A joint Initiative of Ludwig-Maximilians-Universität and Ifo Institute for Economic Research

Working Papers

DEMOCRACY AND INCOME IN-EQUALITY: AN EMPIRICAL ANALYSIS

Mark Gradstein
Branko Milanovic
Yvonne Ying*

CESifo Working Paper No. 411

January 2001

CESifo

Center for Economic Studies & Ifo Institute for Economic Research
Poschingerstr. 5, 81679 Munich, Germany

Tel.: +49 (89) 9224-1410
Fax: +49 (89) 9224-1409
e-mail: office@CESifo.de

* We would like to thank Prem Sangraula for excellent research assistance. The project was financed in part by the World Bank Research Grants RPO 683-01 (“Democracy, redistribution and inequality”) and RPO 683-68 (“Deriving world income distribution in 1988 and 1993”).

CESifo *Working Paper No. 411*
January 2001

DEMOCRACY AND INCOME INEQUALITY: AN EMPIRICAL ANALYSIS

Abstract

While standard political economy theories suggest a moderating effect of democratization on income inequality, empirical literature has failed to uncover any such robust relationship. Here we take yet another look at this issue arguing first, that prevailing ideology may be an important determinant of inequality and, second, that the democratization effect "works through" ideology. In societies where equality is highly valued there is less of a distributional conflict across income groups, hence democratization may have only a negligible effect on inequality. On the other hand, in societies where equality is not valued as much, democratization reduces inequality through redistribution as the poor outvote the rich. Our cross-country empirical analysis, covering the period 1960-98 and 126 countries, confirms the hypothesis: ideology – as proxied by a country's dominant religion – seems to be related to inequality. But in addition, in Judeo-Christian societies increased democratization appears to lead to lower inequality, while in Muslim and Confucian societies democratization has only an insignificant effect on inequality. We hypothesize that in the latter group of countries, desired level of inequality is reached through informal transfers, while in Judeo-Christian societies where family ties are weaker, desired outcome is achieved by political action.

Keywords: Inequality, democracy, religion

JEL Classification: D31

Mark Gradstein
Ben Gurion University
Department of Economics
Beer-Sheva 84105
Israel
e-mali: Grade@bgumail.bgu.ac.il

Branko Milanovic
Research Department
World Bank
USA
e-mail: bmilanovic@worldbank.org

Yvonne Ying
Research Department
World Bank
USA
e-mail: yvonne_ying@hotmail.com

1 Introduction

It has long been recognized that the distribution of income in an economy may, to a large extent, depend on political factors. More specifically, a natural hypothesis is that a more egalitarian distribution of political rights in the form of a political democracy should be accompanied by a more equal income distribution. Indeed, this hypothesis has a celebrated tradition in social sciences (Lipset,1959, Lenski, 1966, Meltzer and Richard, 1981). Empirical research testing this hypothesis has also loomed large. Political scientists, economists, and sociologists alike have devoted a great deal of energies arguing whether or not the hypothesis holds. The existing evidence, however, does not find any robust relationship between democracy and inequality in a cross-country regression analysis. Thus, Bollen and Jackman, 1985, fail to detect such a relationship; Li et al., 1998, find some limited support for a negative relationship between democracy and inequality; Rodrik, 1999, presents evidence that democracy is associated with a higher share of wages in GDP and thus lower inequality.[1]

Indeed, a casual inspection of recent events in East Europe as well as in East Asia casts doubts that any such simple relationship may exist. It has been argued that, in the East European countries, democratization of the 90's actually resulted in an increase in income inequality – for the review of findings supporting this claim see Fleming and Micklewright, 2000. Similarly, some of the East Asian countries such as South Korea, Taiwan, Singapore have had among the most egalitarian income distributions in the world, yet their political record is far from democratic.

These observations lead us to consider additional factors, which may affect income inequality alongside democracy. A clue in the search for such factors is provided by the

experience of the East European countries under the communist regime. There is little doubt that in this era, the political rights' record in these countries was especially miserable. Yet, the distribution of income was quite egalitarian, especially when compared with other countries with similar per capita income levels. This is most likely true even when one takes into account the fact that income was derived from non-market transactions, that some of it was given in kind, and a substantial portion of income was in fact determined by a person's status (see Atkinson and Micklewright, 1992, Milanovic, 1998, 1999, and the review of Fleming and Micklewright, 2000).

One reason for this could be that the prevailing political ideology of these countries was deeply rooted in the egalitarian tradition. To be sure, differences in political power as well as in social status existed and were at least as powerful as everywhere else, but income differences were not much approved by the populace. Ostentatious display of the rich was frowned upon and very uncommon; modest material life and the ability to make ends meet with little means were praised. This may imply that in a cross-country comparison, ideology needs to be taken into consideration when examining income distribution and its relationship to democracy.

While the concepts of political culture and ideology have been controversial and elusive in the social sciences, they seem too important to be neglected altogether. Cultural values may play an important role in shaping policies and the resulting cross-country differences in economic outcomes may to a large extent hinge on different ideologies. Indeed, a substantial body of political literature exists (e.g., Almond and Verba, 1963, and Abramson and Inglehart, 1996) which emphasizes the relationship between culture and ideology on the one hand and political economic institutions on the other hand. More specifically, Granato et al., 1996, studies how

the former may affect economic development;[2] Gradstein and Justman, 2000, investigate the socializing role of education and its effect on the efficiency of resource allocation; Bisin and Verdier, 2000, offer a dynamic evolutionary model of cultural transmission.

This paper is an attempt to employ the insights derived from that literature to study the effect of democracy on income inequality. We stipulate that the outcome of redistribution, and hence inequality, hinges on the details of the political process: when it is democratized, the resulting level of income inequality is expected to be lower than when it is controlled by a rich oligarchy. But it also depends on the society's predisposition towards equity: if equity is valuable in itself, then even the rich oligarchy will avoid extreme inequality. This implies that democratization process in societies which value equity will result in only marginal further reduction in inequality. This is in contrast to societies for which equity in itself is immaterial, and where transition of political power to the majority results in much more aggressive redistribution and inequality reduction.

This view of the effect of democracy on inequality through the prism of ideology is tested in the empirical part of the paper. Over the last decades, several reasonable measures of the degree to which countries are democratic have been generated. A subset of these measures is used in this paper. For inequality we use the high quality Gini data set compiled by World Institute of Development Economics Research (WIDER, 1999). While a proxy for ideology may be difficult to construe, as a first approximation we use the dominant religion in a country, whereas the predominantly atheist post communist countries form a separate category.[3] Our analysis of unbalanced panel data for the period 1960-98 and 126 countries provides support for the hypothesis that ideological factors are important determinants of income inequality.

