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Time to question the wisdom of active monetary policies

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Abstract

Free market economies, on which Western type democracies are based, prosper because of gains-motivated decisions by liberty-loving individuals who act as risk-taking investors of "true" savings borrowed by hard-working savers. Having finite lives and hence being impatient, investors and savers reckon the future effects of their decisions using positive discount factors or interest rates. On the other hand, to raise aggregate demand and stimulate economic growth, perpetually present central banks, issue "artificial" savings that lead to zero and or negative interest rates. As a result, central bank policies wreak havoc in the rational decision-making of economic agents. Investors lose the main instrument they use in the intertemporal allocation of resources. Savers are discouraged to follow the long-standing virtue not to consume all their incomes and put aside some resources for the rainy days of old age; and all this in vain because, at the zero or negative interest rates, the economy becomes unstable and gives rise to distortions that destabilize democracy. Thus, for the sake of preserving the free way of life, a reform may be to turn central banks into a fourth state power, along with the legislative, judicial and executive branches of government, and mandate them with the sole task to maintain the stability of the general price level.

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1. Introduction

In the literature on monetary theory and policy, one comes across three main notions of interest rate. The first, denoted henceforth by i, represents the price of loans exchanged between borrowers and lenders. This is expressed as a percentage on the amount of loans. It is reckoned commonly per annum. Since the loans and the interest-payments are in current money units that gloss over any changes in purchasing power due to inflation or deflation, i stands for the so-called *nominal interest rate*; and, more importantly, given that it is determined in the market for loans, it is *observable*. By contrast, the second notion, denoted henceforth by r, is *unobservable.* Conventionally, it is calculated by subtracting from i the rate of inflation or deflation, denoted by θ; and exactly because it accounts for the latter, r stands for the so-called *real interest rate*. Lastly, the third notion, to be denoted by i_F, is the interest rate levied by central banks on the funds they lend to commercial banks.[1] The suggestion addressed in the title of the paper draws on the proposition that active monetary policies[2] have run their course and that now they are detrimental to the common good because:

> The policies of zero and in some cases negative i_F that central banks in the United States (US), the European Union (EU), and other free market economies have been applying, particularly since the advent of the 2008 financial crisis, give rise to serious economic and social anomalies that risk destabilizing Western type democracies.[3]

Thus, looking forward to its confirmation by reference to economic theory and empirical evidence, certain brief introductory remarks are in order regarding the chronology of recent monetary policy shifts.

Owing to the way in which it is computed, it has long been known that at some times r

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[1] Unless indicated otherwise, this interest rate will be referred to alternatively as policy rate, central bank funds rate, or policy instrument. As for the interest rate central banks pay on the deposits they receive from commercial banks, it will be referred to as repo-rate.

[2] Such are all policies that central banks pursue with the exception of those to which they respond passively to maintain the general level of prices stable, given various natural or manmade exogenous shocks.

[3] The link of i to the future of democracy can best be glimpsed from Schumpeter's (1942/2003) analysis of the investment process. No matter how low a central bank pushes the term structure of market interest rates via its policy rate i_F, Schumpeter and many others, before and after him, predicted the following. Eventually the discovery of new investment opportunities, which fuel economic progress through the process of creative destruction, will subside, capitalism will succumb to its own success, and democracy will be replaced by socialism. By now, history confirms that not only this and similar predictions failed to materialize, but also that, where it had taken roots for several decades, socialism eclipsed in the 1990s. Moreover, it is of significant to note that, according to Freedman (1962, Chapter III), the spectacular accomplishments of free market economies have been achieved despite the mismanagement of money on the part of the central banks in Western type democracies. That is why, recalling the admonitions of Ricardo (1809: III, 21–22), to safeguard freedom and democracy in the long run it is imperative for citizens to reign on the discretionary powers of central banks by enacting reforms along the lines discussed in Bitros (2015).

may become negative for more or less years. For example, from the available data it turns out that the U. S. 10-year sovereign bond yield, which is a good proxy for r, became negative in the late 1950s and then again in the 1970s.[4] Before the late 1980s and early 1990s, when central banks targeted the quantity of money, the culprit for the negative real interest rate episodes was attributed invariably to the excessive increase in the money supply. The conceptualization was that, by raising the aggregate demand for goods and services faster than the productive potential of the economy permitted, money injections by central banks drove the inflation rate above i, and as a result r shifted over to negative values. In these instances, as monetary authorities enacted remedial policies to stem the misallocations of resources that emanated from the high inflation and the negative real interest rates, within a few years inflation subsided, the real interest rate reversed course, and gradually it turned once again positive.

But when after this period central banks switched to targeting the nominal interest rate,[5] reducing it persistently to stimulate economic growth and achieve their other mandates became problematic. The reason is that, if central banks reduced the policy rate to zero, they risked pushing the economy into a liquidity trap reminiscent of the long Japanese experiences.[6] Moreover, if they reduced it below zero and commercial banks passed it along to depositors, the risk was that the latter might withdraw much of their cash deposits, thus sending the economy into a serious protracted recession. This dilemma evolved eventually into a predicament that was unavoidable, since the "creativity and some luck" that certain world-renowned experts[7] wished for did not materialize. Suddenly on October 8, 2008, the world's

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[4] Due to the dominant position of the U.S. dollar in international markets and the influence that monetary policies enacted in the United States exercise in the world, unless explicitly indicated otherwise, all references heretofore will be addressed to the central bank of this country.

[5] For more details regarding the switch of the central bank in the US from targeting the interest rate instead of the money supply, as well as its control over these instruments of monetary poly, see Bitros (2021).

[6] By the late 1990s, several key indicators in Japan signaled that its economy was in a strange impasse. For two decades, Nominal Gross Domestic Product (GDP) was stagnant. Real GDP was barely growing. Nominal short-term interest rates had been close to zero. Nominal long-term interest rates, measured by the bond yields of the Japanese government had been also extremely low for many years, and, not the least, the monetary policies that the Bank of Japan applied had been highly accommodative. To Krugman et al. (1998) and Krugman (2000), who brought the case of Japan to the attention of economists, monetary policy appeared to have become impotent to stimulate the economy out of the slump, and this was the hallmark of a situation known as *liquidity trap*. His clear intention at the time was to warn fiscal and monetary authorities in the advanced free market economies of the imminent risks and to suggest on how they might prepare to confront them.

[7] For the sake of history it is of significance to mention that this expectation originates in Krugman's (2008) note in the New York Times where we read:

> Incidentally, there was a bunch of us at Princeton worrying about the Japan problem in the early years of this decade. I was one; Lars Svensson, currently at Sweden's Riksbank, was another; a third was a guy named Ben Bernanke. I wonder whatever happened to him?

At the time the zero policy rate was introduced Bernake served as Chairman of the Fed, whereas Svensson was Deputy Governor of Sweden's Riksbank, which introduced not a zero but a negative policy rate.

reserve bank, that is, the U.S Federal Open Market Committee (FOMC) or the Fed, abolished a 95 years old tradition and began paying interest on the mandatory and excess reserves that commercial banks deposited with it. This policy shift amounted essentially to a reduction in the policy rate very close to zero, and it is this that agitated Krugman (2008) two months later to proclaim: "That's zero interest rate policy. And it has arrived. America has turned Japanese." [8]

Since then, while central banks in the US and many other countries have shied away from adopting negative policy rates, this has not been the case in general. Notable among the exceptions are the central bank of Sweden, the central bank of Switzerland (SCB), and the European Central Bank (ECB). [9] From their proclamations, it emerges that the main aim of this policy was to create incentives and disincentives among commercial banks, on the one hand, to increase their lending in the expectation of stimulating investment and economic growth, and on the other, to discourage them from parking their excess reserves with the central bank. Not surprisingly, the policy proved deficient in at least one essential respect. This is that in Western type democracies central banks have no authority and cannot force commercial banks to pass the negative rates along to the retail depositors. In the literature that addresses the effectiveness of this policy, researchers do not allow for the institutional and other arrangements that dissuade commercial banks from cooperating with the central bank. Their standard hypothesis is that commercial banks are discouraged from the fear of losing deposits but, in one way or another, the policy does go through. Yet this view is hardly consistent with the prevailing institutional setup in these countries. For, as long as there are laws against practices of unjustifiable enrichment and the country's organization is based on free markets and representative party democracy, commercial banks confront legal, social and

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[8] In the years leading to the 2008 financial crisis, the views that Krugman and other macroeconomists of similar persuasions propagated for dealing with liquidity trap episodes are explained briefly in Appendix A.

