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Inequality, Financialization, and Political Disintegration

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Abstract

Drawing on Peter Turchin's structural-demographic theory, this paper provides a preliminary examination of how rising inequality and financial liberalization contribute to political instability through the interplay of mass immiseration and elite overproduction. We capture these dynamics through a simplified agent-based macroeconomic model, introducing two structural shocks – growing inequality and financial liberalization – that reflect the transformations reshaping advanced economies in recent decades, a process intertwined with political disintegration. A wealth tax on the richest households can reduce political fragmentation and improve economic performance, but lasting resilience will require embedding such measures within a broader rethinking of the policy paradigm that has prevailed since the 1980s.

JEL Class.: C63, D31, E02

Keywords: Inequality, Financial Liberalization, Political Instability, Agent-Based Model.

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Inequality, Financialization, and Political Disintegration[†]

Alberto Russo

1 Introduction

Over more than four decades, advanced capitalist economies have undergone a profound structural transformation. Beginning in the late 1970s-early 1980s, this political turn redefined the relationship between the state, markets, and society (Stiglitz, 2013). Central to this transformation were two intertwined processes: the rise of economic inequality and the expansion of financial markets.[1]

Growing inequality, both functional and personal, has been one of the defining features of the post-1980s economic order. Wages for middle- and low-income households have stagnated or declined in relative terms, while capital income and top-tier wealth have expanded dramatically (Piketty, 2014). In this context, stagnating or declining real incomes have tended to dampen aggregate demand by constraining household consumption. As a response, policymakers across the Global North turned to financial liberalization as an indirect strategy to sustain household consumption without redistributive policies or public expenditure. As Rajan (2011) famously argued, expanding credit served as a "private solution" to the politically inconvenient problem of growing inequality.

However, this solution was (relatively) short-sighted. The reliance on private debt to compensate for stagnant wages exacerbated financial fragility. Households, particularly in the middle and lower parts of the distribution, became increasingly indebted, often with little capacity to service debt during downturns. This dynamic has been identified as a central cause of major financial crises, including the 2007-8 Great Financial Crisis (van Treeck, 2014). A growing body of empirical and theoretical literature highlights how financial liberalization, when combined with rising inequality, leads to systemic imbalances. In particular, these conditions create endogenous cycles of credit expansion and contraction, increasing the likelihood of crisis (Kumhof et al., 2015; Perugini et al., 2016; Russo et al., 2016).

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[1]We use the term "financialization" throughout the paper (starting from the title) referring in particular to the expansion of credit to households due to financial deregulation, as the central mechanism interacting with growing inequality. However, in a broader sense, it indicates the increasing dominance of financial motives, financial markets, financial institutions, and financial elites over the economy and society (Epstein, 2005).

Crucially, inequality and financialization are not merely economic phenomena; they also carry profound political consequences. The literature has examined the destabilizing role of inequality and financial liberalization, though typically as separate mechanisms. Seminal contributions (Alesina and Perotti, 1996; Acemoglu and Robinson, 2006) highlight how rising inequality fuels unrest, polarization, and institutional fragility. In parallel, comparative political economy has emphasized how financial liberalization and deregulation heighten the risk of crises, which in turn undermine governments and social cohesion (Haggard and Kaufman, 1995). More recently, research has linked financial liberalization to growing inequality (as in the works commented in the previous paragraph), while studies of the post-2008 period document the political fallout of finance-driven crises, from declining trust to the rise of populist movements (Pontusson and Raess, 2012; Funke et al., 2016). Yet, the *joint political consequences* of rising inequality and financial liberalization remain quite underexplored. Our contribution aims at closing this gap by integrating these dynamics into a unified, agent-based computational framework. This approach allows us to move beyond separate causal narratives and to study how inequality and financial liberalization, taken together, can generate self-reinforcing processes of political disintegration.

Following Turchin (2016, 2023), two key mechanisms are at the core of this process. The first, *mass immiseration*, refers to the condition in which a growing segment of the population finds it increasingly difficult to maintain a socially acceptable standard of living. This "immiseration" results not necessarily from absolute poverty, but from relative deprivation and the erosion of expectations regarding stable employment, homeownership, and upward mobility. In advanced societies, where consumption norms and social status are shaped by relative standing, such stagnation generates frustration, anxiety, and a loss of trust in the political system. The second mechanism, *elite overproduction*, is a more subtle but equally destabilizing process. As economic rewards become increasingly concentrated, the number of individuals crossing into the economic elite – those with significant wealth and influence – grows. However, the number of available "power positions" in society (e.g., political offices, top corporate roles, elite universities, media control) does not expand at the same pace. This results in a surplus of elite aspirants, many of whom become politically frustrated. These "frustrated elites" are more likely to challenge the existing order, either by supporting radical reforms or by leading counter-elite movements aimed at displacing the current establishment. Crucially, Turchin argues that neither mass immiseration nor elite overproduction alone is sufficient to trigger political disintegration: it is their interaction that creates systemic vulnerability. Popular discontent provides the mass base, while frustrated elites supply the leadership and resources for disruptive political mobilization. When these forces converge, the result can be political fragmentation, institutional decay, and the rise of anti-establishment movements.[2]

Despite its relevance, this perspective is almost entirely absent from conventional macroeconomic modelling. Standard DSGE or neoclassical models treat political factors as exogenous or

[2] According to Turchin, a telling example is the rise of Donald Trump in the United States – an "unlikely president" who capitalized on both mass resentment and elite division. However, this political dynamic is not new. Historical cycles of instability, such as those leading to the fall of the Roman Republic, the French Revolution, and the crises of the early 20th century, display similar patterns. The current period – marked by high inequality, low social mobility, and elite polarization – represents another turning point in the long-term structural-demographic cycle (Turchin, 2023).

irrelevant, focusing narrowly on efficiency and equilibrium. Even Agent-Based, post-Keynesian and Stock-Flow Consistent approaches have rarely integrated political feedbacks in a systematic way. This paper seeks to fill that gap by taking a preliminary step in this direction. We streamline the agent-based model (ABM) of Fierro et al. (2023) and extend it to illustrate how the interplay between growing inequality and expanding finance generates pressures toward political disintegration. Moreover, we show that political disintegration may reinforce and amplify both inequality and financialization.

The paper is organized as follows. After this introduction, Section 2 introduces the baseline model, Section 3 provides a few indicators to measure political instability; Section 4 extends the model by introducing a political feedback on the economy; Section 5 presents the simulation results of both the baseline and the augmented model; Section 6 describes the results of a policy experiment with a wealth tax; Section 7 concludes.

2 The Baseline Model

To explore the macroeconomic consequences of inequality and financialization, as well as their political implications, we propose a simplified macroeconomic agent-based model (MABM) with a stock-flow consistent (SFC) structure. The baseline version of the model builds on the architecture proposed by Fierro et al. (2023), but some simplifications are introduced to keep the economic core lean and transparent, providing a clear foundation for the subsequent integration of the political dimension. Indeed, the key innovation is the subsequent inclusion of a stylized political component, together with political indicators, which will be discussed in the following section.