While in certain countries, mostly in the Judeo-Christian tradition, the expansion of democracy is likely to result in substantial inequality reduction, in other countries (Buddhist/Hindu, Confucian, Communist) such effect is negligible or absent altogether. These findings are obtained even when controlling for other variables, which traditionally have been thought as affecting inequality. Another, surprising, finding of this paper is the different impact of political institutions on the relationship between democracy and inequality. Specifically, we present evidence that the negative relationship between democracy and inequality is more likely to hold—for a given level of democracy—in countries with parliamentary rather than presidential system. Although this finding was not anticipated by the empirical design, we consider it to be interesting enough to be reported here.

The plan of the paper is as follows. Section 2 describes a very simple theoretical framework and its analysis; section 3 presents the data to be used for the empirical part, the analysis of which is undertaken in section 4; finally, section 5 closes with brief concluding remarks.

2 Theoretical framework

2.1. Description of the economy

The model economy consists of a finite but large number of agents indexed by $i = 1,..,N$. The agents are initially endowed with an exogenously given income y_{i0}. The distribution of initial income in the population is assumed to be skewed, so that the median income y_{m0} lies below its mean Y_0, and we let F denote the cdf of income. All individuals share identical preferences. These are derived over an individual's income ex post taxes and transfers, as well as over the

distribution of this income across the individuals in the economy. Letting y_{i1} denote individual i's ex post income, we write his overall utility as:

$$U(y_{i1}) + W(y_{11},\ldots, y_{N1}) \qquad (1)$$

where both U and W are continuous, U is monotonic and concave and W is symmetric and quasiconcave.

Note that the first term in the above expression is the utility from own income, whereas the second term represents the utility an individual derives from income distribution in the population. The assumptions on W guarantee that it captures preference for equality in the sense that its value increases as a result of an equalizing transfer from a richer to a poorer individual – see Rothschild and Stiglitz, 1973. It will be convenient to relate W to a standard inequality measure, such as the Gini coefficient, or a coefficient of variation and to think of utility as a linear combination between own income and such inequality measure; this then would allow us to write individual utility as:

$$y_{i1} - \acute{a}\, I(y_{11},\ldots, y_{N1}) \qquad (1')$$

where $\acute{a} > 0$ is interpreted as the parameter related to disutility from income inequality, called *equality preference*, and I is the inequality measure.

The above depicted economy is a special case of the one considered in, for example, Arrow, 1983, Becker, 1974, and Hochman and Rodgers, 1969. Existence of the second term in the utility specification implies that the individuals may want to voluntary transfer part of their initial endowment in order to decrease income inequality. As is shown in Arrow, 1983, however, the amount of voluntary transfers is typically inefficient because of the free riding effect: every giver hopes that the additional transfers will be made by the other potential givers,

hence not enough income will be transferred.[4] The implication of this argument in the present context is that, typically, the equilibrium income inequality is excessively high.[5]

Alternatively, income redistribution could also be implemented through a *formal redistribution mechanism*. Following the long-standing tradition in the literature (see e.g. Meltzer and Richard, 1981, and the survey in Persson and Tabellini, 1999, part I), we assume that this is given by a combination of a proportional income tax and a lump-sum transfer. In addition, we assume that such redistribution is associated with a deadweight loss. The deadweight loss may stem from adverse labor supply effects, or from the hindering of innovative activity. Specifically, let t denote the income tax rate. The amount of the deadweight loss then is $B(t)Y_0$, where B', $B''>0$, $B(0) = 0$, $B(1) = 1$. Taking the deadweight loss into consideration, the relationship between the ex ante and ex post income of individual i is as follows:

$$y_{i1} = (1-t)\, y_{i0} + (\, t - B(t))\, Y_0 \qquad (2)$$

Note that $Y_1 = (1 - B(t))Y_0$, so that implementation of this redistribution mechanism results in average income loss, whose magnitude is positively related to the tax rate.

The tax rate is chosen by a majority of votes. We assume that the population of voters consists of all individuals whose income exceeds a minimal threshold $\underline{y}$: the lower is the threshold the more democratic the society is, as it allows a larger fraction of the population to be enfranchised.

Finally, we denote $I(t) = I((1-t)\, y_{10} + (t-B(t))Y_0,\ldots,(1-t)\, y_{N0} + (t-B(t))Y_0)$ the indirect utility from a more equal income distribution as a function of the tax rate.

2.2 Analysis

In order to characterize the voting equilibrium of this mechanism, we first turn to the optimal tax rate from the viewpoint of voter *i*. The interior optimal tax rate is determined from the following FOC:

$$- y_{i0} + (1-B'(t))Y_0 - á\, dI/dt = 0 \qquad (3)$$

Differentiation reveals that the second order conditions are satisfied provided that $d^2I/dt^2 \geq 0$, which holds true for such inequality measures as the Gini coefficient and the coefficient of variation.[6] Thus, individual preferences are single peaked, and a majority voting equilibrium exists.

Differentiating (3) with respect to initial income y_{i0}, we obtain, given the assumptions,

$$dt/dy_{i0} = -1/[B''(t)\ Y_0 + á\, d^2I/dt^2] < 0 \qquad (4)$$

Thus, the preferred tax rate is a decreasing function of income implying that the politically decisive voter is the one with the median income among the voters. Differentiation of (3) with respect to á reveals that the higher the equality preference the higher is the chosen tax rate. Moreover, differentiating (4) with respect to á we obtain that $d^2t/dy_{i0}dá > 0$, implying that the greater is the equality preference, the less steep is the negative relationship between income and the preferred tax rate, i.e., the more willing are the rich to bear high taxes.

The implicit characterization of the interior equilibrium tax rate is as follows:

