

Inequality-Constrained Monetary Policy in a Financialized Economy

Luca Eduardo Fierro * **Federico Giri** † **Alberto Russo** ‡
lucaeduardo.fierro@santannapisa.it f.giri@univpm.it russo@uji.es

September 23, 2022

Preliminary draft, please do not cite or circulate

Abstract

During last decades, we observed both an increase in inequality and an expansion of finance in rich economies. More than a decade ago, the mounting instability of the system has provoked the largest crisis after the Great Depression that led central banks to pursue ultra-expansionary monetary policies.

A growing literature is investigating the effects of monetary policy on (income and wealth) inequality. However, there could also be a reversed causation, that is inequality dynamics may affect monetary policy, through the impact that distributional changes may have on financial (in)stability and the likelihood of crises. This is the focus of this paper in which a minimal macro ABM is presented to investigate how the conduct of monetary policy is influenced by the co-evolution of inequality and finance.

We find that when a phase of increasing inequality is met by a wave of financial liberalization a boom in households debt is likely to mount. In such circumstance, the central bank must face a trade-off between financial stability and aggregate demand management: if the central bank adopts a leaning against the wind strategy, it can successfully curb credit growth and preserves financial stability, at the cost of higher unemployment in the short run. On the other hand, an accommodative strategy, i.e. lowering the policy rate, it can actually prevent the drop in aggregate demand at the cost of long-run financial instability, defined as a high leveraged economy and a relative large non-performing loans incidence on banks' balance sheets.

Keywords: Inequality, Financial Fragility, Monetary Policy

JEL classification codes: E12, E21, E25, E31, E42, E52, E58, E47, G21, G51

*Scuola Superiore Sant'Anna Pisa (SSSA)

†Università Politecnica delle Marche (UNIVPM)

‡Universitat Jaume I (UJI)

1 Introduction

1.1 Introduction

The thirty years preceding the Great Recession (1980-2008) have been marked by four persistent macroeconomic trends. These are a steady increase of income inequality and households' debt-to-income ratio, coupled with a descend of the interest and inflation rates [fig.1]. Arguably, correlations of this sort can hardly be regarded as spurious and in fact there are sound theoretical and empirical reasons to believe they are not: for example, income inequality and households' debt have been robustly found to share a common non-deterministic trend (Klein, 2015; Malinen, 2016), which is suggestive of an underlying causal relationship. Also, excessive income inequality is likely to reduce aggregate demand, which carries the usual implications for inflation. Finally, interest and inflation rates are bound to move in the same direction, under the assumption of a central bank committed to steer the former to stabilize the latter.

The aim of this paper is to develop a parsimonious model able to jointly explain the aforementioned dynamics and to provide policy insights for the conduct of monetary policy in a high and rising inequality environment. For this purpose, we designed a barebones out-of-equilibrium macro model endowed with a large number of heterogenous households. As we will see, the key assumptions of our model are heterogeneous saving rates across households belonging to different income classes and imitative consumption *a lá* "keeping up with the Joneses". This is very much in the spirit of Duesenberry (1949) classic "*Income, Saving, and the Theory of Consumer Behavior*", which has the advantage of entailing two desirable properties for the saving rate: cross-sectional heterogeneity and aggregate scale invariance.

The mainstream debate on inequality, private debt, and monetary policy is epitomized in the theory of *indebted demand* (ID, hereafter) by Mian et al. (2021), which we will take as a reference point throughout the paper. The ID framework matches and explains some relevant stylized facts by means of a fairly simple model centered around the fundamental assumption of non-homothetic preferences over wealth and a loanable funds view of the credit market. In the ID framework, an exogenous endowments redistribution from poor (borrowers) to rich (lenders) households triggers a positive credit supply shock. As the credit supply schedule shifts outward, the (natural) interest rate falls at levels where poorer households are willing to take up more debt and a new equilibrium is attained. The theory is therefore successful in matching three out of four empirical observations discussed in the incipit of this paper: increasing debt and interest rate fall, in a world becoming more and more unequal. On the policy side, the ID theory is somehow apologetic with respect to the conduct of monetary policy: as the natural rate falls, the central bank can do little more than follow it. In other words, the central bank does not cause, neither can prevent the interest rate fall, very much like a *driver on a highway who must adapt her speed to road conditions*¹.