[9] Sweden's Riksbank adopted a negative policy rate on commercial bank deposits in 2009 and annulled it shortly thereafter in 2010. Then, it re-introduced it in 2015 and it retracted it once again in 2019. On the contrary, the SCB and the ECB adopted negative rates in 2014 and have maintained this policy stance to the present day. In each of these cases, central bank authorities invoked particular indigenous reasons for adopting the said policy. For example, establishing in Switzerland an interest rate differential to the negative interest rate of the ECB, in order for the SCB to allow for the safe haven status of the Swiss Franc, was an obvious reason. But the main objective should have been to induce commercial banks to increase lending in the expectation of stimulating investment. Did these expectations materialize? In the case of Sweden, Anderson, Jonung (2020) find that the adoption of this policy was unnecessary and advised openly Riksbank not to do it again, at least not under the circumstances that prevailed at the rime in the economy. In the case of Switzerland, Danthine (2017) finds that, while the policy is effective in achieving any interest rate differential on tax haven justifications, as long as the negative rates do not pass to the general public, the banking sector operates asymmetrically above and below the lower zero bound and to the detriment of the expected results. Lastly, in the case of the ECB, the prudence for insisting on this policy should be reassessed in the light of the evidence as surveyed, say, by Beauregard, Spiegel (2020).

political hurdles that prohibit them from borrowing by inflicting on their depositors negative interest rates. Hence, the core argument for moving policy rates below zero evaporates. If the policy is applied by commercial banks at the retail level, it would be arbitrary and abusive, thus rendering commercial banks liable to possible class actions for damages; and, most importantly, no scheme concocted by economists to evade these implications by going around the zero bound of the policy rate can be expected to survive the democratic process.[10]

Now, abstracting from the above institutional setup, assume the following. The central bank is free to set i_F at will. Commercial banks act as a clearing mechanism in the loans market. The demand for loans emanates from investing in producer's durables. The supply of loans comes from two sources: "true" savings[11] from working people and "artificial" savings from the central bank. Moreover, since investment is presumed to be negatively related to r and $r = i_F\text{-}\theta$, assume that it is within the objectives of the central bank to favor setting i_F relative to θ such that r is as low as possible. Under these circumstances, two key questions come to mind. These are, first, can the central bank use the instruments at its disposal to set $r \leq 0$ on a systematic and sustainable basis, and if in the affirmative, second, would pursuing such a policy be consistent with a free market economy, which according to Bitros, Karayiannis (2013) is a necessary condition for the survival of democracy?

To answer them, and on the way to lay down the grounds on which the proposition stated earlier stands, the presentation is organized as follows. Section 2 addresses the stability properties of setting r to zero or negative in a general equilibrium model. From the analysis it emerges that the central bank does have the means to stay on or even break through the zero bound of r for some short period. But doing so systematically and for long would lead to a spiral of unstable equilibria that engender serious economic and social anomalies. Section 3 focusses on the roots and the effects of these anomalies in the domain of the economy. From the analysis, it follows that the intertemporal allocation of resources turns clueless and arbitrary. For, investors become unable to weigh properly the future effects of their investment decisions. The long standing virtue of saving turns into a vice since citizens are purposely induced to stop caring about the future; and all this havoc is stirred in vain, since sooner or later inflation or even worst the bursting of a bubble in asset prices will force the

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[10] As could be expected, there is no shortage of such schemes. They range from Buiter's (2009), and Agarwal, Kimball's (2015) proposals to break through the zero lower bound of the policy rate to Rogoff's (2015) long standing suggestions to replace the cash and establish a centrally controlled system of digital currency. For readers who are interested in this literature, a concise review is Ilgmann, Menner (2011).

[11] Savings out of one's hard-earned income will be referred to as "true" savings. In juxtaposition to them, the savings that central banks create by printing paper money will be referred to modestly as "artificial".

central bank to return to the so-called "normalcy". Section 4 explains how these anomalies erode the foundations of democracy and suggests possible reforms for preserving the institutions of self-government. Finally, Section 5 concludes with a summary of the key findings and a few suggestions for future research in this very important area.

2. Zero and negative policy rates in a general equilibrium model

Consider a free-market economy populated by any number of firms, one of which is representative of all others. Aside from its management, the representative firm comprises two distinct business units or divisions: That is, division C that produces consumer goods and division D that manufactures producers' goods for the C division. This organizational setup implies that the only markets that function in the economy are those of consumer goods and loans, and that all exchanges are settled by debits and credits in the ledger books of the representative firm. Due to the nature of the issues of interest here, the analysis focuses on the equilibrium in the market where savings are lent out for investment purposes. However, this choice has no bearing on the economy-wide equilibrium, since by Walras's law, if equilibrium holds in the one of the markets, it should hold in the other as well.

2.1. The interest rate in the absence of a central bank

Initially it is assumed that in the above economy there is no central bank. From the analysis of the model, which is presented in full detail in [Bitros, Vidali (2022)](#), it emerges that the equilibrium in the market for loans is determined by the inverse demand and supply system:

$$r^d = \mu + \lambda \frac{\gamma_0}{\gamma_1} - \frac{(1+\gamma_1)S(t)}{\alpha N(t) - \gamma_0 S(t)} \quad \text{(a)}$$

$$r^s = \mu + n - \gamma_1 + \frac{(1+\gamma_1)S(t)}{\alpha N(t) - \gamma_0 S(t)} \quad \text{(b)} \tag{1}$$

$$r^d = r^s, \quad \text{(c)}$$

where the symbols are defined as follows:

$r^d, r^s =$ Demand and supply price (real interest rate) for loanable funds.

$\mu =$ Rate of technological change embodied in the vintages of producers' goods.

$n =$ Rate of change in the population.

$N =$ Population.

$S(t) =$ Value of new producers' goods built at time t.

$\alpha =$ Rate of labor force participation.

γ_0 = Minimum labor required to build one unit of producers' goods.

γ_1 = Incentive paid to workers in the D departments of firms to motivate improvements in the economic durability of producers' goods.

λ = Positive scaling factor.

System of equations in (1) may be solved for the equilibrium values $(r^*, S^*(t))$. In addition, this equilibrium solution may be analyzed to find out whether it is stable on not. In symbolic terms, the solution would take the form $r^* = r(S^*(t), N(t); \mu, n, \alpha; \lambda, \gamma_0, \gamma_1)$, whereas in graphic terms it would be given by the cross of the supply and demand curves for loans shown by point A in Figure 1. At this point, the interest rate is positive. So let us ask. In the absence of a central bank, can the interest rate decline to zero or become even negative?
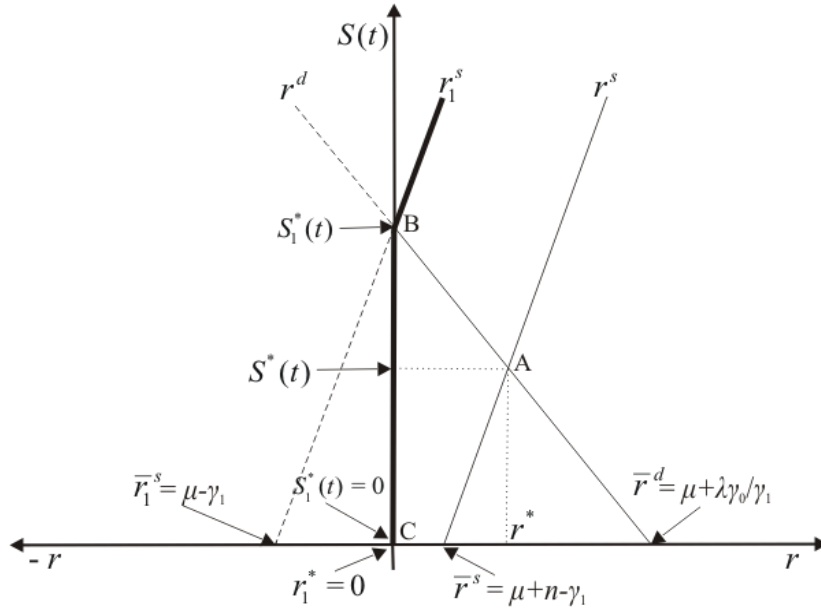

Figure 1: Supply and demand for loanable funds, no Central Bank

Observe that for $S(t) = 0$ the minimum interest rate on the supply curve for loans is $\bar{r}^s = \mu + n - \gamma_1$. This may be positive, zero or negative, depending on whether n is greater, equal or smaller than $\mu - \gamma_1$. In Figure 1, without loss in generality, curve r^s has been drawn on the assumption that $\bar{r}^s > 0$. Now, for demonstration purposes, suppose that $n = 0$. Then, ceteris paribus, the supply curve r^s would shift to the position depicted by r_1^s, thus establishing a new equilibrium at point B. In the transition from A to B, the equilibrium interest rate would converge to $r_1^* = 0$ and the equilibrium gross investment initially to $S_1^*(t)$ at point B, and ultimately to $S_2^*(t)$ at point C. This establishes that potentially the interest rate

in the economy may become zero, but not negative. For, if the interest rate declines to zero due to an unexpected supply or demand shock, self-interest may be expected to mobilize economic agents to take actions that bring the economy back to "normalcy", by which it is meant equilibrium with a positive interest rate.