$$- y_{d0} + (1-B'(t))Y_0 - á\, dI/dt = 0 \qquad (5)$$

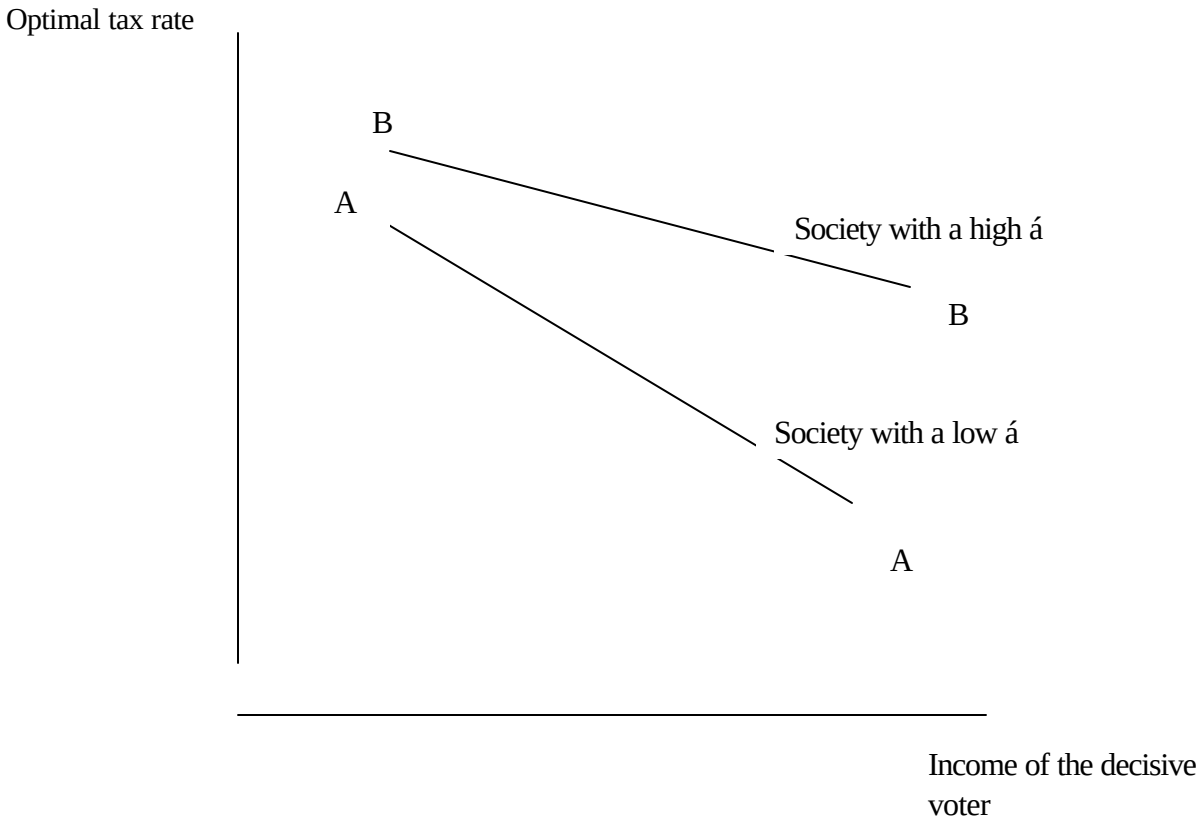
where y_{d0} denotes the income level of the decisive voter, which has the median income in the voters' population. The tax rate chosen by the median voter is the one that optimally balances reduction in inequality and the deadweight loss of taxation; clearly, the equilibrium tax rate is an

increasing function of the median voter's income. Now, democratization enfranchises some of the poor, lowering the minimal franchise requirement, $\bar{y}$. As a result, political power is shifted to a poorer coalition of voters, so that a poorer voter becomes decisive (y_{d0} in (5) is decreased), which in turn results in a higher tax rate and a lower level of inequality (this is why the slope of the line in Figure 1 must be negative). As we have seen, this effect is weaker when there is concern for equality, so that á is large (which means that line BB in Figure 1 must throughout the whole range lie above the line AA *and* be flatter). The implication is that, when democratization is enhanced, its inequality reducing effect may be difficult to detect because of the intervening factor of the social norm of inequality intolerance. The implication is that, when democratization is enhanced, its inequality reducing effect may be difficult to detect because of the intervening factor of the social norm of inequality intolerance.

Summing up,

Proposition 1. Under formal redistribution, democratization results in higher taxes and transfers, hence in lower inequality. This effect is stronger when under the prevailing ideology concern for equality is small and is weaker when such concern is substantial.[7]

Figure 1. Optimal tax rate and income of the decisive voter in two societies



We now turn to the empirical test of the hypothesis summarized in the above Proposition, beginning with the description of the data – the variables and the sample – and then proceeding with the estimation.

3. The data

3.1. Variables

As argued in the previous part, the effect of democracy on inequality is mediated through prevailing ideology. We approximate ideology by dominant religion except in the case of Communist countries where the dominant ideology is, of course, Communism. Appendix 1 shows the ideology data for all the countries in the sample.[8] Our rule in deciding what is a dominant religion in a given country was that at least 40 percent of the population had to have the same religion, with the second most numerous religion not exceeding 25 percent of the population.

In a number of cases, however, two or even three religions have similar number of adherents, and a single dominant ideology could not be defined. In these cases, we have created hyphenated groups. They are African traditional/Christian which includes countries where African traditional religion and Christianity claim about the same share of the population (Botswana, Cameroon, Central African Republic, Kenya, Madagascar, and Zimbabwe). In these countries, between 33 and 55 percent of the population profess Christianity (of all denominations), and between 25 and 50 percent of the population follow the traditional African religions. Another hyphenated category is Buddhist/Hindu. It includes India, Mauritius, Mongolia (after the end of Communism), Nepal, Sri Lanka, and Thailand. It was based on the assumption that cultural similarities between Buddhism and Hinduism are sufficiently great to treat them as one group. Arguing that Christian practices differ significantly between the countries that were converted to Christianity relatively recently, that is over the last two

centuries as the result of European expansion, we have created a category of "New Christian" countries that includes African (e.g. Gabon, South Africa, Uganda, Zambia), Caribbean (Trinidad and Tobago), and Oceanic (Papua New Guinea) countries. In these countries, the dominant religion is Christian but the population has been relatively recently converted (as opposed to, say, Australia or Canada which are what Maddison called "European off-shoots"). Finally, in some countries, more than two religious groups claim sizeable percentage of the population (e.g. Nigeria with more than 40 percent of the population following Islam, about a third Christian, and about a fifth professing traditional African beliefs). These countries where there is no single dominant religion (Burkina Faso, Cote d'Ivoire, Fiji, Guinea-Bissau, Guyana, Nigeria, Sierra Leone, Tanzania, and Trinidad and Tobago) were classified as "mixed religion."

For democracy, we use five variables. Two variables come from the Polity98D data source (version June 2000). [9] The two variables we use are the extent of democracy (*Dem*) and openness of the political system or party competitiveness (*Parcomp*). *Dem* defined as "general openness of political institutions" ranges from 0 to 10; *parcomp*, defined as "extent to which non-elites are able to access institutional structures for political expression" ranges from 0 to 5 (definitions taken from the codebook of *Polity* database by Jaggers [1996][10]). Values of both variables increase as level of democracy and political openness increase. The advantage of the Polity98D is that it provides a long series of data stretching in some cases back to the 19th century. The disadvantage, a serious one, is lack of transparency in how the scores are calculated. While the authors mention a number of checkpoints which they follow, they are very broad so that it very unclear how, in practice, they are instrumentalized, and the judgments are, of course, subjective.[11] The problem with *Polity* database is that there are neither objective

criteria used for measuring democracy, nor can a user see and check for himself how the authors have arrived to their judgments. Basically, one needs to accept the authors' judgments on faith.

These drawbacks are remedied by the newly created Database of Political Institutions (DPI), which is explained and discussed in Beck et al. (2000). We use three variables from DPI. They are type of political system (*System*) which ranges from 0 to 2, with 0 indicating a presidential system, 1 assembly-elected president, and 2 a parliamentary system. Two points are important to underscore with respect to this variable. First, regimes with a low level of Executive Political Competitiveness (in other words, authoritarian or dictatorial regimes) score 0 on the System index; and the same holds for regimes where presidents are elected directly or by an electoral college (whose only function is to elect the president), and where there is no prime minister. Second, DPI uses a set of clear rules to distinguish between the parliamentary and presidential systems, such as presidential veto power, presidential appointment of ministers and dissolution of the parliamet. Thus, the French system is classified as parliamentary, because the Prime Minister depends only on parliamentary majority and not on president's will, and the Russian system as presidential since the Prime Minister is both proposed by the President and needs to be rejected by the *Duma*, which obviously requires a lower level of parliamentary support than the need to muster parliamentary majority. As can be seen from this example, the DPI database's main advantage over other measures of democracy is its transparency: the rules in classifying the regimes are very clear and are based on "objective" indicators.

