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THE IMPACT OF MACROECONOMIC POLICIES ON THE DISTRIBUTION OF INCOME*

by

Aleš BULÍŘ
International Monetary Fund

1 Introduction

The distribution of income in a country is traditionally assumed to shift from relative equality to inequality and back to greater equality as the country develops. Intuitively, inequality will rise as some people move away from prevailing traditional activities, which yield a low marginal product, into more productive ventures. At some point, the marginal product of all economic activities converges and income differences narrow. Based on this reasoning, the so-called Kuznets hypothesis (Kuznets 1955) postulates a nonlinear relationship between a measure of income distribution and the level of economic development. Income distribution is also a concern of policy makers: government policies can, by design, change income distribution to some degree through taxes, transfers, public sector employment, and other policy instruments.

Empirical multicountry studies of income distribution have documented significant residuals in Kuznets-type models even after corrections have been made for explicit redistribution policies, employment by the state, regional development, the age profile of the

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population, and other factors.[1] The presence of country-specific contributions to income inequality, or 'fixed effects', can account for as much as 50 per cent of the variation in the income distribution measure. Relatively little attention has been paid, however, to purely macroeconomic effects, namely inflation, fiscal and external balances, and so on.

Why have macroeconomic variables been omitted in most cross-country studies of income distribution? As noted by other researchers, no comprehensive alternative to the Kuznets hypothesis has been suggested. So far, most authors either estimate the simple Kuznets hypothesis or resort to ad hoc augmentation of the original model. The latter approach is exemplified by Milanovic (1994, p. 3), who argues that 'income distribution is determined (1) by factors that are in the short run, from the point of view of policy makers or society as a whole, "given", and (2) by social (or public policy) choice'. While the former set of factors comprises income per capita and the regional heterogeneity of a country,[2] the latter includes the percentage of workers employed in the state sector and government transfers as a percentage of GDP.

Following Milanovic, and using his original data, this paper further augments the Kuznets hypothesis of income inequality by incorporating inflation, financial deepening, and several variables measuring the fiscal stance. Using a cross-country database containing 75 countries, we find that past inflation affects current levels of income inequality as measured by Gini coefficients, and that these results are robust even after controlling for fiscal redistribution. The positive impact of price stability on income distribution is nonlinear: the reduction in inflation from hyperinflation levels significantly lowers income inequality, while further reduction toward

1 Contributions to the empirical literature are surveyed in Bulíř and Gulde (1995) and Bulíř (1998). Practically no single-country study supports the simplest version of the Kuznets hypothesis. See Ram (1991) for a detailed analysis for the US and Deininger and Squire (1996b) for analyses of several other countries.

2 The list of 'given' factors potentially determining income distribution is, of course, longer (see Deininger and Squire (1996a) or Vanhoudt (1997)). Over time, education (investment in human capital) can lower income inequality. However, this measure is usually found correlated with income per capita. A skewed age profile of a country's population affects income distribution, as younger cohorts tend to have lower incomes. Similarly, inequality in a society comprising many one-person households will likely be high.

a very low level of inflation seems to bring about negligible gains in the Gini coefficient.

As regard to the fiscal variables, the expenditure-to-GDP ratio by itself does not seem to have a measurable impact on income distribution and it is rather poorly correlated with the social transfers. In contrast, an expansionary, deficit-financed fiscal stance does have a small negative impact on income inequality, that is, fiscal deficits seem to increase Gini coefficients. However, these results are only significant at about 10–20 per cent significance level and their economic interpretation is complicated. On the one hand, the overall deficits are practically orthogonal to social transfers, and, on the other hand, the deficit-to-GDP ratio seem to be only a proxy for the financial variables.

2 Cross-country empirical evidence

2.1 The data and the original Milanovic results

The original sample, which was compiled by Milanovic (1994), consists of 80 countries ranked by their GDP per capita in ascending order (the poorest country is Tanzania, the richest is the United States). Gini observations (one per country) range over a period of 22 years (1970–91), a result of the scarcity of consistent Gini observations.[3] Moreover, these observations had to be paired with almost equally scarce state employment and social transfers data. We narrow the Milanovic sample to 75 countries for which we could collect the appropriate price, monetary, and fiscal data from the *International Financial Statistics* (IFS). A correlation matrix of variables is presented in Table 1.

