case $\alpha \approx 0$. The decisive voter next period implements a policy mix relying essentially on inflation. An increase in α would then decrease inflation and mitigate its adverse effects on young agents' labor supply and money demand. In effect, progressivity contributes to balance inevitable welfare losses over the life cycle: every young agent z supports a strictly positive level of progressivity, as it provides appropriate *dynamic incentives* to curb the excessive inflationary

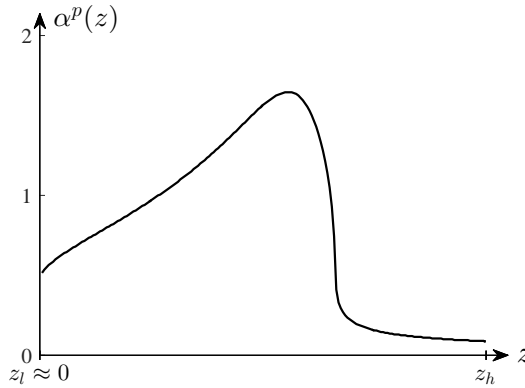
policies.

Lemma 5. *Any agent $z \in [z_l, z_h]$ would favor a strictly positive level of progressivity, i.e., for all z , $\alpha^P(z) > 0$.*

Proof. See Appendix B.7. ■

Figure 4 outlines that agents' favorite choice of progressivity $\alpha^P(z)$ is not monotonic in z . Indeed, individuals weigh their individual exposure to labor taxation, the deadweight loss associated with progressivity and the reduction in inflation. For the least productive agents $z_l \approx 0$, the marginal tax rate is 0 for any $\lambda \geq 0$ whenever $\alpha > 0$. Therefore, this agent would favor a level of progressivity that maximizes total labor taxes collected.²⁶ An agent with a low $z > z_l$ would then support a higher level of progressivity, to further exploit the *tax-shifting* effect while minimizing its individual exposure to labor taxes. An agent with a higher z would support a lower level of progressivity because it internalizes it would bear a large welfare cost associated to labor taxes. The highest-productivity agent z_h would favor progressivity just enough to balance distortions induced by inflation and labor taxes. Overall, agent z 's favorite level of progressivity weighs *tax-shifting*, *distortions* from progressivity and *dynamic incentives* to curb inflation. The latter dominates at low level of progressivity for every agent z .

Figure 4: Individual Choice of Progressivity - Stage 1



This figure plots young agents' favorite choice of α . The non-monotonicity of $\alpha^P(z)$ stems from the interplay between *tax-shifting*, *distortions* from progressivity and *dynamic incentives* to curb inflation. When $z_l \approx 0$, $\alpha^P(z_l)$ maximizes labor tax revenue next period. At lower values of z , an agent would select a higher α to take benefit of *tax-shifting*. Higher productivity agents choose a lower value of α because they internalize the support of the largest burden of labor taxes.

The choice protocol described in Section 4.1 specifies that progressivity is set behind a *veil of ignorance*, namely before agents learn their productivity parameter z . The selected level of progressivity α^P is the solution to the following program:

$$\max_{\alpha} \int_z \tilde{V}_y(z, \alpha) dF(z), \quad (25)$$

where policy choices $\lambda^P(\cdot)$ and $\tilde{\pi}^P(\cdot)$ are the outcome of majority voting next period. The following proposition follows naturally from Lemma 5.

²⁶Recall that with $\alpha > 0$, the average tax rate writes $\frac{\tau(\cdot)}{y_o(\cdot)} = \lambda y_o(\cdot)^\alpha$. Agent $z_l \approx 0$ would pick α that maximizes $T(\alpha, \lambda^P(\alpha))$, the peak of the aggregate labor income tax function. See Figure 3.