The second DPI variable we use is Executive Index of Electoral Competitiveness (EIEC) index. The index ranges from 1 to 7, with competitively elected presidents or prime ministers

depending on who is assigned the Chief Executive title (e.g., in the US, it would be president, in the UK, it would be prime minister) getting 6 or 7. For example, thr chief executives of Communist nations (the chairman of the Communist Party) are given a 3, because they are elected by the Party Congress, electing bodies which they do not appoint. Executives elected by small, appointed juntas or by appointed electoral colleges get a 2. Rival chief executives in one country, particularly in the setting of armed conflicts, are counted as *No executives*, and thus score a 1; see Beck et al., 2000, for a more complete elaboration.

Very similar rules and ranking are used for Legislative Index of Political Competitiveness (LIEC). The scale also ranges from 1 to 7. The rules are: if there is no legislature LIEC scores 1, if there is an unelected legislature 2; elected legislature with single candidates (like in many Communist countries) scores 3; single party with multiple candidates scores 4; if multiple parties are legal but only one party won seats (like in many Arab countries), the score is 5; if some parties had won seats but the largest party received more than 75 percent of all seats, the score is 6; and finally, if there are multiple parties and none holds more than 75 percent of all seats, the score is 7.

Table 1 shows simple correlations between the five measures of democracy. It can be easily noticed that the two measures from Polity98D (Democracy and Party Competitiveness) are very strongly correlated (0.93). One of the DPI measures (EIEC) also seems to measure similar aspects of democracy as Polity98D variables. The correlation between EIEC and the Polity measures is about 0.80. The correlation is weaker (a little over 0.70) between the Legislative Index of Electoral Competitiveness and the two Polity98D measures. Finally, the correlation between *System* and all other measures of democracy is relatively weak. Basically,

we can conclude that Democracy and Party Competitiveness seem to measure the same thing (which is not surprising in light of lack of transparent and objective criteria used in the derivation of the Polity98D data), and what they measure seems to be similar (close to) competitiveness in elections for the executive office. The variables LIEC and *System* do measure, as explained in the DPI manual, competitiveness in legislative elections, and the type of political system (presidential vs. parliamentary).

Table 1. Simple correlations between the various democracy measures

	System	EIEC	LIEC	Dem
EIEC	0.44			
LIEC	0.39	0.86		
Dem	0.53	0.80	0.73	
Parcomp	0.48	0.79	0.75	0.93

In addition to these five measures of democracy, we also create two interacted variables, by interacting respectively EIEC and LIEC with the political system.

The last control variable we use is the level of economic development which we approximate by GDP per capita expressed in international dollars of equal purchasing power parity (PPP). The benchmark year is 1995 for which we have the actual $PPP levels for more than 100 countries. [12] We then use real GDP changes to derive the GDPPPP levels in the previous years going all the way to 1960. Thus all the GDP per capita data are expressed in PPP levels using the international prices of the year 1995. Most of the data are obtained from the on-line World Bank data base (called *SIMA*), while for some countries—mostly transition economies, and in particular the former republics of the USSR—we had to calculate their real per capita growth rate using the countries' statistical yearbooks. [13]

Finally, for the dependent variable, we use Gini coefficients as reported in the most recent (June 2000) WIDER database.[14] It contains 909 high-quality Gini observations from 126 countries. The data are described in detail in WIDER (1999). The Gini coefficients reported vary as to the recipient (household or individual), welfare indicator (income or expenditures), and net or gross measurement (net is after deduction of personal taxes). Following the approach taken Li, Squire and Zou (1998), we use dummy variables to adjust for each of these characteristics. [15]

3.2. Sample

Our data are longitudinal. We have a total of 126 countries in the sample.[16] For most of these countries GDPPPP per capita data go back to the early 1960's. For example, from 1965 forward, in no year are there GDPPPP per capita data for fewer than 105 countries.[17] Note, however, that to conduct a panel analysis for all years since 1960, the limiting factor is the availability of the Gini data. In only a few exceptional cases (United States, UK, Taiwan, Bulgaria, India), inequality data are available for most years. For the vast majority of countries, such data are available in time intervals of several years, and for many countries, the WIDER data base gives only a few observations.[18]

All currently existing countries (year 2000) are "projected back" into the past. We mean by that that individual data are collected for all former USSR republics, for the Czech republic and Slovakia separately, for all five successor states of the former Yugoslavia, and for Pakistan and Bangladesh (until 1972, East Pakistan).[19] For all the "current" countries (formerly republics/parts of larger entities), we use the republican GDP's, population, or Gini coefficients.

The political variables for each of the republics are often, but not always, the same as for the entire country where they belonged.

While the GDPPPP data vary a lot in time, the variability is less for the political variables, either in Polity98D or DPI database. However, they too are time-variant as shown in Tables 2 and 3 on the example of *Dem* variable from Polity98D, and EIEC from the DPI database. We see from the last columns in Table 2 that only the least democratic (value 0) and the most democratic (value 10) observations tend to stay in the same group: conditional on having democracy level 0 or 10, respectively 66 and almost 70 percent of cases (or time) such countries remain in the same group. The constancy of the other levels of democracy is much less (between 11 and 23 percent). The same regularity is observed for EIEC: the stability of political arrangements is the greatest at the extremes. 64 percent of the time, countries where the chief executive is elected by a party congress or by referendum or "popular acclamation" stay in the same category; 52 percent of time, countries whose chief executive is competitively elected and gets less than 75 percent of the vote, remain in the same group.