We argue that the ID framework suffers from some theoretical weaknesses leading to inconsistencies with empirical observations. Therefore, we wish to propose an alternative model, which in our view is much better equipped to qualitatively explain the relevant stylized facts. For example, our framework is able to replicate the three main stylized facts already shown by Mian et al. (2021) as well as the observed inflation dynamics. We are also able to link functional and income distribution, obtaining changes in the former by modeling mark-up shocks. We also obtain, consistently with empirical observations, that the

¹The quote is from an NYT column by Neil Irwin: <https://www.nytimes.com/2021/08/28/upshot/low-interest-rates.html>

whole narrative is coherent with a decrease of the aggregate saving rate. Finally, a central role for the monetary authority is carved out, as far as the interest rate, aggregate demand and financial fragility are concerned.

First and foremost, we wish to challenge the dominant view according to which an inequality shock must exclusively be seen as a credit supply shock trigger. There are indeed many plausible mechanisms consistent with the idea that an inequality shock would nudge households into demanding more credit. One of such mechanisms is the so called imitative consumption or consumption cascade, which is the one implemented in this paper. The narrative is somehow similar to the one put forward in the first chapter of [Rajan \(2011\)](#)'s *Fault Lines*, which was indeed given the suggestive title *Let Them Eat Credit*. Although with respect to Rajan we will propose a different view concerning the chief causes of rising income inequality, we generally agree with his hypothesis regarding the consequences of income inequality: as the top income share rises, richer individuals can afford higher consumption relative to the rest of the population. When this happens, a keeping up mechanism is triggered, one in which households earning below top incomes wish to increase their consumption standards, possibly above what their own income would allow. If this is the case, households would demand more credit, in the attempt to finance the new consumption targets.

To the attentive reader, the above explanation might appear plausible as a pure theoretical elaboration, but difficult to reconcile with the observed data. This is because, as economists, in the aftermath of a demand shock we would expect quantities and prices to move in the same direction, whereas we showed the growing private debt together with the falling interest rate. We maintain that this apparent inconsistencies can be easily dismissed as such, by considering shocks and policy regimes contemporaneous to the credit demand shock so far discussed.

Let us first point out that during the decades under consideration a wave of financial liberalization took place in the U.S. ([Rajan, 2011](#)). This allowed commercial banks to expand their credit supply. In particular, by relying on complex financial products, like CDOs, commercial banks could extend credit to the household sector and so be able to satisfy the increasing credit demand regardless its potential risk ([Botta et al., 2021](#)). Financial liberalization can be seen as an exogenous event with respect to our main focus, which is increasing income inequality. On the other hand, it can be interpreted as the response to income inequality designed by the policy maker: according to such view, the policy maker would have acted in such a way to reduce consumption inequality, rather than income inequality, by allowing the bottom 90% to finance part of their consumption with credit and therefore reducing the consumption gap with the top 10%. Be as it may, this is equivalent to a positive credit supply shock, leading to a reduction of the interest rate.

The second channel exerting a downward pressure on the interest rate runs through the monetary policy conduct. We indeed hypothesize two distinct reasons why the central bank, although not targeting inequality per se, would be compelled to act as inequality increases: inflation targeting and financial stabilization. Similarly to [Mian et al. \(2021\)](#), we assume that the propensity to save is an increasing function of relative income, which implies that distributing income from the bottom to the top of the income distribution lowers the aggregate propensity to consume and therefore depresses aggregate demand.