The model represents a closed economy composed of the following interacting sectors:

- Heterogeneous households differing in income, wealth, and creditworthiness.
- An aggregate non-financial business sector that produces a single homogeneous consumption good.
- An aggregate banking sector providing credit to both households and the business sector.
- A fiscal authority (government) that collects taxes, pays unemployment benefits, hires public employees, and purchases goods.
- A monetary authority (central bank) setting the policy interest rate and partially accommodating public debt issuance.

The structure is intentionally minimal – confining heterogeneity to what is strictly necessary (heterogeneous households) and minimizing direct interaction (social component in consumption) – yet rich enough to capture key interactions between household consumption, credit dynamics, production, income distribution, and financial fragility.[3] This baseline configuration

[3] In a sense, this is a *hybrid* model given that all sectors are aggregated but one (namely, the household sector), whereas fully-fledged ABMs are typically featured with heterogeneous agents in all sectors. Nevertheless, we can refer to it as a macro agent-based model (MABM). Anyway, it could also be defined as a Stock Flow Consistent (SFC) model with agent-based features in the household sector.

provides a reference scenario for evaluating the effects of inequality and financialization shocks on macroeconomic variables and political (in)stability.

In what follows, we present a concise overview of the economy's sectors; a full description of the model is provided in Appendix A.

2.1 Households

The household sector is composed of heterogeneous agents whose consumption behaviour, credit demand, and income sources jointly influence aggregate demand and credit dynamics, that is macro performance and financial (in)stability.

Household income comes from four sources: (i) wages, which are distributed according to an exogenous log-normal distribution among employed workers; (ii) unemployment benefits, provided by the government to non-employed agents; (iii) dividends, paid by firms and banks in proportion to the household's relative wealth; (iv) interest payments on deposits.

Desired consumption is determined by a combination of current disposable income and a *social norm* based on past average consumption.[4] This specification endogenously generates heterogeneity in marginal propensities to consume, even though all households share the same functional rule.[5]

When available financial resources (i.e., income and existing deposits) are insufficient to meet desired consumption, households demand loans from the banking sector. Loan access is subject to a creditworthiness assessment, and credit rationing may occur (see more on this below). As a result, consumption is bounded by both income/deposits and access to credit.

Households may also default on their loans, triggering losses for banks and affecting the financial system's resilience.[6]

2.2 Firms

The corporate sector operates under a simple linear production technology in which labour is the only input.[7] Expected demand is formed adaptively, based on past realized demand, and determines hiring and production decisions.

Prices are set as a *mark-up* over unit production costs, which include both wages and financial costs. The mark-up is a key parameter in the model, and will be used in the policy experiments to simulate the effects of rising inequality.

Profits are distributed as dividends to households in proportion to their wealth.[8] Firms cover costs through bank credit and, differently from households, in this case there is no credit

[4] Duesenberry (1949) provides a foundational discussion of the relative and social dimensions of consumption in the Keynesian tradition.

[5] In the parent model, Fierro et al. (2023), there is a more complicated, and realistic, mechanism of consumption imitation according to which heterogeneous households are partitioned in deciles and each decile imitates the average consumption of the upper decile, as an approximation of an "expenditure cascade" (Frank, 2005).

[6] See Subsection A.2 in Appendix A for the equations and the details about the household sector.

[7] One of the next extensions of the model will incorporate physical capital to develop a more realistic description of the economy, its fluctuations and crisis events.

[8] This is a simplifying assumption that allows us to distribute dividends unevenly across heterogeneous households, even in the absence of an explicit stock market, thereby capturing wealth-based income differentiation without introducing additional financial assets.

rationing.[9]

2.3 Banking sector

The banking sector provides credit to households, subject to prudential capital constraints and internal risk assessments, and the business sector (in this case, without rationing). Loan pricing includes two components: (i) the central bank's policy interest rate, and (ii) a borrower-specific *risk premium*, which depends on the agent's financial condition (basically, the agent's leverage).

The banking sector checks each household's creditworthiness individually before granting loans. If the required *repayment-to-income ratio* exceeds a maximum threshold, the loan is denied. The maximum repayment-to-income ratio is another key parameter that will be used to shock the system (together with the other key parameter, i.e. the mark-up).

Banks are exposed to losses when households default, which negatively affects their capital base and, consequently, their ability to distribute dividends or expand credit.

Banks also purchase part of the government's debt and are subject to capital adequacy requirements, which impose additional constraints on their behaviour and distributional policies.[10]

2.4 Policy makers

The government hires public workers, purchases goods (as a fraction of past aggregate consumption), pays unemployment benefits, collects taxes on labour income and profits, and services public debt. The tax structure is proportional and does not vary across agents or time.

The central bank pursues price stability by adjusting the policy interest rate according to a simple monetary rule aimed at inflation stabilization. It also participates in government bond markets by purchasing a fixed fraction of newly issued bonds, thus providing partial monetary accommodation.[11]

2.5 Inequality and financialization shocks

Following Fierro et al. (2023), the model simulates two key shocks to reflect the political-economic transformations that began around the 1980s:

- An "inequality shock", implemented as a gradual increase in the firms' *mark-up* rate, which worsens both functional and interpersonal income distribution.[12]
- A "financial liberalization shock", modelled as a gradual rise in the maximum *repayment-to-income ratio* allowed for households, thereby expanding their access to credit.[13]

[9] In the model, credit rationing is not applied to the corporate sector – not due to a lack of importance, but because, under our simplifying assumptions, it plays a more significant role for households. See Subsection A.3 in Appendix A for the equations and the details about the firm sector.

[10] See Subsection A.4 in Appendix A for the equations and the details about the banking sector.

[11] See Subsections A.5 and A.6 in Appendix A for the equations and the details about the government and the central bank.

[12] Indeed, when the mark-up increases, an increase in the profit share follows – affecting the functional income distribution – that, in turn, results in a larger (uneven) distribution of dividends – affecting the interpersonal income distribution.

[13] An increase in this parameter relaxes credit constraints, representing financial deregulation.

These exogenous shocks reflect the ideological and institutional changes that marked the transition from the "Trente Glorieuses" to the "Neoliberal Era." In this sense, the pre-shock phase represents a relatively egalitarian and regulated post-war economy, while the post-shock phase reflects the financialized and unequal configuration of the contemporary macroeconomy.

Before going into the political instability mechanism and introducing a political feedback on the macroeconomy, in the next section we present a few political indicators to measure political (in)stability in our computational framework.

3 Measuring political instability

As discussed earlier, our theoretical motivation builds on the structural-demographic theory of Turchin (2023), which identifies two mutually reinforcing mechanisms at the core of political disintegration: (i) *mass immiseration*, i.e. the erosion of living standards among the lower and middle classes; (ii) *elite overproduction*, i.e. the surplus of elite aspirants relative to available power positions.

We translate these concepts within the model by defining the following three political indicators (See Appendix B for a detailed description.)