To substantiate this claim, consider for example the possible options on the part of savers. In view of the zero interest rate, some may withdraw from the loans market and stash away their savings, while absorbing the safety and storage costs involved. If the economy is open to international transactions, some others who have pertinent knowledge and experience may seek opportunities for their savings abroad where returns may be positive. Still some others, most likely the overwhelming majority, after weighing the risk of default by borrowers, will remain in the market and continue lending to forgo the afore-mentioned costs, as well as to satisfy whatever idiosyncratic preferences they may have. Apparently, the distribution of "true" savings among these groups is crucial since the larger the percentage leaked to hoarding and placements abroad, the less would be offered for investment loans at home. The faster the curve r_1^S in Figure 1 would shift to the right; and as a result, aided also by analogous adjustments from the side of borrowing firms, the interest rate would turn positive and the economy would come quickly out of the zero interest rate episode with minimum disruption.

On the contrary, in the presence of a central bank that sets the interest rate to zero or negative, the longer the policy lasts, the more costly and even ruinous the return to normalcy may become. The first step in the analysis of the processes that lead to these undesirable outcomes is undertaken immediately below.

2.2. The interest rate in the presence of a central bank

In the economy analyzed above, money takes the form of claims in the accounting ledgers maintained by firms and all exchanges in the markets for consumer goods and loans are settled by debits and credits in those ledgers. By contrast, in today's market economies exchanges take place by means of a medium of exchange in the form of paper currency or equivalent electronic money, the quantity or price of which is determined by a central bank that controls its status.[12] In the United States, this medium of exchange is the U. S. dollar and the central bank is the Fed. Thus, assuming that the latter manages monetary policies by fol-

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[12] The central bank is essentially a monopoly of money. Hence, from the theory of monopoly we know that, in principle, it can control at any one time either the quantity of money or its price, that is the interest rate. But in actuality, this does not preclude central banks from attempting to control both these variables by adopting various schemes of monetary and financial planning.

lowing some version of the quantity theory of money, system (1) transforms into:

$$r^d = \mu + \lambda \frac{\gamma_0}{\gamma_1} - \frac{(1+\gamma_1)S(t)}{\alpha N(t) - \gamma_0 S(t)} \qquad (a)$$

$$r_F^s = \mu + n - \gamma_1 + \frac{[\gamma_0(\theta - \mu + \gamma_1) - 1]wS(t)}{M(t)V(t) - \gamma_0 wS(t)} \qquad (b) \qquad (2)$$

$$r^d = r_F^s, \qquad (c)$$

where the new variables have the following meanings:

r_F^s = Price (real interest rate) of central bank influenced supply of loanable funds.

$M(t)$ = Real quantity of money.

$V(t)$ = Velocy of circulation of the average monetary unit.

w = Real wage rate

Figure 2 shows that for $S(t) = 0$ the interest rates $\bar{r}_F^s$ and $\bar{r}^s$ coincide. Given that gross investment is bounded from below to zero, what this finding inplies is that the interest rate $\bar{r}^s = \bar{r}_F^s = \mu + n - \gamma_1$ that would emerge in the presence of the Fed would be the same as that in its absence (see Figure 1). But, ceteris paribus, for values of $S(t) > 0$, $r_{F-\theta}^s$ stays to the right of r^s because of the target inflation rate that the central bank pursues as part of its mandate to attain full employment economic growth. This distortion would hurt the economy because it

Figure 2: Supply and demand for loanable funds in the presence of a central bank

ends up shrinking gross investment by the difference $S^*(t) - S_F^*(t) > 0$.[13] However, aside of price stability at the rate of inflation θ, the Fed strives to achieve a low long-term interest rate. To this effect, it expands the money supply $M(t)$ by offering "artificial" or "fake" saving. However, aside of low inflation, Fed's congressional mandates include the pursuing of moderate long-term interest rates. To this end, let the Fed expand money supply $M(t)$ by offering "artificial" savings to reduce the interest rate and stimulate investment. Figure 2 depicts two particular versions of monetary policy. They are represented by curves $r_{F-\bar{M}}^s$ and $r_{F-\bar{\bar{M}}}^s$. As the supply of money increases to $\bar{M}(t)$ in the former case and to $\bar{\bar{M}}(t)$ in the latter, the policy changes give rise to two equilibria at points B and D, where the interest rate is respectively zero and negative. Observe that while the curves r^d, $r_{F-\bar{M}}^s$ and $r_{F-\bar{\bar{M}}}^s$ are negatively sloped to the interest rate axis, the latter two cross the former from below. Therefore, given that the excess demand (supply) for loans declines (increases) as the interest rate declines (increases), from comparative static analysis it follows that both equilibria are unstable in the sense that they cannot be maintained for long.

In sum, the preceding analysis highlights what a central bank can and cannot do. From a technical point of view, it ascertains that, with its ability to issue any quantity of "artificial" savings, a central bank does have the means to push the interest rate to zero and even beyond into the negative territory. Hence, equilibria like B and D are within its reach and, as noted earlier, over the last several years central banks around the world have adopted monetary policies of zero interest rate, whereas a few have experimented even with negative ones. But they are unsustainable because the monetary policies that lead to them disrupt the rational optimizing behavior of economic agents, and thereby give rise to consequences that shake the economic and social foundations of Western type democracy. To corroborate these claims, next section starts by focusing on the shifts that take place in the loans market as investors and savers react when the central bank adopts policies of zero or negative interest rate.

3. Time, rational decision-making, and interest rate policies

The economy under consideration is populated by workers, business firms, and a central bank. Workers live finite lives. They grow young, go through several decades of working in various occupations and professions, at some point they retire into old age, and finally die. Throughout

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[13] Empirical evidence of a negative relationship between gross investment and inflation at various levels of aggregation is reported in several studies. For such evidence from OECD countries, as well as related literature, see Madsen (2003). However, experiences in Japan more recently show that a low rate of inflation in the neighborhood of $\theta = 0.02$ may be related to investment positively. On the latter view, see Klein (2015).

their lives, all have a probability of death, which keeps increasing with the passage of years. Roughly similar is also the case with the average business firm. It enters into the markets of the economy, it operates for some period by making robust utilization of society's resources, and finally it is pushed aside through competition by another more productive firm. On the contrary, the central bank, for all practical and analytical purposes, is perceived to hold on to perpetuity. From the extensive literature that has looked into the implications of the historical and logical notions of time in economics (see, for example, Boland (1978)), it follows that, while the central bank may ignore the future effects of its decisions, perhaps because it will be around to correct any mistakes, private economic agents do not have this luxury. For them, when deciding, it would be utterly irrational not to care about the outcomes of their decisions looking forward into the future by allowing for the finiteness of life. As a result, they become impatient; psychologically they are led to value present over future goods; and thus acting rationally they end up discounting the value of the latter goods by using a positive discount factor. For the time being, the presence of government is held in abeyance.

Equations (2a) and (2b) reflect respectively the demand for and the supply of loanable funds for investment purposes. Both have been obtained on the assumption that markets are competitive and that economic agents behave rationally in the above sense. That is, they decide on investing and saving by maximizing the present value of a stream of positive returns that they expect to accrue from the resources they commit to productive activities for some period. In this setting, the commitment of resources and the expectation of positive returns go hand in hand, since it would be preposterous for anybody to tie up resources in the expectation of no gains or suffering losses. Therefore, normally, for rational investors and savers dealing in the loans market implies $r > 0$. If the central bank intervenes and by issuing "artificial" savings reduces the interest rate to $r \leq 0$, the behaviour of economic agents leads to odd results. This section is devoted to their analysis.

3.1 Investment under $r \leq 0$

The representative firm, from the demand for investment of which (2a) derives, behaves as if it maximizes an objective function that gives rise to the following first-order condition:

$$r[e^{-(r-\gamma_1)u} - \gamma_0[(r-\mu)e^{-(r-\mu)u} + \gamma_1(1-e^{-(r-\mu)u})]]e^{-\gamma_1 u} - (r-\mu)e^{-(r-\mu)u} - \mu e^{-(2r-\mu)u} = 0. \qquad (3)$$

In this equation, the symbol u stands for the average service life of the stock of producer's durables. From Brems (1968, 158) it follows that, if (3) is solved with parameter values for

any country, developed, developing or underdeveloped, and for any period in their history, using values for $r > 0$ yields values $u > 0$. Moreover, it is noteworthy that this result would be expected from any theory of investment, neoclassical, Tobin's Q, financial or whatever, and hence that there is no point in dwelling on this result any further.

Now, if equation (3) is solved for $r = 0$, it yields $u = 0$. What this finding implies is that the new producer's goods turn into current inputs just like labour services, raw materials, energy, etc., for which there is no need to tie up resources for more than the current period. Consequently, with regard to the operations of business firms, the demand for expansionary investment vanishes. Worn-out producer's durables are not replaced and depreciation funds are used to repay debt and/or return capital to shareholders. Short-term loans to finance any asynchronicities in the flows of revenues and payments within the budget year are obtained at no cost from the central bank. Investment declines towards C in Figure 2 while at the same time it assumes the form of expenditures for the maintenance and upkeep of the existing stock of producer's durables until they are worn-out and are scrapped. As a result, productivity, which springs from the roundaboutness and the technological upgrading of the durable inputs of production, decelerates; and, eventually, a trend towards economic stagnation takes hold.

