

Full Reserve Banking: solving the problem of public debt and the positive interest-rate-growth-differential through debt-free money?

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Martin Sauber¹
Benedikt Weihmayr²

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Abstract

In the post-growth debate a rising number of authors advocate monetary reforms (100%-Money, Full Reserve Banking), whose intention it is to prevent banks from creating deposits and establish the central bank as the sole issuer of money. This paper investigates the macroeconomic consequences of issuing debt- and interest-free money. A central issue in the context of a non-growth economy is the reduction of interest-rate-growth-differential (IRGD). From a monetary-Keynesian perspective, we conclude that in an open economy these reforms rather lead to higher interest rates and therewith worsen the conditions of reaching a stationary economy. However, in a closed economy or an alliance of leading currencies at the top of the currency hierarchy, a sovereign money system could decrease the interest rate and therefore mitigate issues induced by a positive IRGD. In this context we raise the question, if not conventional measures are more efficient to reduce IRGD and increase effective demand.

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¹ Dr. Martin Sauber, lecturer in Economics at University of Hamburg, Department of Socioeconomics, Martin.Sauber@wiso.uni-hamburg.de

² Benedikt Weihmayr, student in Socioeconomics at University of Hamburg, Sustainable Money Research Group, benedikt@weihmayr.de

1. Introduction

Several authors in Ecological Economics support monetary reforms, which would prevent banks from creating deposits and establish the central bank as the sole issuer of money, known as Full Reserve Banking, Positive Money or 100% Money (Farley et al., 2013; Jackson, Dyson and Hodgson, 2013). Besides expectations about better financial stability and smoother business cycles, the proponents also proclaim for lower public debt and lower interest-rates. The latter should be achieved through issuing debt- and interest-free money.

The reform concepts are increasingly criticized from a post-Keynesian viewpoint (Dittmer, 2015; Cahen-Forout, 2014), but the question whether the concepts could solve the problem that long term interest rate level exceed the growth rate remains unexplored. In our paper we will contribute to closing that gap focusing on the problem of public debt and the positive interest-rate-growth-differential. We will investigate to what extent debt- and interest-free money could mitigate or solve this problem and will study the role of public debt. First in chapter 2 we will explore the macroeconomic preconditions for a stationary economy. The scientific discussion about the interest-growth-differential (IRGD) and its relevance will be presented in chapter 3. After that we discuss theoretically the impact of public debt on interest rates in chapter 4. Finally the macroeconomic effect of issuing debt- and interest-free money is considered.

2. Preconditions for a Stationary Economy

2.1. Investment and Saving

A stationary economy can be characterized by full employment, zero growth, zero net investments and zero net savings. Zero net investments including gross investments in size of depreciation of capital stock, but therefore means complete consumption of nation income. Zero net savings contain positive savings by some households of the economy and dissaving by other households. But in aggregate savings have to be zero, due to the fundamental macroeconomic identity of investments and savings (Kimmich and Wenzlaff, 2012: 3). A stationary economy must not to be confused with a stagnating economy. The latter means involuntary unemployment at low or zero GDP growth. While the neoclassical theory explains the mass unemployment since the mid-1970ies with the concept of *the natural rate of unemployment*, a Keynesian diagnosis would be an *equilibrium of underemployment* and underutilized capacity, caused by insufficient effective demand.

2.2. Interest Rate

Now we consider the role of the interest rate regarding a stationary state. In ecological economics, some authors stating an incompatibility of positive interest rates with a stationary economy (Farley et al., 2013; Loehr, 2012). In addition, proponents of Full Reserve Banking arguing, that in a debt based money system with positive interest rates the stock of debt will compulsory rise. Wenzlaff et al. (2014) and Berg et al. (2015) have shown in a stock-flow consistent model, that an equilibrium state of a stationary economy is theoretical possible with positive interest rates. But the necessary condition is full consumption of interest income. However, when interest earnings will be saved to a certain amount, then the individual savers can either invest the money which would lead to GDP growth (neoclassical story), or savings will not be invested and insufficient aggregate demand (Keynesian story) would enforce rising debt levels and trigger an equilibrium of underemployment.

