Inequality, Economic Growth and Economic Performance

A Background Note for the World Development Report 2000

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1. Introduction

What is the effect of inequality on economic growth and economic performance? Do more unequal societies enjoy better conditions for economic growth, or can inequality have a dampening effect on efficiency? What are the channels through which inequality has these effects? Does inequality create unfavorable conditions for the enactment of economic reforms that can lead to greater efficiency?

This note will attempt to answer the above posed questions. The first question is whether there exists a sufficiently strong and robust correlation between inequality and economic growth. This issue is discussed in Section 2. The second question regards the explanation behind this relationship – that is, the links of causal mechanisms connecting inequality with growth. Section 3 discusses several possible explanations and examines the empirical evidence for them. Section 4 turns to the evidence for a link between inequality and successful economic reforms.

2. Inequality and Growth: Empirical Evidence

2.1 Cross Country Studies

The first discussions about the role of inequality in determining economic growth can be traced back to Kaldor (1960) and Kalecki (1971). In what became a hallmark of the post-keynesian literature the above authors argued that inequality should have a favorable effect on economic growth. They based their arguments on models with fixed savings rates in which workers were assumed to have a zero savings rate. In them a transfer of resources from workers to capitalists would raise the economy's aggregate savings rate and therefore the growth rate. Extensions of this research developed the cases in which workers had non-negative savings rates and imperfect competition.[1] The main concern of these authors was with the effect on growth of income inequality as measured by factor shares on economic growth.

Whether one uses factor shares or normatively more desirable indicators of income inequality such as the Gini index, there is very little evidence that inequality is good for growth. Pineda and Rodríguez (1999) discuss the evidence regarding factor shares and conclude that countries with higher capital shares tend to display lower growth rates, mostly because they invest less in human capital. Alesina and Rodrik

[1] See Pasinetti (1974) , Marglin (1984) and Baranzini (1990).

(1994) (henceforth AR) find that the Gini coefficient has a consistently negative effect on standard neoclassical growth regressions. The effect is particularly strong when the Gini coefficient in the distribution of land – a better proxy of inequality in the distribution of wealth - is used. Persson and Tabellini (1994) (henceforth PT) measure inequality by the share of the median voter in GDP – the lower this is, the less equal society is. Although this measure is highly correlated with the Gini coefficient, it is closer to the measure of inequality (the ratio of mean to median income) that theory indicates should be linked with economic growth.[2] They obtain a similar finding – that a lower share of the median in GNP is associated with lower growth. These results have been confirmed with the use of similar cross-sections of developing and developed countries by other authors.[3] The magnitude is not only economically but also statistically significant: an increase of inequality by one standard deviation is associated with a rise of growth of more than half a percentage point.[4]

Recently, authors using new data sets and or new methodologies have questioned the existence of the link between inequality and growth. These authors can be divided into (i) those that use more complex panel data techniques and (ii) those that use other data sets. We discuss their arguments in turn.

2.2 Panel Data Studies

Three recent studies have questioned the existence of a negative relationship between inequality and growth. They are the studies by Robert Barro (1999), Kristin Forbes (1997) and Hongyi Li and Heng-fu Zou (1998). Forbes and Li and Zou show that, when the AR/PT regressions are rerun using panel data and introducing country-specific fixed effects the relationship becomes positive – more inequality leads to higher growth. Barro uses the Seemingly Unrelated Regressions technique of Barro and Sala-I-Martin (1994) and finds no evidence of a linear relationship between inequality and growth; he does, however, find a non-linear relationship: inequality appears to be good for growth at high levels of income but bad for growth at low levels of income.

By using panel data techniques, these authors put much heavier emphasis on short-run variations in the data. The Li and Zou and the Forbes studies use five-year averages as observation, whereas the

[2] More on this in Section 3.
[3] In his survey of the literature, Benabou mentions thirteen studies, of which ten find a consistently negative and statistically significant relationship, two find generally negative although not always significant effects, and one finds no effect.
[4] Perotti (1994), p. 160.

