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Inflation, Financial Development and Income Inequality

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I. Introduction: Inflation, Financial Development and Income Distribution

Traditional studies on the relationship between inflation and income distribution mainly focus on the impacts of inflation, both expected and unexpected, on income (re)distribution. The issue is quite extensively examined with reference to the experiences of many countries and the empirical results are also quite well documented (see for example Laidler and Parkin 1975, McCallum 1990, and Driffill, Mizon and Ulph 1990 and the references therein). Only until recently have economists looked into the possibility of income distribution as one of the determinants leading to higher inflation. These studies include Beetsma and van der Ploeg (1996), Carr and Chu (1996), Lippi and Swank (1996), Al-Marhubi (1997, 2000) and more recently Dolmas, Huffman and Wynne (2000). As shall be seen below, this paper adds to the literature by providing empirical evidence as well as a theory to explain how income inequality and financial development affect inflation.

To highlight the contribution of this paper and how it differs from most of the major studies in the literature, we briefly recapitulate the major results of these studies in the next few paragraphs. In brief, the prevailing theories are based on a public interest argument applicable to democracies only and postulate that the poor benefit from inflation as a result of wealth redistribution. In sharp contrast, the theory of this paper does not rely on the assumption that politicians are benevolent social planners, and is thus applicable to non-democracies; it also contends that the poor rather than the rich suffer from higher inflation.

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Among the first formal theories to explain the inequality-inflation link is the one by Lippi and Swank (1996), who reexamine and extend the Barro-Gordon (1983) model by interpreting it as a political model in which political parties care about both income distribution and output growth. If the central bank fails to make a policy commitment, then there is the well-known outcome that an inflationary bias will exist. However, if policymakers are concerned with income distribution only, there will be no inflationary bias in the sense that the optimal inflation policy depends on the distributional motives of policymakers. If lower income groups are more averse to unemployment and higher-income groups are more concerned with inflation, then policymakers catering to the distributional desires of lower-income groups will opt for high inflation. In this context, income distribution is a determinant of inflation because in equilibrium inflation depends on the targeted Gini coefficient.

From a public-choice perspective and based on the median voter theorem, Beetsma and van der Ploeg (1996, hereafter BVP) argue that democratic governments are likely to levy inflation taxes in order to erode the real value of debt service, thus redistributing wealth from the rich to the poor. They also provide empirical evidence of a positive association between inflation and income inequality for a cross section of 23 democratic countries over the period 1960–85 to support their theory.

Similarly, Dolmas, Huffman and Wynne (2000, hereafter DHW) recently argue that greater income inequality leads to higher inflation because of a desire by voters for wealth redistribution. In their overlapping generations model, higher income or wealth inequality may lead to greater pressure on the government to collect inflation taxes from the young in order to finance transfer payments to the old. Empirically, they also examine the impact of central bank independence on inflation (see for example Alesina and Summers 1993, among others). Their cross-country regression results for 44 countries over the period 1960s–1980s indicate a positive relationship between income inequality and inflation for democracies, but not for non-democracies. They also conclude that democracies with more independent central banks tend to have better inflation outcomes for a given degree of inequality.

While the public-choice approach adopted by Beetsma and van der Ploeg as well as Dolma, Huffman and Wynne explains the inequality-inflation link in democracies, its robustness and applicability to non-democracies remains to be seen.[1] Based on cross-country OLS regression results for 72 countries over the period 1973–90, Al-Marhubi (1997) finds

that countries with greater income inequality have higher average inflation, even after controlling for other country-specific variables. His subsequent empirical paper (2000) shows that the association between inflation and income inequality holds for both democracies and non-democracies and also that the results are not due to reverse causation.

Apparently, what is lacking in the existing literature is a theory to explain the inequality-inflation link among non-democracies. As a matter of fact, non-democracies on average have higher inflation and more unequal income distribution than democracies (see Table 1 below). In addressing the issue of a monetary constitution for the Americas, Carr and Chu (1996, pp. 290–2) observe that high inflation countries tend to have higher income inequalities whereas low inflation countries have more equal income distributions. Furthermore, the top six countries with the highest post-war inflation – namely Brazil, Argentina, Bolivia, Peru, Uruguay and Chile – are all non-democracies.[2] One plausible explanation is that in these countries higher inflation rather than an increase in income taxes is chosen by the government to extract tax revenues to finance its expenditures or deficits because an inflation tax has a lower incidence on the rich people than a progressive income tax does. Higher inflation thus promotes the interests of higher-income groups.

This paper formalizes and extends the above observation by investigating the relationship between inflation on the one hand and income distribution and financial development on the other. The effects of the latter two factors on inflation are not discussed in the survey papers by Laidler and Parkin (1975) and McCallum (1990). Using an overlapping generations model of Sargent and Wallace (1981), we demonstrate that higher income inequality can lead to a higher steady-state inflation when the financial system is underdeveloped – in the sense that not all economic agents have access to the financial market. Financial underdevelopment can be an outcome of economic development or government regulations restricting financial institutions from providing alternative

[1] Interestingly, *Hill* (2000) uses the same dataset provided by *Dolmas*, Huffman and *Wynne* to show that the relationship between income inequality and inflation across democracies is not robust and that, contrary to their finding, income inequality appears to have a stronger relationship with inflation in non-democracies. As shall be seen, our paper also shows that the nexus between inflation and income inequality is stronger among non-democracies than democracies.

[2] Changes in political regimes over time are inevitable. For example, Chile did not become a democratic country until the end of 1989 (see, for example, *Banks* et al. (1997)). It is thus classified as a non-democracy in our study.

"money-like" financial instruments to the non-bank public. When the economy is financially underdeveloped, the government can engineer inflation as a means to finance its expenditures because some economic agents, the poor in particular, cannot hedge against inflation by switching their money holdings into other interest-bearing financial assets. The choice of high inflation regimes can be attributed to inefficient tax collection systems (see, for example, Cukierman, Edwards and Tabellini 1992), which tilt governments towards seigniorage as a principal source of revenue. In this paper, we explicitly show that financial "undevelopment" (i.e., the financial system is not developed such that both the rich and the poor hold money as a store of value) can lead to higher steady-state inflation when compared with "underdevelopment" (i.e., when only the poor cannot access the financial market and have to hold money). Furthermore, the steady-state inflation rate increases if the income of the poor when they are old decreases. But this condition also means higher income inequality. Hence, inflation can be positively related to income inequality and negatively related to the level of financial development.

Our hypothesis is supported by empirical evidence. The OLS and generalized instrumental variable estimation (GIVE) results for a subsample of 56 non-democratic countries, out of a cross-sectional data set for 90 countries over the period 1950–92, show a positive relationship between average inflation rates and the Gini coefficients and a negative relationship between average inflation rates and the degree of financial development.