Proposition 3. *If labor income tax progressivity is set behind a 'veil of ignorance', then $\alpha^p > 0$.*

Proof. Note $W(\alpha) \equiv \int_z \tilde{V}_1(z, \alpha) dF(z)$ the welfare criterion. Applying Lemma 5, we naturally have $W'(0) > 0$, so that the optimal level of progressivity is not zero. Because when α gets very large no labor taxes are effectively collected (see Lemma 4), and α^p is finite. ■

Overall, the political analysis stresses how progressive labor taxation generates distributional conflicts that are effective in mitigating excessive inflation. Recall from Proposition 1 that a benevolent policymaker with commitment and without distributional concern would set $\alpha = 0$ and optimally equalize distortions and welfare losses across the population and over time. Here, without commitment and with distributional conflicts - reflected by the majority voting protocol, progressive labor taxation allows policy to implement a similar allocation, in the sense that the inflation bias is contained and the burden of policy distortions is distributed more evenly over time.

Finally, note that for a given generation, life-time welfare is higher under the conflictual political decision protocol than under benevolent discretionary policymaking (Proposition 1). Indeed, the choice of progressivity under both decision processes satisfies the same welfare criterion (25). In addition, the political protocol could set the same policy instruments (no progressivity, maximum inflation bias) but selects instead policy with progressive labor taxes to reduce the inflation bias: redistributive conflicts motivate the introduction of progressive labor taxes that enhance lifetime welfare under a lack of commitment.

5 Commitment and Insurance Channels of Progressivity

The analysis has been conducted so far in a stylized environment, to isolate the distinctive forces that determine the commitment channel of progressivity against discretionary monetary policy. The literature emphasizes the role played by progressive fiscal policy as partial insurance against idiosyncratic productivity risk, e.g., Conesa and Krueger (2006) and Heathcote, Storesletten, and Violante (2017). This section introduces incomplete markets and idiosyncratic productivity risk to study the interplay of these channels. The analysis highlights that progressive fiscal policy enhances welfare, through a reduction in the inflation bias and a decrease in the cross section inequality of consumption.

5.1 Adjustments to the model

The environment is in all respects similar to the one introduced in Section 2, at the exception of the following additional elements.²⁷ First, agents are exposed between young and old age to idiosyncratic productivity shocks, that satisfy the following process:

$$\log(z_o) = (1 - \rho) \log(\bar{z}) + \rho \log(z_y) + \varepsilon, \quad (26)$$

²⁷By construction, the analysis focuses on the effect of intragenerational conflicts on monetary and fiscal choices. An alternative specification that features intergenerational conflicts is discussed in Appendix A.2.3.

where $\varepsilon \sim \mathcal{N}(0, \sigma_\varepsilon^2)$. This feature generates a non-trivial joint distribution of labor productivity and nominal wealth, reflected by the cumulative distribution function $F(z_o, z_y)$ over old-age population. Individual preferences are modified to account for risk aversion and plausible behavioral reactions to policy decisions:

$$\beta E_{z_o|z_y} \left[\frac{c_o^{1-\sigma}}{1-\sigma} - \chi \frac{n_o^{1+\frac{1}{\kappa}}}{1+\frac{1}{\kappa}} \right] - \chi \frac{n_y^{1+\frac{1}{\kappa}}}{1+\frac{1}{\kappa}}, \quad (27)$$

where κ is the commonly defined Frisch elasticity of labor supply, and χ pins down the disutility of labor. Under this specification, young age money demand is motivated by wealth accumulation and insurance against productivity shocks, i.e., a standard incomplete market *precautionary motive* for saving. Finally, the government budget constraint features a lump-sum transfer t :

$$t + g = \lambda \int_{z_o, z_y} (z_o n_o(z_o, z_y))^{1+\alpha} dF(z_o, z_y) + (1 - \tilde{\pi}) \int_{z_o, z_y} \phi(z_o, z_y) dF(z_o, z_y) \quad (28)$$

where $n_o(z_o, z_y)$ and $\phi(z_o, z_y)$ are the endogenous labor supply and money holding of individuals with productivity history z_y, z_o .

As in the analytical sections, we contrast economic outcomes induced by a benevolent policymaker under commitment and policy discretion, and by majority voting.