Barro study uses ten-year averages. Therefore the studies could be reinterpreted as saying that there is evidence for a short-run positive effect of inequality on growth, which is reversed in the long run. Most of the theories that predict that inequality is bad for growth – discussed below - act through inequality's effect on the political system. One would expect this effect to operate through long periods of time and therefore not to show up in analysis of five or even ten year intervals. Further, none of these studies discuss the effect of variations in the surveys used to calculate the inequality measures over time. But the methods and coverage of the surveys on which the Gini indices are based tend to vary substantially over time, and these variations are particularly important in developing economies. Therefore it is possible that most of the cross-time variation that is being picked up by the panel data studies is not genuine variation in inequality – indeed one problem with using time variation to control for endogeneity effects is that Gini indices tend to be very stable over time, except for changes in methods and coverage of surveys.[5] Additionally, the fixed-effect studies effectively throw out of the regression all the cross-sectional information, including all the information coming from countries for which there is only one observation. The samples used therefore end up being representative of higher income countries.

2.3 Other Data Sets

Partridge (1997) has used a panel of U.S. states to test whether inequality is associated with growth. His findings are that equality as measured by the share of median income in GDP is positively related with growth (confirming the AR/PT findings) but that the Gini coefficient is also positively related with growth. As the Gini is an index of *in*equality, this latter finding contradicts the PT/AR findings. Partridge's findings imply that, if the ratio of median income to GDP is held constant, greater inequality is associated with greater growth.

Several observations must be made with respect to Partridge's findings. First, Partridge uses ten-year averages but does not present pure cross-sectional regressions. The observations made above with respect to long-run/short-run effects apply here. Second, Partridge is not open to the charge of data quality problems that the panel studies are because he uses high quality comparable data from the U.S. Bureau of the Census. Third, more unequal societies generally have both a higher Gini index and a lower share of median income in GNP. For example, if the distribution of income is a lognormal distribution with density

[5] Rodrik (personal communication).

$\ln(y,\sigma)$ an increase in σ will lead to an increase in both the Gini and the share of the median. As the lognormal density generally gives a good fit of income distributions[6], the relevant empirical question would be whether societies with higher σs will grow less or more.

A possible reinterpretation of the evidence would take Barro's and Partridge's findings to jointly imply that inequality can be good for growth in rich countries, but not in poor countries. Another possible intrepretation of the literature is that the panel data studies (including Partridge) are mostly picking up short or medium-run effects. A short or medium run effect of inequality on growth may still be very relevant for issues of policy design, but the long run effect is more important from the point of view of well-being.

3. Inequality and Growth: Channels of Influence

If inequality is good – or bad – for growth, then why is this the case? Several reasons have been offered in the literature. We discuss them in more or less logical order.

3.1 Inequality and Redistribution: Median Voter Models

AR and PT both offered theoretical models predicting that inequality would be associated with low levels of economic growth. The main building block of these models was a political economy block borrowed from Meltzer and Richard (1981) (henceforth MR). The MR model is a model of voting over redistribution. In that model, voters trade off the benefits from redistribution (more transfers) from the costs (higher taxes). For voters with less than average income, the former effect outweighs the latter. As income distributions tend to be positive skewed, the median voter will have less than average income. Her incentives to vote for redistribution, however, will depend on *how* poor she is. The lower the income of the median voter (higher inequality) the more incentives she has to support higher redistributive transfers. If these redistributive transfers are financed with capital taxes they can lead to lower levels of capital accumulation and growth. Inequality is bad for growth because it leads to high levels of redistribution, which lead to lower growth.

This theoretical explanation is problematic for several reasons. First, there is no empirical evidence either that inequality is associated with redistribution or that redistribution is associated with lower growth. Most studies have found a zero or negative correlation between inequality and