Frustration Index (FI). It measures the normalized excess supply of elite aspirants. Households are considered elite aspirants if their wealth exceeds a given threshold. The threshold is computed (in each time period) by multiplying the current price of the consumption goods and an elite aspirant threshold: to be considered part of the elite, the household's net worth has to be equal or greater than the elite aspirant threshold multiplied by the price. However, the number of "power positions" in the system is a fraction of the total population. Therefore, the number of frustrated elite households is the difference between the total number of elite households and the number of power positions.[14]

Immiseration Index (II). It captures the share of households with wealth below a socially defined normal living standard threshold, NLS. In other words, immiserated people are those households with a net worth equal or below the normal living standard threshold multiplied by the current price of consumption goods.[15]

Political Disintegration Index (PDI). It represents the systemic interaction between the two forces and is defined as the Frustrastion Index multiplied by the Immiseration Index. Following Turchin (2023), this formulation captures the core idea that political instability becomes systemic when elite frustration and mass immiseration co-evolve: neither component is sufficient alone; it is their interaction that creates a high-risk political environment.[16]

The next section introduces the political dimension in the modelling framework, where the consequences of economic and financial structural transformations on political disintegration are captured via indicators of elite frustration and mass immiseration.

[14] Admittedly, not all elite households aspire to positions of power; this is a dimension that a more detailed and agent-based oriented extension of the model will be able to capture. The Frustration Index index is normalized between 0 and 1. See Appendix B for the index formula.

[15] The Immiseration Index is normalized between 0 and 1. See Appendix B for the index formula.

[16] While only sketched here, an extended and more detailed agent-based version of the model – including political preferences, voting behaviour, and related mechanisms – will aim to endogenously reproduce such political dynamics. In this sense, the current contribution is only a first, preliminary step in this direction.

4 The Augmented Model

While the baseline model captures the macroeconomic implications of inequality and financialization, it treats political instability as an external consequence, without feedback effects on the economy. In fact, political disintegration can have significant economic repercussions. This section introduces a minimal but meaningful feedback mechanism by which political instability may affect credit conditions and amplifies macro-financial fragility.

4.1 Political feedback on financial markets

Once computed, the PDI is used to endogenously modulate a key macro-financial variable: the spread over the policy interest rate that banks charge on loans. While the baseline model includes a borrower-specific risk premium, the augmented version introduces an additional term – driven by political disintegration – that reflects system-level political risk.

This mechanism is grounded in both theoretical reasoning and empirical evidence. Political instability has been shown to increase country risk premiums, reduce investor confidence, raise interest rates, and tighten credit conditions (Alesina and Perotti, 1996; Ashraf and Shen, 2019; Kaviani et al., 2020). By incorporating this feedback into the ABM, we close the loop between economic inequality, political fragmentation, and financial instability.[17]

The augmented spread is given by the base spread (the one already present in the baseline model) plus a term which depends non-linearly on the PDI (see Equation 18 in Appendix C). As a consequence, a higher PDI thus raises the cost of credit for both households and firms and this effect is amplified by the presence of the non-linearity: therefore, the effect is small in "normal times", while it is reiforced when political instability goes beyond a certain threshold.[18]

This feedback loop has several important implications: (i) it transmits political instability into the financial system, raising debt servicing costs and reducing access to credit; (ii) it amplifies recessionary pressures by depressing consumption and investment; (iii) it exacerbates defaults and non-performing loans, further undermining bank balance sheets; (iv) it closes the political-economy cycle by showing how instability can endogenously reinforce the economic conditions that produced it.

5 Simulation Results

This section presents the simulation results of the model, comparing the baseline configuration (without political feedback) with the augmented version (with political feedback driven by the PDI).[19] In the next section, the model will be used to explore a potential policy response: a

[17] Other pathways of political-economic feedback could be explored in future extensions, as for instance: consumption volatility (heightened political uncertainty may increase household precautionary saving and reduce consumer confidence), investment contraction (firms may delay or reduce investment under unstable political regimes), and macroeconomic expectation (political risk may affect inflation expectations, asset prices, and portfolio decisions).

[18] Given the change regarding the augmented spread, the interest rate charged on loans will be modified accordingly for both households and the firm sector. See Appendix C for a detailed description.

[19] The model is simulated for $T = 1000$ periods (the first 100 iterations are discarded, and not reported in the figures, to get rid of initial conditions).

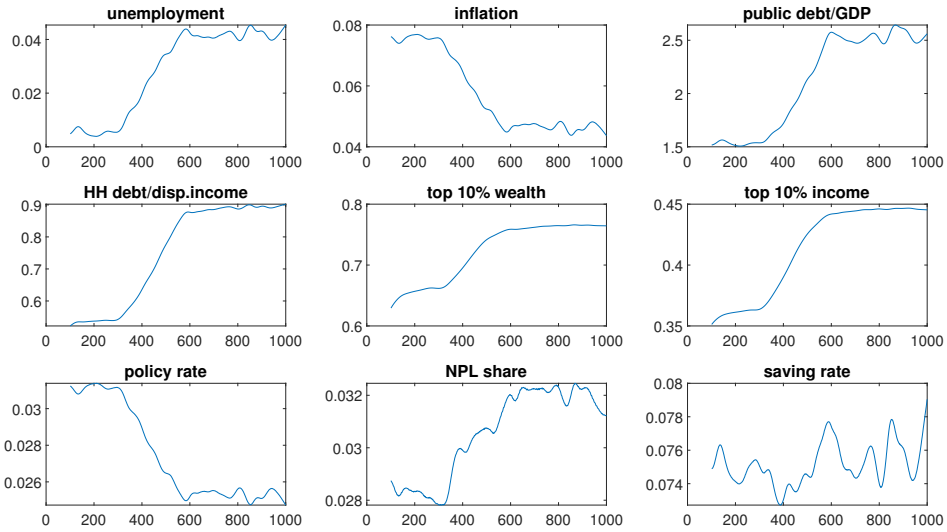

Figure 1: Baseline simulation results: macroeconomic dynamics

modest wealth tax on the top decile of the wealth distribution. Results are discussed in terms of key macroeconomic indicators and political disintegration metrics.

5.1 Baseline dynamics

In the baseline scenario, the model replicates the long-run consequences of gradually increasing inequality and deepening financial liberalization. These are introduced via the two exogenous shocks discussed above:[20]

- A rising *markup rate* by firms, which lowers the wage share and redistributes income from labor to capital.
- An increasing *maximum debt-service-to-income ratio*, allowing households to access more credit over time.

For a while, greater access to credit offsets the decline in labour income, allowing households to sustain consumption despite stagnant wages. This mechanism masks underlying distributional tensions and gives the appearance of stability temporarily. However, as borrowing accumulates and debt-servicing costs rise, the capacity of households to smooth consumption diminishes. At the same time, worsening inequality concentrates resources among those with lower propensities to consume, further weakening aggregate demand. Together, these dynamics generate mounting financial fragility, leaving the system increasingly vulnerable to shocks and defaults.

Figure 1 displays the evolution of main macroeconomic variables under this regime: unemployment increase (and GDP growth slows), household debt rises, defaults increase, and banks face growing balance-sheet stress. Although no political feedback is present at this stage, we

[20] In the simulation, the two shocks are active for $t > 300$.