Milanovic tests the hypothesis according to which government policies can significantly change income distribution: 'inequality in richer societies does not decrease because of economic factors, but because societies *choose* less inequality' (p. 33). His preferred variables, the so-called social choice factors, include the percentage of all employed who work in the state sector (inclusive of government administration) and the percentage share of cash and in-kind social transfers in the country's GDP.

3 In our cross-country sample income distribution exhibits no secular trends. Experiments with various time dummies provided no meaningful results.

Table 1 – Estimated correlation matrix of variables

	Gini[1]	GDP	State employment	Transfers	Inflation				M2-to-GDP ratio	Deficit-to-GDP ratio
					Hyper-	High	Low	Very low		
GDP[2]	−0.63									
State employment[3]	−0.57	0.28								
Transfers[4]	−0.73	0.74	0.38							
Hyperinflation[5]	0.18	−0.05	0.12	−0.09						
High inflation[6]	−0.05	0.05	0.27	−0.02	−0.07					
Low inflation[7]	−0.02	−0.11	−0.22	−0.09	−0.31	−0.42				
Very low inflation[8]	−0.04	0.13	0.00	0.17	−0.13	−0.17	−0.70			
M2–GDP ratio[9]	−0.49	0.57	0.26	0.50	−0.09	−0.11	−0.20	0.36		
Deficit–GDP ratio[10]	−0.33	0.24	0.29	0.14	−0.11	−0.03	−0.06	0.14	0.34	
Expenditure–GDP ratio[11]	−0.28	0.15	0.35	0.39	−0.15	−0.15	−0.04	0.02	−0.01	−0.45

[1]Gini coefficient of disposable income (for Organization for Economic Cooperation and Development members and socialist economies) and Gini coefficient of gross income for African, Asian, and Latin American countries. The year of the Gini coefficient observation for each country is the same as that of the other variables.

[2]The country's GDP per capita in thousands of 1988 US dollars.

[3]The percentage share of workers in the state sector (including government administration) in total employment.

[4]The percentage share of cash and in-kind social transfers in the country's GDP.

[5]Dummy variable: 1 if five-year average annual inflation more than 300 per cent; zero otherwise.

[6]Dummy variable: 1 if five-year average annual inflation more than 40 per cent but less than 300 per cent; zero otherwise.

[7]Dummy variable: 1 if five-year average annual inflation more than 5 per cent but less than 40 per cent; zero otherwise.

[8]Dummy variable: 1 if five-year average annual inflation less than 5 per cent; zero otherwise.

[9]Three-year average of M2–GDP ratio (financial deepening measure).

[10]Three-year average of the overall fiscal balance.

[11]Three-year average of the expenditure-to-GDP ratio.

While the Kuznets hypothesis holds in Milanovic's results, the effects of social choice variables is substantial and rises with the level of income per capita. For example, state employment and transfers lower the Gini coefficient three times more on average in countries with GDP per capita between US$6,000 and US$10,000 than in countries with GDP per capita below US$1,500 (Table 5 in Milanovic (1994)). On average, social choice variables reduce the Gini coefficient from 54 Gini points to 41 Gini points, that is, by one-fourth.

2.2 New hypotheses

While Milanovic is mainly concerned with targeted redistribution through fiscal and quasi-fiscal channels, either through explicit transfers or through broadly defined state sector employment, we add the measures of the macroeconomic stance: inflation,[4] financial deepening (defining the latter as the ratio of M2 to GDP), and the fiscal stance (the overall fiscal balance-to-GDP and expenditure-to-GDP ratios) to the list of explanatory variables. We expect the impact of inflation on income distribution to be stronger at higher inflation rates. In principle, the impact of inflation should be independent of the level of development and of the level of fiscal redistribution. In addition, we expect that, in countries with deeper financial markets, individuals benefit from better access to capital, an effect reinforced by low inflation.[5]