In neoclassical growth theory, the *Golden Rule of Capital Accumulation* (Phelps, 1961) describes an optimal allocation theorem for consumption and investment, whereby consumption is maximized when the real interest rate r is equal to the growth rate g . Therefore Loehr (2012) and Kimmich and Wenzlaff (2012) arguing that in a zero growth economy, interest rates should be at zero, too. If $r < g$ (negative IRGD), the economy has accumulated an excessive amount of capital. This means a dynamically inefficient situation, where a reduction in the savings rate leads to a Pareto improvement. If $r > g$, the economy has reached its Pareto Optimum. But what is the neoclassical explanation for a positive IRGD? The so called *Modified Golden Rule* includes time preference and then impatience can drive equilibrium rate of interest above the growth rate (Blanchard and Fischer, 1989: 45).

Another neoclassical argument explaining a positive IRGD is the existence of an irreproducible factor, like land (Homburg, 1991). Because of its scarcity, land receives a Ricardian land rent. When the interest rate would be zero, then the capitalized value of future land rents rises beyond any limit.

Loehr (2012) and also Kimmich and Wenzlaff (2012) identified the liquidity preference of the wealth owners as a crucial variable regarding the possibility of a positive IRGD. A fundamental Post Keynesian explanation for $r > g$ would be a restrictive policy rate by the central bank. Schulmeister (1996) argues, such a regime would lowering growth rates, increase the unemployment rate and public deficits. On the contrary, a policy rate regime with

$r < g$ would enable sustainable high growth rates and full employment. In Section 4, we will provide a Monetary Keynesian model where we want to discuss, that the central bank maybe doesn't have the possibility to set any desired policy rate.

3. The interest-rate-growth-differential (IRGD)

The concept of the IRGD (difference between r and g) is increasingly used to analyze the dynamics of public debt in industrialized and developing countries (Escolano, 2010; Ley, 2010; Turner and Spinelli, 2011; Schulmeister, 1996). A simple mechanism regarding public finance goes as follows: „If the IRGD is positive, state debts are more costly than what can be taxed relatively from a growing economy. With a given tax rate, tax income grows slower than the debt expenses. If the primary balance were zero, and debt service were financed by issuing new debts, the debt-to-GDP ratio would grow at the rate of the IRGD. (Kimmich and Wenzlaff 2012: 6f.)” Therefore to stabilize the debt-to-GDP ratio, a budget surplus is needed. In majority of industrial countries the IRGD is positive. This is contrary to developing countries, where the IRGD is often negative. Possible determinants of the IRGD are financial liberalization, capital mobility, government debt and fiscal sovereign risk premia. Turner and Spinelli (2012) and also Shabunina et al. (2011) found positive correlations for these variables.

Before we elaborate more theoretically the impact of public debt on the interest rate, let's look at some empirical developments of the IRGD in different countries. For Germany, Kimmich and Wenzlaff (2012) used the long-term interest rate derived from outstanding public sector bonds of more than 3 years up to 10 years to calculate the IRGD from 1960 to 2010. As in in figure 1 visible, until the mid of 1970ies the IRGD was deep negative and then turned into a positive differential. This fundamental shift at the mid of the 1970ies is observable in majority of the OECD countries, as can be seen in Figure 2 and also in Figure 3, the case in Japan. The end of the Bretton Woods regime and the following oil price shocks in the 70ies could be the trigger of the positive IRGD (Schulmeister, 1996). Because this had led to increased inflation rates, unemployment, government deficits and increased uncertainty (Ford and Laxton, 1999). The fall of the IRGD since the 90s during the pre-crisis period in OCED countries can be explained by reduced inflation volatility (credible inflation targeting), the introduction of the European Monetary Union and by the savings glut hypothesis (Spinelli and Turner, 2012).