Besides explaining income inequality as a factor leading to higher inflation, this paper can also be viewed as complementary to a recent strand of literature on growth, income distribution and politics, which purports to show that higher income inequality is harmful to economic growth. Examples of these studies are Alesina and Rodrik (1994), Bertola (1991) and Persson and Tabellini (1991, 1992). The common vein in their arguments is that higher income inequality causes the government to impose a higher equilibrium tax rate so as to redistribute income, and economic growth is reduced as a result of higher taxation on capital. Another study by Alesina and Perotti (1996) argues that higher income inequality leads to social discontent and hence higher political instability, which has an adverse impact on investment and growth. Our study here does not directly address the issue of income distribution and economic growth. But if we believe that high inflation is harmful to growth, as many studies have shown (e.g., Andres and Hernado (1997), Kormendi

and Meguire (1984)), then our study suggests an alternative channel through which income inequality deters economic growth.

This paper proceeds as follows. In the following section, we use an overlapping-generations model to derive the relationship between inflation on the one hand and financial development and income distribution on the other. In section III, we discuss the political economy of inflation and income distribution and explain why governments, particularly in non-democracies and less-developing countries, tend to choose inflation taxes to finance their expenditures and why they impose regulations on the financial sectors. In the penultimate section, we provide cross-country empirical evidence to support our hypothesis. The last section summarizes and concludes.

II. An Illustrative Model

1. The Setup

We apply an overlapping generations model of Sargent and Wallace (1981) to illustrate our arguments. There are two different classes of economic agents – the rich and the poor – in the economy. Each economic agent lives for two-periods. At any time $t \geq 1$ there are born $N_1(t)$ identical poor people who are endowed with α_1 units of good when young and α_2 units when old, where $\alpha_1 > \alpha_2$. On the other hand, at any time $t \geq 1$ there are born $N_2(t)$ identical rich people who are endowed with β_1 units of good when young and β_2 when old, where $\beta_1 > \beta_2$. By definition, $\beta_1 > \beta_2 > \alpha_1 > \alpha_2$. For simplicity, we consider the case where populations of the rich and the poor grow at the same rate n, i.e., $N_i(t+1) = N_i(t)(1+n)$, for all t and $i = 1,2$.

Given this setup, the Gini coefficient of this economy is

$$(1) \quad GINI = \frac{\begin{array}{r} N_1{}^2(\alpha_1 - \alpha_2)(1+n) + N_2{}^2(\beta_1 - \beta_2)(1+n) + 2N_1N_2(\beta_1 + \beta_2 - \alpha_1 - \alpha_2) \\ + N_1N_2\,n(\beta_2 + 3\beta_1 - 3\alpha_1 - \alpha_2) + N_1N_2\,n^2(\beta_1 - \alpha_1) \end{array}}{(N_1+N_2)(n+2)[N_1(\alpha_1+\alpha_2) + N_2(\beta_1+\beta_2) + n(N_1\alpha_1 + N_2\beta_1)]}.$$

The above equation appears to be complicated and formidable. Nonetheless, for the purpose of our analysis to follow, it suffices to focus on how the Gini coefficient changes in response to a change in α_2.

Turning to the household utility maximization problem, the representative household is assumed to have the following logarithmic utility function:

$$u\left[c_t^h(t), c_t^h(t+1)\right] = \ln c_t^h(t) + \ln c_t^h(t+1). \tag{2}$$

where $c_t^h(s)$ is the consumption of agent h of generation t in period s. The representative household is assumed to maximize the above utility function subject to the inter-temporal budget constraint:

$$c_t^h(t) + \frac{c_t^h(t+1)}{1+r(t)} = w_t^h(t) + \frac{w_t^h(t+1)}{1+r(t)}. \tag{3}$$

where $w_t^h(s)$ is the endowment of agent h of generation t in period s and $r(t)$ is the interest rate on consumption loans. The superscript h denotes whether the economic agent is rich or poor. The solution to the representative household's maximization problem leads to the following savings function:

$$s_t^h(t) \equiv f^h\left[1+r(t)\right] = \frac{1}{2}\left[w_t^h(t) - \frac{w_t^h(t+1)}{1+r(t)}\right]. \tag{4}$$

If money is the only form of store of value in this economy, we have the following aggregate saving function:[3]

$$\frac{M(t)}{p(t)} = \sum_h^{N_1+N_2} s_t^h(t). \tag{5}$$

where $M(t)$ is currency and $p(t)$ is the price level. Or in per worker (young capita) terms,

$$\frac{M(t)}{p(t)N(t)} = \frac{\sum_h^{N_1+N_2} s_t^h(t)}{N(t)} \equiv f(1+r(t)). \tag{6}$$

where $N(t) = N_1(t) + N_2(t)$.

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3 This is apparently unrealistic as households can hold their savings in portfolios of different assets. However, a model is by definition a simplification of reality. This simplifying assumption makes our model analytically tractable without loss of generality. As long as households hold part of their savings in the form of money, the government or central bank can extract inflation taxes from money creation.

On the other hand, the government is assumed for simplicity to finance its expenditures, $G(t)$, by currency creation:[4]

$$G(t) = \frac{M(t) - M(t-1)}{p(t)}. \tag{7}$$

Alternatively, $G(t)$ can be interpreted as the government expenditure in excess of current tax revenue. This assumption is appropriate for most less developing countries which find it less costly to collect taxes by inflation than by their inefficient tax systems. For simplicity, the rate of currency creation is assumed to follow a currency growth rule:

$$M(t) = zM(t-1), z \geq 1. \tag{8}$$

The government's objective is to choose the currency growth rate z to maximize seigniorage (or what is equivalent to maximize $G(t)$) in a stationary equilibrium, i.e.,

$$\max_{z} g \equiv \frac{G(t)}{N(t)} = f(1 + r(t))\left(1 - \frac{p(t-1)}{p(t)(1+n)}\right). \tag{9}$$

subject to

$$1 < z < \bar{z}. \tag{10}$$

where $\bar{z}$ is determined such that $1/p(t) > 0$ for all t, i.e., fiat currency is valued in a monetary equilibrium.