We expect the fiscal variables to be neutral *vis-à-vis* income inequality, because we lack a theory that would *ex ante* attribute the effects of the aggregate fiscal impulse to individual income groups. Similarly, without knowing the composition of fiscal expenditures, little can be said about its impact on households' incomes. Two hypotheses can be tested in this setting. First, one can assume that the overall balance measures the countercyclical stance of economic policies. In that case, fiscal deficit ought to be income equalizing. On the one hand, this hypothesis would be supported by the negative correlation between the overall fiscal balance and the expenditure-to-GDP ratio (-0.45). On the other hand, the negative correlation between the overall balance and the Gini coefficients (-0.33) suggests that higher deficits (negative balance) would be associated with more unequal income distribution. Second, one can simply assume that the

4 See Bulíř (2000) for a general equilibrium model with inflation.

5 See De Gregorio (1993) for the effect of credit markets on human capital accumulation, growth, and income distribution.

impact of redistributive policies is already captured in the social choice variable and that the overall balance is merely a proxy for inflation and financial deepening. In other words, we would be postulating fiscal dominance of monetary outcomes in the long run.

There is little reason to assume that changes in macroeconomic variables can cause a major swing in a country's income distribution rapidly. If this were so, we would observe much larger annual swings in income distribution because inflation and fiscal outturns are prone to cyclical fluctuations.[6] More likely, the full effects thereof take time to feed through the system and only at cumulative changes preceding the period of observation of the income inequality indicator should have a measurable effect. In our regressions we use a five-year average for inflation based on goodness-of-fit criteria; the three-year average used for financial deepening and the fiscal variables is dictated by the availability of time series for some countries.[7]

The regression equation, with the Gini coefficient as the dependent variable, includes a constant, a quadratic expression for GDP per capita to capture the nonlinearity of the Kuznets hypothesis (Y and Y^2), state employment as percentage of total employment, transfers as a percentage of GDP, inflation, a measure of financial deepening (M2 as percentage of GDP) and two fiscal variables (the overall balance- and the expenditure-to-GDP ratios). Income inequality is assumed to initially rise with development but to decline in higher stages of development; therefore, the expected signs of Y and Y^2 are positive and negative, respectively. State employment and fiscal transfers are expected to lower inequality and have negative expected signs.[8] Inflation should unambiguously increase inequality and the variable transformation and sign determination are discussed below. Financial deepening variables are expected to lower income inequality and the expected sign is negative. Finally, the sign of the fiscal variables is not predetermined.

The transformation of the inflation variables differs from that of other variables in the equation. The literature suggests that the

6 Nevertheless, several countries have pronounced cyclical or countercyclical patterns of inequality. See Cardoso (1993) and Livada (1992) for the former, and Brandolini and Sestito (1994) and Blinder and Esaki (1978) for the latter.

7 Milanovic avoided this problem by working with his social choice variables that are very much stable over time.

8 See Milanovic (1994) for discussion of a possible confusion in determining the signs.

macroeconomic effects of inflation are nonlinear[9] and, in general, adding average inflation rates to the Kuznets model yields statistically insignificant results even when various nonlinear transformations of inflation are used. To correct for nonlinearity, we distinguish several levels of inflation: hyperinflation (more than 300 per cent annually for four countries, with a mean of 1,034 per cent), high inflation (between 41 per cent and 300 per cent annually for seven countries, with a mean of 56 per cent), low inflation (between 5 per cent and 50 per cent annually for 47 countries, with a mean 14 per cent), and very low inflation (less than 5 per cent annually for 17 countries, with a mean of 3 per cent).

We select intercept dummies as the best transformation of the inflation variable. In principle, one can regress Gini coefficients either on intercept or slope dummies. Although slope dummies have lower estimates of residual sums of squares, because of higher multicollinearity, usually one or more parameter estimates are either statistically insignificant and/or the overall improvement in fit is marginal. Including both intercept and slope dummies leads to insignificant estimates. We also tested for a presence of feedback relationships between the fiscal stance and inflation, however, our estimates again yielded statistically insignificant results.

2.3 Overview of results

The empirical results, summarized in Table 2, are divided into two parts: the reestimated Milanovic parameters are reported in the shaded area and the estimated parameters of the newly added variables are reported in the nonshaded area. The inclusion of the new explanatory variables only marginally affects the Milanovic parameters and most of the regression's variation *vis-à-vis* the new variables is captured by changes in the intercept. As in the Milanovic regressions, the inverted U-shaped income distribution profile seems to hold.