The above analysis describes an unreal situation because the service life of structures, equipment, and intellectual property rights that add up to the stock of durables of firms and economies cannot be reduced to zero. However, reasoning by *reductio ad absurdum* serves to highlight the effects of a trend that has been observed in many advanced countries. For example, from Lane (2019, Chart 1) it follows that *r* has been declining in the US since the 1970s. During the same period, Gordon (2015, 32) reports that the ratio of net private business investment to private business capital stock has been declining, whereas data from the U.S. Bureau of Economic Analysis show unequivocally that the service life of the capital stock is increasing.[14] That is, exactly as predicted by the model, as the real interest rate has trended downwards, the capital stock has been growing older and its growth rate has been decelerating. Hence, it is not surprising that economic growth has been showing persistent signs of secular stagnation.

Last is the monetary policy $r < 0$ that a few central banks continue to apply. As noted earlier, this policy is motivated by the expectation that commercial banks will accelerate lending that may stimulate aggregate demand. But the empirical evidence does not confirm it. For example, Beauregard, Spiegel (2020, 4) find that:

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[14] The source is U.S. Bureau of Economic Analysis, National Income and Product Accounts, Table 3.10ESI, Line 1.

Under extended negative rate episodes, evidence shows that both bank profitability and bank lending activity decline.

Therefore, the Fed has had good empirical grounds to view the viability of this policy with skepticism and shy away from adopting it even on an experimental basis. The wisdom of this stance is also supported by the model. For, given that the service life of producer's durables is bound from below to zero, if $u = 0$, equation (3) yields $r = \mu < 0$. Yet at $u = 0$ there is no new investment and the benefits from technological change, which is embodied in the newest vintages of producer's durables, are lost. Thus, ostensibly, surely when the central bank sets r equal to $\mu < 0$ the losses of benefits from technological progress are fully compensated. But new investment is not forthcoming and the expected trend towards secular stagnation is similar to the policy $r = 0$.

3.2 Saving under $r \leq 0$

Embedded in the adopted general equilibrium model is the assumption that savers hold on to the loans they advance to investors until maturity. The reason for adopting it was to bypass the need for introducing a third market where claims in the form of bonds and other financial instruments are traded. Yet, aside of the *primary* loans market provided for in the model, in actuality there is also a *secondary* market, where such trading does take place, as well as a *banking* market, where "true" and "artificial" savings are consolidated and then channeled to business firms through either the primary or the secondary markets. In any case, from theory and experience is known that all three markets play important roles in the conduct of monetary policy because they generate highly informative signals for the central bank to gauge the state of the economy and initiate policy actions.

In this structure of the loans market, let the central bank adopt an interest rate policy $r = 0$ that commercial banks pass on to savers. Because of this policy, savers would suffer various types of negative shocks. For example, all those who keep savings in relatively safe assets such as cash, bank deposits, and other liquid payment instruments, would see the interest income they used to earn evaporate. Another is the erosion of expected retirement income. Those who save for this purpose and place their savings in various obligatory and discretionary annuity funds would experience disappointment, since they would have to prolong their working life, make do with less retirement income, switch to more risky investments in search for higher yields, or even cut down on consumption. Still a third source of losses is the decline in the present value of the outstanding stock of savings, which in the form business loans have gone into the financing of the stock of producer's durables. This is

loss of wealth. For, when claims from this stock expire, business firms would replace them by lower cost loans, and hence the present value of this stock of claims would shrink. Due to these negative income and wealth shocks, "true" saving would decelerate; "artificial" saving would accelerate, and large amounts of savings would become available and seek profitable placement somewhere. This development, among other adverse effects, like the outflow of money abroad and the decline in the country's exchange rate, would raise the prices of all classes of assets in the secondary market. Hence, the longer the zero interest rate monetary policy lasts, the more savings would be directed to higher risk assets until the bubble of their unsustainably rising prices bursts and together with the "artificial" savings, the crisis burns a lot of "true" hard-earned savings.[15]

If the central bank applies an interest rate policy $r < 0$, the above distortions will be quicker and more precipitous because of the scramble that will emerge among "true" savers to avoid paying safekeeping fees and storage charges to banks. This development will transpire unless commercial banks stop short of charging negative interest rates or charge negative rates only to amounts well above the common levels of deposits, as is the case in countries where such central bank policies apply. However, even then, the distortions that accompany this policy will take effect, inflationary pressures will mount, and the central bank will be obliged to consider two policy options. Either to push the interest rate further down into the negative territory in the expectation that aggregate demand might expand or to reverse course and start draining "artificial" savings from the economy to bring the interest rate back to positive levels. No doubt, neither of them is free of undesirable consequences. For, returning to the so-called "normalcy" may be accompanied by painful adjustments, the economic and social cost of which depends on the damage that it has already been done.

4. Why and how active monetary policies undermine democracy

In open free market economies, individuals live and act in the independence and autonomy that democratically enacted laws insure. To go by every day, they draw on their current incomes. Concurrently they care to maintain *ad infinitum* this way of life without undue re-

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[15] How price bubbles are formed should be obvious. When pushing the interest rate towards zero, the central bank aims, on the one hand, at reducing the user cost of capital in the expectation of stimulating investment, and on the other, at boosting the prices of financial assets in the expectation that this will create some euphoria, which in turn may stimulate aggregate demand. The secondary and the banking markets are crucial in this regard because at times suddenly implode. In particular, the constructive euphoria that the central bank promulgates turns over time into speculative exuberance; the prices of traded financial assets rise into unsustainable levels; and, if the central bank fails to act in time, suddenly trading stops, the so-called bubble implodes, and the losses experienced by economic agents lead to painful financial and economic crises, and not only.

straints on their personal freedoms. For this reason, while on the one hand, as savers acquire claims on the output of the economy that are settled sometime in the future, and particularly when they grow old and are unable to earn income from work, on the other hand, as investors agree to honor these claims by channeling savings in the form of loans to their best uses. The stability of this organizational setup hinges on $r > 0$, because it would be irrational for citizens as economic agents to tie up resources over an uncertain future without the prospect of some gain. But, as argued above, when central banks adopt monetary policies that lead to $r \leq 0$, the rational behavior of economic agents is quashed and investors and savers are led to decisions that precipitate the behavioral distortions that were emphasized in the preceding section. Simultaneously though, given that these distortions upset the allocational mechanism of free markets, the monetary policies in question end up eroding dangerously the institutional foundations on which the social order and the free way of life are based in these countries. The presentation in this section highlights their political economy implications by reference to a select number of key issues.

4.1 Shrinking of private wealth

With the exception of Marxists, most observers of societies and economies in Western type democracies would agree that private property cum private wealth is vital to citizen sovereignty[16] and the free way of life for several reasons. Following Barros (2009, 46-57), three of them are that private property enables citizens: a) to preserve their privacy and independence by rendering them capable to withstand threats to their economic survival; b) to obtain access to resources that are necessary for pursuing success and happiness in life;[17] and c) to

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[16] The notion of sovereignty advocated here has to do with the position of citizens within a state or a federation, not the relation of the latter with other states or federations. This notion was articulated with utmost clarity by the American and French evolutions. "We, the people" became the sovereign, since following the Aristotelian tradition according to which the power of the governing bodies in democracy is limited by the laws that exist above them. More recently, political scientists and authors with Marxist and statist persuasions are working hard to overturn the established order by promoting the notion that the government can be above the law by drawing mainly on the idea of *free agency*, which claims that after being elected the representatives of the people have a free hand.

[17] Since wealth enables one to pursue one's objectives in life, as Furubotn, Pejovich (1972, 1138-1139) find in their review of the literature on property rights, the ownership of wealth in kind or other financial forms increases the responsibility with which individuals care for its maintenance and utilization. This implication of property was first emphasized by Aristotle (Politics.2.1261b) who wrote, among others, that:

> Property that is common to the greatest number of owners receives the least attention; men care most for their private possessions, and for what they own in common less, or only so far as it falls to their own individual share for in addition to the other reasons, they think less of it on the ground that someone else is thinking about it, just as in household service a large number of domestics sometimes give worse attendance than a smaller number. And it results in each citizen's having a thousand sons, and these do not belong to them as individuals but any child is equally the son of anyone, so that all alike will regard them with indifference.

contribute towards achieving an adequate dispersion of economic power, and thus limiting the possibility of coercion from centers of authority. In addition, a fourth reason is that private property empowers citizens to exercise actively their rights in the public domain, since under democracy all authority stems from the people.

The arguments advanced in subsection 3.2 corroborate that, when monetary policies result in $r \leq 0$, savers are induced to cut down on discretionary saving, to rely increasingly on government operated social programs, to increase borrowing, etc. Hence, over the period during which such policies are applied, the accumulation rate of private wealth may be expected to decelerate, if not decline, thus influencing citizen autonomy adversely. But testing for the effects of the said policies on private wealth is a daunting econometric task because, among other difficulties, good quality data are scarce. Hopefully then the evidence from the US, where some survey data are available, may be sufficiently informative about the direction and magnitude of these effects in other democratic countries as well.