The lack of aggregate demand poses the usual deflationary effect, which the central bank is called to countervail by lowering the policy rate. On top of inflation targeting, the central bank might also want to stabilize the financial side of the economy by targeting private debt. If this is the case, the central bank can opt for two opposite regimes: a leaning against the wind or an accommodative monetary policy. In the former regime, the central bank increases the policy rate in response to a surge in the level of private debt, in the attempt of curbing the building up of potential credit bubbles. On the other hand, if the central bank opts for an accommodative strategy, it will react by lowering the rate in response to a surge in the level of private debt, in this case the motivation would be to prevent a financial crash by avoiding to stress a leveraged financial system. We would argue that this is *the* trade-off the central bank faces when confronting a surge in income inequality and that depending on the regime chosen we might obtain lower unemployment in the short run, at the cost of future financial stability, or larger unemployment today with the benefit or more stability in the future. Either way, our thesis is that the central bank, rather than being a *driver on a highway who must adapt her speed to road conditions*, plays the role of the *main traffic control which regulates and enforces traffic volume, speed and road conditions, in normal times and during emergencies*².

The last departure we take from the existing literature concerns the narrative used to justify the progressively increasing income and/or wealth inequality. For example, [Kumhof et al. \(2015\)](#) assume heterogeneous discount rates across households: patient - *therefore* rich/lender - households, versus impatient - *therefore* poor/borrower - households. [Mian et al. \(2021\)](#) assume exogenous shocks hitting the endowments distribution coupled with non-homothetic preferences, which - more realistically - implies rich - *therefore* lender - households, versus poor - *therefore* borrower - households. On the contrary, we will explicitly link the personal income distribution to the functional income distribution: we will assume that households hold stocks and are entitled to receive dividends proportionally to their accumulated wealth. Then, the shock on the mark-up brought about an increase in dividends and a consequential change in the personal income distribution. We deem this approach more accurate from a descriptive point of view. Indeed, it allows us to match an additional stylized fact: the fall of the wage share going hand in hand with the rise of the top 10% income share.

2 The model

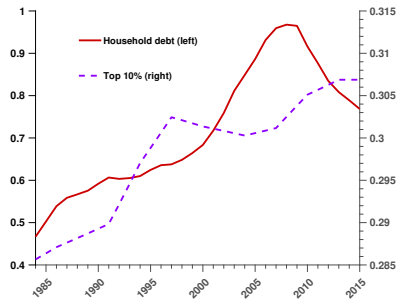
We propose a disequilibrium macroeconomic model with heterogeneous households, a non-financial firm sector, a banking system, the government, and the central bank. Accordingly, the only sector in which heterogeneous agents are present is the household sector. Initial conditions are set such that all variables are zero but for the ones necessary to activate the economy (for example, firm's expected demand). Moreover, we set the exogenous distribution of individual wage shares based on a log-normal distribution (which remains fixed all the time). The model works according to the following sequence of events (more details on single events are provided in following subsections):

- interest on loans and (firm and bank) dividends are paid;
- the firm sets the expected demand and, based on a fixed labour productivity, the labour demand is established (labour is the only productive input);
- if the firm's labour demand is less or equal to the labour supply (considering that a fraction of

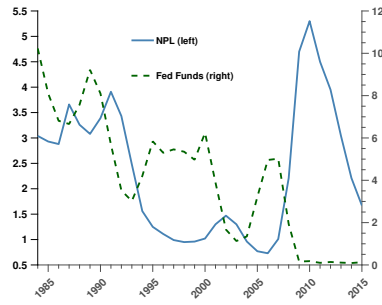
²The quote is from a very detailed critique of the ID framework made by Servaas Storm and appeared as an INET article: <https://www.ineteconomics.org/perspectives/blog/why-the-rich-get-richer-and-interest-rates-go-down>

Figure 1: Stylized Facts

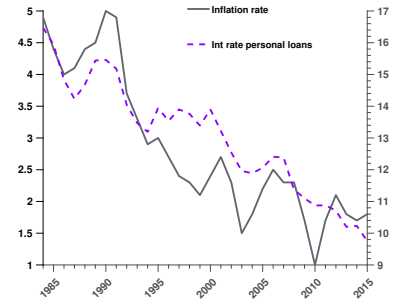
Household debt and top 10 %



NPL and fed funds rate



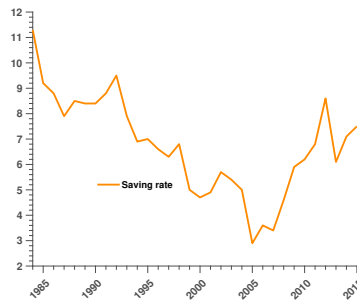
Inflation and loans interest rate



Wage share



Saving rate



Aggregate real savings



Note

workers is hired by the government), the employment level corresponds to the labour demand; otherwise, it is constrained by the availability of workers;