The results lend additional support to the Kuznets hypothesis because previously unexplained regional differences can be attributed to past inflation and fiscal developments. For example, the highest inequality in middle-income Latin American countries (with an average Gini coefficient of 50.6 compared with the sample average of 41.7) can be viewed as a consequence of the comparatively high

9 See, for example, Bruno (1995), Barro (1996), and Sarel (1996).

Table 2 – The Kuznets hypothesis, inflation and financial deepening (sample of 75 countries, ordinary least squares and instrumental variable regressions, heteroscedastic-consistent standard errors)

Eq	Constant	Y	Y^2	State employment	Transfers	Hyper-inflation	High inflation	Low inflation	Very low inflation	M2-to-GDP ratio	Deficit-GDP ratio	Adj. R^2	Standard errors of regression	RSS	LM test
1a	−97.080	39.800	−2.608	−0.223	−0.416							0.71	6.449	n.a.	—
	(0.21)	(0.04)	(0.00)	(0.00)	(0.00)										
1	−111.584	43.326	−2.814	−0.230	−0.421							0.674	6.450	2912	—
	(1.42)	(2.30)	(2.53)	(8.21)	(3.96)										
2	−96.304	39.455	−2.579	−0.242	−0.397	7.815						0.694	6.247	2692	2
	(1.23)	(2.10)	(2.32)	(11.09)	(3.78)	(2.66)									
3	−98.403	39.897	−2.578	−0.238	−0.385	7.546				−4.163		0.694	6.241	2648	3
	(1.23)	(2.09)	(2.28)	(10.85)	(3.62)	(2.41)				(1.40)					
4	−84.069	38.552	−2.531	−0.250	−0.401		−6.605	−8.783	−5.953			0.697	6.190	2567	4
	(1.03)	(1.97)	(2.18)	(10.66)	(3.74)		(2.05)	(2.84)	(1.83)						
5	−92.500	40.374	−2.597	−0.239	−0.391		−6.946	−8.383	−4.614	−6.590		0.704	6.142	2489	3
	(1.10)	(2.01)	(2.18)	(10.44)	(3.44)		(1.98)	(2.47)	(1.30)	(1.89)					
6	−101.047	42.856	−2.777	−0.249	−0.314		−6.934	−8.555	−4.857	−6.531		0.702	6.158	2503	3
	(1.15)	(2.02)	(2.19)	(9.80)	(1.80)		(1.94)	(2.45)	(1.33)	(1.47)					
7	−106.191	41.219	−2.658	−0.209	−0.457						−0.239	0.681	6.377	2807	10
	(1.40)	(2.28)	(2.48)	(7.03)	(3.98)						(1.63)				
8	−91.209	39.378	−2.522	−0.223	−0.425		−6.705	−7.823	−3.974	−5.602	−0.171	0.705	6.127	2439	2
	(1.10)	(2.00)	(2.16)	(8.54)	(3.45)		(2.03)	(2.43)	(1.15)	(1.57)	(1.17)				

Notes: (1a) is the original Milanovic equation with 80 observations; values in parentheses are the complements of the level of confidence with which the null hypothesis is rejected. For example, 0.21 is the first column indicates that the hypothesis of the first parameter being equal to zero can be rejected at the 21 per cent confidence level. Equation 6 was estimated by instrumental variable technique. Instruments for transfers and the M2-to-GDP ratio were their respective natural logarithms.
The variables for the Augmented Kuznets hypothesis are presented in the shaded area. Absolute values of *t*-statistics in brackets, except equation (1a). The 1 per cent and 5 per cent critical values for the *t*-statistics are 2.38 and 1.67, respectively; Adj. R^2 is coefficient of determination adjusted for the number of variables, and RSS is a residual sum of squares. The Lagrange multiplier (LM) test is the probability of rejecting the null hypothesis that the parameters of the new explanatory variables (in the nonshaded area) are jointly equal to zero. For example, in equation 2, a value of 2 means that the null hypothesis can be rejected at approximately the 2 per cent confidence level.

inflation rates, low monetization, and high overall fiscal deficits. Excluding countries in hyperinflation, the five-year Latin American inflation rate is 27 per cent and the regional ratio of M2 to GDP is only 0.31 (compared with the sample averages of 14 per cent and 0.45, respectively). In the same vein, the three-year average overall fiscal deficit is −5.8 per cent of GDP as compared with the sample average of −4.9 per cent of GDP. By way of comparison, the low inequality in middle-income Asian countries (with an average Gini coefficient of 42.1) can be rationalized by the low inflation rates, high monetization of the economy, and relatively low overall deficit-to-GDP ratios (10, 0.50, and −2.6 per cent, respectively).