2. *Inflation, Financial Development, and Income Distribution*

Substituting the household saving function (Equation (6)) into the government budget constraint (Equation (9)), both in per capita terms, yields the following

[4] We omit the important issue of central bank independence and simply assume that the central bank and the government together are a single entity. This assumption makes our theoretical analysis and empirical evidence more relevant as most countries, especially non-democracies, do not have independent central banks. Based on their empirical results, *Dolmas, Huffman* and *Wynne* (2000) argue that greater central bank independence seems to alleviate inflation pressure stemming from greater income inequality in a democratic society – the measure of central bank independence contributes to explaining cross-country differences in inflation, although the relationship is rarely significant in a statistical sense.

$$g \equiv \frac{G(t)}{N(t)} = \frac{M(t) - M(t-1)}{p(t)N(t)} = f(1+r(t)) - \frac{p(t-1)}{p(t)(1+n)} f(1+r(t-1)). \tag{11}$$

In a state steady equilibrium, $f(1+r(t)) = f(1+r(t+1)) = \ldots = f(1+r)$, which implies $p(t+1)/p(t) = z/(1+n) = 1/(1+r)$. Therefore, the government's problem can be rewritten as

$$\underset{z}{\text{MAX}}\; g = f(1+r) - \frac{f(1+r)}{z} = f(z)\left(1 - \frac{1}{z}\right). \tag{12}$$

First, consider the case in which the economy is financially "undeveloped" such that fiat money is the only form of store of value. In this case, both the rich and the poor have to hold fiat money as a store of value in order to smooth out their consumption over their life. The solution to the government's maximization problem gives the following steady-state inflation rate:

$$z^* = \sqrt{\frac{N_1 \alpha_1 + N_2 \beta_1}{N_1 \alpha_2 + N_2 \beta_2}}\,(1+n). \tag{13}$$

Then consider the case in which the economy is financially "underdeveloped" in the sense that only the rich can acquire other financial assets that serve as stores of value.[5] This can be the case when we assume that the minimum amount for investing in these financial assets is $\beta_1/2$ and that the government imposes legal restrictions such that individuals cannot share investments. As a result, only the poor hold money as a store of value. The steady-state inflation rate in this case is

[5] As already mentioned before, it is not the objective of this paper to model the portfolio choices of households. But there should be little doubt that the rich have better access to financial markets than the poor in the real world, particularly in less developing countries. For example, a recent report by *World Bank* (2001) states that the financial systems of developing countries are small and they provide fewer services at higher unit costs partly because of failure to exploit economies of scale (pp. 19–20) and also that low-income households are excluded from the international capital markets whereas large depositors can place their funds and make their investments abroad (pp. 180–181).

$$z^{**} = \sqrt{\frac{\alpha_1}{\alpha_2}(1+n)}. \tag{14}$$

Financial development in the sense of availability as well as accessibility of stores of value other than fiat money is expected to lower steady-state inflation. This can be the case when the minimum amount for investment is lowered to $\alpha_1/2$ or less, or when the government removes the legal restrictions prohibiting the poor from sharing investments. This result is hardly surprising. When interest-bearing financial securities are available as stores of value, rational economic agents will switch from holding currency to these financial securities in order to protect the purchasing power of their financial wealth at times of inflation. The switching limits the government's power to extract seigniorage from inflation. In the extreme case where all economic agents switch away from holding currency the government can no longer extract seigniorage from inflation by supplying more currency.[6]

This extreme case that neither the rich nor the poor hold money is unlikely to be a true description of the real world. To examine whether the steady-state inflation rate under "financial undevelopment" is higher than it is under "financial underdevelopment," we compare z^* with z^{**}. Since N_i, α_i and β_i, for $i = 1,2$, are all positive, it suffices to compare the terms inside the square roots except the common factor $(1+n)$. Thus we have

$$\frac{N_1\alpha_1 + N_2\beta_1}{N_1\alpha_2 + N_2\beta_2} - \frac{\alpha_1}{\alpha_2} = \frac{N_2(\beta_1\alpha_2 - \alpha_1\beta_2)}{\alpha_2(N_1\alpha_2 + N_2\beta_2)}. \tag{15}$$

To further simplify the expression, we normalize α_2 to 1. The right-hand side of Equation (15) can now be rewritten as

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[6] OLG models fail to capture the function of money as a medium of exchange or to provide a satisfactory rationale for the use of money (see for example *Schönfelder* (1992) for an assessment of OLG models). But it is not the purpose of this paper to explain why money coexists with other interest-bearing assets or why money is a more superior intergenerational transfer mechanism. We presume the existence of fiat money and that the medium-of-exchange and store-of-value functions are symbiotic (see *Hoover* (1988), pp 136–7 for arguments related to this point). In reality, both the rich and the poor need money as a medium of exchange. If money holdings are proportional to income, the rich again prefer the proportional inflation tax to the progressive income tax. And the political economy implications of our OLG model, in which money serves essentially as a store of value, should remain intact.

$$\frac{N_2(\beta_1 - \alpha_1 \beta_2)}{N_1 + N_2 \beta_2} = \frac{N_2 \beta_1 (1 - k_1 k_2)}{N_1 + N_2 \beta_2} > 0. \tag{16}$$

where k_1 and k_2 are two fractions. The numerator on the right-hand side of Equation (16) follows from letting $\alpha_1 = k_1\beta_1$ and $\beta_2 = k_2\beta_1$, as $\beta_1 > \beta_2 > \alpha_1 > \alpha_2 = 1$ and $1 > k_1 > k_2 > 0$ by definition. Since Equation (16) is positive, $z^* > z^{**}$. In other words, steady-state inflation in the case of financial undevelopment is higher than it is under financial underdevelopment. Therefore, there is a negative relationship between inflation and financial development. The economic intuition is simply that the government has stronger incentives to use inflation to extract seigniorage when both the poor and the rich hold money as a result of financial undevelopment.

When the financial market is not fully well-developed, income distribution can be a factor in determining the steady-state inflation rate because it affects the aggregate savings function and hence the demand for money. All other things equal, it is obvious from Equations (13) and (14) that the steady-state inflation rates z^* and z^{**} will increase when α_2 decreases. In other words, the poor earn relatively low income when they are old.[7] This is particularly the case in countries where safety nets such as pension plans to supplement the income of the old are absent.[8] But as can be seen from Equation (1), the Gini coefficient is getting larger in value when α_2 is getting smaller. Therefore, there is a positive relationship between income inequality and inflation: the more unequal the income distribution, the higher the steady-state inflation. The economic intuition behind this case is as follows. It is well known that the steady-state inflation rate that maximizes seigniorage is inversely related to the elasticity of money demand with respect to inflation (Cagan 1956). When the financial market is underdeveloped, the poor have to hold money as

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[7] Theoretically, this income pattern is consistent with the Life-Cycle Hypothesis of *Modigliani* and *Brumberg* (1954). Empirically, a recent study by *Förster* (2000) shows that in all OECD countries except Sweden and the United States relative disposable income peak for individuals in the age group of 41–50. Furthermore, the poverty rates in elderly adults (age 51–65) and the elderly (age 65 and over) are in most cases higher than prime age adults (age 26–50). The relative risk or representation indices also indicate that the former two groups are more often represented than the latter in the poor population.