- when the labour demand is below the labour supply (net of public workers), a number of households (corresponding to the realized unemployment rate) are picked at random as unemployed;
- wage inflation is determined based on an inverse linear relation with the unemployment rate;
- the total wage bill is set and assigned to the employed workers according to the log-normal distribution; the unemployed receive a dole;
- the firm produces homogeneous goods based on a linear technology;
- the price of goods is set according to a mark-up over unit production and financial cost;
- households' disposable income is given by the net wage (or the dole), plus interest on deposit and dividends, minus interest on loan;
- households choose desired consumption based on heterogeneous propensity to consume and an imitation mechanism;
- households set desired (precautionary) deposit and desired loan (to cover desired consumption in excess with respect to disposable income and the available stock of deposit net of desired deposit);
- the bank grants loans to creditworthy households, the interest rate depends on both the policy rate and a risk premium;
- affordable consumption is equal to desired consumption for creditworthy households, whereas it can be lower for rationed households for which the available stock of deposit is insufficient to cover the entire expenditure implied by desired consumption;

- in case the sum of affordable consumption plus public purchases in real terms is greater than firms' production, both consumption and public purchases are rescaled to meet the total supply of goods (this implies that households' effective consumption can be lower than the affordable level);
- households' saving is set and the new deposit stock is determined;
- firm's and bank's profit is determined; while firm's profit is fully distributed to households, the bank retains a fraction of profit if this is necessary to meet the capital requirement; in case household's liquidity is not enough to pay back the principal to the bank a non-performing loan is set implying a loss for banks' capital;
- if firm's internal resources do not fully cover production and financial costs, the firm asks for a bank loan; the interest rate depends on both the policy rate and a risk premium;
- the government determines the public deficit (public purchases, wages to public workers and dole minus collected taxes) and issues bonds which are bought by the banking sector;
- the central bank sets the policy rate.

2.1 Households

The household sector is composed of H heterogeneous households ($h = 1, 2, \dots, H$). Each employed worker gains a wage $w_{h,t}$ which is a fraction of the total wage bill W_t paid by the firm, where the individual wage quota is determined by an exogenous log-normal distribution initially set. In other words, we do not explain inter-personal inequality due to the distribution of individual wages, while we focus on the residual inequality related to the endogenous mechanisms of the model and policy changes. Unemployed workers receive a dole from the government which is a fraction ν of the lowest net wage paid to employed workers. The total wage bill W_t is determined at the aggregate level by the following equation:

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

where \dot{w}_t is the wage inflation and \dot{N}_t is the percentage change in employment. In particular, wage inflation depends on the unemployment rate u_t in a linear way:

$$\dot{w}_t = \alpha_0 - \alpha_1 u_t \quad (2)$$

The disposable income of the h -th household is given by:

$$y d_{h,t} = w'_{h,t} + d_{h,t} - i_{h,t}^L l_{h,t-1} \quad (3)$$

where $w'_{h,t}$ is the net wage (households pay a flat tax τ on labour incomes), $d_{h,t}$ the dividends distributed by the firm and the bank (proportionally to each households' wealth),³ $i_{h,t}^L$ the interest rate charged on the bank loan, and $l_{h,t-1}$ the loan stock inherited from the previous period.