Taking into account the persistent heteroscedasticity, we reestimated the standard errors using the White heteroscedastic-consistent standard errors procedure. No spatial autocorrelation was observed. The overall fit is quite robust in the sense that dropping of adding variables or shortening the sample affects parameter estimates only marginally. However, as can be seen in Table 2, all of the newly included variables are statistically different from zero at the 5 per cent significance level in only some equations.[10] This is an unfortunate but inescapable effect of multicollinearity of variables: the standard errors of parameters rise when mutually correlated explanatory variables are added to the regression (for example, the M2-to-GDP ratio and very low inflation, state employment and low inflation, etc.).

We also address the possibility that some variables may be determined endogenously. For example, social transfers and the M2-to-GDP ratio tend to be higher in more developed countries: the correlation coefficients are 0.73 and 0.57, respectively. Hence, in Table 2 we display along with OLS regressions also instrumental variable (IV) regressions, where social transfers and the M2-to-GDP ratio are instrumented by their natural logarithms (equation 6). Clearly, the parameters are not affected and we reject the hypothesis of simultaneous equation bias.

10 This is especially true when using the two-tail *t*-test (the 1 per cent and 5 per cent critical values are 2.63 and 1.99, respectively). However, the one-tail test is more adequate here, since we know the expected sign of each parameter. The 1 per cent and 5 per cent critical values are 2.38 and 1.67, respectively.

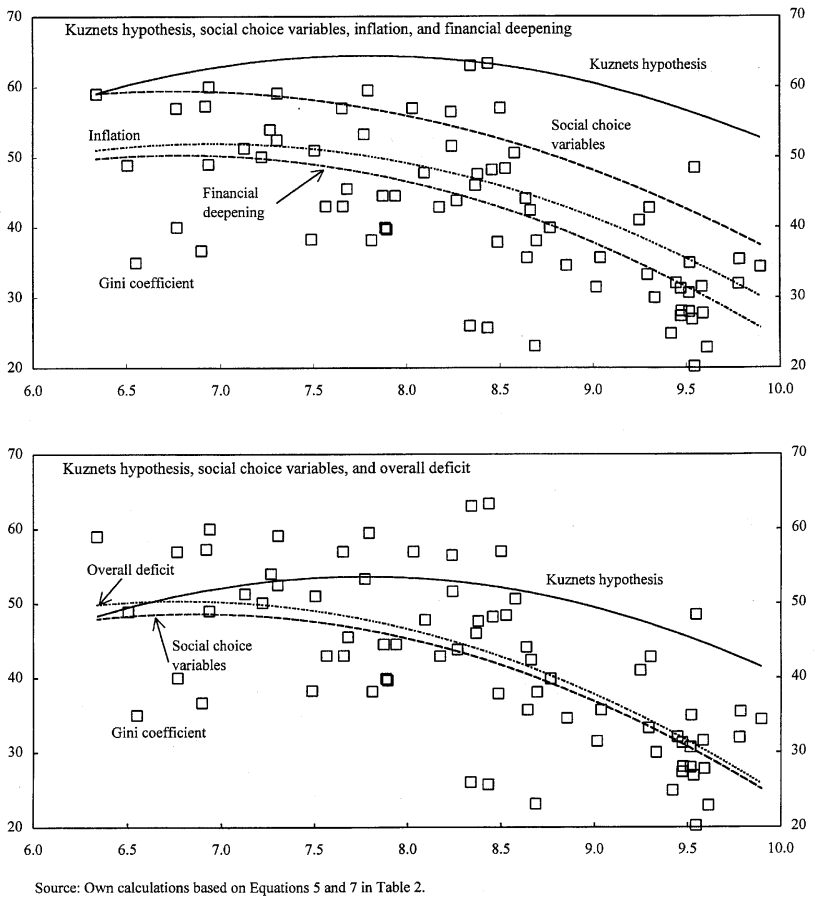
2.4 Effects of inflation, financial deepening, and fiscal variables on income inequality