[8] According to *World Labour Report 2000* published by the International Labour Office, in many developing countries no more than 20% of the active population is included in regular social security systems. Furthermore, another study (*Gillion* et al (2000)) points out that the overwhelming majority of the world's population is still without some form of income security in old age or disability.

a store of value to smooth out their consumption. The lower the income when they are old, the higher their savings will be put in the form of money and hence the government can extract more seigniorage. In other words, the money demand function is rather inelastic in this case because the poor do not have access to alternative assets as stores of value.[9]

III. From Pure Economic Theory to Political Reality

In the existing literature, some studies argue that unequal income distribution will lead to a higher inflation. Their arguments are fundamentally different from ours. For instance, Beetsma and van der Ploeg (BVP) argue that

> ... an unequal society means that a relatively large part of the government debt is in the hands of a relatively small group of individuals. When this society is democratic, it thus elects a political party that represents the interest of poor people. Such a party has more of an incentive to levy inflation taxes and erode the real value of debt service, because this hurts the rich more than the poor. We show that in democracy inequality and nominal government debt sow the seeds of inflation (p. 144).

In reality, poor people collectively may hold substantial sums of government debt through pension plans and participating insurance policies. For present purposes let us assume a disproportionate share of government debt is held by the rich. With this assumption, BVP present an argument diametrically opposite of ours. They claim inflation helps the poor and hurts the rich. While unexpected inflation reduces the ex-post real returns from government debt, perfectly expected inflation will lead to higher nominal interest rates and unchanged ex-post real returns on government debt. Investors will not be continually fooled. Increased monetary shocks will lead investors not only to demand increased inflationary premiums but also increased inflationary risk premiums. Monetary instability will ultimately lead to higher real interest rates on government debt. As such higher and more volatile inflation rates do not lead to higher tax rates on the holders of government debt, they ultimately lead to higher real costs of government debt. Consequently, no redistribution will take place in the long run if inflation is fully anti-

[9] The same phenomenon may also be true for the medium-of-exchange function of money. For large transactions, the rich have access to foreign monies. For small transactions, it is costly to use foreign monies. Hence, for the medium-of-exchange function the poor do not have alternative assets; whereas the rich do.

cipated and inflation expectations are incorporated into the nominal contracts accordingly. Under these circumstances, income inequality would no longer give an incentive to raise the inflation rate for redistributive purposes.

In a similar spirit, DHW argue that greater inequality leads to greater inflation because of voters' desire for wealth redistribution. Like the BVP paper, their theory can at best explain the inflation outcomes in democratic societies. What remains to be explained is why greater inequality is associated with persistently higher inflation in non-democratic countries. This is one of the main issues that are addressed in this paper.

In both democracies and non-democracies, many factors other than wealth redistribution may affect temporary inflation rates but not the long-run inflation rate. In wartime, the "deadweight cost" of a temporary inflation tax may be substantially less than the excess burden of an income tax. In addition, in most countries the income tax system is not inflation neutral and higher inflation rates result in higher effective income tax rates without any need for parliamentary or congressional approval. Certain interest groups gain from unexpected increases in inflation. Farmers with long-term debt would gain from unexpected inflationary increases. If political parties dependent on support from these groups form governments, new inflationary policies may be adopted. In an unstable political environment, regime changes may be commonplace. When regimes change, inflationary policies may be adopted as a means of redistributing income to supporters of the party in power. In addition, governments may use inflation surprises to temporarily increase output. All these factors may explain why some countries temporarily resort to inflationary policies but are inadequate in explaining the long-run inflation rate.

It is well known that perfectly expected inflation imposes substantial deadweight costs on society. If this is the case, why do some countries consistently pursue high inflation policies? For almost the entire postwar period non-democracies like Brazil, Argentina, Peru and Uruguay have had substantial inflation. Why are inflation rates in these countries persistently and substantially higher than inflation rates in democracies like Germany, Switzerland, Singapore and Belgium? One answer may be that the deadweight costs of the inflation tax is high but the deadweight costs of other forms of taxation are even higher.[10] In economies, particularly less developing countries, where a substantial number of transactions do not pass through organized markets, sales and income taxes are

very costly to collect. The least costly taxes in these economies may in fact be the inflation tax.

Although deadweight costs of the various taxes may be an important determinant of the inflation rate, it is not the only determinant. A number of African countries have less developed markets than Brazil, Argentina, Peru and Uruguay, yet have substantially lower inflation rates. According to our economic model, income inequality can be a significant factor in explaining the difference in inflation rates between Latin American countries and African countries.

More specifically, we should not ignore the relative incidence of the various methods of financing government expenditures. Consider a country that has only two methods of financing government expenditures – a progressive income tax system or an inflationary tax. With relative income equality, the incidence of an inflationary tax and of an income tax would be similar. The more unequal the income distribution, the greater the percentage of taxes collected on income, the greater the burden on high income individuals. This is the case because the inflation tax is at best a proportional tax. The tax incidence of the inflation tax depends on the income elasticity of demand for non-interest bearing money (i.e., primarily currency). With a unitary income elasticity, the inflation rate will be a proportional tax since individuals will hold cash balances in direct proportion to their income.[11]

The income elasticity will depend on the availability of substitutes to non-interest bearing money. A plausible argument can be made that high income groups in countries with high inflation rates have access to substitute currency (i.e., US dollars). Foreign monies tend to be used in higher valued transactions, in which higher income individuals conduct their transactions, rather than in low valued transactions in which low income people make most or their transactions. If substitute monies are available primarily to high income groups then an inflation tax may in fact be a regressive tax. At best the inflation tax is a proportional tax, at

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10 For example, *Cooley* and *Hansen* (1991) show that the efficiency losses of moderate inflation are significant but less than those associated with income taxes.

11 Earlier empirical studies suggested that economies of scale in money holding did not exist. However, more recent studies show evidence of economies of scale in the demand for money, particularly for narrowly defined money. See for example *Laidler* (1993) for more details. Whether such economies of scale exist or not does not change our proposition that the inflation tax is at best a proportional tax and at worst a regressive tax.

worse a regressive tax. As such with a progressive income tax system, high income groups prefer a greater proportion of government expenditures funded by an inflation tax.