Each household sets a level of desired consumption which depends on two terms, normal and imitated consumption, the former being tied to disposable income $y d_{h,t}$ and net worth $nw_{h,t}$, and the latter deriving from the tendency to imitate upper-class consumption standards:

$$c_{h,t}^d = (1 - \xi)c_{h,t}^n + \xi c_{h,t}^i \quad (4)$$

³In order to keep the model as simple as possible, we do not consider firm and bank shares and assume that dividends are distributed to households according to their relative, namely deposits, which represent the only asset in the households' balance sheet.

where $c_{h,t}^n$ is “normal consumption”, $c_{h,t}^i$ is “imitated consumption”, and ξ is an “imitation intensity” parameter. Normal consumption is given by:

$$c_{h,t}^n = c_{y_d}^h \cdot \max(0, yd_{h,t}) + c_{nw} \cdot \max(0, nw_{h,t}) \quad (5)$$

where $c_{y_d}^h$ and c_{nw} are, respectively, the propensity to consume out of disposable income and net worth. The propensity $c_{y_d}^h$ is heterogeneous across households’ deciles. Imitated consumption (which is set to zero for unemployed workers) follows an “expenditure cascade” scheme according to which each household imitates the average consumption of the upper decile in the distribution of consumption (the richest ones do not imitate).

Households set a desired deposit $\Delta d_{h,t}^d$ for precautionary purposes which is equal to past consumption. If the available resources, namely the disposable income plus the deposit stock inherited from the past period, are not enough to cover desired consumption plus desired deposit, then the household asks for a bank loan:

$$\Delta l_{h,t}^d = \begin{cases} c_{h,t}^d + \Delta d_{h,t}^d - yd_{h,t} + l_{h,t-1} & \text{if } c_{h,t}^d + \Delta d_{h,t}^d > yd_{h,t} + l_{h,t-1} \\ 0 & \text{otherwise.} \end{cases} \quad (6)$$

The bank assesses the creditworthiness of households on individual bases (as explained below), so that the affordable consumption for non-rationed households corresponds to desired consumption, while for rationed ones the maximum affordable consumption is constrained by available resources ($yd_{h,t} + l_{h,t-1}$).

By summing up individual consumption we obtain aggregate consumption C_t . Aggregate consumption plus public purchases G_t gives rise to the aggregate demand in nominal terms. If the aggregate demand in real terms, D_t^* is greater than production Y_t (excess demand), both individual consumption and public purchases are scaled down in order for the effective demand to be equal to production. Accordingly, households’ effective consumption $c_{h,t}$ can be lower than the affordable level. Households’ saving is equal to disposable income minus effective consumption.

Indebted households have to pay a fraction ι of the loan principal, that is the installment $\iota l_{h,t-1}$; in case of insufficient resources, the household is not able to pay back the installment, fully or partially, and the bank suffers a non-performing loan $npl_{h,t}$ (thus negatively impacting bank’s capital; see below). Accordingly, the household’s deposit stock at the end of the period is:

$$d_{h,t} = \begin{cases} d_{h,t-1} + yd_{h,t} + \Delta l_{h,t} - c_{h,t} - \iota l_{h,t-1} & \text{if } npl_{h,t} = 0 \\ 0 & \text{if } npl_{h,t} > 0. \end{cases} \quad (7)$$

Finally, the households’ net worth is:

$$nw_{h,t} = d_{h,t} - l_{h,t}. \quad (8)$$

2.2 Firm

The non-financial sector produces homogeneous goods with labour only according to a linear technology:

$$Y_t = \omega N_t \quad (9)$$

where $\omega > 0$ represents the (fixed) labour productivity, and $N_t = \min(H - PW, N_t^d)$ is the actual employment level, which in turn is the minimum between the number of available workers (after that the government hired public workers) and firm’s labour demand. The latter is given by:

$$N_t^d = \lceil D_t^e / \omega \rceil \quad (10)$$

where D_t^e is firm's expected demand. The firm follows an adaptive scheme for setting expectations on demand:

$$D_t^e = D_{t-1}^e + \lambda(D_{t-1}^* - D_{t-1}^e) \quad (11)$$

where D_{t-1}^* stays for potential aggregate demand (in real terms), namely the amount of goods corresponding to the total households' expenditure at the previous period price independently of the (possibly binding) quantity constraint.

The price at which homogeneous goods are sold is:

$$P_t = (1 + \mu) \frac{W_t + FC_t}{Y_t} \quad (12)$$

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:

$$\pi_t = P_t * D_t - W_t - FC_t \quad (13)$$

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.