Inflation increases income inequality, and the impact is strongest in hyperinflation countries. The largest improvement in income distribution, compared with the hyperinflationary subsample, is in the group of low-inflation countries (5–40 per cent annually). Although countries with very low inflation (below 5 per cent annually) seem to benefit less directly from the price stability than the low-inflation countries, the former have deeper financial markets (higher ratios of M2 to GDP) and better access to capital improves income inequality (see also Figure 1, upper panel). Unlike price stability, which is independent of the level of development, financial deepening is correlated with GDP per capita.

Total expenditures do not seem to have an impact on income distribution. Their parameter was insignificant both in regressions with and without the social transfers-to-GDP ratio. This finding is not really surprising – fiscal expenditures that are not targeted, as is the case with social transfers-to-GDP, should not have an impact on the Gini coefficient.

Higher overall fiscal deficits appear to be associated with more unequal income distribution, and their impact is largely independent of the level of development. Although the coefficient of the overall balance-to-GDP ratio is statistically significant at only 10–20 per cent, recursive and rolling regressions confirm sufficient stability of the estimated parameter. Numerically, an increase in the deficit-to-GDP ratio by one percentage point or by one standard deviation worsens the income inequality by about 0.2 or by one Gini point, respectively. This seems to be a rather negligible impact compared with the monetary variables (Figure 1, lower panel). In addition, the estimated parameter becomes less significant as more variables are added to the equation, both statistically and in terms of its absolute value. It appears to confirm that larger fiscal deficits are associated with looser monetary policies and higher inflation. Moreover, the rolling coefficients of the deficit variable are the highest and most stable for the group of the middle-income countries that include many Latin American, high-inflation countries. In other words, the deficit-to-GDP ratio is probably measuring the same effect as the inflation variables – in the long run monetary policy cannot be independent of the fiscal stance.

The numeric results for inflation can be summarized as follows. First, hyperinflation dramatically worsens income distribution: the four hyperinflationary countries face an increase of about 8 points in



Source: Own calculations based on Equations 5 and 7 in Table 2.

Figure 1 – Gini coefficients and the Augmented Kuznets hypothesis

the Gini coefficient over the average of 50 Gini points for the rest of the sample (Table 2, equation 2). Second, deepening in financial markets (increasing the M2-to-GDP ratio by its one standard deviation) lowers the Gini coefficient by roughly 1 point (equation 3). Equations 4 and 5 estimate the Kuznets hypothesis with all monetary policy variables and reveal the expected nonlinear effects of inflation on income distribution. While the improvements in high and low inflation compared with hyperinflation remain stable at 7 and 8–9 Gini points, respectively, very low inflation implies only a modest gain in income distribution, roughly equal to the gain of high inflation (6 Gini points, equation 4). The gain for countries with very low inflation becomes even smaller (5 Gini points) when financial deepening is taken into account

(equation 5).[11] However, the decline in the parameter of very low inflation is partially offset by the parameter of the M2-to-GDP ratio: the average financial depth increases from 0.42 in countries with low inflation to 0.61 in countries with very low inflation.[12] So, the additional gain for countries with very low inflation compared with low-inflation and high-inflation countries is 1.2 and 1.6 Gini points, respectively.

On inspection, however, the estimated dummies for the various levels of inflation have similar values, especially those for high and very low inflation. Inflation dummies and financial deepening are jointly significant at the 5 per cent significance level (see the Lagrange multiplier tests in Table 2). Therefore, are the differences in the estimated inflation coefficients statistically significant? To answer this question, we calculate the Wald tests for all pairs of inflation parameters. The null hypothesis of identical values of parameters can be rejected at the 5 per cent significance level for all combinations except high inflation/very low inflation.[13] Hence, the effects of high inflation and very low inflation cannot be distinguished at the usual 5 per cent significance level.