Politically, if high income groups either directly control the government, as in most non-democratic governments, or greatly influence democratic governments through campaign contributions, there will be a bias towards inflationary finance. This bias will only exist if income is unequal. If all individuals had identical income; there would be no inflationary bias. The greater the income inequality, the greater will be the inflationary bias.[12]

This inflationary bias due to income inequality together with the fact that the rich usually have better access to financial markets than the poor suggests one of the reasons why governments, particularly those of less developing countries, are usually less enthusiastic in liberalizing or reforming their financial systems. Controls and limitations on the availability of money substitutes, as Nicholls (1974) suggests, are imposed as attempts to limit the extent to which people are able to switch out of real money balances during the inflationary process. For instance, of the 117 countries surveyed by Gwartney and Lawson (1997) to rate global economic freedom, 13 out of the 20 industrial countries regarded it illegal for citizens to maintain bank balances abroad whereas nine regarded it illegal for citizens to own foreign monies domestically in 1975. The respective figures for the remaining countries were 73 and 66. In 1990, these two figures for the industrial countries had noticeably dropped to three and two respectively, whereas they remained high at 71 and 57 for the remaining countries.

IV. Empirical Evidence

In our theoretical model, higher steady-state inflation is directly related to money supply growth. In the inflation process, the level of financial development and the pattern of income distribution are also factors in determining the steady-state inflation rate. To measure income inequality, the Gini coefficient is used. For financial development, we use respectively three proxies, which we will go into more detailed discussion below. The regression equation is therefore specified as follows:

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12 It should be noted that income inequality and the extent of democracy will be correlated. The more equal is income distribution, the greater the likelihood of a democratic system of government.

$$CPI = a_0 + a_1 M + a_2 FD + a_3 GINI + \tilde{\mu}. \tag{17}$$

where *CPI* is the rate of change of the Consumer Price Index, as a measure of the rate of inflation,

M is the money supply growth rate,
FD is a proxy variable for the degree of financial development,
GINI is the Gini coefficient, as a measure of income distribution, and
μ is a random disturbance term.

Both *CPI* and *M* are in logarithmic form. If our theory is correct, we expect $a_1 > 0, a_2 < 0$ and $a_3 > 0$. Given the above specification, the coefficient a_1 measures the elasticity of inflation with respect to the money supply, whereas a_2 and a_3 measure the relative changes in the inflation rate with respective to absolute changes in the level of financial development and the Gini coefficient respectively.

Cross-sectional data are used to test our hypotheses. The main sources of data, except the Gini coefficients, are *International Financial Statistics (IFS)* and *World Tables* published by the International Monetary Fund and the World Bank respectively. All data are annual average figures for the period 1950–1992. Some countries have shorter time series because data are not available. The average annual rate of change of the consumer price index (line 64..x in *IFS*) is used as a measure of inflation, whereas *M* is the average annual rate of money supply (line 34 in *IFS*).

The best measure of financial development is probably the Financial Interrelations Ratio (FIR) proposed by Goldsmith (1969). This is the ratio of the sum of the value of all financial assets to the sum of the value of all real assets. A higher value of FIR reflects a higher degree of financial development. Unfortunately, most, if not all, countries do not have the relevant data series for us to construct the FIR. Instead, we use several other indicators as proxies for financial development. The first proxy is *BMY*, which is defined as the ratio of broad money (line 34 plus line 35 in *IFS*) to nominal GDP (line 99b). This is similar to the ratio of liquid liabilities of the financial system to GDP (labelled as *LLY* in their paper) as used as an indicator of financial depth in a study by King and Levine (1993). These two indicators are in line with the traditional practice, such as Goldsmith (1969) and McKinnon (1973), which uses the size of the formal financial sector relative to the size of the economy as a measure of financial development or financial depth. The provision of financial services is assumed to be positively related to the size of the financial sector. While such an indicator may be appropriate in the study of financial development and economic growth, it is not quite appropriate,

or to a certain extent distortionary, for our present study because the growth in broad money could be due to an increase in currency rather than financial development. If currency accounts for a large proportion of broad money, we may observe a positive correlation between inflation and the ratio of broad money to GDP instead of a negative correlation as predicted by our theory. For comparison, we will still produce the empirical results based on the ratio of broad money to GDP as a proxy for financial development despite the potential distortionary effect as mentioned above.

The second proxy for financial development used in this study is *QMY*, defined as the ratio of quasi-money to GDP. This indicator is used by Brodsky and Finnerty (1994) to study the relationship between financial depth and human development. Quasi-money includes time, savings, and foreign currency deposits held at depository institutions such as banks (line 35 in *IFS*). Well developed financial markets are expected to have high levels of quasi-money. Furthermore, a high level of quasi-money is associated with a wider array of financial products as well as a greater financial depth. The underlying idea is essentially similar to the first indicator except that non-interest bearing currency and demand deposits are excluded. Therefore, this indicator is expected to serve as a more reliable indicator of financial development than the first one. While quasi-money grows in nominal value over time due to inflation, it is also the case for nominal GDP. Therefore, the ratio of quasi-money to GDP can be taken as a measure of the size of financial sector relative to economic activity. A higher ratio of quasi-money to GDP is thus taken as a higher degree of financial development or financial depth.

The last proxy we use in this study does not rely on the strong assumption that the degree of financial development is directly proportional to the size of the financial sector. Instead, it is based on a "stylized" pattern observed in the development of the financial sector in almost all economies (see, for example, Dow and Earl 1982). This pattern is the switch of using commodity money, or currency, to an alternative, more convenient, asset-like financial instrument, such as bank checking deposits, in the exchange process as both the economy and the financial system develops; and further financial innovation and development saw the emerging of money-like instruments such as savings and time deposits. Based on this pattern of financial development, we construct the ratio of quasi-money to currency (*QMC*) as an indicator of financial depth. The higher the value of this ratio, the higher the degree of financial development.

The Gini coefficient is used as a measure of income inequality. A higher value for the Gini coefficient is assumed to represent higher income inequality, although it is well known that two different income distributions can have the same Gini coefficient. Data on the Gini coefficients are obtained directly or indirectly computed from various sources. The main data source is Deiniger and Squire (1996). Other sources include Jain (1975), Sundrum (1990), United Nations (1985), and various issues of *World Development Reports*. For countries with more than one value of the Gini coefficient reported for the sampling period 1950–1992, the average figures are used in the regressions. While some countries experienced changes in income distribution over the sampling period, their changes are not dramatic. Moreover, the pattern seems to be relatively stable over time, i.e., the rank orders of inequality appear to change only a little over the sampling period. Countries with high initial income equality, as ranked by the Gini coefficients, remain to have high income equality throughout the sampling period. Based on available data, a total of 90 countries (see Table 1 for a list of these countries) are included in our sample.