2.3 Bank

The banking sector provides credit to both the firm and households. In the case of households, the bank firstly assesses the creditworthiness of potential clients by checking, for any household h asking for a (desired) loan $\Delta l_{h,t}^d$, that $\iota l_{h,t}^d \leq \theta yd_{h,t}$, where ι represents the percentage repayment of the principal, $l_{h,t}^d = l_{h,t-1} + \Delta l_{h,t}^d$ is the desired stock of loan, and θ is the maximum debt-to-service ratio, which is used in the model to implement the "financial deregulation shock". Non-rationed households pay an interest rate on the bank loan as follows:

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

where σ represents a spread. The interest rate on the bank loan to the firm (there is no rationing in this case) is computed according to a similar formula:

$$i_t^F = i_{CB} + \sigma + (i_{CB} + \sigma) \frac{L_t^F}{P_t D_t} \quad (15)$$

where $P_t D_t$ represents firm's revenues.

The bank's profit is given by the interest on both loans and bonds (there is no interest paid on deposits). The bank pays a proportional tax on (positive) profit (no tax is paid in case of negative profit). The fraction of profit distributed to households evolves according to the following equation:

$$\delta_t = \delta_{t-1} + \left(\frac{C_{t-1} - NPL_t}{L_t + L_t^F} - car \right) \quad (16)$$

where C_{t-1} is previous period bank's capital, NPL_t is the total amount of non-performing loan in period t , L_t and L_t^F are the loan stock of households and the firm, respectively, and car is the capital

requirement.

2.4 Government

The government hires a fraction pw of workers who do not produce anything but are necessary to manage the public sector. They are paid a total bill equal to W_t^B which is then assigned to single workers according to the same mechanism followed for private workers. Moreover, the government pays unemployment benefits for a total of UB_t . It also pays interest on bonds equal to $i_{t-1}^G B_{t-1}$. Public purchases are proportional to past aggregate demand: $G_t = \chi(P_{t-1}D_{t-1})$. The government collects taxes on both wages and profits, Tax_t . Therefore, the public deficit is:

$$\Delta B_t = W_t^B + UB_t + i_{t-1}^G B_{t-1} + G_t - Tax_t \quad (17)$$

The public debt is given by cumulative public deficits. The bonds issued by the government to run the fiscal deficit are bought by the banking sector and pay an interest rate i^B .

2.5 Central bank

The central bank sets the policy rate following a pretty standard single mandate Taylor rule with inflation targeting:

$$i_{CB,t} = \tilde{i}_{CB}^{(1-\phi_r)} i_{CB,t-1}^{\phi_r} \left[\left(\frac{\pi_t}{\tilde{\pi}_{CB}} \right)^{\phi_\pi} \right]^{(1-\phi_r)} \quad (18)$$

Where \tilde{i}_{CB} is an exogenous anchor for the policy rate; $\tilde{\pi}_{CB}$ is the central bank inflation target; ϕ_r and ϕ_π are positive parameters; and π_t is the current inflation rate.

In our policy experiments we then augment the Taylor rule described in equation (18) in order to include aggregate private debt:

$$i_{CB,t} = \tilde{i}_{CB}^{(1-\phi_r)} i_{CB,t-1}^{\phi_r} \left[\left(\frac{\pi_t}{\tilde{\pi}_{CB}} \right)^{\phi_\pi} \right]^{(1-\phi_r)} + \beta \left[\phi_{D1} + \phi_{D2} \left(\frac{L_t}{Y_t} \right)^2 \right] \quad (19)$$

Where L_t is the total loan stock held by households; Y_t is total households' disposable income; ϕ_{D1}, ϕ_{D2} are positive parameters. It follows that β is the regime switching parameter: with $\beta = 0$, we have the single mandate Taylor rule. With $\beta = 1$, we have the leaning against the wind regime; With $\beta = -1$ we have the accommodative central bank.