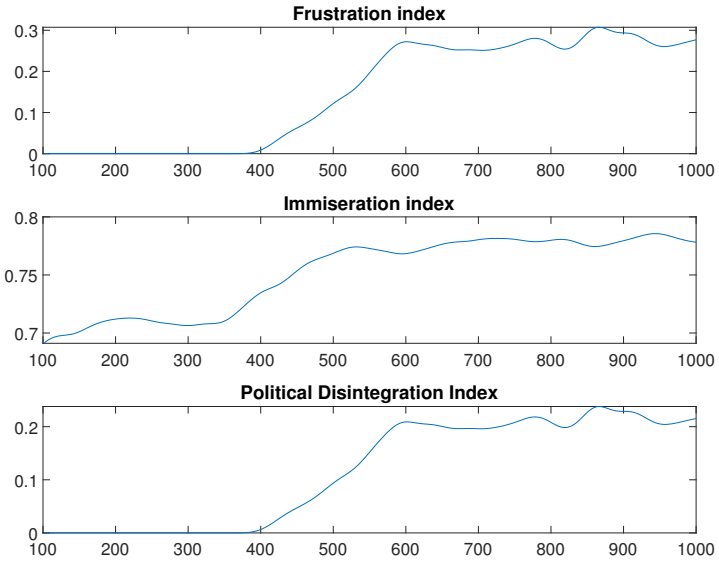

Figure 2: Baseline simulation results: political indicators

already observe the economic symptoms of a polarized, financialized economy. In fact, computational findings tend to *qualitatively* replicate the evolution of some key variables in advanced economies, let's mainly refer to the US, in the passage from the post-WWII to the late-20th-century policy regime.[21]

5.2 Political indicators

Even in the absence of political feedback, the model is able to track the evolution of key political risk indicators. Figure 2 displays the dynamics of the *Frustration Index*, the *Immiseration Index*, and their multiplicative interaction, the *Political Disintegration Index* (PDI), over the simulation horizon in the baseline scenario.

The *Frustration Index* rises steadily, reflecting the phenomenon of elite overproduction. As wealth becomes increasingly concentrated, a larger number of households surpass the threshold required to be considered part of the economic elite. Yet the number of available "power positions" – in politics, business, academia, and other spheres of influence – remains limited. This mismatch between aspirations and opportunities creates a growing pool of frustrated elites, consistent with Turchin's structural-demographic theory, and serves as a leading indicator of mounting political pressures.

The *Immiseration Index* also increases over time, capturing the erosion of living standards among the lower and middle segments of the population. More households fall below the socially defined threshold of acceptable wealth, reflecting not only declining relative well-being but also the frustration of expectations regarding security, mobility, and consumption norms. This result illustrates how long-run inequality and financial liberalization gradually generate

[21] Basically, model simulation reproduces results regarding the economic and financial evolution of the system which are similar to the ones presented in Fierro et al. (2023) – thus calibrated against US data, albeit with a few slight differences regarding NPLs and saving – which do not warrant deeper discussion in this context.

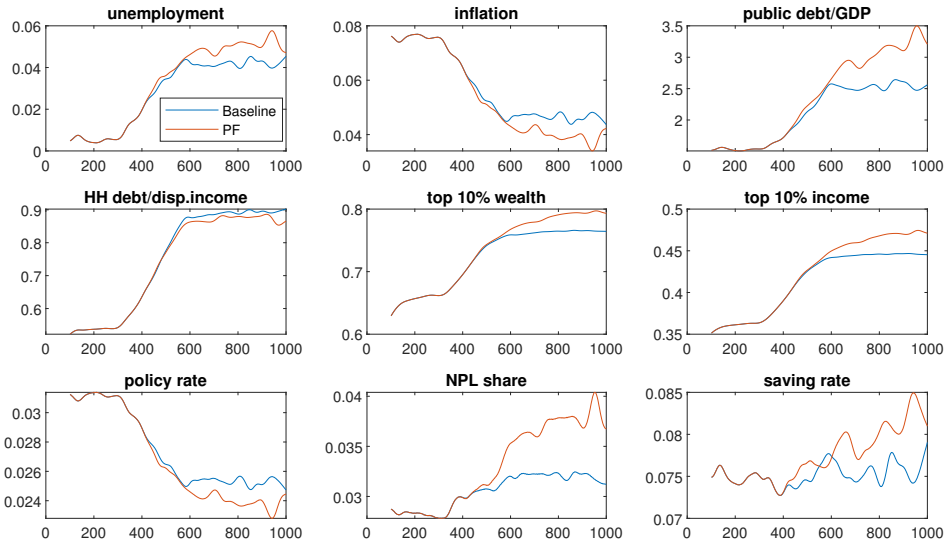

Figure 3: Simulation with political feedback: macroeconomic dynamics (Baseline: blue. Model with Political Feedback: orange)

widespread discontent, even before political shocks feed back into the economy.

Taken together, these two dynamics produce the *Political Disintegration Index* (PDI), which combines mass immiseration and elite overproduction. The PDI amplifies the systemic risk by capturing the co-evolution of discontent at the base of society with competition and fragmentation at the top. According to Turchin (2023), the evolution of the PDI stresses that it is the interaction of these forces – rather than either mechanism in isolation – that drives systemic instability. In the baseline simulation, the PDI exhibits a persistent upward trend, signalling that even without political feedback mechanisms on the economy, the structural conditions for political disintegration are progressively intensifying.

5.3 Introducing political feedback

We now simulate the augmented model in which the Political Disintegration Index (PDI) directly affects the spread charged by banks on loans. The relationship is specified in a non-linear way, so that the effect of political instability is modest in normal times but grows disproportionately during periods of heightened political disintegration.

As shown in Figure 3, the introduction of political feedback alters the overall behaviour of the economy in a fundamental way. Credit conditions, which in the baseline depended primarily on borrower-specific risk and monetary policy, now also reflect the broader political environment. As the PDI rises, banks increase their loan spreads to compensate for the higher systemic uncertainty. This tightening of credit conditions emerges endogenously within the simulation and affects both households and firms simultaneously.

The consequences are substantial. Higher spreads increase debt-servicing costs, which constrain household consumption and negatively impact firm's profit. Aggregate demand falls more sharply than in the baseline. At the same time, the higher credit burden accelerates the incidence of defaults, further weakening bank balance sheets and amplifying financial fragility. In

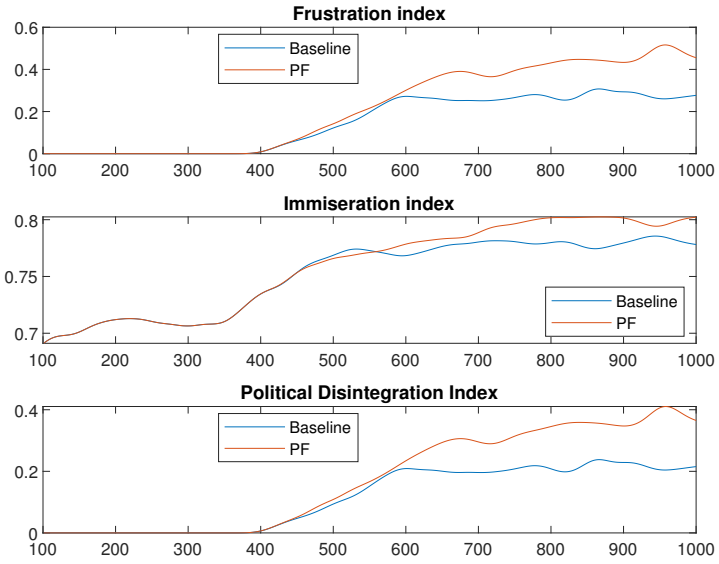

Figure 4: Evolution of political indicators with feedback mechanism (Baseline: blue. Model with Political Feedback: orange)

this augmented setting, instability propagates not only from economics to politics but also from politics back into economics, creating a feedback loop.