To facilitate the reader to assess the impacts of the level of financial development and income distribution on inflation, we first report in Table 2 the OLS results with money supply growth omitted as an explanatory variable. In all cases the coefficient of the Gini coefficient has the predicted positive sign and is statistically significant, except in the QMY equation where it is only marginally significant. Similarly, the coefficient of the level of financial development has the predicted negative sign and is statistically significant in all cases except in the BMY equation. However, in terms of R^2 a large proportion of the variations in inflation is unexplained by these two variables.[13]

As expected, money supply growth is the main factor leading to higher inflation. This is revealed by the OLS results tabulated as Table 1–3 for the entire sample, the subsample of non-democracies and democracies respectively. In each table, the first set (column) of results is based on using BMY as a proxy for financial development, whereas the second and third set of results are respectively based on using QMY and QMC respectively as a proxy for financial development. In all cases, the coefficients of the money supply growth variable have the correct positive sign

[13] We would like to remind the reader that these results are for reference purpose only and should be interpreted with qualifications because they are based on a "mis-specified" model with an omitted variable.

and are statistically significant. For hypothesis testing, White's (1980) heteroscedasticity-consistent standard errors are also reported to account for heteroscedasticity, which are detected in some cases. While the coefficients of the level of financial development have the predicted negative sign in all cases, they are not all statistically significant. The results for the Gini coefficient are mixed: the parameters are statistically insignificant in most cases, not to mentioned that in some cases they have the wrong negative sign as predicted by our theory. Nonetheless, the results for non-democracies (Table 4), notably those for the QMC equation, lend support to our theory. As our theory predicts that inflation and income inequality are positively related, the estimates for the BMY and QMY equations are also significant at the 10% level if one-tailed tests are used.

Though efficient, the OLS estimates are bias and inconsistent because the money supply growth is endogenously determined according to our theory and this is also confirmed empirically.[14] For this reason, we apply the generalized instrumental variable estimation (GIVE) technique to Equation (17) to obtain consistent estimates.[15] For the money supply growth, we use the (log of) average annual growth rate of government expenditures at current market prices (line 91 or 91f *IFS*) as an instrument. Government expenditure growth is a suitable instrument because it is a major driving force behind the government's need to finance its expenditures by inflationary taxes, as suggested by Equation (7).[16] Both variables *FD* and *GINI* are taken as exogenous variables and used as instruments themselves.[17] Furthermore, all the *FD* proxies are used as extra instruments so that we have the degree of freedom to test the joint

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[14] This endogeneity problem is empirically confirmed by an omitted variable (OV) version of *Hausman* (1978) specification test, the results of which indicate contemporaneous correlation between the error and the money supply growth variable. See for example *Kennedy* (1998, p. 151) for details of the test procedures.

[15] Given our finite sample size, however, both the OLS and IV results are reported for comparison.

[16] Theoretically, the monetization of government deficit rather than government expenditure growth is the ultimate factor. But empirically, the latter is a better instrument. For example, *Protopapadakis* and *Siegel* (1987) found little relation between budget deficits or public debt and inflation or money growth for 10 industrial countries.

[17] Theoretically, inflation can affect income inequality and hence the variable *GINI* can be endogenous. However, this is not a problem empirically, at least in our sample, because the results of another OV version of Hausman test indicate that the variable is not endogenous. For details of the testing procedures in this case, see for example *Kennedy* (1998, pp. 174–5).

hypothesis of validity of the instruments and correct model specification.[18]

As heteroscedasticity is detected in the OLS regressions, White's (1980) heteroscedasticity-consistent covariance matrixes are used as the weighting matrixes in the GIVE estimation. The results are reported in Tables 6–8. As in the case of the OLS results, the results for non-democracies (Table 7) support our theory, as indicated by the correct signs and statistical significance of the explanatory variables in almost all equations. The test statistics proposed by Davidson and MacKinnon (1993, pp. 232–7) do not reject the joint hypothesis that the instruments are valid and the model is correctly specified. In contrast, for democracies the parameter estimates of the Gini coefficient are all statistically insignificant, not to mention that some have the incorrect negative sign.

Overall, our empirical results lend support to our theoretical hypothesis that inflation is related positively to income distribution but negatively to the level of financial development, notably for the sample of non-democratic countries. The results are in line with the findings of Al-Marhubi (1997, 2000) based on a sample of both democratic and non-democratic countries. On top of these regression results, it is a plain fact that non-democracies have in general higher average inflation rates and more unequal income distributions than democracies, as clearly revealed in Table 1.

V. Conclusion

In the recent, blossoming literature on income inequality as a cause of inflation, the prevailing view is that higher income inequality leads to higher inflation in democratic countries because governments implement inflationary policies to redistribute wealth from the rich to the poor. These theories, however, may not generalize to non-democracies, which on average have persistently higher inflation and more unequal income than democracies.

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[18] Apart from enabling testing the hypothesis, *Kennedy* (1998, p. 153) suggests that it would seem desirable to have two more instruments than explanatory variables for the IV estimator to have better properties in finite samples. Anyhow, in our case the empirical results for using the extra instruments are found to be very similar to those when the number of instruments is the same as the number of explanatory variables.

Based on differential tax incidence, this paper provides an alternative explanation of how unequal income distribution can lead to high inflation. An inflation tax has a lower incidence on the high income group than an income tax. Persistently high inflation polices can be the combined result of high income inequalities, inefficient tax systems and political factors. Financial development is also a determinant of inflation because the government can extract more inflation taxes if the financial system is less developed. As our theory does not rely on the assumption of benevolent politicians or governments, it should have a wider applicability, especially to non-democratic countries.

Empirically, our theory is supported by OLS and GIVE regression results for 56 non-democratic countries over the period 1950–1992, which indicate that inflation is positively related to money supply growth and the Gini coefficient but negatively related to the level of financial development.

In the literature there are quite a lot of studies on the distributional consequences of inflation, but much less work on the reverse channel. From this perspective, this study can be regarded as making a small step forward in explaining how income inequality, together with financial development, affects inflation. Given the high degree of heterogeneity across countries, there is unlikely a general theory applicable to all countries. Our theory can at best be interpreted as being applicable to most non-democracies. Given the complex interdependencies among inflation, income distribution and financial development, the possibility of alternative theoretical interpretations of our empirical findings cannot be entirely ruled out. Further theoretical and empirical work is needed before we have a better understanding of the interplay between income inequality and inflation.