3 Policy experiments

In the present section, we explore the response of the model to a sequence of mark-up shocks. The choice of a mark-up shock is dictated by the idea that the increase of firms market power is one of the most powerful drivers of macroeconomic dynamics. At the same time, we simulate a series of financialization shocks, modeled as almost continuous increments in the parameter θ . By doing so, we impose less strict conditions for households' access to credit, an exogenous increase in the credit demand, and a more risky attitude in the banking sector. In our simulation design, the markup shocks occur from period $T = 500$ for each simulation. To ease comparability among simulations, we normalize each run with the value obtained at $T = 499$. Figure (2) summarizes our results under three possible policy regimes: a *baseline* where the central bank only targets inflation; a *leaning against the wind*, where, alongside inflation

targeting, the central bank aims to control the excess of household indebtedness; an *accommodative regime* where the central bank steers the short term interest rate to minimize firms' default.

The baseline transmission mechanism of our model goes as follows: increasing the markup directly exacerbates income inequality, as capital income is mostly concentrated among wealthy individuals. According to the "keep it up with Jones" habit formation, the consumption pattern of poorer households is driven by the imitation of richer individuals. The reduction of disposable income at the bottom translates into an increase in household debt in order to maintain their standard of consumption. The previous mechanism, alongside the lower marginal propensity to consume by the richer households, causes a lack of aggregate demand, an increase in the unemployment rate, and a decrease in the inflation rate.

The lack of aggregate demand is partially compensated, at least in the short run, by debt-financed consumption, however, the extent of it depends on the policy regime in place: in the leaning against the wind scenario, the central bank increases the interest rate in the attempt to discourage credit growth. The central bank is somehow successful in achieving such a goal, however, this comes at the cost of larger unemployment. On the other hand, if the central bank follows an accommodative behavior, a lower level of unemployment is achieved. However, this comes at the cost of approaching the zero lower bound and increasing the share of non-performing loans, therefore undermining the long-run stability of the economy.

Our model suggests that the last decade of monetary policy framework can be adequately explained as a result of an inequality-constraint policy that is mainly focused on preventing household defaults and keeping the solvency of the financial system.