[6] The evidence is discussed in Lambert (1989)

redistribution[7] and, if anything, a positive relationship between taxes and growth[8]. Second, the MR model's basic assumption is that voting over redistribution takes place within the context of a well-functioning democracy. The median voter model may not even be a good description of politics in advanced industrialized countries[9], and is certainly highly problematic for describing non-democracies. In particular, for the median voter model to be a good approximation to how redistribution is decided in any system, political power should be distributed relatively evenly to the left and to the right of the median voter. When the issue is redistribution and those to the left of the median voter are considerably poorer than those to the right, this may not be a very good assumption. Third, the MR results are highly dependent on the use of a linear tax rate. When the tax rate is allowed to be highly progressive (say the median voter is allowed to place a tax on everybody with income higher than the median) then the result disappears.[10]Fourth, if the MR hypothesis were true, inequality would be associated with growth more strongly in democracies. Although PT present evidence that this is the case, AR and Perotti (1994) provide strong criticisms of that evidence.[11]

3.2 Inequality and Redistribution: Non-Median Voter Models.

Benabou (1996) and Rodríguez (1999b) have provided non-median voter models of redistribution which can justify a negative relationship between inequality and growth. For both authors, an increase in inequality can lead to a fall in redistribution. Benabou simply assumes that the decisive voter has a higher level of income than the median; if it is sufficiently high, then inequality will raise his cost from redistribution. Rodríguez presents a model of rent-seeking and political influence in which inequality puts more resources into the hands of the groups that are in a better position to exert political influence on policymakers.

If inequality leads to less redistribution, then inequality can be harmful for growth either because redistribution is actually growth enhancing or because it has other indirect effects on growth. Benabou models the first of these reasons. He points to the existence of incomplete asset markets and liquidity constraints as suggestive that a reduction in inequality may lead the poor to carry out more efficient

[7] See Perotti (1994), Rodríguez (1999a), Lindert (1996) Lybeck (1986), and Henrekson (1988).
[8] Easterly and Rebelo (1993), Perotti (1994).
[9] Grossman and Helpman (1994) make this argument for the political economy of trade policy.
[10] See Rodríguez (1999c).

investments than they would have been capable of with very low incomes. Therefore the allocation of investment may be more efficient under equality. Rodríguez considers the second: in his model of political influence inequality leads to greater rent-seeking by agents who give money contributions to politicians in exchange for political favors. Inequality can raise the amount of resources that are deviated towards those activities, resources which under other conditions would have gone to capital accumulation and produced higher growth.

3.3 Differential savings rates

The post-keynesian approach mentioned previously assumed that inequality could be good for growth because it put resources into the hands of those with the capacity to accumulate capital, as workers were assumed to have a low propensity to save. These models, however, would imply that inequality is good for growth and would not be consistent with most readings of the empirical evidence discussed above. However, a suitable reinterpretation of these models could argue that workers actually have *higher* savings rates than capitalists, provided that we hold to a broad version of capital that includes human capital.[12] That is, since a poor family is likely to spend an important fraction of an additional dollar of income in health and education-enhancing spending, it may effectively contribute more than a rich family's savings to capital accumulation.

3.3 Sociopolitical Instability

Inequality, and, particularly, polarization, may lead poor groups to pursue their political and economic objectives outside normal channels. Therefore it may lead to higher participation of these groups in violent political movements that cause high levels of uncertainty to investors and therefore restrict growth. In a certain sense this hypothesis is a reformulation of the median voter model, but without the median voter politics: as inequality increases, the majority of voters, facing a system which is politically more controlled by economic elites, turn against the system through protests, riots, and participation in attempts to overthrow the system. Perotti (1994), Alesina and Perotti (1993) and Alesina et al. (1992) present evidence for such a link. Regrettably, the theoretical link between inequality and political instability is somewhat murky. At high levels of inequality the poor may have more incentive to engage in

[11] According to Perotti, PT's results on an interaction with democracy are strongly dependent on their control for a flow indicator of human capital instead of the more appropriate stock indicator.

behavior that leads to instability, but the rich also have greater resources to repress them. Furthermore, a distinction must be drawn between the incentive that the poor have to engage in these activities, which might raise their expectation of success, and the variance of the outcome, which is what indicators of instability purport to capture.