Table 2. Variable *Democracy* from Polity98D

Estimated level of democracy	Number of observations	Percent	Number of countries with at least 1 such observation:	Percent of countries with at least 1 observation:	Percent of observations in same group
0	2417	46.2	86	71.1	66.1
1	260	5.0	32	26.5	18.4
2	109	2.1	18	14.9	14.1
3	142	2.7	29	24.0	11.4
4	86	1.6	17	14.1	11.4
5	86	1.6	19	15.7	10.2
6	170	3.3	26	21.5	15.0
7	220	4.2	21	17.4	22.6
8	379	7.2	48	39.7	18.0
9	256	4.9	25	20.7	22.9
10	1108	21.2	34	28.1	69.7
Total	5233	100	355	293.4	33.6

Table 3. Variable *Executive Index of Electoral Competitiveness* from DPI

Definition of variable values	Number of observations	Percent	Number of countries with at least 1 such observation:	Percent of countries with at least 1 such observation:	Percent of observations in same group
Elected by a junta, or by an appointed electoral college; or unilateral extension of the term of office; or elected for life (2)	485	17.5	51	41.5	42.0
Elected by a party congress, referendum or acclamation (3)	669	24.1	46	37.4	64.1
3.5	15	0.5	2	1.6	32.6
Several candidates from one party (4)	54	1.9	7	5.7	36.7
Several parties field candidates, only one gets all votes (5)	8	0.3	3	2.4	11.6
5.5	5	0.2	1	0.8	21.7
Competitively elected with more than 75% of vote (6)	254	9.1	31	25.2	35.7
6.5	94	3.4	20	16.3	20.5
Competitively elected with less than 75% of vote (6)	1196	43.0	101	82.1	52.3
Total	2780	100	262	213.0	46.8

The situation, however, is very different as far as religious variables are concerned. That variable itself is much more sluggish since religious composition of population does not change

fast. Practically, the only source of variability is the change from Communist to whatever the dominant religious affiliation may be in the case of countries that have abandoned Communism. Table 4 shows that out of 4861 observations (of countries in different points in time) some 22.7 percent are Catholic, followed by 17.1 percent Communist, 16.7 percent Muslim etc. The last column show the extent of variability in the ideology variable. We see that in 5 out of 11 religious affiliations, the variable is time-invariant. For example, the Christian mixed, New Christian, Confucian, or Buddhist observations are in 100 percent of cases constant; countries that are once classified as Catholic, remain so in 85.6 percent of cases, Protestant/ Evangelical Protestant remain so in 86.8 percent etc. On average, once a country is given a certain affiliation, in 85.6 percent of the cases it remains within that affiliation. The only reason why the variable is not entirely time-invariant is that Communist countries have, after the end of the Cold War, changed their dominant ideology.

Table 4. Religious composition of the sample

	Number of observations	Percent	Number of countries	Percent	Percent of time to the same group
Catholic	1101	22.2	33	26.2	85.6
Protestant/Evangelical	406	8.2	12	9.5	86.8
Orthodox	142	2.9	10	7.9	36.4
Christian mixed/Judaism	195	3.9	5	4.0	100.0
New Christian	351	7.1	9	7.1	100.0
Muslim	812	16.4	24	19.1	86.8
Buddhism	203	4.1	6	4.8	86.8
African Christ/traditional	234	4.7	6	4.8	100.0
Confucian	205	4.1	5	4.0	100.0
Communist	861	17.4	27	21.4	83.7
Mixed	440	8.9	10	7.9	100.0
Total	4950	100	147	116.7	85.65

Note: Number of countries shows all countries that have, at least once, had a given religion. Thus, for example, if a country changes from Communism to Orthodoxy, the country would be included in both groups (Communism and Orthodoxy). This explains why there are 147 countries in the sample, and why the percentage column gives 116.7 percent.

4. Empirical estimation

4.1. Methodology

We use the following specification:

$$GINI_{it} = fct(GDP_{it}; DEM_{it}; IDEOLOGY_i; IDEOLOGY_i * DEM_{iti}) \quad (6)$$

where subscript i refers to country and t to year (from 1960 to 1998). In the empirical estimation, GDP per capita expressed in the 1995 dollars of equal purchasing parity (PPP) enters both linearly and squared, as is conventionally done to reflect some Kuznets-type movement of inequality. Democracy (DEM) is approximated by the five variables described above. The IDEOLOGY dummies test for the possibility, explained earlier, that some ideologies may be more sensitive to equality than others. Finally, the interaction between ideology and democracy tests for our hypothesis (Proposition 1) that democracy may exert a differential impact on inequality depending on the prevailing religious/political affiliation of the country. In other words we posit that the effect of religion or ideology on inequality is exerted through two channels: directly (as reflected in the ideology dummies) and through differential effect of democracy on inequality depending on the religious-ideological context within which democratization occurs.

We expect the effect of GDP per capita to be of the usual inverted-U shape, the impact of democracy to be negative, while the coefficients on the IDEOLOGY dummies and the interaction term between ideology and democracy are not determined on an *a priori* basis.

The data are an unbalanced panel covering 38 years and 126 countries, primarily because of unevenly spaced observations on the Gini coefficient. IDEOLOGY (religion) is clearly

exogeneous. While the effect of inequality on growth has recently been hotly debated, with arguments put forward that the effect is both positive and negative (for an excellent review of the literature and testing of the hypotheses, see Perotti, 1996), the influence of inequality on GDP *levels* is unlikely, so that reverse causality is not a problem. Reverse causation can, however, be a problem with the DEMOCRACY variable. Inequality can influence the level of democracy, and we address this problem by lagging DEMOCRACY. The use of lagged DEMOCRACY, however, is not only an econometric expedient. It has a substantive role too. It is reasonable to assume that the effect of democracy on inequality, if any, is unlikely to be instantaneous. While political changes can be fast (a country can move swiftly from a dictatorship to a democracy, and perhaps within a relatively short time span from democracy to dictatorship), they are unlikely to immediately affect the relatively stable economic forces which underlie inequality. This is why in addition to one-period (one-year) lagged democracy, we also use the average of the DEMOCRACY values for years *t-1* to *t-3*.[20]

We also need to control for country effects. Without this adjustment it is quite conceivable, for example, that what is retrieved as a religious effect is in reality a country effect. This may be particularly a problem for religious practices that exist in only a few countries. For example, is relatively low inequality in Taiwan due to ideological preferences for equality, or to the fact that a successful agrarian reform and privatization were conducted in the 1950's which in turn, derive from the past of Japanese occupation and the Communist threat from the Mainland? All regressions therefore include country dummies.

4.2. Effect of democracy

The first four columns in Tables 5 and 6 show the results of estimating equation 1 with four formulations of the DEMOCRACY variables; the next two columns include interaction of DEMOCRACY with the *system* variable. [21] Table 5 presents the results using a one-year lag formulation for DEMOCRACY, while in Table 6 we use the average value of DEMOCRACY during the three previous years. As expected, the effect of democracy is negative in all formulations but is not statistically significant (at 5 percent level) anywhere. However, the significance is almost always stronger when we use the three-year lagged formulation. This conforms with Muller, 1988, who similarly finds that the stability of democracy is a better predictor of inequality that the one time level of democracy.

However, democracy may affect inequality not only directly but through the type of political system. In other words, democracy in a parliamentary system may have a different impact on inequality than democracy in a presidential system. The former is closer to a direct democracy and, by giving a greater role to the political parties and formation of coalition governments, may stimulate redistributionist policies of the type that we generally associate with the median voter behavior. The effect of a democratic presidential system on inequality is more difficult to gauge on an *a priori* ground. A strong president, once elected, is not subject to the day-to-day "control" of the political parties, and ultimately, voters which is a key characteristic of parliamentary regimes. President can thus pursue a wider range of distributional policies; in some cases, he/she may opt for policies that increase (e.g. Salinas in Mexico), and in other cases, for policies that reduce (e.g. Chavez in Venezuela) inequality. To account for the political system, we interact political system (*system* variable from DPI) with competitiveness in election for the executive office and legislature (respectively *EIEC* and *LIEC*). The results are shown in

columns 5 and 6 (Tables 5 and 6). We see that the parliamentary and the mixed system (strong president elected by parliament) are associated with reduced inequality compared to the presidential system. This effect is particularly strong and significant when we interact the type of polical system with competitivness in the election for the executive office: the Gini coefficient is some 0.3 points less, controlling for the level of democracy.