The key implication is that political instability no longer appears as a by-product or external consequence of economic polarization. Instead, it becomes an endogenous driver of macroeconomic performance. The model thereby illustrates a vicious cycle: inequality and financialization foster political disintegration, which in turn feeds back into the financial system, tightening credit and depressing activity, and thereby reinforcing the very conditions that generated political disintegration in the first place (see Figure 4).

6 Policy Experiment

We implement a 1% wealth tax on the top 10% of households by net worth in the augmented model. The design of the policy is intentionally simple: a proportional levy on accumulated wealth that directly targets the concentration of resources at the top of the distribution. The proceeds are assumed to be used for debt reduction, which in turn improves fiscal sustainability and creates room for countercyclical policy in future downturns. Although stylized, this intervention captures the spirit of progressive taxation as a structural response to inequality and financial fragility.[22]

Figure 5 shows that the introduction of the wealth tax markedly improves macroeconomic stability. Public debt levels, which had been rising under baseline and political-feedback scenarios, now decline as revenues from the tax are devoted to debt repayment. Lower public debt

[22]The presence of a direct mechanism of wealth redistribution from the 'rich' to the 'poor' – rather than one mediated by the public sector through a reduction of public debt – should amplify the positive effects of a wealth tax in terms of macroeconomic performance, financial stability, and political stability. This is one of the possible exercise to be implemented in this computational framework, especially in an improved version with endogenous political preferences, voting behaviour, and related mechanisms.

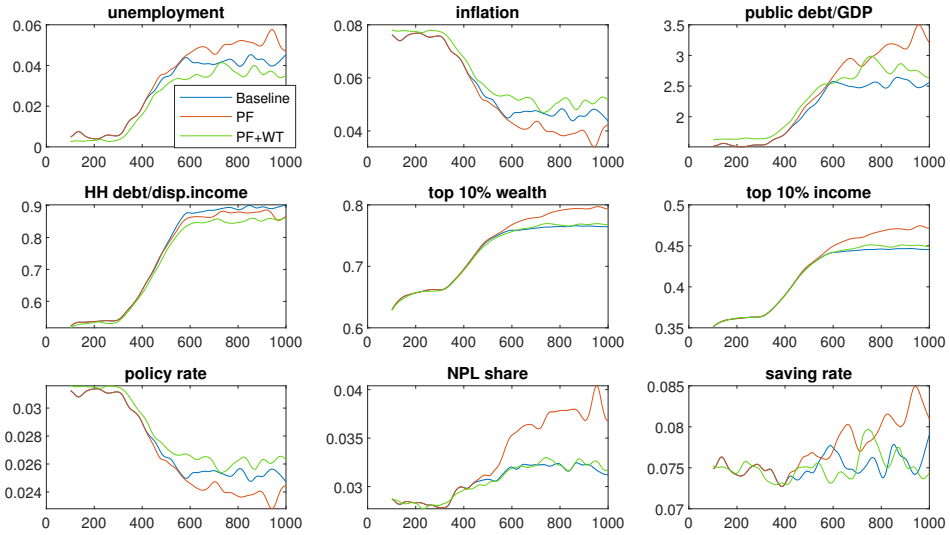

Figure 5: Wealth tax experiment: macroeconomic impact (Baseline: blue. Model with Political Feedback: orange. Wealth tax: green)

alleviates the pressure on fiscal policy and reduces the burden of debt servicing. At the same time, household consumption recovers modestly, reflecting a redistribution of resources from high-wealth households with lower propensities to consume toward the public sector, which indirectly benefits the wider economy. Bank balance sheets also strengthen as the incidence of defaults falls, demonstrating that the tax indirectly reduces financial fragility.

Most significantly, the policy also generates beneficial political effects. Figure 6 shows a clear reversal in the trends of the *Frustration Index* and the *Immiseration Index*. Elite overproduction is reduced as the top decile faces constraints on unlimited wealth accumulation, narrowing the gap between elite aspirants and available positions. At the same time, redistribution alleviates mass immiseration by reducing the number of households falling below the socially defined standard of living. As both forces are dampened simultaneously, the *Political Disintegration Index* (PDI) declines, signalling a reduction in systemic political risk.

Taken together, these results suggest that even a modest redistributive measure can mitigate both economic and political instability. By curbing the dual pressures of immiseration and elite overproduction, the wealth tax mitigates political fragmentation. While the simulated policy is stylized and limited to debt reduction, the results highlight the broader importance of progressive taxation in rebalancing economic and political dynamics. Higher tax rates would likely have an even stronger impact, but ultimately what is required is a fundamental rethinking of the dominant policy paradigm itself – here represented in the model by the dual shocks of rising inequality and financial liberalization.

7 Conclusions

This paper has proposed a simplified agent-based political macroeconomic model to investigate the joint dynamics of inequality, financialization, and political disintegration. Drawing on the

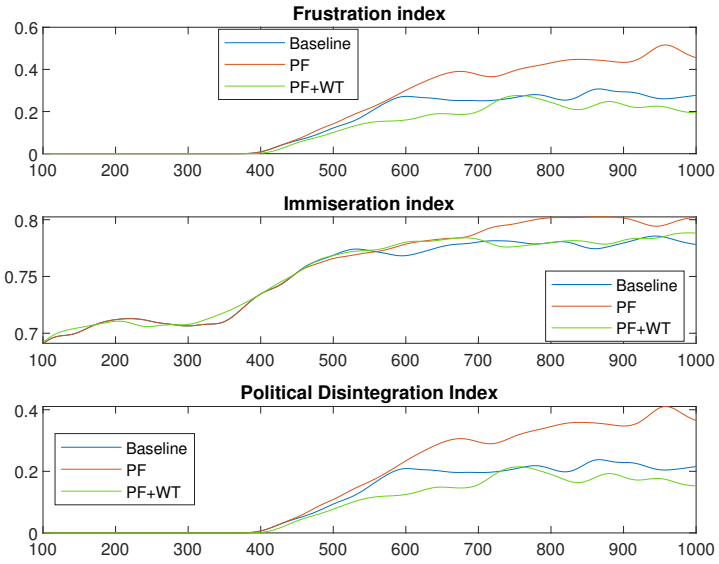

Figure 6: Wealth tax experiment: impact on political disintegration (Baseline: blue. Model with Political Feedback: orange. Wealth tax: green)

structural-demographic theory of Turchin (2016, 2023), we introduced a stylized representation of political dynamics through two core mechanisms: mass immiseration and elite overproduction.

Simulations revealed that political disintegration may emerge from medium/long-run trends in inequality and financial liberalization. In the baseline model, the decoupling of household income from consumption needs, compensated through rising indebtedness, eventually produced economic fragility and political strain. In the augmented version, as political disintegration feeds into credit spreads, instability intensifies macroeconomic volatility and restricts credit availability, completing a vicious, self-reinforcing loop.