Table 1 displays the data and the computations used to obtain two indices that trace the course of household net worth from 2004 to 2019. Index A in the second to the last right column shows the real net worth per household over this period. In 2004, that is, 4 years before the Fed started setting $i_F \cong 0$, the index shows a value of 330.4 thousand U.S. dollars. In 2019,

Table 1: Household net worth in the United States, 2004-2019

Year	Average household net worth[a]				Number of households[a]				Indices	
	White	Black	Hispanic	other	White	Black	Hispanic	other	A[c]	B[d]
2004	756.3	149.3	170.9	505.4	93.2	13.6	11.7	4.7	**330.4**	**9.38**
2007	834.9	165.8	230.6	709.9	95.9	14.4	13.0	4.5	**334.7**	**8.97**
2010	743.3	114.4	128.9	607.6	96.8	14.7	13.3	4.7	**275.9**	**7.65**
2013	747.2	104.3	123.0	638.2	99.3	15.9	15.6	5.6	**256.1**	**6.85**
2016	961.4	149.1	194.0	752.4	101.0	16.5	16.7	6.3	**318.9**	**7.92**
2019	952.9	140.5	192.2	1039.4	102.5	17.2	17.8	7.0	**300.0**	**7.05**

Notes
1. The average net worth is in thousands of current U.S. dollars. The data come from the Survey of Consumer Finances, Figure 1, Board of Governors of the Federal Reserve System.
2. The number of households is in millions. The data come from the U.S. Census Bureau, Table HH-2: Households, by Race and Hispanic origin of the Householder: 1970-2021.
3. Weighted-average net worth per household in constant 1982-1984=100 U.S. Dollars.
4. Weighted-average household net worth per household income.

after following initially the downturn and later the upturn in the economy due to the 2008 financial crisis, the index declined to 300.0 thousand U.S. dollars. Overall, this index followed a mild negative trend, which under appropriate econometric testing might not turn out

to be statistically significant. The case is different though with regard to index B. Observe that its negative trend is quite robust. Household incomes did decline in the early years of the financial crisis and then recovered somewhat from 2016 on. Yet household wealth per household income trended persistently downwards.

If during this period wealth was redistributed from the more well to do households, whose share in the population is relatively small, to the less wealthy whose share is large, this finding might be spurious. From Domhoff (2022, Table 2) it follows that, while in 2004 the top 20% of households owned 84.6% of the total private net worth, in 2013 this percentage had grown to 88.9. Apparently, private wealth was redistributed in favor of the top 20%. By implication, the downward trend for the lower 80% of households must have been sharper in comparison to the trend depicted by index B. Consistent with this finding is also that the Gini inequality coefficient, which is reported in the data source mentioned under (a) in the notes section of Table 1, increased from 0.81 in 2004 to 0.86 in 2019. Therefore, based on this evidence, it is certain that the great majority of citizens wealth wise lost ground both in absolute and in relative terms.

Have Fed's policies anything to do with this trend? The evidence discovered by Albert, Fernandez (2021), using data from the same sources as those mentioned in the notes section of Table 1, suggests clearly that monetary policies contributed significantly through the redistribution channel. In particular, here is how they summarize their findings in this regard:

> If we focus on the analysis of wealth distribution by deciles, our results show that an expansionary monetary policy shock substantially increases the net wealth of the richest and poorest households in terms of wealth, while the middle class benefits the least. This result is explained because the effects of monetary policy on the stock prices and the interest rate of debt are the most important drivers of increases in wealth, and stock and debt are concentrated in the richest and poorest households, respectively. Albert, Fernandez (2021,12).[18]

But given that both conventional monetary policies before the 2008 financial crisis and the unconventional ones after it reduced the value of "true" savings relative to consumption by lowering systematically i_F, it is unlikely that the policies in question left the trend of index B unaffected. The data show that while from 2010 to 2019 the Gini coefficient remained fixed at 0.86, index B continued to move downward. In all probability therefore, households

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[18] The available evidence leaves no doubt that central bank policies result in the redistribution of income and wealth, albeit not necessarily only in one direction. As a result, these unintended effects provide the basis for questioning the democratic legitimacy of central banks on grounds ranging from the lack of related citizen authorization to the morality of redistribution. Since these issues touch upon the stability of the democratic system, they will be considered briefly later on in a separate subsection.

across the board were induced to sustain their consumption standards by plunging into their wealth and this together with the other detrimental effects of monetary policies led to the erosion of private wealth, particularly of the middle class.[19]

4.2 Expediting of public deficits and debt

When Hayek (1960, 304-5) penned down the warning that democracy would have to learn that it must pay for its follies, he thought that democracy did have the capability to reverse course away from systematic deficit spending and debt accumulation that threaten the well-being of future generations. However, he proved too optimistic because, by the time Buchanan, Wagner (1977), *democracy in deficit* had been established already as the new normal. Since then the situation has worsened considerably at least on two grounds: First, public deficits have become self-sustaining, and secondly, they emanate from the expansion of various consumption-oriented entitlement programs rather than expenditures for building and maintaining productive infrastructures. The Fed is not immuned of its own responsibilities for this development because, it has certainly encouraged and sustained the excesses in the conduct of fiscal policy.

To corroborate this assessment, Figure 3 displays the graphs of four key aggregates as percentages of Gross Domestic Product (GDP). The top graph traces the changes in the stock of household debt. It is interesting to observe that in the years leading to the international financial crisis household debt was increasing, whereas since then it has been declining, albeit at much slower pace in recent years. From this evidence, in conjunction with index B from Table 1, it follows that the net worth of households declined at the same time that their debt shrunk. An obvious interpretation of this finding is that, as the Fed reduced i_F, households used their own assets on the one hand to sustain their consumption standards, and on the other to repay and recycle debt through cheaper loans. So, if the Fed intended to boost aggregate demand by stimulating consumption, households had other plans. Consistent with this view is also that business firms did not increase borrowing to accelerate investment. For, as it can be

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[19] If Aristotle lived and served as advisor to the Fed in the postwar period, he would have recommended that, beyond and above other concerns, they ought to have taken into account the following considerations:

> In all states therefore there exist three divisions of the state, the very rich, the very poor, and thirdly those who are between the two ... It is clear therefore also that the political community administered by the middle class is the best, and that it is possible for those states to be well governed that are of the kind in which the middle class is numerous, and preferably stronger than both the other two classes, or at all events than one of them, for by throwing in its weight it sways the balance and prevents the opposite extremes from coming into existence. (Aristotle (Politics,4.1296b).

For then, perhaps, the Fed would have enacted policies promoting a distribution of wealth more compatible with democracy than the overly asymmetric distribution that has taken hold in the US.

observed, the stock of debt of nonfinancial business firms remained practically flat through-
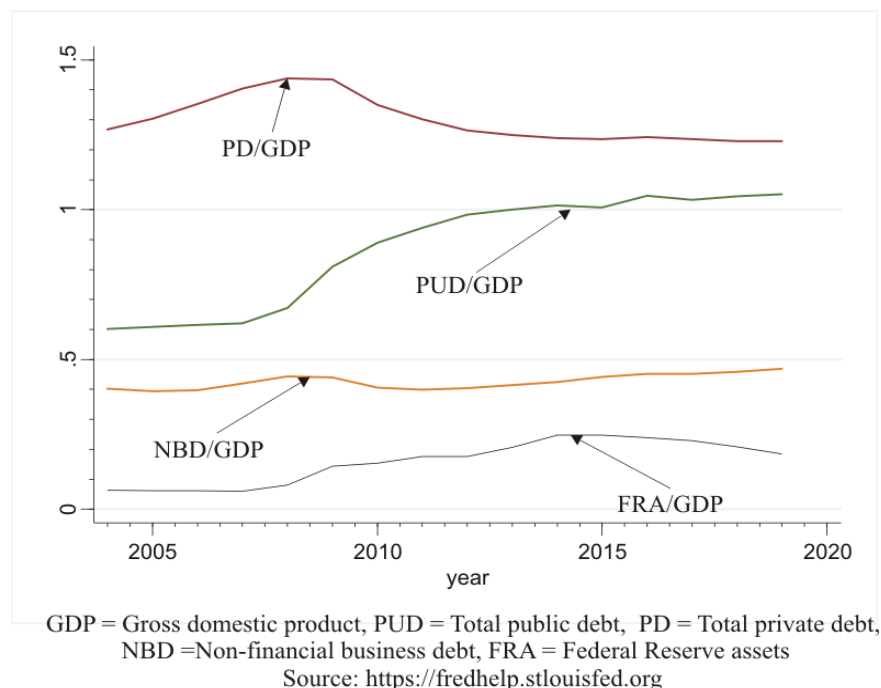

GDP = Gross domestic product, PUD = Total public debt, PD = Total private debt,
NBD =Non-financial business debt, FRA = Federal Reserve assets
Source: https://fredhelp.stlouisfed.org

Figure 3: Public and private debt in the United States, 2004-2019

out at levels close to 42.5%. These findings shed some light on why the recession this time was abnormally deep and protracted. It seems that households and business firms understood that Fed's interest rate policies and practices were untenable and that it was rational for them to protect their wealth and autonomy by preparing for the consequences of a policy reversal.