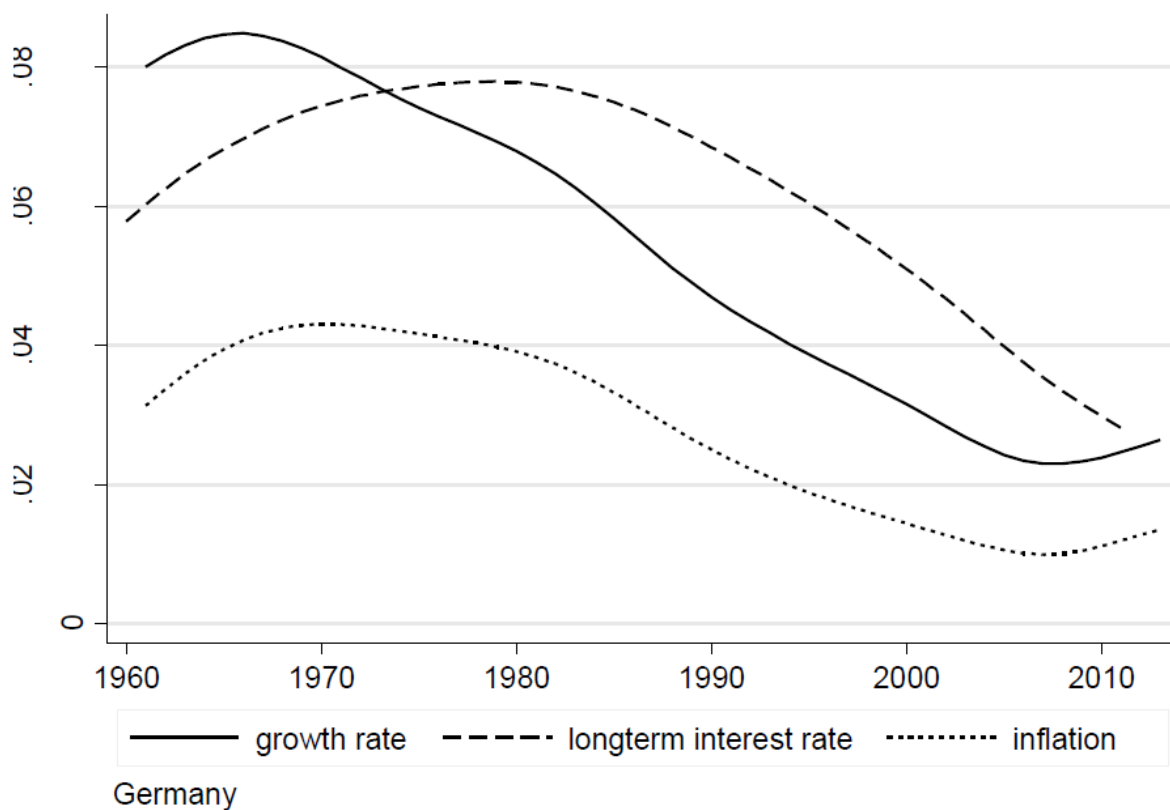
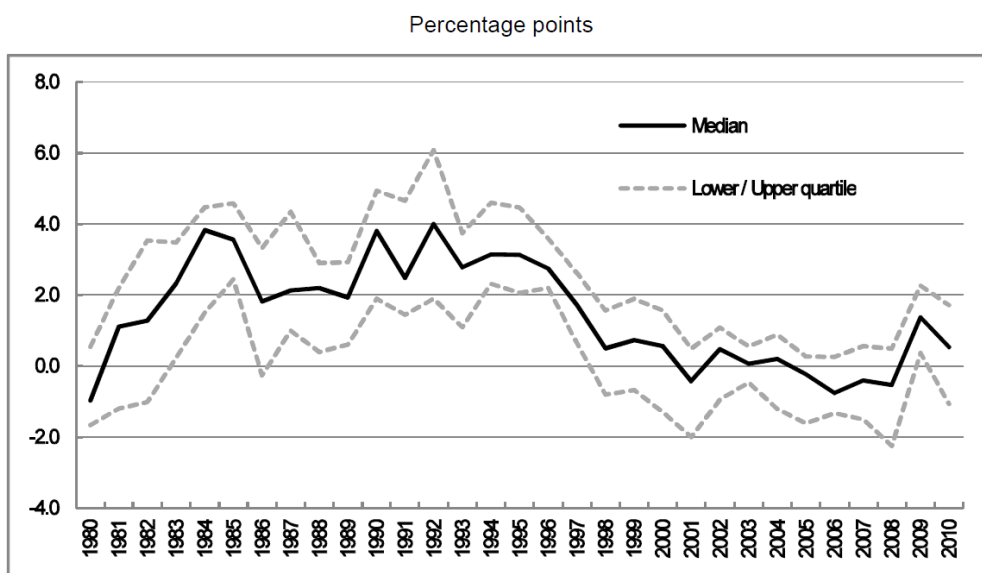


Figure 1 (Kimmich and Wenzlaff 2012)

Figure 2. The interest-rate-growth differential for 23 OECD countries



Source: OECD *Economic Outlook* June 2011 and OECD calculations, for country coverage see notes to Table 1 and Annex 1 for further details.