3.4 Fertility and Education

Perotti (1994) finds evidence that inequality is associated with lower levels of fertility. His explanation for this finding is as follows: raising levels of income of the poor, especially if it raises their level of human capital, also raises the opportunity cost of raising children. Redistribution can thus lead to lower fertility. As fertility is associated with lower growth in a basic growth model, redistribution can lead to higher growth. Galor and Zeira (1993) and Perotti (1993) have also emphasized the role of equality in allowing individuals to overcome fixed costs of investment in human capital: if a society is more equal, given the same level of income, a higher fraction of its poor would be willing to undertake investments with considerable fixed costs. There are good reasons to believe that education investment is precisely characterized by fixed costs and increasing returns.

3.5 Back to Factor Shares

Recent work has neglected the emphasis of the early literature on factor shares as indicators of income distribution. In part this is for good reason: Gini indices have normatively much more desirable properties than factor shares and factor shares may give a particularly poor picture of inequality if workers have considerable access to capital. Furthermore the correlation between Gini indices and factor shares, after one controls for GDP per capita, is somewhat weak. On the other hand, given the problems with comparability of the Ginis and the particularly skewed nature of wealth distribution in most countries, this fact in itself may be evidence to be skeptical of the Ginis as measures of inequality. Since factor shares are based on a uniform UN National Accounts methodology across countries, they are certainly of higher quality data than existing Ginis.

Pineda and Rodríguez (1999) find that capital shares are negatively associated with growth. They find that this effect is a result of the fact that societies with higher capital shares invest less in education and health, both of which are strongly positively associated with growth. To test for reverse causation, they

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[12] See Mankiw, Romer and Weil (1992) for a justification of this broad view of capital for research on

instrument changes in capital shares with changes in the terms of trade interacted with a measure of a country's factor abundance: according to the Stolper-Samuelson theorem, improvements in the terms of trade should lead to a higher capital share in capital abundant countries and to a higher labor share in labor abundant countries. IV estimations confirm that exogenous variation in capital shares lead to lower rates of investment in human capital.

4. Inequality and Reform

Inequality can be harmful to long run economic growth by making economic reforms less plausible. Inequality can reduce the base of support for fundamental structural transformations necessary to embark on a path of high growth. The basic reason is that inequality tends to result in polarized societies and polarized societies may be in a weaker position to undertake fundamental economic reforms.

Formal models of reform with implications for the relationship with inequality are provided by Alesina and Drazen (1993) (henceforth AD) and Fernandez and Rodrik (1993) (henceforth FR). In the AD model two groups decide on whether to adopt a program of measures necessary to stabilize an economy. These groups may decide to inefficiently delay the stabilization in hopes that the other group will decide to concede and carry the brunt of the stabilization's costs. AD prove that the time that transpires before the stabilization actually takes place (that is, before a group decides to concede) is increasing in the inequality in the distributions of the gains. FR have shown that individual specific uncertainty can be a good reason for why reforms are not enacted: even if individuals know that the gains will on average outweigh the losses, a majority of them can have what are in expectation negative gains, even if, when the uncertainty is resolved, they may form part of a coalition that supports the reforms *ex-post*. Again, here inequality in the distribution of the gains is vital: if gains are equitably distributed, then all individuals can be certain to have the same gains, which would be positive if the reform is efficient; therefore they would unanimously support the reform.

One caveat about this approach is necessary: the models discussed refer to the distribution of the gains from reforms, not directly to the distribution of incomes. The gains from reform and initial inequality are however related if one assumes that the capacity for a group to extract gains is proportional to their economic and political power. In the case of Russian reform, for example, those who stood to gain more

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economic growth.

form privatization were those who had the political power to ensure that they would be able to bid at favorable conditions for them.[13] But, as Alesina (1998) has pointed out, structural reforms may not benefit those who are already well-off, particularly if they help to undermine vested interests.

Rodrik (1998) has provided empirical evidence that unequal societies are less likely to carry out the adjustments necessary to respond to negative macroeconomic shocks. Indeed, Rodrik finds that what is particularly destructive is a combination of high inequality and poor institutions of conflict management (such as social safety nets, democratic institutions, rule of law, and efficient government institutions). He finds that an interaction of these is a strong predictor of growth collapse during the 1980s.

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[13] See Shleifer, Boycko and Vishny (1995) for a description and justification of this approach to reform.

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