We also interact each year during which country is in transition from Communism (that is, all years after 1990 for all formerly Communist countries) with democracy in order to sweep the already-noted paradoxical effect (see Gradstein and Milanovic, 2000) of post-Communist transition during which increase in democracy was associated with increase in inequality. The coefficient is always positive, and in 11 out of 12 cases statistically significant with various (Polity- or DPI-measured) improvements in democracy adding between 1 and 3 Gini points.

We conclude that the effect of democracy on inequality is negative but very weak. It becomes statistically more significant when we assess country's democracy by looking at its level over a longer (three-year) time period. With one-year lag, the effect of democracy almost vanishes. In addition, democracy reduces inequality more in parliamentary and mixed systems than in presidential systems, while during the transition from Communism, democratization is associated with increased inequality.

Table 5. Inequality, ideology and democracy (lagged by a year)
Fixed effect regressions. Dependent variable: Gini coefficient

	Polity98D variables		**DPI variables**			
Definition of democracy	Democracy	Party competiti.	Executive competit.	Legislative compet	Executive competit.	Legislative compet
Formulations	1	2	3	4	5	
Ln gdp per capita	15.5	15.0	-5.9	-6.4	-4.5	-6.5
	(0.00)	(0.00)	(0.51)	(0.48)	(0.61)	(0.48)
Ln gdp per capita squared	-0.97	-0.94	0.36	0.42	0.3	0.42
	(0.00)	(0.00)	(0.50)	(0.43)	(0.60)	(0.44)
Democracy interacted with:						
Presidential-assembly system					-0.37	-0.19
					(0.02)	(0.20)
Parliamentary system					-0.27	-0.22
					(0.05)	(0.10)
Transition from Communism	0.74	2.9	1.2	1.6	1.3	1.7
	(0.02)	(0.00)	(0.03)	(0.06)	(0.03)	(0.05)
One-year lagged democracy	-0.13	-0.58	-0.07	-0.16	-0.09	-0.19
	(0.26)	(0.08)	(0.82)	(0.56)	(0.76)	(0.48)
Religious dummy variables:						
(Catholic omitted)						
Protestant	5.2	(dropped)	18.7	12.5	-4.8	-12.0
	(0.15)		(0.01)	(0.13)	(0.85)	(0.62)
Orthodox	3.4	-1.1	3.7	-1.6	4.7	-0.53
	(0.27)	(0.76)	(0.43)	(0.82)	(0.33)	(0.94)
Christianity mixed/Judaism	(dropped)	(dropped)	(dropped)	(dropped)	(dropped)	(dropped)
"New" Christianity	-9.5	-7.0	11.5	-8.8	-4.7	-7.7
	(0.15)	(0.34)	(0.03)	(0.40)	(0.51)	(0.46)
Muslim	-11.6	-12.7	-9.0	-9.1	-9.3	-9.8
	(0.00)	(0.00)	(0.01)	(0.01)	(0.01)	(0.00)
Buddhism/Hinduism	-14.2	-17.9	2.7	-9.6		-10.7

	(0.00)	(0.00)	(0.67)	(0.26)	(dropped)	(0.21)
African Christian/traditional religion	-0.01 (0.997)	(dropped)	(dropped)	7.1 (0.53)	-7.4 (0.35)	(dropped)
Confucianism	-24.4 (0.00)	-24.7 (0.00)	-13.7 (0.02)	-18.9 (0.00)	-19.4 (0.00)	-18.6 (0.00)
Communism	1.3 (0.66)	5.9 (0.08)	-4.1 (0.49)	-30.3 (0.00)	-2.3 (0.70)	-24.0 (0.02)
Mixed	4.3 (0.22)	15.0 (0.00)	16.2 (0.00)	12.6 (0.01)	15.1 (0.00)	15.5 (0.00)
Democracy interacted with: Protestant	0.21 (0.52)	1.8 (0.01)	-2.0 (0.05)	-2.2 (0.05)	1.6 (0.65)	1.6 (0.65)
Orthodox	0.48 (0.17)	2.9 (0.01)	0.0 (0.999)	0.11 (0.92)	0.1 (0.90)	0.11 (0.92)
Christianity mixed/Judaism	-1.6 (0.00)	-3.8 (0.00)	-3.1 (0.00)	-3.2 (0.00)	-2.8 (0.00)	-2.9 (0.00)
“New” Christianity	1.3 (0.03)	2.1 (0.12)	1.6 (0.07)	2.1 (0.14)	1.6 (0.07)	2.2 (0.13)
Muslim	0.4 (0.07)	0.10 (0.89)	-0.12 (0.79)	0.1 (0.82)	0.02 (0.96)	0.2 (0.56)
Buddhism/Hinduism	-0.06 (0.87)	0.81 (0.21)	-1.5 (0.08)	0.3 (0.79)	-1.1 (0.18)	0.7 (0.56)
African Christian/traditional religion	0.73 (0.25)	-2.4 (0.58)	0.5 (0.55)	0.7 (0.65)	0.6 (0.53)	0.7 (0.64)
Confucianism	0.73 (0.01)	1.6 (0.00)	0.4 (0.63)	0.4 (0.32)	0.4 (0.65)	0.6 (0.20)
Communism	0.68 (0.29)	0.57 (0.58)	2.3 (0.16)	9.0 (0.00)	1.8 (0.28)	7.7 (0.00)
Mixed	-1.2 (0.00)	-3.3 (0.02)	-1.7 (0.00)	-1.3 (0.01)	-1.7 (0.00)	-1.3 (0.01)

Dummy income (vs. expenditure)	5.6 (0.00)	5.5 (0.00)	5.9 (0.00)	6.6 (0.00)	5.9 (0.00)	6.5 (0.00)
Dummy household (vs. individual)	0.5 (0.31)	0.2 (0.58)	0.7 (0.23)	0.7 (0.27)	0.7 (0.26)	0.6 (0.28)
Constant	-12.9 (0.54)	-9.5 (0.65)	71.2 (0.07)	70.8 (0.07)	65.2 (0.10)	71.9 (0.07)
Adjusted R^2 (F)	0.88 (48.3)	0.88 (48.5)	0.92 (41.0)	0.90 (42.7)	0.90 (41.6)	0.90 (42.3)
Number of observations	815	816	608	607	603	602

Note: P-values between brackets (if P<0.05 shaded). The omitted ideology is Catholic (both as the dummy, and in the interaction between democracy and religion); omitted *system* is presidential. The omitted country is Mexico which was Catholic and presidential throughout the entire period. Coefficients for country dummies not shown.