2.5 How important are the newly added variables for income inequality?

The next question is twofold. First, what is the importance of inflation, financial deepening, and the fiscal stance compared with the Milanovic social choice factors? Second, does the impact of inflation, financial deepening, and the fiscal stance depend on the level of

11 Some authors have speculated that the fiscal restraints needed to subdue inflation have a detrimental effect on fiscal transfers, especially in poorer countries (Adelman and Fuwa 1992). This result is not, however, confirmed by the data: countries with lower inflation have higher transfers, not vice versa.

12 The average financial depth is 0.36 in high-inflation and 0.37 in hyperinflation countries. The latter number is, however, biased upward by Yugoslavia's high M2-to-GDP ratio (0.71). The average of the three remaining countries (Argentina, Bolivia, and Brazil) is only 0.25.

13 This is, of course, an expected result from inflation nonlinearity. Countries' income distribution improves rapidly after the economy is stabilized from hyperinflation or high-inflation levels. At some "very low" levels of inflation income distribution worsens again, perhaps as a result of tight monetary policies or perhaps as a result of missing indexation schemes. These schemes are known to make income distribution more equal, see Brandolini and Sestito (1994).

development? Using a simple static analysis, we aim to show that the effect of inflation is as strong as that of the social choice variables and that the benefits of low inflation and fiscal stability are evenly spread across income levels.

Inflation and financial deepening clearly exert a strong impact on income distribution, but how exactly is the impact distributed across the levels of development? Using the estimated coefficients from equations 5 and 7 of Table 2, we separate the effects of income variables, Milanovic social choice variables, and our monetary and fiscal policy variables on income distribution. Those effects are smoothed and plotted against GDP per capita (Figure 1).

In the upper panel we plot the results from equation 5 and find the following. First, taking into account an intercept and the Kuznets factors only[14] (solid line) underestimates the actual income distribution, as shown by the empty squares, but the inverse U-shaped curve holds. Second, the inclusion of the social choice variables shifts the Kuznets curve downward and pivots it at the intercept (long-dashed line).[15] Finally, inflation and financial deepening shift the Kuznets line further downward (short-dashed line and chained line, respectively). The narrowing effects on income distribution of lower inflation and financial deepening seem independent of the level of development: while the effect of inflation is somewhat stronger in lower-income countries, the effect of financial deepening is slightly more pronounced in higher-income countries.

In the lower panel we plot the results from equation 7 and find the following. First, as before, the original Kuznets hypothesis (solid line) underestimates the actual income distribution, but the inverse U-shaped curve holds. Second, the social choice variables shift the Kuznets curve downward and pivot it at the intercept (long-dashed line). Finally, the fiscal stance shifts the Kuznets line upward (short-dashed line). The income distribution appears to be affected slightly more at low-income countries than in high-income countries.

The average effect of the additional variables (and unexplained errors) is about 20 Gini points (Table 3).[16] The average effect of inflation and financial deepening is stable, at about 10 Gini points, and

14 Social choice variables, inflation, and the M2-to-GDP ratio are set equal to zero.

15 Inflation and financial deepening (M2-to-GDP ratio) are set equal to zero.

16 Because of overall deficit's marginal significance, we exclude it from the subsequent analysis.

Table 3 – Impact of selected variables on income distribution at different income levels (simple unweighted averages, in Gini points)

Per capita GDP (in US dollars)	Actual Gini coefficients	Kuznets hypothesis[1]	Total effect of additional variables[2]	Partial effects							
				Social choice[3]	Inflation and financial deepening						Unexplained part of Gini coefficients
					Total[4]	Inflation[5]				M2-to-GDP ratio	
						Total	Very low	Low	High		
Less than 1,500	50.7	62.3	−11.6	−3.7	−8.2	−6.7	−1.3	−5.4	0.0	−1.5	0.3
1,501–3,000	46.0	64.4	−18.4	−6.0	−10.9	−8.1	−0.4	−7.7	0.0	−2.8	−1.5
3,001–4,500	48.2	63.8	−15.6	−7.8	−8.7	−6.4	−0.9	−3.4	−2.1	−2.3	1.0
4,501–6,000	42.9	62.8	−19.9	−12.1	−9.6	−6.3	−0.4	−4.2	−1.7	−3.3	1.8
6,001–10,000	31.4	61.2	−29.8	−16.5	−11.4	−7.4	−1.2	−6.3	0.0	−4.0	−1.9
Over 10,000	31.8	56.6	−24.8	−13.4	−10.9	−6.9	−1.7	−5.0	−0.3	−4.0	−0.4
Average	41.7	61.2	−19.5	−9.5	−9.9	−6.9	−1.0	−5.3	−0.6	−3.0	0.0

Source: calculations based on equation 8 in Table 3.