The two remaining graphs provide further support for this interpretation. Since the economy experienced a "liquidity trap" and monetary policy at the zero interest rate is considered ineffective, U.S. governments employed deficit spending to bring the economy out of its slump. Under the circumstances, this policy response was to be expected. But not in the observed levels of deficits and public debt, not in the manner that the Fed accommodated public borrowing, and most certainly not in the context of the new theories that public debt does not matter because it can be financed at no cost by the central bank and anyway it may not have to ever being repaid. For, as the graphs PUD/GDP and FRA/GDP show, in the short span of 11 years from 2008 to 2019 public debt rose from 67% to 105% of GDP. The Fed accumulated in its balance sheet government securities worth trillions of U.S. dollars. And as reported recently by Boehm (2022),[20] only few lawmakers in the U.S. Congress are alarmed about the

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[20] According to this report, only 24 out of 435 congressional representatives have called for a discussion of the issues of deficits and public debt in this year's federal budget bill.

sustainability of this huge public debt, let alone the structural and institutional distortions that it promotes in the US, and not only, given the dominance of the U.S dollar in world markets.

To conclude, recently de Rugy, Salmon (2022) reviewed the whole body of recent literature on the sustainability of fiscal policies in the post-2008 period. From their presentation emerges that this literature is marked by at least three glaring deficiencies. Namely, first, by a lack of serious concerns on how to stabilize an otherwise unsustainable explosion of budget deficits and debts. Second, by total neglect of how the policies that the authors recommend may affect the institutions of free markets on which democracy is based; and thirdly, by a profound shortfall of prudence in not allowing for the possibility that inflation might force the central bank to raise the interest rate, and thus wreak havoc in the public budget and the economy. As a result, it is not surprising that the states and the central banks have become unresponsive to the priorities of citizens. Public deficits and debts have become unsustainable. Free markets have succumbed to the "too-big-to-fail" regulatory doctrine. Private wealth has shrunk and the middle class has become enfeebled. Democracy is in retreat. And now free nations are called upon to deal with the outbreak of inflation and other unsettling domestic and international circumstances.

4.3 Exacerbating of inequality

By its very definition, democracy is a system of governance in which decisions on any public issue are based in principle on the views held by a majority of citizens having equal political rights. Hence, given that wealth provides owners with commensurate political power, democracy may become dysfunctional if wealth is overly concentrated among few citizens. At the same time though, given that in the course of life individuals develop various potentials that may be of benefit to the community, some wealth inequality may contribute to progress in terms of economic growth, individual freedoms, and other manifestations of social wellbeing. Expressing the quest for balance in this regard, income and wealth inequality in democracy is like cholesterol, which in a moderate measure is beneficial for keeping one's circulatory system in good condition, whereas in excess it contributes to the clogging of one's blood vessels, leading to all sorts of cardiovascular problems.[21] The bulk of the literature that looks into the sources and effects of inequality focuses on the relation of income ine-

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[21] Bitros, Karayiannis (2013, 1-21) find that the Athenian democracy proved such an all-time success because their institutions managed to strike an effective balance between relative political and economic equality between the rich, the middling and the poor.

quality and economic growth.[22] Much less addresses the relation of wealth inequality and economic freedom; and still less attends to the effects of monetary policy on income and wealth inequality. To turn immediately to the latter relationship, which is of main interest here, a brief summary of the literature on the former two relationships is found in Appendix B.

Conventional monetary policies have not escaped criticism for provoking various unintended income and wealth distributional effects.[23] But in the aftermath of the 2008 financial crisis, as the data revealed that inequality worsened spectacularly, the criticisms addressed to the unconventional monetary policies that the Fed introduced became particularly sharp, Defending them as the then chair of the Fed, Bernake (2015) responded by conceding that:

> Monetary policy is a blunt tool which certainly affects the distribution of income and wealth, although whether the net effect is to increase or reduce inequality is not clear. More research will be needed to untangle and measure the many channels through which these effects are transmitted.

This call to arms, so to speak, gave impetus to an on-going program of research, the results from which are not of particular interest in this study. For, as Colciago, Samarina, Jakob (2019, 1224) found, the literature available at the time focused on the short run effects of monetary policy on income and wealth inequality, and even so not with much success.

Yet, the objective that these authors planned to pursue in their future research had been identified already by Bitros (2018), whose research focused on the long-run effects of monetary policy on the income shares in the US. By tweaking appropriately the well-known dynamic general equilibrium model of heterogeneous capital and solving it to convergence with data for the period 2000-2014, the results obtained show that the monetary policy worsened the downward trend of the labor share, and hence of income inequality. More specifically, from the solution of the model it emerged that monetary policy affected the labor share positively through the reduction in the policy rate and negatively through raising the useful life of producers' goods, which trended upwards since the 1980s due to the rising real cost of capital.[24]

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[22] The empirical evidence regarding the channels through which inequality influences economic growth is weak. This holds true irrespective of whether inequality is measured by an index based on income or wealth. For an assessment of the relevant literature in this area, see Neves, Silva (2014).

[23] These effects pass through the channel of inflation. To appreciate, for example, the havoc that inflation provokes in the distribution of wealth, see Wolff (1979) and Doepke, Sneider (2006). In the light of these effects, which extend also to the distribution of income, it is not surprising that even from within the U.S. Federal Reserve System there have been voices in favor of monetary policies aimed at keeping the general price level stable (Hoskins (1991)).

[24] At the same time that the trend of the effective federal funds rate i_F was declining, several components of the user cost of capital were increasing, thus discouraging investment. For example, as documented in Bitros (2019, 5), the trend of a very important user cost component based on the rate of capacity utilization has

Lastly, by weighing these two opposite effects in the context of a labor share equation, it turned out that monetary policy, as indexed by the 3-month nonfinancial commercial paper, influenced adversely the share of labor, and hence income inequality, significantly.

If there is an aspect that casts doubt on the validity of this finding, this is that after 2008 monetary policies turned from conventional to unconventional, and the introduction of a dummy in the estimates to allow for this shift did not prove statistically significant. But now there is an indirect way to get some reassurance. For, if monetary policy does indeed affect negatively the labor share, in the long-run wealth inequality would be expected to increase. Did monetary policy contribute to the widening of wealth inequality during this period? As it was noted earlier in the quotation from Albert, Fernandez (2021), wealth inequality increases after an expansionary monetary policy shock. Clearly then, since household net worth per household income trended downwards from 2004 to 2019, while roughly during the same period monetary policy pushed the labor share downward, monetary policy cannot be invariant with respect to the rise in wealth inequality.

In sum, extreme wealth concentration and extreme poverty are serious destabilizing anomalies for democracy. To prevent them, but without stifling income and wealth inequality that can be beneficial for the common good in terms of economic growth and freedom, Western type democracies have adopted institutions to prevent a sharp asymmetry between political and economic equality among citizens. In the US, the institutions in charge of this task have lost their guard because the concentration of wealth has been allowed to enfeeble the wealth basis of the middle class. Among the institutions that have not been authorized by citizens anywhere to conduct activities that aggravate inequality are central banks. Yet, piling empirical evidence shows that the policies they conduct are accompanied as a rule by such unintended effects.

4.4 Compromising the efficiency and stability of the banking industry

To enhance the effectiveness of monetary policies, the undesirable influences of which were analyzed in the preceding subsections, central banks go to great efforts to make sure that the banking industry functions in accord with the rules provided for under the so-called micro-prudential policies. However, in as much as they aim at serving the public interest, these policies cast doubts in the wisdom of their application in the first place, because they compro-

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been increasing in the US since the 1980s. But central bankers did not pay much attention to factors other than the cost of credit.

mise the efficiency and stability of the banking industry. The focus in this subsection is to explain the grounds for this assessment.

Micro-prudential policies are rules that central banks apply on the banks that participate in a country's monetary system for safeguarding its operational efficiency and stability. The design of any such rule presupposes a process of discovery. Central banks must identify in advance risky practices in the behavior of banks and enact policies to forestall them. But this is easier said than done, because central banks cannot have the information that banks have about their operations. From an informational point of view, this implies that central banks are always the weaker party. Because of this asymmetry, commercial banks are at the same time over-regulated and under-regulated. On the one hand, they are over-regulated because central banks in their effort to close possible loopholes in their monitoring systems enact unnecessary provisions, and on the other, commercial banks are under-regulated because they are better informed and hence better positioned to invent new ways to bypass the regulations and serve their interests. As a result, drawing on Akerlof (1970), Rothschild, Stiglitz (1976), and other pioneers who discovered and documented its implications, this *asymmetry of information* becomes the source of severe inefficiencies and instabilities that break out in increasing frequency and force.