Policy plan under commitment. The benevolent policymaker maximizes the intertemporal welfare of a given generation:

$$\max_{\lambda, \tilde{\pi}} \int_{z_y} \beta \int_{z_o|z_y} (u(c_o) - g(n_o)) dF(z_o|z_y) - g(n_y) dF(z_y), \quad (29)$$

subject to labor supply functions $n_y(\cdot)$, $n_o(\cdot)$, money demand function $m(\cdot)$ and the government budget constraint (28).

Policy plan under discretion. Given a distribution of money holding $\{\phi(z_y, z_o)\}$, a benevolent policymaker under discretion solves:

$$\max_{\lambda, \tilde{\pi}} \int_{z_y} \int_{z_o|z_y} u(c_o) - g(n_o) dF(z_o|z_y) dF(z_y), \quad (30)$$

subject to old age labor supply function $n_o(\cdot)$ and the government budget constraint (28). An equilibrium is computed as a fixed point between stationary policy choices $(\lambda, \tilde{\pi})$ and the distribution of money holding $\{\phi(z_y, z_o)\}$ that reflects these policy choices. Individual money demand and the inflation rate lie on the upward sloping part of the seigniorage Laffer curve.

Policy plan under majority voting. Given a distribution of money holding $\{\phi(z_y, z_o)\}$, individual agents with productivity history z_y, z_o form preferences over a set of policy choice $(\lambda, \tilde{\pi})$ that satisfy the government budget constraint (28). The winning platform of electoral competition is the median voter bliss

policy mix. An equilibrium is computed as a fixed point, where individual money holding and aggregate real money balances are consistent with the policy platform that wins under majority voting.

5.2 Numerical Solution and Results

To generate plausible behavioral reactions to taxes, the model is calibrated to match standard moments for the U.S. economy, when policy choices are made by a benevolent policymaker under a lack of commitment.²⁸ Table 1 reports numerical parameters and moments.

Table 1: Calibration

Parameter		Value	Source / Target
Preferences			
β	discount factor	0.96	Annual frequency
σ	coefficient risk aversion	2	Fixed
χ	disutility labor	10.36	Average hours worked = 1/3
κ	Frisch elasticity	0.72	Chetty and al. (2011)
Productivity			
\bar{z}	average productivity	1	Normalization
ρ	persistence	0.96	Conesa and Krueger (2006)
σ_ϵ	variance	0.169	U.S. Market GINI = 0.48
Government			
α	progressivity	0.499	U.S. After Tax GINI = 0.36
g	pure government expenses	0.11	U.S. public consumption = 15%
t	pure government transfers	0.05	U.S. public transfer = 7%

The productivity process is discretized into a 7 state Markov chain using the method developed by Tauchen (1986). Following the definition in Heathcote, Storesletten, and Violante (2017) and Holter, Krueger, and Stepanchuk (2019), the moment progressivity is computed within the model as:

$$\int_{z_o, z_y} \frac{T'(y) - T(y)/y}{1 - T(y)/y} dF(z_o, z_y)$$

, where $T(y) = \lambda y^{1+\alpha} - t$ and income y satisfies individual policy functions $y \equiv y(z_o, z_y, \alpha, \lambda, \tilde{\pi}, t)$. Given the parsimonious OLG structure of the model, the numerical solution delivers exact policy functions, both for private agents and the government.

Table 2 reports steady-state outcomes under the choice mechanisms presented in ??, for economies with no progressivity ($\alpha = 0$), with the empirical level of progressivity ($\alpha = 0.499$) and at the optimal level of progressivity under each regime.

These elements emphasize the insurance channel of progressive labor taxes, highlight the time inconsistency of monetary policy, and the effectiveness of progressive fiscal policy to curb welfare losses under monetary discretion. Columns 1 to 3 presents equilibrium outcomes under commitment: progressive labor

²⁸See for instance Conesa and Krueger (2006), Conesa, Kitao, and Krueger (2009), Holter, Krueger, and Stepanchuk (2019), Heathcote, Storesletten, and Violante (2017). Overall, the calibration matches some key empirical statistics. It might overestimate the effective progressivity of the tax schedule, even though there is substantial uncertainty about its exact empirical value, due to the multidimensionality of tax codes.