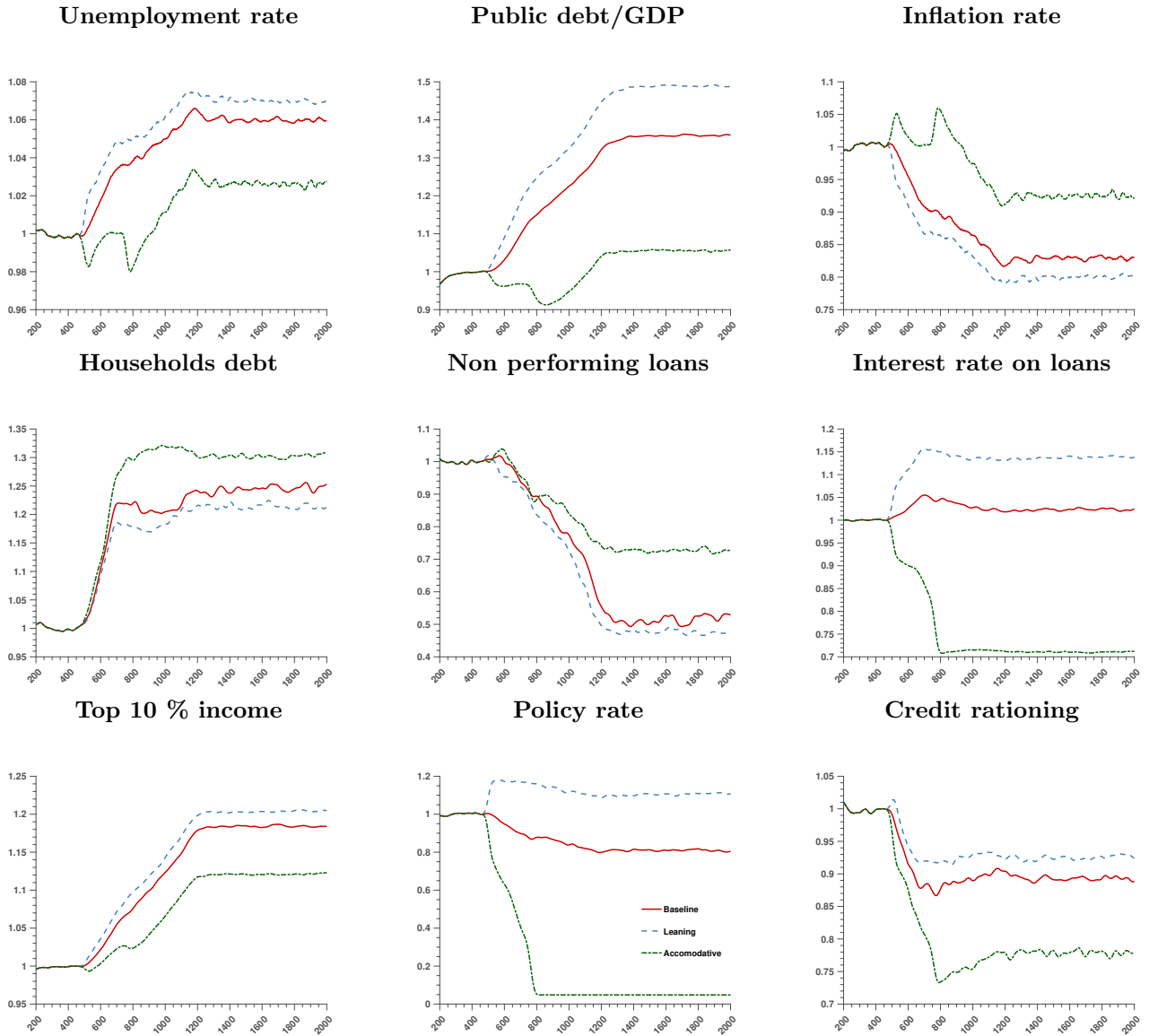
4 Conclusions

We proposed a novel theoretical framework in order to study the interplay between inequality and financial stability and analyze the role of monetary policy in governing such relationship and its wider macroeconomic implications.

According to our theory, increasing inequality lead to a credit demand shock, which, if it coincides with a wave of financial liberalization, causes a credit boom. The reaction of the interest rate, by and large, depends on the the monetary policy regime in place: if the central bank opts for a leaning against the wind regime, it will successfully curb the credit growth and preserve the long run macroeconomic stability. However, it will be unable to contrast the drop of aggregate demand caused by an unequal distribution of income. Conversely, an accommodative strategy is able to contain the lack of aggregate demand, at the cost of fueling a credit boom and undermine financial stability in the long run.

In conclusion, our model suggests that the three decades preceding the 2007-08 of monetary policy framework can be adequately explained as a result of an inequality-constraint policy that is mainly focused on preventing household defaults and keeping the solvency of the financial system.

Figure 2: Policy simulation results: Baseline, leaning against the wind, and accommodative monetary policy



Note: The Figure shows the baseline (red solid line), the leaning against the wind (dashed blue line), and the accommodative monetary policy (dotted green line) scenarios. Each simulation is smoothed using a moving average and a gaussian kernel.

References

- Botta, A., Caverzasi, E., Russo, A., Gallegati, M., Stiglitz, J.E., 2021. Inequality and finance in a rent economy. *Journal of Economic Behavior & Organization* 183, 998–1029.
- Duesenberry, J.S., 1949. Income, saving, and the theory of consumer behavior.
- Klein, M., 2015. Inequality and household debt: a panel cointegration analysis. *Empirica* 42, 391–412.
- Kumhof, M., Rancière, R., Winant, P., 2015. Inequality, Leverage, and Crises. *American Economic Review* 105, 1217–1245.
- Malinen, T., 2016. Does income inequality contribute to credit cycles? *The Journal of Economic Inequality* 14, 309–325.
- Mian, A., Straub, L., Sufi, A., 2021. Indebted Demand*. *The Quarterly Journal of Economics* 136, 2243–2307.
- Rajan, R.G., 2011. *Fault lines*. princeton University press.