Table 6. Inequality, ideology and democracy (average level over the past three years)
Fixed effects regressions. Dependent variable: Gini coefficient

	Polity98D variables		**DPI variables**			
Definition of democracy	Democracy	Party competit.	Executive competit.	Legislative compet	Executive competit.	Legislative compet
Formulations	1	2	3	4	5	
Ln gdp per capita	18.1 (0.00)	19.0 (0.00)	-5.0 (0.60)	-1.4 (0.88)	-3.6 (0.70)	-1.1 (0.91)
Ln gdp per capita squared	-1.1 (0.00)	-1.1 (0.00)	0.27 (0.63)	0.12 (0.83)	0.19 (0.72)	0.10 (0.86)
Democracy interacted with: Presidential-assembly system					-0.31 (0.06)	-0.10 (0.50)
Parliamentary system					-0.32 (0.02)	-0.19 (0.17)
Transition from Communism	1.0 (0.00)	3.6 (0.00)	1.7 (0.00)	2.7 (0.00)	1.8 (0.00)	2.8 (0.00)
Three-year lagged average democracy	-0.10 (0.40)	-0.60 (0.08)	-0.15 (0.63)	-0.48 (0.14)	-0.17 (0.58)	-0.50 (0.12)
Religious dummy variables: (Catholic omitted) Protestant	8.9 (0.01)	24.2 (0.00)	21.0 (0.00)	18.9 (0.01)	1.8 (0.94)	-22.3 (0.75)
Orthodox	1.1 (0.68)	0.28 (0.92)	-0.84 (0.84)	-1.8 (0.76)	1.8 (0.67)	1.8 (0.86)
Christianity mixed/Judaism	(dropped)	(dropped)	(dropped)	(dropped)	(dropped)	(dropped)
"New" Christianity	16.7 (0.00)	12.2 (0.00)	3.7 (0.45)	(dropped)	-1.9 (0.81)	1.8 (0.86)
Muslim	-10.7 (0.00)	-10.4 (0.00)	-11.4 (0.00)	-12.8 (0.00)	-12.0 (0.00)	-13.6 (0.00)
Buddhism/Hinduism	(dropped)	-16.6	(dropped)	(dropped)	(dropped)	(dropped)

		(0.00)				
African Christian/traditional religion	8.9 (0.02)	(dropped)	(dropped)	31.3 (0.25)	(dropped)	31.8 (0.24)
Confucianism	-25.7 (0.00)	-25.2 (0.00)	(dropped)	(dropped)	-28.1 (0.14)	(dropped)
Communism	2.8 (0.18)	7.0 (0.04)	1.6 (0.77)	-28.9 (0.00)	6.1 (0.29)	-20.0 (0.08)
Mixed	10.4 (0.01)	(dropped)	11.6 (0.04)	11.7 (0.03)	2.5 (0.67)	11.6 (0.03)
Democracy interacted with: Protestant	-0.19 (0.57)	-4.5 (0.01)	-2.7 (0.01)	-3.5 (0.00)	0.4 (0.91)	2.7 (0.79)
Orthodox	1.0 (0.03)	2.9 (0.00)	0.9 (0.20)	0.2 (0.81)	0.6 (0.42)	-0.1 (0.92)
Christianity mixed/Judaism	-1.6 (0.00)	-3.8 (0.00)	-3.0 (0.00)	-2.8 (0.00)	-2.7 (0.00)	-2.9 (0.00)
“New” Christianity	1.6 (0.02)	4.5 (0.02)	1.0 (0.32)	0.5 (0.70)	1.1 (0.29)	0.6 (0.67)
Muslim	0.19 (0.60)	-0.9 (0.29)	0.2 (0.75)	0.5 (0.32)	0.4 (0.45)	0.7 (0.20)
Buddhism/Hinduism	-0.01 (0.98)	0.9 (0.15)	2.6 (0.00)	2.8 (0.00)	2.6 (0.00)	2.9 (0.00)
African Christian/traditional religion	-0.3 (0.66)	0.7 (0.92)	-0.4 (0.90)	-2.9 (0.44)	-0.3 (0.90)	-2.8 (0.46)
Confucianism	0.81 (0.01)	1.6 (0.00)	1.8 (0.51)	0.9 (0.11)	1.7 (0.53)	0.9 (0.09)
Communism	1.7 (0.24)	1.0 (0.63)	1.1 (0.50)	10.2 (0.00)	-0.4 (0.82)	8.1 (0.00)
Mixed	-1.9 (0.01)	-3.0 (0.08)	-1.6 (0.02)	-1.7 (0.01)	-1.6 (0.01)	-1.6 (0.01)
Dummy income (vs. expenditure)	6.5	6.5	5.5	6.1	5.5	6.0

	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Dummy household (vs. individual)	0.52	0.50	0.51	0.45	0.39	0.42
	(0.26)	(0.28)	(0.42)	(0.48)	(0.53)	(0.50)
Dummy gross (vs. net)	0.55	0.47	-0.05	0.02	0.22	0.12
	(0.23)	(0.30)	(0.92)	(0.96)	(0.67)	(0.81)
Constant	-26.1	-29.5	71.4	52.8	64.6	52.3
	(0.20)	(0.15)	(0.09)	(0.20)	(0.11)	(0.21)
Adjusted R^2	0.89	0.89	0.93	0.91	0.91	0.91
(F)	(52.1)	(51.6)	(41.1)	(44.0)	(42.1)	(43.6)
Number of observations	795	796	560	559	556	555

Note: P-values between brackets (if P<0.05 shaded). The omitted ideology is Catholic (both as the dummy, and in the interaction between democracy and religion); omitted *system* is presidential. The omitted country is Mexico which was Catholic and presidential throughout the entire period. Coefficients for country dummies not shown.

4.3. Effect of religion

Countries with Muslim, Confucian and Buddhist/Hindu ideology consistently show, both in Tables 5 and 6, a statistically significant lower inequality that Catholic countries (Catholicism, the most represented religion in terms of countries, is the omitted category). Since we do not know what really explains lower inequality in these societies, we call them "intrinsically more equal" (than Catholic), using "intrinsic" as a technical term, and implying thereby that there are certain preferences for equality which may be due to the differences in family formation (fewer nuclear households) or to greater informal transfers—points raised in Section 1 above.