Table 2: Equilibrium Statistics

	Commitment			Discretion			Majority Voting		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Progressivity α	none 0	data 0.499	opt. 1.032	none 0	data 0.499	opt. 0.944	none 0	data 0.499	opt. 1.163
Lifetime Welfare	1 (n)	1.008	1.01	0.628	1.003	1.005	0.628	0.996	1.002
Dispersion Welfare	1 (n)	0.951	0.949	2.271	1.019	1.006	2.271	1.069	1.03
Seignorage/(g+tt)	0.507	0.575	0.662	0	0.706	0.739	0	0.78	0.783
Gini coef. pre-tax income	0.49	0.466	0.431	0.486	0.475	0.458	0.486	0.478	0.456
Gini coef. after-tax income	0.417	0.355	0.31	0.431	0.389	0.36	0.431	0.403	0.362
Effective progressivity	0.169	0.255	0.296	0.131	0.198	0.229	0.131	0.173	0.22
Average hours worked	0.339	0.332	0.328	0.257	0.333	0.331	0.257	0.333	0.33
Output'	0.741	0.727	0.716	0.562	0.73	0.723	0.562	0.729	0.721
Gini coef. wealth	0.496	0.522	0.545	NaN	0.518	0.534	NaN	0.516	0.537
Gini coef. consumption	0.441	0.418	0.398	0.431	0.425	0.411	0.431	0.429	0.41

(n): normalization.

taxes provides insurance against idiosyncratic shocks, hence increase welfare and decrease the dispersion of consumption. Column 4 presents outcome under a lack of commitment without progressive labor taxes: the incentives to rely on inflationary finance generates a collapse of money demand, a decrease in average welfare and a sharp increase in the dispersion of welfare.²⁹ In contrast, discretionary policy choice with fiscal progressivity ($\alpha = 0.499$) contains the inflation bias and provide valuable insurance against productivity shocks (column 5). If policy choices were instead made under majority voting, the lack of fiscal progressivity generates an inflationary bias similar to policy discretion (columns 4 and 7). In contrast majority voting under fiscal progressivity yields an equilibrium outcome comparable to policy discretion with progressivity (columns 5 and 8). These elements confirm the qualitative equivalence between policy choices by a planner with a concern for the distribution of consumption and the political majority voting protocol.³⁰

In addition, one can contrast the optimal level of progressivity under each regime (columns 3, 6 and 9). In the presence of idiosyncratic uncertainty and risk aversion, the interplay between planner's choice of policies under commitment or discretion and the optimal level of progressivity is richer than discussed in Section 3. A planner with commitment would choose a positive degree of progressive labor income taxes to trade-off the inefficiency of progressive taxes against a reduction in the dispersion of consumption across agents (column 3). A planner without commitment would not necessarily choose a higher level of progressivity, because redistribution is partially achieved through discretionary collection of seignorage (column 6). Majority voting still would pick a relatively higher level of progressive labor income taxes, because the *tax-shifting* effect dominates the choices of the median voter (column 9), hence motivate higher levels of progressivity.

²⁹Note that the inflation tax is naturally interpreted in this set up as inflationary finance. A set-up with a cash-in-advance constraint is presented in Appendix A.2.3 that allows to interpret the inflation tax as an inflation rate.

³⁰This equivalence motivated the structure of the analysis that distinguished efficiency (Section 3) and redistributive conflicts proxied by majority voting (Section 4).

Table 3: Sensitivity Analysis

Panel a. Idiosyncratic Productivity

		Persistence			Variance		
		ρ_l	ρ	ρ_h	σ_l	σ	σ_h
Commitment	α^*	0.947	1.032	1.101	0.996	1.032	1.060
	Welfare	1.007	1.010	1.014	1.008	1.010	1.011
	Dispersion	0.950	0.949	0.947	0.950	0.949	0.948
	Share seign.	1.297	1.306	1.303	1.305	1.306	1.305
Discretion	α^*	0.905	0.944	1.003	0.923	0.944	0.965
	Welfare	1.001	1.005	1.011	1.003	1.005	1.007
	Dispersion	1.025	1.006	0.986	1.016	1.006	0.997
	Share seign.	1.500	1.457	1.405	1.480	1.457	1.436
Voting	α^*	1.199	1.165	1.156	1.177	1.165	1.160
	Welfare	0.997	1.002	1.009	0.999	1.002	1.005
	Dispersion	1.040	1.020	0.999	1.030	1.020	1.010
	Share seign.	1.567	1.521	1.464	1.545	1.521	1.497