Table 1

List of Countries and Summary Statistics

(a) Democracies

Australia	Austria	Belgium	Bahamas	Barbados	Canada
Colombia	Cameroon	Costa Rica	Denmark	Finland	France
Germany	Greece	Guyana	India	Ireland	Israel
Italy	Jamaica	Japan	Mauritius	Malaysia	Netherlands
Norway	New Zealand	Portugal	Spain	Sri Lanka	Sweden
Switzerland	United Kingdom	United States	Venezuela		

(b) Non-Democracies

Algeria	Argentina	Bangladesh	Bolivia	Brazil	Botswana
Chad	Chile	China	Cyprus	Dominican	El Salvador
Ecuador	Egypt	Fiji	Gabon	Ghana	Guatemala
Hong Kong	Honduras	Indonesia	Iran	Ivory Coast	Jordan
Kenya	Korea	Madagascar	Malawi	Mexico	Morocco
Nepal	Niger	Nigeria	Pakistan	Panama	Peru
Philippines	Rwanda	Senegal	Seychelles	South Africa	Sudan
Sierre Leone	Singapore	Suriname	Taiwan	Tanzania	Thailand
Trinidad & Tobago	Tunisia	Turkey	Uganda	Uruguay	Yugoslavia
Zambia	Zimbabwe				

	All Countries	Non-Democracies	Democracies
Number of Countries	90	56	34
Inflation: Mean	21.6708	29.7105	8.4291
Standard Deviation	47.5389	58.7767	6.8439
Range	2.088–307.494	2.088–307.494	2.898–42.992
Gini Coefficient: Mean	0.4124	0.4351	0.3750
Standard Deviation	0.0869	0.0881	0.0716
Range	0.2598–0.6230	0.2890–0.6230	0.2598–0.5151

Table 2

Effects of Income Distribution and Financial Development

Dependent variable: log(*CPI*)
Number of Observations = 90

	log(*CPI*)	log(*CPI*)	log(*CPI*)	log(*CPI*)
Intercept	1.3325 (2.793)***	1.2137 (2.401)**	2.0139 (3.725)***	1.4951 (3.053)***
GINI	2.4863 (2.196)**	2.5463 (2.237)**	1.6503 (1.432)†	2.4228 (2.148)**
BMY		0.2214 (0.729)		
QMY			−1.5715 (−2.455)**	
QMC				−0.0519 (−1.358)†
$\bar{R}^2$	0.0519	0.036	0.093	0.0503
F-statistic	4.8204**	2.6630*	5.5621***	3.3560**
S.E.E.	0.9284	0.9309	0.903	0.924
Log-likelihood	−120.011	−119.737	−116.997	−119.067

Notes: 1. Figures in parentheses are t-statistics based on OLS standard errors.
2. †, *, ** and *** respectively denote significance at the 20%, 10%, 5% and 1% levels.

Table 3

OLS Results for All Countries

Dependent variable: log(*CPI*)
Number of Observations = 90

Proxy for *FD*	*BMY*	*QMY*	*QMC*
Intercept	–0.8575 (–3.67)*** [–3.69]***	–0.6021 (–2.31)** [–2.31]**	–0.8107 (–3.48)*** [–3.74]***
log(*M*)	1.0994 (20.42)*** [16.54]***	1.0778 (20.21)*** [16.31]***	1.0913 (20.39)*** [16.82]***
FD	–0.0446 (–0.35) [–0.32]	–0.5436 (–1.99)** [–2.17]**	–0.0174 (–1.09) [–1.28]†
GINI	0.4647 (0.96) [0.99]	0.2273 (0.46) [0.48]	0.4703 (0.98) [1.06]**
$\bar{R}^2$	0.8332	0.8404	0.8353
F-statistic	149.24***	157.16***	151.43***
S.E.E.	0.3871	0.3788	0.3848
Log-likelihood	–40.26	–38.3	–39.71
White Test	21.43***	20.90**	16.40**

Notes: 1. Figures in parentheses are t-statistics based on OLS standard errors whereas figures in brackets are those based on White's heteroscedasticity-consistent standard errors.
2. †, *, ** and *** respectively denote significance at the 20%, 10%, 5% and 1% levels.

Table 4

OLS Results for Non-Democracies

Dependent variable: log(*CPI*)
Number of Observations = 56

Proxy for *FD*	*BMY*	*QMY*	*QMC*
Intercept	–1.2014 (–3.38)*** [–3.31]***	–0.9817 (–2.77)*** [–2.81]***	–1.2515 (–3.60)*** [–3.72]***
log(*M*)	1.1492 (16.19)*** [13.39]***	1.1322 (17.15)*** [14.10]***	1.1483 (17.15)*** [13.92]***
FD	–0.0875 (–0.54) [–0.55]	–0.837 (–2.18)** [–2.92]***	–0.0446 (–1.81)* [–2.77]***
GINI	0.887 (1.32)† [1.50]†	0.7409 (1.15) [1.25]†	1.1383 (1.71)* [2.07]**
$\bar{R}^2$	0.8337	0.8468	0.8427
F-statistic	92.98***	102.33***	99.22***
S.E.E.	0.4357	0.4181	0.4237
Log-likelihood	–30.86	–28.56	–29.29
White Test	19.20**	20.27**	10.74**

Notes: 1. Figures in parentheses are t-statistics based on OLS standard errors whereas figures in brackets are those based on White's heteroscedasticity-consistent standard errors.
2. †, *, ** and *** respectively denote significance at the 20%, 10%, 5% and 1% levels.

Table 5

OLS Results for Democracies

Dependent variable: log(*CPI*)
Number of Observations = 34

Proxy for *FD*	*BMY*	*QMY*	*QMC*
Intercept	–0.0735 (–0.16) [–0.17]	–0.076 (–0.18) [–0.19]	–0.3768 (–0.99) [–1.21]
log(*M*)	0.9383 (7.65)*** [7.22]***	0.9484 (7.91)*** [6.87]***	0.9659 (7.83)*** [7.49]***
FD	–0.3503 (–1.25) [–1.55]†	–0.5697 (–1.42)† [–1.97]*	–0.0093 (–0.44) [–0.54]
GINI	–0.0685 (–0.09) [–0.07]	–0.1472 (–0.19) [–0.16]	0.1852 (0.24) [0.20]
$\bar{R}^2$	0.6939	0.6982	0.68
F-statistic	25.94***	26.44***	24.38***
S.E.E.	0.2886	0.2866	0.295
Log-likelihood	–3.86	–3.62	–4.61
White Test	13.18 †	12.74 †	21.50**

Notes: 1. Figures in parentheses are t-statistics based on OLS standard errors whereas figures in brackets are those based on White's heteroscedasticity-consistent standard errors.
2. †, *, ** and *** respectively denote significance at the 20%, 10%, 5% and 1% levels.

Table 6

GIVE Results for All Countries

Dependent variable: log(*CPI*)
Number of Observations = 90

Proxy for *FD*	*BMY*	*QMY*	*QMC*
Intercept	–1.1079 (–5.01)***	–0.924 (–3.94)**	–1.1282 (–5.7)***
log(*M*)	1.215 (12.94)***	1.2267 (19.35)***	1.2259 (19.40)***
FD	–0.0382 (–0.32)	–0.4628 (–1.91)†	–0.0108 (–0.82)
GINI	0.2956 (0.6)	–0.064 (–0.01)	0.312 (0.71)
R^2 between observed and predicted	0.8385	0.8446	0.8401
S.E.E.	0.1511	0.1498	0.152
χ^2 Test for Instruments and Specification	2.87	1.3	2.67

Notes: 1. Figures in parentheses are t-statistics based on "structural residuals."
2. †, *, ** and *** respectively denote significance at the 20%, 10%, 5% and 1% levels.