Figure 2 (Spinelli and Turner, 2012)

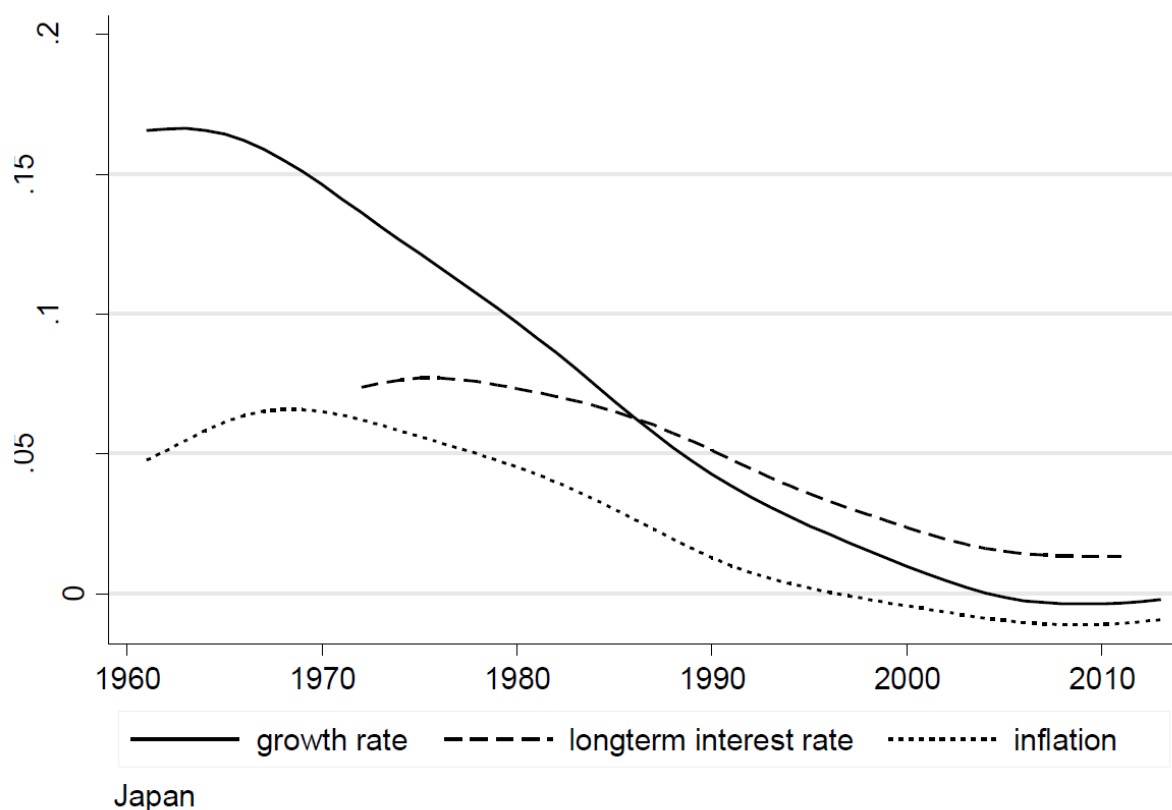


Figure 3 (Kimmich and Wenzlaff, 2012)

4. Public debt and interest rate

We have noticed in chapter 3, that government debt is partially a factor for the development of the IRGD. Now we want present in short the neoclassical argument regarding public deficits/debt and then provide a monetary Keynesian framework which differs fundamental from the neoclassical story but shows similar impact on interest rate and growth rate.

In the neoclassical world, deficit spending competes with investment for a given supply of savings. Increased deficits therefore drive interest rates upwards. The assumption here is full employment and the government finances public consumption, not investment.