Panel b. Government Policy

		Lump-sum trans.			Gov. spending		
		t_l	t	t_h	g_l	g	g_h
Commitment	α^*	1.071	1.032	0.992	1.063	1.032	1.001
	Welfare	1.001	1.001	1.001	1.001	1.001	1.001
	Dispersion	0.950	0.950	0.947	0.950	0.950	0.947
	Share seign.	1.309	1.306	1.303	1.308	1.306	1.304
Discretion	α^*	0.985	0.944	0.903	0.978	0.944	0.912
	Welfare	1.006	1.005	1.004	1.006	1.005	1.005
	Dispersion	1.003	1.006	1.010	1.002	1.006	1.011
	Share seign.	1.452	1.457	1.462	1.453	1.457	1.461
Voting	α^*	1.204	1.165	1.129	1.198	1.165	1.137
	Welfare	1.003	1.002	1.001	1.003	1.002	1.001
	Dispersion	1.015	1.020	1.025	1.014	1.020	1.026
	Share seign.	1.514	1.521	1.527	1.514	1.521	1.527

The tables report the numerical performance of the model at the optimal level of progressivity under different parameter values, with $x_l < x < x_h$. All numbers are reported relative to the case of commitment without progressivity.

5.3 Sensitivity Analysis

Finally, the model is used to conduct sensitivity analyses related to the incomplete-market structure of the economy and the policy-making environment. Table 3 reports comparative statics exercises for selected parameters to illustrate how they influence the optimal level of progressivity, the inflation bias of discretionary monetary policy, and associated economic outcomes.

Persistence in individual productivity ρ plays a central role in shaping the joint distribution of income and wealth. The more persistent individual productivity is, the stronger the correlation between labor income and wealth. The resulting inequality in market income increases the planners incentive to redistribute consumption and, in turn, to rely on labor income taxation to finance public spending and transfers. As a result, both the committed and discretionary planners raise the level of progressivity as ρ increases. In contrast, under majority voting, the optimal degree of progressivity declines with higher persistence. This is because, at high levels of progressivity, the median voter operates on the downward-sloping part of the government revenue curve (Figures 3 and 4). Nonetheless, across all levels of persistence, majority voting

yields higher progressivity than either planner regime.

Table 3 also illustrates how increasing dispersion in productivity σ_ε – and hence in labor income – amplifies redistribution incentives. Greater inequality strengthens the desire to redistribute and leads to higher optimal progressivity for both planner types. Intuitively, the more unequal individual productivity becomes, the stronger the incentive to redistribute, and the more effective the *tax-shifting* mechanism is in raising public resources.

A similar logic applies to lump-sum transfers t and government spending g , analyzed in panel b. Lump-sum transfers are inherently redistributive, so higher transfers reduce the planners incentive to rely on progressive labor income taxation. This result holds across all policy regimes: commitment, discretion, and majority voting. Higher government spending g raises the distortionary cost of taxation, which further reduces the desirability of progressive labor taxes. In both cases, the model predicts lower optimal progressivity and a stronger inflation bias under policy discretion and majority voting.

Overall, the more persistent and volatile idiosyncratic shocks are, the more effective progressive labor taxation becomes in curbing the inflation bias under discretion and majority voting. In contrast, higher lump-sum transfers mitigate the tax-shifting effect, while higher government spending increases the distortive cost of taxation. Both mechanisms result in lower optimal progressivity and higher inflation bias.

6 Conclusions

This paper studies how the design of progressive fiscal policy can address the time inconsistency of monetary policy. The political game stresses that progressive labor taxes generate redistributive conflicts that mitigate the inflation bias. In this context, progressive labor taxes are desirable, despite the distortionary costs they impose on the economy. Progressive labor taxes achieve several objectives: they reduce consumption dispersion, provide insurance against income risk and mitigate the credibility deficit of monetary policy.