But this is not the only anomaly in the established institutional arrangements. Another, the nature of which is *structural*, springs from the presumed commitment of central banks to safeguard the working of competition in the banking industry. Has the Fed acted consistently by preventing concentration among banks, or perhaps it has encouraged it? Fohlin, Jaremski (2020, 2) report that, while the value of assets managed by the top five banks as a percentage of total assets never exceeded 11% from 1820 to 1924, in the following years it trended upwards rising to around 27% in 1980. After decelerating somewhat in the 1980s, its trend turned again upwards in 1994, climbing to an all-time high close to 50 % in 2012, and since then it has retreated towards the neighborhood of 45%. From the course of this index, one cannot help but surmise that, in the 80 years from the *great depression* in 1929 to the *great recession* in 2008, the Fed pursued systematically policies that encouraged concentration in the banking industry. If one were prepared to assume that the Fed behaved in this way because it found motivating support in the findings of empirical research, one would be disappointed. For, all indications are in favor of the following findings by Schaeck, Cihak, Wolfe (2009, 711):

> Using the Panzar and Rosse H-statistic as a measure of competition in 45 countries, we find that more competitive banking systems are less prone to experience a systemic crisis and exhibit increased time to crisis. This result holds even when we

control for banking system concentration, which is associated with higher probability of a crisis and shorter time to crisis.

Rather the more credible interpretation is that the Fed gave in to pressures that the "big-to-fail-banks" exercised via the political system.

Closely related to the preceding are also various *systemic* anomalies originating in multiple moral hazards that the Fed has propagated among commercial banks. For example, by allowing a few banks to grow so large that, if any of them failed it might bring down the whole financial system, the Fed has transformed banking crises in the US from a problem of isolated individual banks before its establishment in 1913, to a problem of large-scale systemic breakdowns in a centrally managed financial system. Now any of these large banks knows that its credit risks are ultimately insured by the money creating authority of the Fed, and hence instead of prudence it has an incentive to degrade the quality of its loans to maximize profits. How destabilizing this magnification by centralization of financial risks may turn out to be, emerged recently, when suddenly financial markets closed down in 2008 and the authorities improvised with policies alien to free market economies.

Recapitulating, banking systems in Western type democracies are beset by certain inherent operational weaknesses that erode economic efficiency and enhance the frequency and the force of financial crises. In the post 2008 period, the Fed has assured the world community repeatedly that the U.S. banks are now well capitalized and that there is no risk of another crisis, which due to the world dominance of the U.S. dollar might develop into a financial Armageddon. Yet, if anything is certain, this is that another crisis will occur and at a time that will be least expected, to the great detriment of democracy and the free way of life.

4.5 Other major sources of unsettling distortions

From an institutional point of view, central banks in the free world have been setup to operate independently of their elected country governments. Although based on dubious historical presumptions, this setup was adopted as an effective arrangement for preserving the integrity of fiat money, particularly during periods leading to elections. However, in actuality, central banks have failed to keep governments at arm's length. That this is the case may be ascertained from the nature and extent of the bold reforms that Buiter (2014) has proposed. Drawing on them it would not be farfetched to surmise that central banks have turned into extended departments of the respective country treasuries, and that this assessment is further reinforced by data such as those explicated in subsection 4.2 with reference to the Fed.

The missing link is not hard to pinpoint. It is identified explicitly in the report on "Rethinking Central banking" that 16 world-renowned monetary experts in the *Committee on International Economic Policy and Reform* submitted back in 2011. In page 28 of the report, they state that:

> Central Bank independence ultimately rests on political consensus—on the convergence of views among leading political interests that society's broader economic goals are best served by this independence.

The implications of this diagnosis are not surprising. For, given that political parties in representative democracies are beset by moral hazard problems that make political consensus extremely unlikely. Democracy stands on the principle of not granting independence to any person, collective entity, or institution—even if it were certain that this would serve society's broader goals, and that the state monopoly on money provides easy rents to the class of politicians and the associated elites, there can be no central bank independence.[25] For this reason, short of the institutional rearrangements considered in Bitros (2015), thinking ahead of the next big financial crisis it is wise to abandon active monetary policies, switch to a commodity standard, or even abolish central banks altogether.

Reform along these directions is recommended also from another perspective. The presentation in subsections 4.1 and 4.3 corroborated that active monetary policies exert distortionary effects on income and wealth through the redistribution channel. Since otherwise it would be unable to pursue the objectives for which it is tasked by law, a central bank cannot avoid influencing the distribution of income and wealth over the business cycle. These could be perceived as unavoidable non-systematic side effects of the monetary policies under its outstanding statutory authorizations. As such, they would be free of a thorny issue that associates with the distributional effects discussed in the above-mentioned subsections. For, the latter are structural and take hold over the long haul because active monetary policies are biased in favor of the well to do and against the middle class. Now this bias raises two questions. These are, first, since worsening of inequality may destabilize democracy, should central banks be allowed to continue on the established course. And second, is it moral for central banks to practice redistribution. Given that these functions are exercised by the elected

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[25] Greenspan (1996) interpreted central bank independence as "... conditional on pursuing policies that are broadly acceptable to the American people and their representatives in the Congress." More recently though the economic advisor to President Trump asked publicly and the data show that the Fed lowered i_F by half a point. So the piles of evidence discussed in Binder, Spindel (2017), which document convincingly the myth of central bank independence, is beside the point because, never before such an open and for that matter brazen intervention of the U.S. government had taken place in the institutional standing of the Fed.

governments, the answer to both questions is in the negative, thus rendering the above-suggested directions imperative.

Last, but not least, is the loss of trust in central banks by markets and citizens. Because of the secrecy under which they conduct monetary and regulatory policies, central banks have been suspected for committing various improper activities. For example, scanning over related sites in the internet, one finds that central banks are suspected for bestowing huge amounts of money on politically connected financial institutions, rescuing the rich at the expense of the poor; intervening secretly to manipulate markets, picking winners and losers, etc. None of these allegations is supported by hard evidence or proven otherwise. However, due to the lack of transparency, when the policies contradict openly fundamental principles of free markets, particularly in periods of financial crises, trust in central banks cannot but ebb. For, it is self-evident that, when central banks shield commercial banks from failure because of their size, after of course they have allowed these banks to become gargantuan, it is quite natural for market participants and citizens to become suspicious and loose trust.

5. Summary of findings and concluding remarks

Free market economies, on which Western type democracies are based, prosper because of gains-motivated decisions by liberty-loving individuals who act as risk-taking investors of "true" savings borrowed by hard-working savers. Having finite lives and hence being impatient, investors and savers reckon the future effects of their decisions using positive discount factors or interest rates. On the other hand, motivated by the presumption of raising aggregate demand and stimulating economic growth, perpetually present central banks, are issuing quantities of "artificial" savings that lead to zero and or negative interest rates. As a result, central bank policies wreak havoc in the rational decision-making of economic agents. Investors lose the main instrument they use in the intertemporal allocation of resources. Savers are discouraged to follow the long-standing virtue not to consume all their incomes and put aside some resources for the rainy days of old age; and all this in vain because, at the zero or negative interest rates, the equilibria are unstable and give rise to economic and social distortions that destabilize democracy. In particular, active monetary policies shrink private property, distort the distribution of income and wealth, encourage the accumulation of public debt, erode the efficiency and stability of the banking industry, and undermine social cohesiveness as markets and citizens lose trust in the fairness and integrity of public governance.

While these distortions take effect in the medium- and longer-run, active monetary policies are not free of undesirable side effects over the business cycle. In the past, central banks reduced the policy rate or increased money supply to stimulate aggregate demand and avoid recession or an unexpected financial crisis. Certainly they did so at some risk of stirring inflation and creating asset price bubbles. However, in the aftermath initially of the 2008 financial crisis and then in 2019 of the Covid-19 pandemic, the circumstances called for so-called "non-conventional" for interventions. Under them, policy rates declined to zero or negative levels, the balance sheet of central banks grew way too unbalanced, public deficits and debts became unsustainable, and now central banks are called upon to combat a bout of high inflation in an international environment full of discord and country antagonisms. Will the return to the so-called "normalcy" be achieved without a serious economic downturn and/or social turmoil?

Assuming that this time it does, thinking ahead of the next major crisis, "monetary policy as usual" undermines democracy and it is prudent that it gives way to another more tenable institutional arrangement. For example, perhaps, a feasible reform may be to turn central banks into a fourth state power, along with the legislative, judicial and executive branches of government. But even then, monetary policies should focus exclusively on preserving the stability of the general price level.

Appendix A

Mainstream monetary policies for "liquidity trap" episodes

When Krugman (2008) took notice of the event that the US had entered into a period of zero interest rate, he did so to emphasize that the Fed was about to be confronted with the difficulties of a "liquidity trap" situation, to which he had been drawing attention at least since the late 1990s. At that time, he argued that exactly like in Japan, where they had been tried in vain for almost two decades, traditional monetary policies are impotent to bring the economy out of a sustained slump. Thus, to tackle the problem at its roots, if it ever occurred in the United States, together with his associates they proposed in Krugman, Dominquez, Rogoff (1998, 187) the following policy:

> ... a large fiscal expansion would be applied, with interest rates kept at zero, and sustained even as the economy began to develop inflation. Ideally, the fiscal stimulus would then be phased out gradually, just slowly enough for rising expectations of inflation to take up the slack. The important point is that monetary policy would have to remain accommodating, not only up to the point of full employment, but as inflation rose to the necessary level.