We also explored a policy counterfactual: a modest 1% wealth tax on the top decile of the wealth distribution. This intervention proved effective in mitigating both economic and political instability. However, extreme inequality and hypertrophic finance are not inevitable; they are the results of political decisions. It follows that if these outcomes have been shaped by past political choices, they can also be reshaped by new ones. Addressing the current trajectory therefore requires a fundamental rethinking of the policy paradigm that has prevailed since the 1980s.[23]

This model represents only a first step toward a richer computational framework for understanding the roots of economic and political instability in an integrated framework.[24] Future

[23] In every historical period, societies construct ideological justifications for inequality, with elites playing a central role in persuading the broader population to accept them (Piketty, 2019). This process extends to the shaping of technological change, which—as Acemoglu and Johnson argue—is far from neutral but reflects the interests and power of dominant groups (Acemoglu and Johnson, 2023). Exploring this complex direction of research will require multiple steps, of which the present contribution represents only a preliminary one.

[24] According to Lerner (1972, p. 259), "Economics has gained the title Queen of Social Sciences by choosing solved political problems as its domain". By removing power struggles, distributive conflicts, and questions of legitimacy from its analytical framework, economics effectively *depoliticized* issues that are inherently political. The resulting appearance of *neutrality* is therefore not a sign of genuine detachment, but rather the outcome

extensions will focus on endogenizing political preferences and voting behaviour, allowing the model to capture how economic shocks and distributional conflict translate into shifting political alignments and institutional change. Another line of development will be to incorporate physical capital accumulation and investment dynamics, and then technology, providing a more complete macroeconomic representation of growth, crises, and structural change. Together, these enhancements will allow us to move from a stylized framework to an empirically calibrated model capable of reproducing observed patterns and generating concrete policy applications.

More broadly, the analysis highlights the limitations of treating politics as exogenous to economic dynamics. By embedding political disintegration within an agent-based macroeconomic framework, we illustrate how economic and political fragility are mutually reinforcing. This approach underscores the need to re-embed macroeconomics within its political and social context – an essential foundation for understanding and addressing the *polycrises* of our era, rooted in inequality, financialization, and political instability.

of a self-imposed narrowing of focus. This *ideological* strategy, rooted in the marginalist turn and then in the neoclassical approach, is in fact profoundly political, with enduring consequences for academic discourse, institutional arrangements, and policy-making.

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A The full model

This Appendix presents a full account of the baseline version of the macro agent-based model. We first outline the sequence of events occurring within each time step, and then detail the behaviour of agents and the underlying model mechanisms and political indicators.

A.1 The sequence of events

The model unfolds through the following sequence of steps:

- Interest on outstanding loans is paid, and firms and banks distribute dividends.
- The firm sets its expected demand and, given a fixed labour productivity, determines its labour demand (labour being the only productive input).
- If the firm's labour demand does not exceed the available labour supply (net of the share of workers employed in the public sector), employment corresponds to labour demand; otherwise, it is limited by the effective labour supply.
- When labour demand falls short of labour supply (net of public employment), a number of households corresponding to the realized aggregate unemployment rate are randomly selected as unemployed.
- Wage inflation is determined through a Phillips-curve mechanism, with an inverse relation to the unemployment rate.
- The total wage bill is computed and allocated across employed workers according to a log-normal distribution of individual wage shares; unemployed households receive unemployment benefits.
- Firms produce a homogeneous good using a linear production technology.
- The price of goods is set as a mark-up over unit production and financial costs.
- Households' disposable income equals net wages (or unemployment benefits), plus interest on deposits and dividends, minus interest payments on loans (if any).
- Households set the desired consumption based on individual and social inputs.
- Households set their desired precautionary deposits and loan demand (the latter covering the gap between desired consumption and available resources, i.e. disposable income and deposits net of desired savings).
- The bank grants credit to households deemed creditworthy; the loan interest rate depends on the policy rate and a risk premium.
- Affordable consumption matches desired consumption for creditworthy and non-indebted households, but can be lower for rationed households whose deposits are insufficient to cover expenditures implied by desired consumption.

- If the sum of affordable consumption and programmed public purchases (in real terms) exceeds firms' production, both private and public demand are proportionally scaled down to equal supply. This generates forced savings when effective household consumption falls short of the affordable level.
- Household savings are finalized and held as bank deposits.
- Firms' and banks' profits are determined. Firm profits are fully distributed to households, while banks may retain part of their profit to satisfy capital requirements. If households' liquidity is insufficient to repay loan principals, non-performing loans arise, reducing banks' capital.
- If firms' internal funds do not cover production and financial costs, they request bank loans. The lending rate depends on the policy rate and a risk premium.
- The government's deficit – defined as public purchases, wages to public workers, and unemployment benefits net of taxes – is financed through bond issuance. Bonds are purchased by both banks and the central bank.
- The central bank sets the policy interest rate.

A.2 Households

There are $H = 5000$ heterogeneous households indexed by $h = 1, 2, \ldots, H$. Each employed worker receives a wage $w_{h,t}$, defined as a share of the aggregate wage bill W_t paid by the firm. Individual wage shares are assigned according to an exogenous and time-invariant log-normal distribution with standard deviation κ.[25] Unemployed households receive a government transfer (dole) equal to a fraction ν of the lowest net wage paid to employed workers in the previous period. The aggregate wage bill W_t is determined at the macro level by the following equation:

$$W_t = W_{t-1}(1 + \dot{w}_t + \dot{N}_t) \tag{1}$$

where $\dot{w}_t$ is the wage inflation and $\dot{N}_t$ is the percentage change of employment. Wage inflation depends on the unemployment rate u_t according to a simple, linear relationship:

$$\dot{w}_t = \alpha_0 - \alpha_1 u_t \tag{2}$$

where α_0 and α_1 are positive parameters.

The h-th household's disposable income is given by:

$$yd_{h,t} = w'_{h,t} + d_{h,t} - i^L_{h,t} l_{h,t-1} \tag{3}$$

where $w'_{h,t}$ is the net wage (after the payment of a flat tax τ on labour income),[26] $d_{h,t}$ the

[25] The mean of the log values is set to 1, being irrelevant for our analysis, indeed individual quotas are then normalized to sum up to unity.

[26] In case of unemployment, the household gets a dole, which will be present in eq. 3, rather than the net wage.

dividends paid by the firm and the bank (proportionally to each households' wealth),[27] $i^l_{h,t}$ the interest rate on loan charged by the bank to household h, and $l_{h,t-1}$ the loan stock inherited from the previous period.

Household set desired consumption according to two elements: disposable income and past average consumption, which is the simplest way to consider the social nature (imitation) of consumption:

$$c^d_{h,t} = c_{yd} \cdot max(0, yd_{h,t}) + c_{pac} \cdot c^{avg}_{t-1} \tag{4}$$

where c_{yd} is the propensity to consume out of disposable income and c_{pac} is the propensity to consume out of past average consumption, namely the imitation term. The resulting effective propensity out of disposable income will then be heterogeneous across households due to the presence of imitative consumption.