Table 7

GIVE Results for Non-Democracies

Dependent variable: log(*CPI*)
Number of Observations = 56

Proxy for *FD*	*BMY*	*QMY*	*QMC*
Intercept	–1.3473 (–3.96)***	–1.2214 (–4.67)***	–1.5793 (–6.36)***
log(*M*)	1.1725 (10.59)***	1.2204 (32.51)***	1.2569 (27.40)***
FD	–0.0614 (–0.39)	–0.8746 (–3.61)***	–0.0482 (–3.48)***
GINI	1.0023 (1.77)*	0.7102 (1.32)†	1.1542 (2.20)**
R^2 between observed and predicted	0.8427	0.8551	0.8512
S.E.E.	0.1772	0.168	0.1751
χ^2 Test for Instruments and Specification	4.77	0.19	1.05

Notes: 1. Figures in parentheses are t-statistics based on "structural residuals."
2. †, *, ** and *** respectively denote significance at the 20%, 10%, 5% and 1% levels.

Table 8

GIVE Results for Democracies

Dependent variable: log(*CPI*)
Number of Observations = 34

Proxy for *FD*	*BMY*	*QMY*	*QMC*
Intercept	–0.4942 (–1.10)	–0.4731 (–1.29)	–0.8489 (–2.47)**
log(*M*)	1.1011 (13.42)***	1.127 (14.04)***	1.1214 (10.533)***
FD	–0.2637 (–1.04)	–0.4885 (–1.42)	–0.0056 (–0.26)
GINI	–0.0278 (–0.03)	–0.2352 (–0.27)	0.4793 (0.59)
R^2 between observed and predicted	0.8332	0.7239	0.7081
S.E.E.	0.213	0.0785	0.083
χ^2 Test for Instruments and Specification	2.42	1.41	3.38

Notes: 1. Figures in parentheses are t-statistics based on "structural residuals."
2. †, *, ** and *** respectively denote significance at the 20%, 10%, 5% and 1% levels.

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Summary

Inflation, Financial Development and Income Inequality

Contrary to most traditional studies which focus on the distributional effects of inflation, this paper theoretically examines how income distribution can be a determinant of inflation. Using an overlapping-generations model, this paper shows that inflation in the steady state under financial "undevelopment," defined as both the rich and the poor hold money, is higher than it is under financial "underdevelopment" where only the poor hold money. Furthermore, inflation will be higher if the income of the poor when they are old is lower. Thus, more unequal income distribution can lead to higher steady-state inflation. This is because the government can extract more inflation taxes, which have a lower incidence on the rich people than a progressive income tax does. This may explain why higher inflation rather than tax reform is chosen in the political process, particularly among non-democratic countries. We apply both OLS and GIVE estimation techniques to cross-country data for 90 countries over the period 1950–92. Our hypothesis is supported by the results for a subsample of 56 non-democracies, which indicate that inflation is related positively to money supply growth and the Gini coefficient but negatively to the level of financial development. (JEL D30, E31, E58, H22)

Zusammenfassung

Inflation, Entwicklung des Finanzsektors und Einkommensungleichheiten

Im Gegensatz zu den meisten traditionellen Untersuchungen, die auf die Verteilungswirkungen von Inflation gerichtet sind, enthält dieser Beitrag eine theoretische Untersuchung, warum die Einkommensverteilung eine Determinante von Inflation sein kann. Unter Verwendung eines Modells sich überlappender Generationen zeigt dieses Papier, dass im steady state die Inflation bei einer „Unterentwicklung" des Finanzsektors, die dadurch gekennzeichnet ist, dass die Reichen und die Armen Geld nachfragen, höher ist als im Falle einer „Unterentwicklung", bei der nur die Armen Geld nachfragen. Ferner wird die Inflation dann höher sein, wenn das Einkommen der Armen im Alter niedriger ist. Somit kann eine ungleiche Einkommensverteilung im steady state zu höherer Inflation führen. Der Grund dafür ist, dass die Regierung mehr Inflationssteuern erheben kann, deren Inzidenz für die Reichen geringer ist als die Inzidenz einer progressiven Einkommensteuer. Dies mag erklären, warum insbesondere nicht demokratische Länder im politischen Prozess eher dazu neigen, eine höhere Inflation zuzulassen, als eine Steuerreform durchzuführen. Wir haben im Zeitraum von 1950 bis 1992 sowohl OLS- als auch GIVE-Schätztechniken auf die für 90 Länder erhobenen Daten angewandt. Unsere Hypothese wird von den Ergebnissen einer Stichprobe für 56 nicht demokratische Länder gestützt. Diese zeigt, dass Inflation positiv mit dem Geldmengenwachstum und dem Gini-Koeffizienten, jedoch negativ mit dem Niveau der Entwicklung des Finanzsektors korreliert.

Résumé

Inflation, développement financier et inégalité de revenus

Contrairement à la plupart des études traditionnelles qui se focalisent sur les effets de distribution de l'inflation, cet article examine de façon théorique comment la distribution du revenu peut représenter une déterminante de l'inflation. A l'aide d'un modèle de débordement de générations, il est montré ici que l'inflation à l'état d'équilibre sous le «non-développement» financier – dans lequel autant les riches que les pauvres gardent de l'argent – est plus élevée que sous un «sous-développement» financier où les personnes pauvres seulement détiennent de l'argent. De plus l'inflation sera plus élevée si le revenus des personnes âgées pauvres est plus bas. Donc, une distribution de revenus plus inégale peut entraîner une inflation d'équilibre plus élevée. Ceci s'explique par le fait que le gouvernement peut extraire plus de taxes d'inflation, ce qui a une plus faible incidence sur les riches qu'une taxe progressive sur le revenu. Ceci pourrait expliquer pourquoi dans le processus politique, particulièrement dans les pays non-démocratiques, on préfère une inflation plus élevée à une réforme fiscale. Les techniques d'estimation OLS et GIVE sont utilisées ici pour des données internationales de 90 pays sur la période s'étendant de 1950 à 1992. Les auteurs soutiennent l'hypothèse que les résultats d'un sous-échantillon de 56 pays non démocratiques indiquent que l'inflation a un rapport positif avec la croissance de l'offre monétaire et au coefficient de Gini mais qu'elle est corrélée négativement au niveau du développement financier.