Notice the last sentence. Having set $i_F = 0$ and remained accommodative to the large government spending shocks up to full employment, where inflation may have increased, say to $\hat{\theta}$, it is not sufficient. The central bank must accommodate deficit spending until θ exceeds $\hat{\theta}$ to the "necessary level". But they explained neither the need for the condition $\theta > \hat{\theta}$, nor for what the "necessary level" of the inflation rate ought to be. Perhaps for this reason Krugman (2000, 236-237) returned two years later and clarified that:

> The whole subject of the liquidity trap has a sort of Alice-through-the-looking glass quality. Virtues like saving, or a central bank known to be strongly committed to price stability, become vices; to get out of the trap a country must loosen its belt, persuade its citizens to forget about the future, and convince the private sector that the government and central bank aren't as serious and austere as they seem.

That is, the Fed was advised to accommodate deficit spending until inflation increased to the level where working people are convinced that "saving" is irrational, business firms stop worrying about the cost of debt, since they can borrow as much "artificial" saving as they wish at zero interest rate, and the government does not need to think of ever having to repay its debt. That was spendid. Wasn't?

In the following years and until 2007, this policy proposal remained dormant. Early in September of that year, i_F measured by the Federal Funds Rate stood at 2%, the rate of in-

flation in the same month run at 0.3%, and hence *r* was about 1.7%. Then, the signals of the impeding financial crisis became loud and clear and by early October 2008, the Fed begun to apply unconventional monetary policies different from the above cookbook, but of similar orientation. For example, as Figure A-1 shows, while they set $i_F \cong 0$, instead of the large fiscal shock these authors recommended, the Fed introduced a large program of quantitative
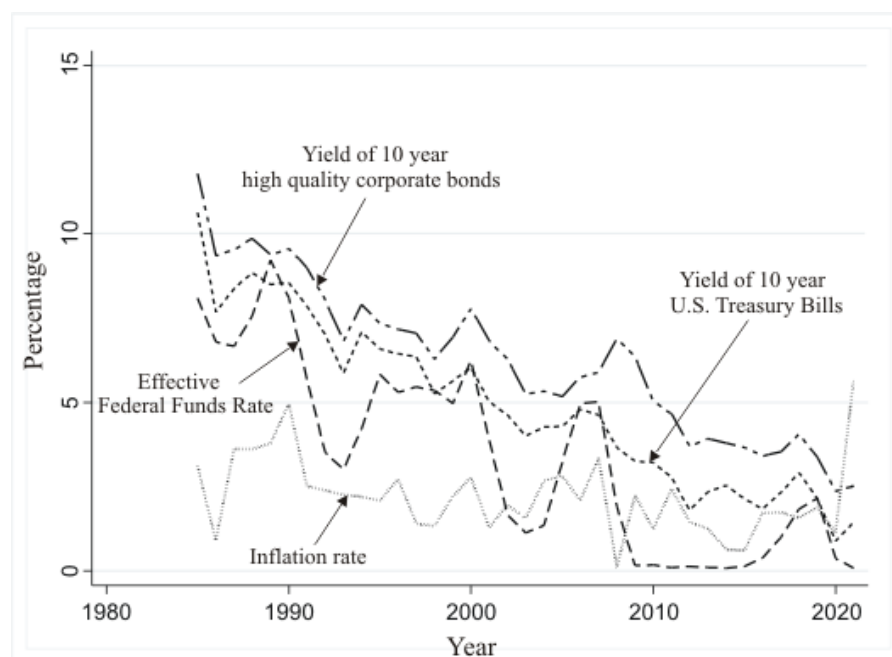

Figure A-1:Trends in the monetary policy rate, cost of credit
in the public and private sectors, and inflation

easing. But as in the following years inflation kept moving below the targeted rate of 2%, the monetary authorities came back with two consecutive phases of quantitative easing. After some considerable lag, Figure A-1 indicates that the large quantities of money injected into the economy, which was directed partly to finance the budget deficit, started to bear the expected results from 2016 on. The inflation rate and the Federal Funds Rate rose *pari passu*, and in 2019 entered the neighborhood of 2.5%. It is then that the Fed lost control under pressure from the President's office. They started to reduce the Federal Funds Rate, the pandemic ensued and inflation now is skyrocketing. Unfortunately, what the above-mentioned economists thought as feasible, did not allow for the whims of party politics and the lack of independent of the Fed. High inflation and other economic instabilities would have transpired anyway, irrespective of the unsettling developments in the energy market and the attack of Russia on Ukraine.

Now, the US, EU and other democracies experience high inflation and the scramble is on how to control it. But fiscal deficit won't come down, the central bank has to increase i_F, and god knows when and how the spiral will come to an end. of demand pulwill co and the central bank has to accomodate it

Appendix B

Inequality and economic progress

A brief summary of what is known about the first two relations, curves EE' and FF' in Figure B1 have been drawn to reflect the above example of cholesterol. Sections EA and AE' on the former curve depict the presumed relation between an index of income inequality and progress in terms of economic growth, whereas sections FB and BF' on the latter curve depict the relation between an index of wealth inequality and progress in terms of economic freedom. Observe that, as the indices of income and wealth inequality increase over the sections EA and FB, respectively, economic growth and economic freedom improve. But, as inequality worsens past the threshold points A and B, economic growth and economic freedom deteriorate.[26]

Turning first to curve EE', Okun (1975) focused on section EA and found enough evidence to argue that the disparity in incomes among individuals acts 'as a form of motivation' that raises their productivity. In particular, by referring to various examples, he was able to establish that, when inequality increases because of widening individual differences in knowledge, intelligence, dexterity, and work effort rather than unfairness and institu-
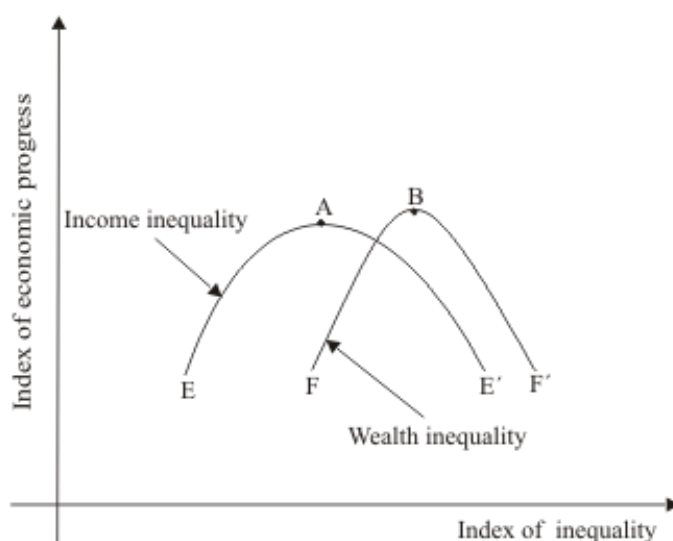
Figure B-2:Trade-offs between inequality and economic progress

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[26] The existence of points A and B in Figure B1 finds some support in both the theoretical and empirical literature. On the contrary, the view frequently expressed that economic freedoms, and hence democracy, may be more sensitive to the inequality of wealth than productivity to income inequality, is just a conjecture. To allow for its possibility, observe that the upward and the downward slopes in the FF' curve have been drawn to be sharper than those in the EE' curve.

tional failings, inequality accelerates economic progress. Other studies, such as the ones by Persson, Tabellini (1994) and Bénabou (1996), show that the more constraints are imposed by the state on markets, the greater the income inequality, which in turn reduces the growth potential of the economy (i.e. section AE' of the curve in Figure B1). And still other studies, such as that by Alesina, La Ferrara (2005), corroborate the above findings by showing that, if income inequality stems from institutional and market imperfections but there is mobility of individuals within the income scale, inequality acts as motivation for increasing productivity. Moreover, it is of particular interest to note that the shape of the curve EE' is consistent with the non-linear long-run relationship that Apergis, Cooray (2017) identified and estimated more recently using data from a very large sample of countries.

Next is the likely shape of the FF' curve. Relevant to it are the results that Islam (2018) obtained using panel data for a large sample of countries over the 2000-2014 period. From them it emerges that:

> On average, a ten percent increase in the wealth inequality measure would cause a 2.7% decline in the economic freedom summary measure. More specifically, higher wealth inequality causes lower protection in property rights, less access to sound money, less freedom in international trade, and greater regulation of credit, labor, and business. On the contrary, larger wealth inequality reduces government size, which may indicate that higher concentration of wealth may lead to lower taxes and government social welfare expenses. Islam (2018, 932).

Clearly, since the data refer to the inequality of wealth among the top cohorts of wealth owners, these highly illuminating findings relate to the downward segment of the FF' curve.

As such, they ascertain that, beyond a threshold point like B, increasing wealth inequality impacts negatively the index of economic freedom, as well as its underlying determinants.[27] By implication, in the absence of direct empirical evidence regarding the upward sloping segment of this curve, it is not farfetched to maintain that at the low and medium cohorts wealth inequality is positively related to economic freedom.

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[27] Relatively speaking, the negative elasticity of economic freedom found in this study, given a change in wealth inequality, is small. This may be due to the opposing effects that wealth inequality exerts on the various determinants of economic freedom. For example, the effect of wealth inequality on government size that the study finds may be economic freedom enhancing relative to other effects that may be detrimental.

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