Households set a desired deposit $\Delta d^d_{h,t}$ for precautionary purposes which is equal to past consumption.[28]

If available resources – that is, disposable income plus the deposit stock carried over from the previous period – are insufficient to finance both desired consumption and desired deposit, the household applies for a bank loan:

$$\Delta l^d_{h,t} = \begin{cases} c^d_{h,t} + \Delta d^d_{h,t} - (yd_{h,t} + d_{h,t-1}) & \text{if } c^d_{h,t} + \Delta d^d_{h,t} > yd_{h,t} + d_{h,t-1} \\ 0 & \text{otherwise.} \end{cases} \tag{5}$$

The bank evaluates each household's creditworthiness individually (see Section A.4). For non-rationed households, affordable consumption coincides with desired consumption, whereas for rationed households it is limited by available resources, i.e. $yd_{h,t} + d_{h,t-1}$.

Aggregate consumption C_t is obtained by summing individual consumption. Together with public expenditure G_t, it constitutes nominal aggregate demand. When aggregate demand in real terms, D^*_t, exceeds output Y_t (i.e. in the presence of excess demand), both individual consumption and public purchases are proportionally scaled so that effective demand matches production. As a result, households' effective consumption $c_{h,t}$ may fall short of the affordable level. Household saving is then given by disposable income minus effective consumption.

Indebted households must repay a fraction ι of the loan principal, corresponding to the installment $\iota l_{h,t-1}$. If available resources are insufficient, the household is unable to meet the installment—either partially or fully—generating a non-performing loan $npl_{h,t}$ that reduces the bank's capital (see Section A.4). Consequently, the household's deposit stock at the end of the period is:

$$d_{h,t} = \begin{cases} d_{h,t-1} + yd_{h,t} + \Delta l_{h,t} - c_{h,t} - \iota l_{h,t-1} & \text{if } npl_{h,t} = 0 \\ 0 & \text{if } npl_{h,t} > 0. \end{cases} \tag{6}$$

Finally, the households' net worth is:

[27] As explained in the main text, we do not model explicitly the stock market and assume that dividends are distributed to households according to their relative wealth (deposits).

[28] Therefore, households' try to keep a sufficient amount of liquidity to finance consumption also in case of declining income/unemployment.

$$nw_{h,t} = d_{h,t} - l_{h,t}. \tag{7}$$

A.3 Firm

The non-financial sector produces a homogeneous good employing labour as the sole input, based on a linear production technology:

$$Y_t = \omega N_t \tag{8}$$

where $\omega > 0$ denotes the fixed labour productivity, and $N_t = \min(H - PW, N_t^d)$ is the effective level of private employment, defined as the minimum between the number of workers available after the government hires PW public employees and the firm's labour demand N_t^d. Public employment is given by $PW = \lfloor pw \cdot H \rceil$, with $pw \in (0, 1)$. The firm's labour demand is specified as:

$$N_t^d = \lceil D_t^e / \omega \rceil \tag{9}$$

where D_t^e denotes the firm's expected demand. Expectations are formed according to an adaptive adjustment scheme:

$$D_t^e = D_{t-1}^e + \lambda(D_{t-1}^* - D_{t-1}^e) \tag{10}$$

where $\lambda > 0$, and D_{t-1}^* denotes potential aggregate demand in real terms, i.e. the volume of goods implied by the total demand from household and public expenditures, regardless of any binding quantity constraint.

The price of the homogeneous good is then set as:

$$P_t = (1 + \mu)\frac{W_t + FC_t}{Y_t} \tag{11}$$

where W_t is the wage bill, FC_t the interest on bank loan (if any), and μ is the markup, which is used in the model to implement the "inequality shock".

Finally, firm's gross profit is given by:

$$\pi_t = P_t \cdot D_t - W_t - FC_t \tag{12}$$

where D_t is actual demand (that can be equal or smaller than production Y_t). The firm then pays a proportional tax on (positive) profit (no tax is paid in case of negative profit) and distributes the net profit to households.

A.4 Bank

The banking sector supplies credit to both firms and households. For households, creditworthiness is first assessed by checking, for each household h applying for a loan $\Delta l_{h,t}^d$, the following condition:

$$\iota l^d_{h,t} \leq \theta y d_{h,t} \tag{13}$$

where ι denotes the repayment rate of the principal, $l^d_{h,t} = l_{h,t-1} + \Delta l^d_{h,t}$ is the stock of loans of household h if her request $\Delta l^d_{h,t}$ is approved, and θ is the maximum principal-repayment-to-income ratio imposed by the bank. This parameter θ is also used in the model to implement the "financial deregulation shock". If condition (13) is not satisfied, the household is denied credit; otherwise, her credit demand is fully accommodated.

Indebted households pay an interest rate on loans given by a homogeneous premium σ over the central bank policy rate $i_{CB,t-1}$, plus a household-specific risk premium proportional to the loan-to-income ratio:

$$i_{h,t} = i_{CB,t} + \sigma + (i_{CB,t-1} + \sigma)\frac{l_{h,t}}{yd_{h,t}} \tag{14}$$

The interest rate charged on loans to the firm (with no credit rationing in this case)[29] is determined analogously:

$$i^F_t = i_{CB} + \sigma + (i_{CB,t-1} + \sigma)\frac{L^F_t}{P_t D_t} \tag{15}$$

where $P_t D_t$ denotes firm revenues.

A.5 Government

The government hires a fraction pw of the total workforce H.[30] They receive a total wage bill W^B_t, allocated across individuals following the same rule applied in the private sector. The government also pays unemployment benefits equal to UB_t and services its outstanding debt by paying interest on bonds in the amount of $i^G_{t-1}B_{t-1}$. Public purchases are determined as a proportion of past aggregate demand, $G_t = \chi(P_{t-1}D_{t-1})$, with $\chi > 0$. Revenues are collected through taxes Tax_t on both wages and profits. The public deficit is therefore given by:

$$\Delta B_t = W^B_t + UB_t + i^G_{t-1}B_{t-1} + G_t - Tax_t \tag{16}$$

Public debt accumulates as the sum of past deficits. Government bonds are purchased by both the banking sector and the central bank, with a fraction ψ assumed to be held by the latter.[31]

A.6 Central bank

The central bank sets the policy rate according to a simple rule aimed at inflation stabilization:

[29] The aim is to simplify those mechanisms that are not essential for capturing inequality and financial processes mainly driven by the consumption behaviour of heterogeneous households. This follows the idea of a hybrid model where heterogeneity is central but confined to the household sector, which is the focus of the analysis.

[30] Public employees do not produce market goods but are assumed to provide essential services necessary for the functioning of the economy.

[31] As a result, the government effectively bears only the share $(1-\psi)i^G_{t-1}B_{t-1}$ of total interest payments on public debt, since the portion paid to the central bank is rebated immediately.

$$i_{CB,t} = \tilde{i}_{CB} + \phi_\pi(\pi_t - \tilde{\pi}_{CB}) \tag{17}$$

where $\tilde{i}_{CB}$ is the long-run policy rate, $\tilde{\pi}_{CB}$ is the central bank's inflation target, π_t is the current inflation rate, and $\phi_\pi > 0$ is a policy parameter capturing the central bank's reaction to inflation deviations from the target.

B Political indicators

We propose three indexes to capture political dynamics, as explained in the main text.