[1]Income variables and an intercept. All other parameters set equal to zero.

[2]The difference between the actual Gini coefficients and predictions from the simple Kuznets hypothesis.

[3]State employment as percentage of total employment and transfers as percentage of GDP.

[4]Inflation and financial deepening. For definitions of variables see the text.

[5]Relative to hyperinflationatory countries.

it increases only slightly with income per capita. In addition, the combined effect can be further divided into the effect of inflation (7 Gini points) and the effect of financial deepening (3 Gini points). In contrast to Milanovic, the gap between the Kuznets hypothesis and the actual Gini coefficients owing to social choice variables widens earlier, at about US$4,501–6,000 per capita. As before, the impact of social choice variables is strongest in the high-income countries. On average, however, their effect is smaller in absolute terms and also marginally smaller than the aggregated effect of the newly added variables.

Further insights can be obtained from analysing the impacts at different levels of development. Low-income countries (US$1,501–3,000 per capita) benefit both from low inflation and a relatively high M2-to-GDP ratio, which improve their theoretical income distribution by 11 Gini points, or by almost double the amount generated by the social choice variables. Economies in the two upper brackets of income per capita (US$6,001–10,000 and more than US$10,000 per capita, respectively) gain because of households' better access to financial markets. The poorest countries (with incomes of less than US$1,500 per capita) appear to gain little from the combination of very low inflation and thin financial markets. However, the combined effects of inflation and financial deepening are more than twice as strong as those of social choice variables at this level of development! Middle-income countries (US$3,001–6,000 per capita) also gain little; this can be attributed mostly to their larger proportion of high-inflation countries. We can also disentangle a part of the nonlinear effect of inflation, namely, the failure of very low inflation to improve the Gini coefficient more than low inflation. Part of the positive effect of price stability is captured by the coefficient of the M2-to-GDP ratio, as countries with very low inflation benefit from deeper financial markets.[17]

While lowering income inequality through the social choice variables is likely to be costly and may be open only to middle- or higher-income countries, substantial income equality gains can be obtained through low inflation at any stage of development. In fact, only with income per capita of more than US$4,500 can a country

17 One should not also forget that low-inflation countries – and their per capita incomes – tend to grow faster than other countries (Bruno 1995, Sarel 1996). Despite a marginally wider income distribution, the total pie to be divided is bigger.

expect the effects of social choice variables to outweigh the combined effects of low inflation and financial deepening.

3 Conclusions and policy implications

This paper offers a contribution to the income inequality literature within the traditional Kuznets model. Price stability, financial deepening, and fiscal stability – in addition to the level of development and fiscal redistribution – are found to improve income equality. While the impact of price and fiscal stability is essentially uniform for all levels of GDP per capita, the impact of the social choice variables increases with the level of development. In line with the cost-of-inflation literature, the negative impact of growing prices is most pronounced during hyperinflation. Effects of price stabilization on income distribution are nonlinear – countries with inflation below 5 per cent a year seem to benefit much less than countries with inflation between 6 per cent to 40 per cent. However, the low-inflation countries tend to have deeper financial markets, in which individuals benefit indirectly from better access to capital. The impact of fiscal variables is small, primarily because the long-term impact thereof is captured in the monetary policy variables.

What are the policy implications? In the author's view, price and fiscal stabilization offers a free lunch: there are no medium- or long-term inequality costs of disinflation, only benefits. The improvement in income distribution from a hyperinflationary to a high-inflation steady state is substantial, and the benefits of moving from high to low inflation are tangible. It might even pay off to move toward price stability because the smaller direct effects can be compensated by the effects of financial deepening.

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