The monetary Keynesian model, developed by Karl Betz (2012), starts at an unemployment equilibrium and Income Y is demand driven. Hence government spending G induces additional production and increases GDP by, with m as the multiplier (Ibid.: 7f.)

$$dY = m * dG$$

If we don't reach full capacity of labor and capital, then the interest rate will be remaining on the same level. Now Betz delivers two arguments which divide monetary Keynesianism from fundamental Post Keynesianism. Betz asserts a contractionary impact by government debt on GDP in the long run (Ibid.: 5):

1. Additional interest payments redistribute income to wealthier households with a smaller propensity to consume.
2. portfolio shifting of the wealth owner causes a higher equilibrium interest rate

Argument 1: If a government has a given stock of debt, it has to serve interest payments by reduction in government spending, higher taxes or increased deficits. In the first case, spending has to be reduced by $dG = -r * ST$ and part of these interest receipts then will be spent by the households of the bond owners $dC = c * r * ST$ (Ibid.: 9). Reduced spending has negative impact on Income and the interest payments on government bonds goes to households with a lower propensity to consume. In the second case, if interest payments are financed via tax increases for all income groups, "net income is reduced for all consumers, while the interest income accrues to the top income groups only.(Ibid.: 10)" In the latter case, when interest payments are financed by issuing new public debt, the impact of the stock of debt on GDP depends on the growth rate, the real interest rate and the consumption out of profit. Therefore a contractionary situation can be described with:

$$g < r * (1 - C)$$

We have elaborated the impact of public debt on aggregate demand through interest rate as a transfer mechanism to households with a low propensity to consume.

Argument 2: The higher the public deficit/debt, the higher the interest rate, due to portfolio shifting of wealth owners. In Post-Keynesian models, the interest rate is exogenously determined by the policy rate of the central bank. In the Monetary-Keynesian framework, the interest rate is determined by market forces, particular the liquidity preference and portfolio-decision of the wealth owners. Empirical it is observable, that higher deficits and public debt lead to a significant increase in long-term interest rates (Laubach, 2009; Gale and Orszag, 2004; Ford and Laxton, 1999). In the monetary Keynesian framework these results would be explained by following theoretical framework:

The interest rate is an incentive for wealth owners to hold titles denominated in their portfolio, instead of other currencies or real assets⁴. Currencies are understood as alternative assets and the exchange rate as an asset price. “Now distinguish between liquidity preference and liquidity premium. Let liquidity preference L_j reflects the assessment of the quality of some currency relative to others, whereas the actual liquidity premium (l_j) demanded from a currency can vary with the portfolio share α_i in the individual portfolio, so that (Betz, 2012: 14):”

$$r_j = l_j = f(L_j, \alpha_i) \quad \text{with} \quad \frac{\delta l_j}{\delta L_j} < 0 \quad \text{and} \quad \frac{\delta l_j}{\delta \alpha_i} > 0$$

The liquidity premium reflects thereby the required real rate of interest, which is demanded by the individual investor. Now consider two factors for an increase of the demanded premium. “First there is the diversification aspect: A higher portfolio share will at some point increase risk, as diversification is reduced and the exposure to the risk of that specific currency increases. (Betz, 2012: 14f.” If the central bank doesn’t accommodate the higher equilibrium interest rate, then portfolio shifting will inflate government bonds away through depreciation of the currency. Also the precautionary services decrease: “If some agent has liabilities denominated in currency A, then assets denominated in the same currency provide an insurance against the cost of illiquidity (Whalen, 1966). As the probability of illiquidity diminishes with the ratio of assets to liabilities, the marginal advantage of holding further assets in that currency will decrease as the portfolio share increases (Betz, 2012: 15)”

When the currency is faced with a higher equilibrium rate of interest, demand is reduced through two channels. “Some interest elastic demand will be affected directly. In addition to that increasing real rates of interest affect equilibrium factor incomes. Given the factor price frontier, real wages are reduced as the real rate of return increases. This in turn implies that income is redistributed from wages to profits. With differing marginal rates of consumption the (average) marginal rate of consumption of the economy is reduced and thereby the value of the multiplier decreases. (Ibd: 16f.)”

⁴ Real Assets without production purpose, like extensively used land, empty real estate or metal and other resources.

We can see that also in a Keynesian world an increasing debt share can tend to raise r and (thereby) reduce g .

5. debt-free money and the interest rate

Now the central question arises, whether debt- and interest-free money could help reducing the real interest rate, especially the IRGD. In the context of the debate about Full Reserve Banking, also called Sovereign Money, often is claimed that such a monetary reform would reduce public debt and therefore reduce also the interest rate in the economy (Farley et al., 2013; Jackson, Dyson and Hodgson, 2013).