Frustration Index (FI). It measures the normalized excess supply of elite aspirants. Households are considered elite aspirants if their wealth exceeds a given threshold. The threshold is computed by multiplying the price of the consumption goods (at a certain time t), P_t, and the parameter EAT (that stays for elite aspirant threshold): to be considered part of the elite, the household's net worth has to be equal or greater than $P_t * EAT$. However, the number of "power positions" in the system is a fraction PP (which stays for power positions) of total population H. Therefore, the number of frustrated elite households at time t, $Frustrated\_Elite_t$, is the difference between the total number of elite households and the number of power positions.[32] The Frustration Index is calculated as:

$$FI_t = \frac{Frustrated\_Elite_t - Min^{fe}}{Max^{fe} - Min^{fe}},$$

where Min^{fe} and Max^{fe} are used to normalized the index between 0 and 1.

Immiseration Index (II). It captures the share of households with wealth below a socially defined normal living standard threshold, NLS. In other words, immiserated people at time t, $Immiserated\_People_t$, are those households with a net worth equal or below the threshold $P_t * NLS$. The Immiseration Index is calculated as:

$$II_t = \frac{Immiserated\_People_t - Min^{ip}}{Max^{ip} - Min^{ip}}.$$

where Min^{ip} and Max^{fe} are used to normalized the index between 0 and 1.

Political Disintegration Index (PDI). It represents the systemic interaction between the two forces and is defined multiplicatively as:

$$PDI_t = FI_t \times II_t.$$

This way political instability produces systemic effects when elite frustration and mass immiseration co-evolve: neither component is sufficient alone; it is their interaction that creates a high-risk political environment.

[32] Admittedly, not all elite households aspire to positions of power; this is a dimension that a more detailed and agent-based oriented extension of the model will be able to capture.

C The augmented model

The baseline model is amended to introduce a political feedback on the economy through an augmented spread tied to the PDI. Therefore, we move from a fixed spread σ in the baseline moel to a time-varying spread in the augmented model, as follows:

$$\sigma'_t = \sigma + \sigma_1 \cdot PDI_{t-1}^{\sigma_2} \tag{18}$$

where σ is the spread as computed in the baseline model, $\sigma_1 > 0$ is a sensitivity parameter, and $\sigma_2 > 0$ allows for non-linear effects. A higher PDI thus raises the cost of credit for both households and firms, and this effect is amplified by the non-linear dependence of the spread on the PDI.

Accordingly, we rewrite the interest rate on households' loans in the following way:

$$i_{h,t} = i_{CB,t} + \sigma'_t + (i_{CB,t-1} + \sigma'_t)\frac{l_{h,t}}{yd_{h,t}} \tag{14'}$$

Similarly, for the firm sector we get:

$$i_t^F = i_{CB} + \sigma'_t + (i_{CB,t-1} + \sigma'_t)\frac{L_t^F}{P_t D_t} \tag{15'}$$

Therefore, the augmented model can be regarded as the baseline model with the following modifications: (i) Equation 18 is additionally included; (ii) Equations 14 and 15 are replaced by Equations 14' and 15'.

D Parameters

Table 1: Calibrated parameters

Parameter	Description	Value	Comments
c_{yd}	Propensity to consume out of income	0.7	Give rise to heterogeneous effective propensities to consume out of income due to the presence of the imitation consumption term
c_{pac}	Propensity to consume out of past average consumption	0.3	Social nature of consumption (imitation parameter)
CAR	Capital adequacy ratio	0.08	Minimum capital requirement in Basel I and II
pw	% of public servants	0.25	Broadly in line with ILO data for advanced countries (the chosen value overestimates the number of civil servants in countries like the US and Italy and compensates for a lower share of government expenditure in the model - see next parameter)
χ	Government expenditure	1/3.5	Broadly in line with worldwide data (the chosen value underestimates the percentage of government expenditure over the GDP and compensates for a slightly higher percentage of public servant in the model with respect to countries like US and Italy - see previous parameter)
ψ	Share of public debt held by the central bank	0.3	Broadly in line with the percentage of government bonds held by central banks in US and Europe
κ	Standard deviation of lognormally distributed individual wage quotas	0.4	Qualitatively matches the distribution of labour income in advanced countries like the US and European countries
$\pi\tilde{CB}$	Inflation target	0.02	Typical target for central bans like the FED and the ECB
$\tilde{iCB}$	Policy rate anchor	0.02	Close to long run level of the real interest rate
ϕ_π	Response to inflation	0.2	Adjustment to deviations from the inflation target
λ	Adaptive expectation	0.8	Higher weight for the correction term than for the past value of the variable
ω	Labour productivity	10	It only determines the scale of economic activity
ν	Unemployment benefit	0.5	Tied to the minimum wage paid to employed workers
ι	Loan repayment rate	0.2	Tends to be a midpoint of repayment rates of heterogeneous loans
τ^H	Tax rate on households	0.35	Both tax rates are set such that the public debt over GDP stabilizes around reasonable values without going out of control
τ^F	Tax rate on firms and banks	0.45	Both tax rates are set such that the public debt over GDP stabilizes around reasonable values without going out of control
α_0	Phillips Curve intercept	0.08	Both the intercept and the slope of the linear PC are set to obtain reasonable rates of wage inflation (with values, and an evolution, in line with those observed during the Great Moderation - from mid 1980s to mid 2000s)

α_1	Phillips Curve slope	0.8	Both the intercept and the slope of the linear PC are set to obtain reasonable rates of wage inflation (with values, and an evolution, in line with those observed during the Great Moderation - from mid 1980s to mid 2000s)
σ	Markup on interest rates on loans	0.03	It allows to have a margin on the base interest rate even near the ZLB
μ_0	Initial markup	0.1	Pre-inequality-shock "low" margin on production costs
$\bar{\mu}$	Maximum value the markup can achieve during the policy shock	0.2	Post-inequality-shock "high" margin on production costs
γ^{μ}	Growth rate of the markup after the shock	0.001	Implied by the minimum and maximum values of the markup
θ_0	Initial maximum principal repayment-to-income-ratio	0.4	Pre-financial-liberalization-shock "tough" credit policy
$\bar{\theta}$	Maximum value θ can achieve during the policy shock	0.6	Post-financial-liberalization-shock "loose" credit policy
γ^{θ}	Growth rate of θ after the shock	0.001	Implied by the minimum and maximum values of the maximum principal repayment-to-income ratio
EAT	Elite aspirant threshold	150	Multiplied by P_t gives the threshold to belong to the elite
PP	Power positions	0.002	Multiplied by H gives the number of power positions in the society
NLS	Normal living standard	8	Multiplied by P_t gives the threshold to belong to the immiserated people
Min^{fe}	Frustrated elite min	$0.01*H$	Minimum number of frustrated elites
Max^{fe}	Frustrated elite max	$0.1*H$	Maximum number of frustrated elites
Min^{ip}	Popular immiseration min	$0.1*H$	Minimum number of immiserated people
Max^{ip}	Popular immiseration max	$0.9*H$	Maximum number of immiserated people
σ_1	spread sensitivity	0.1	sensitivity of spread to political disintegration index
σ_2	spread concavity	0.4	non-linear effect of political disintegration on spread