References

- ALBANESI, S. (2007): “Inflation and inequality,” Journal of Monetary Economics, 54(4), 1088–1114.
- AUCLERT, A. (2019): “Monetary Policy and the Redistribution Channel,” American Economic Review, 109(6), 2333–67.
- BENABOU, R. (2002): “Tax and Education Policy in a Heterogeneous-Agent Economy: What Levels of Redistribution Maximize Growth and Efficiency?,” Econometrica, 70(2), 481–517.
- CALVO, G. A. (1978): “On the Time Consistency of Optimal Policy in a Monetary Economy,” Econometrica, 46(6), pp. 1411–1428.
- CAMOUS, A., AND R. COOPER (2019): ““Whatever It Takes” Is All You Need: Monetary Policy and Debt Fragility,” American Economic Journal: Macroeconomics, 11(4), 38–81.
- CHARI, V. V., AND P. J. KEHOE (1990): “Sustainable Plans,” Journal of Political Economy, 98(4), 783–802.

- CONESA, J. C., S. KITAO, AND D. KRUEGER (2009): “Taxing Capital? Not a Bad Idea after All!,” American Economic Review, 99(1), 25–48.
- CONESA, J. C., AND D. KRUEGER (2006): “On the optimal progressivity of the income tax code,” Journal of Monetary Economics, 53(7), 1425–1450.
- EASTERLY, W., AND S. FISCHER (2001): “Inflation and the Poor,” Journal of Money, Credit and Banking, 33(2), 160–78.
- FARHI, E. (2010): “Capital Taxation and Ownership When Markets Are Incomplete,” Journal of Political Economy, 118(5), 908 – 948.
- FARHI, E., C. SLEET, I. WERNING, AND S. YELTEKIN (2012): “Non-linear Capital Taxation Without Commitment,” The Review of Economic Studies.
- FERRIERE, A. (2015): “Sovereign Default, Inequality, and Progressive Taxation,” mimeo, New York University.
- GORNEMANN, N., K. KUESTER, AND M. NAKAJIMA (2021): “Doves for the Rich, Hawks for the Poor? Distributional Consequences of Systematic Monetary Policy,” ECONtribute Discussion Papers Series 089, University of Bonn and University of Cologne, Germany.
- HEATHCOTE, J., K. STORESLETTEN, AND G. L. VIOLANTE (2017): “Optimal Tax Progressivity: An Analytical Framework*,” The Quarterly Journal of Economics, 132(4), 1693–1754.
- HOLTER, H. A., D. KRUEGER, AND S. STEPANCHUK (2019): “How do tax progressivity and household heterogeneity affect Laffer curves?,” Quantitative Economics, 10(4), 1317–1356.
- KAPLAN, G., B. MOLL, AND G. L. VIOLANTE (2018): “Monetary Policy According to HANK,” American Economic Review, 108(3), 697–743.
- KYDLAND, F. E., AND E. C. PRESCOTT (1977): “Rules Rather Than Discretion: The Inconsistency of Optimal Plans,” Journal of Political Economy, 85(3), 473–91.
- MELTZER, A. H., AND S. F. RICHARD (1981): “A Rational Theory of the Size of Government,” Journal of Political Economy, 89(5), 914–27.
- PERSSON, T., AND G. TABELLINI (1994): “Representative democracy and capital taxation,” Journal of Public Economics, 55(1), 53–70.
- PERSSON, T., AND G. TABELLINI (2002): Political Economics: Explaining Economic Policy, Zeuthen lecture book series. MIT Press.
- SOLT, F. (2016): “The Standardized World Income Inequality Database*,” Social Science Quarterly, 97(5), 1267–1281.

TAUCHEN, G. (1986): “Finite state markov-chain approximations to univariate and vector autoregressions,” Economics Letters, 20(2), 177 – 181.

WERNING, I. (2007): “Optimal Fiscal Policy with Redistribution,” The Quarterly Journal of Economics, 122(3), 925–967.