First let's think generally about money. For easy comprehension, modern money can be understood as monetized debt. Monetized in the sense, that debt is used as money. Hence high-powered money (central bank money) is a liability by the central bank and an asset (claim on central bank money) for the private sector. Private bank money is also monetized debt, but the private bank money is for the non-banking sector a claim on central bank money, not a claim on private bank money itself. Besides the store of value and unit of account function, money mainly functions as a medium of exchange. Because of its liquid form money carries a non-pecuniary rate. Therefore money usually doesn't bear interest. When debt is used as money, the highest possible maturity transformation is realized: (long term) assets are financed with infinite short term liabilities. From this point of view, using debt money instead of a commodity like gold is highly efficient.

How does a Full Reserve Banking regime or Sovereign Money system works? For easier understanding, let's stay in a Full Reserve Banking regime, because the difference between both is only technically, not economically. At the beginning of the transition period, the central bank raises the reserve requirement up to 100 percent and the additional demand for reserves (central bank money) will be accommodated by provision of credit by the central bank. Over the time, when debt repayments of non-banks lead to a lower money supply, the central bank can buy government bonds or directly finance the government with debt- and interest-free money, to fill the money supply gap (then commercial banks will repay their debt to the central bank). After the transition period, the public sector has reduced its debt in the amount of the additional created money demand (approximate the amount of sight deposits in the currency).

It is crucial to understand, that this kind of public debt reduction does not lead to less monetary assets (claims) in the currency. It's a similar procedure if the central bank would

buying government bonds like in QE, but sterilizing the expansionary monetary policy completely by rising the reserve requirement in the same amount. With other words: it can be described as a huge debt-equity swap. Interest-bearing public debt will be transformed into non-interest bearing central bank money. But keep in mind, also central bank money is a liability for the central bank (public sector).

What does this mean for the interest rate in the economy? It's clear, that the neoclassical advantage of lower public debt here not works, because of the same crowding out level, if not even crowding out is rising, due to increased seigniorage. We have seen, the public sector can reduce its interest burden in the amount of the reduced outstanding public debt. But commercial banks are now confronted with higher costs, because cheap refinancing through sight deposits is no longer available. The bank has to attract savers, which deposit their money for a particular time and an interest rate. Higher costs by the bank, which are similar to a tax on deposits, will be passed on a) bank account fee, b) lower deposit interest rate c) lower dividends or d) higher lending rate. Case a) would be have a regressive effect on income distribution. Case b) and c) would be a desirable situation, because aggregate demand would rise, due to lower income of households with a low propensity to consume. Case d) would be no problem, if we assume that the central bank can set the interest rate on its own decision. From this perspective, issuing debt-free money could raise the aggregate demand through higher seigniorage by the government and lower capital income.

But if we analyze debt-free money from a monetary Keynesian perspective, where the discount rate of the central bank is restricted to the micro founded asset market, we get a more pessimistic picture. As we have seen in chapter 4, wealth owners hold nominal assets in different currencies, according to their preferences. When they are faced with lower deposit rates and lower dividends on bank shares, they will adjust the portfolio shares according to the given preferences. Depreciation will cause an inflationary effect, which will force the central bank to raise the discount rate. Especially the banking sector is characterized by high capital mobility, where the effect may be noticeable. Therefore from a monetary Keynesian perspective, in an open economy debt-free money doesn't decrease the interest rate of the economy, rather increase it. Of course in a closed economy, wealth owners haven't the possibility to shift their assets to other currencies, so they have to get accustomed with lower deposit rates and equity dividends.

6. Conclusion

We conclude from a monetary Keynesian perspective, issuing debt-free money leads in an open economy rather to higher interest rates and therewith worsen the conditions of reaching a stationary economy. However, in a closed economy or an alliance of leading currencies at the top of the currency hierarchy, a sovereign money system could decrease the interest rate and therefore mitigate issues induced by a positive IRGD. But in this context it is to raise the question, if not other measures may be more effective to raise effective demand, especially for a single currency. Taxing capital with low mobility (land, real estate, inheritance tax) could be more successful and easier to implement, then a complete monetary reform.

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