Looking at Table 5 and 6 results, the intercept (dummy variable) shows that the inequality reducing effect of Islam—which is the most consistent and statistically significant throughout—amounts to between 10 and 14 Gini points; the effect of Confucianism which is also statistically significant in all but one case ranges between

–14 and –25 Gini points, while the effect of Buddhism/Hinduism is between –11 and –14 Gini points. Communism too shows a statistically significant negative effect in four regressions. At the other end of the spectrum, countries without a dominant religion (Burkina Faso, Cote d'Ivoire, Fiji, Guinea-Bissau, Guyana, Nigeria, Sierra Leone, Tanzania, and Trinidad and Tobago) consistently display greater intrinsic inequality (the dummy variable is statistically significant in almost all formulations both in Tables 5 and 6). Protestant countries and the "new" Christian countries also show, in some instances, a positive coefficient on the dummy variable. The intercept term for all other religions does not differ from the one for the Catholic countries. The implication of our finding is that Muslim and Confucian societies very strongly, and somewhat more tentatively Buddhist/Hindu, and Communist societies, exhibit certain features, independent

of whether they are democratic or not, which make then more equal than other societies. This effect has been, in some previous empirical work on inequality, established for Communist societies (Kaelble and Thomas, 1991; Ahluwalia, 1976; Milanovic 1996) but not for the other three.

4.4. Interaction between democracy and religion

It is also possible that ideology exerts an impact on inequality indirectly, that is in "determining" how a given level of democracy is "translated" (reflected) on inequality. This effect comes in addition to the direct effect captured by the religion dummies. To account for it, we interact religion dummy variables with democracy. We thus allow for religion to affect both the intercept and the slope coefficients.

The results here somewhat vary between the two regressions. With a one-year lagged DEMOCRACY, only Confucianism and Communism show a positive (inequality increasing) effect of democracy (in at least two formulations out of six). The result for Communism is not unexpected because greater political liberalization in Communist countries in Eastern Europe (up to 1990), and in contemporary China and Vietnam, was accompanied by economic liberalization and increased income differences. Thus a combination of intrinsic inequality-reducing effect of Communism (as reflected in the intercept term), and increasing inequality with democratization makes intuitive sense. On the other hand, the group of Christian mixed societies composed of Canada, Switzerland, Germany, Israel, and the Netherlands shows a very strong inequality-reducing effect of democracy present in all formulations (see Table 5). Nations with mixed religion too show that democracy reduces inequality: this effect is both strong and present

in all the formulations. For example, a one standard deviation increase in Polity98D democracy index (equivalent to an improvement from the level of Armenia to that of Australia, both in 1998), reduces on average the Gini coefficient in mixed-religion societies by 5.6 points; similarly, a one standard deviation increase in the EIEC index (equivalent to an improvement from Vietnam to Zimbabwe in 1997), reduces the Gini coefficient by 3.6 points. Other religions show no statistically significant effect in more than one case. [22]

When we approximate DEMOCRACY using its three-year average value, the number of religions with inequality-increasing effect of democracy goes up. In addition to Confucian and Communist countries, there is now a strong evidence of a positive relationship for Buddhist/Hindu societies, and somewhat weaker evidence for "New" Christian and Orthodox countries. On the other side of the spectrum, the group of Christian mixed/Judiasm and countries without a dominant religion is joined by countries where Protestantism is the dominant religion. They exhibit the same inequality reducing effect, although it is not statistically significant in all the formulations.

Table 7 summarizes the effect of religion on inequality, by combining the "intrinsic" effect of religion on inequality, and the additional effect working through the interaction term. For the effect to be deemed significant, we request that the sign of the coefficient be the same (positive or negative) throughout all the formulations of the regression, and that it be statistically significant at the 5 percent level in at least two cases out of six.

Table 7. Effect of different religions on inequality 1/

	Additional effect of democracy on inequality 3/ (depending on the religious context)		
Intrinsic effect of religion 2/	*More equal than under Catholicism*	*Same as under Catholicism*	*Positive effect (offsets direct negative effect of democracy)*
More egalitarian than Catholic		Muslim	Confucianism
Same as under Catholicism	Christian mixed/Judeo	Orthodox "New" Christian African Christian/ traditional	Buddhist/Hindu Communism
Less egalitarian than Catholic	Protestant Mixed religion		

1/ Based on the results from Table 6.
2/ As reflected in the religion dummy variable.
3/ As reflected in interaction between democracy and religion.

Table 7 classifies all societies into six (out of possible nine) groups. Note first that empty cells are the "extreme" societies. There are, according to our results, no religions that are both intrinsically more egalitarian than Catholicism *and* where democracy has more of a pro-equality effect (than under Catholicism); nor are there religions that are intrinsically less equal than Catholic *and* where democracy increases inequality. Thus all religions cluster in the "middle" cells.

Second, we note that in all cases where societies are predominantly Judeo-Christian greater democracy either reduces inequality—significantly as in the case of Protestant and mixed Christian societies, or mildly so as in the case of Catholic, Orthodox, "new" Christian, and African Christian/traditional societies. Unlike the Judeo-Christian societies, other cultures, notably Confucian and less so Buddhist/Hindu and Communist, show that while the effect of

increased democracy on inequality is positive, they apparently have other "intrinsic equalizers" independent of democracy which reduce inequality. The same "intrinsic equalizers" are very strongly present in Muslim societies too. Therefore, more equality seems, in the Judeo-Christian context, and this particularly in Protestant and mixed Christian societies, to be achieved through democracy, and presumably, the ability which democracy gives to poorer segments of society to redistribute some income (via government transfers and taxes) away from the rich.[23] In the other societies (Muslim, Buddhist/Hindu, Confucian and Communist), the effect of democratization on inequality is small or even positive, but inequality is reduced, we surmise, through other tools like religious alms, broadly provided state-sector employment, private transfers between the generations, and generally stronger family, and perhaps ethnic, ties. Whether such societies are democratic or not does not seem to matter, as far as equality is concerned.

Third, an interesting case is offered by societies without a dominant religion. These are in all but two cases (Fiji, and Trinidad and Tobago) African nations where traditional African beliefs, Christianity and Islam each appeal to a broad segment of the population. These religiously fragmented societies seem to possess certain features that make them intrinsically more unequal than other societies. However, on a positive note, democracy there is very strongly associated with reduced inequality, the way it is associated in mixed Christian and Protestant nations. Thus, democracy, in addition to its positive freedom-expanding effect, may also exert a desirable effect on inequality. To the extent that inequality stimulates inter-ethnic and inter-religious conflict, one may speculate that democracy in such fractious settings may be a good tool for lessening inequalities and thus the underlying tensions.[24]

5. Conclusion

In conclusion, we find that it is not democracy per se that matters for inequality—in fact, its direct net effect appears quite weak. Our findings suggest rather that democratization affects inequality indirectly.

First, through the social context and societal values within which it takes place. For the Judeo-Christian societies, democratization is generally associated with reduction in inequality. For Muslim, Buddhist/Hindu and Confucian societies, democracy has either hardly discernible, or even a positive, effect on inequality. Yet these societies seem to possess some features which make them intrinsically more equal than the Judeo-Christian societies. It could be – although our empirical test does not account for that - that, the same "desired" level of inequality which in the Judeo-Christian societies is achieved through expanded franchise and government-sponsored redistribution, is implemented in the Muslem, Buddhist/Hindu, and Confucian societies informally, through family and ethnic ties.

Second, our empirical analysis indicates that democracy "works" through the type of political system: controlling for the level of democracy, parliamentary systems are more likely to generate lower inequality than presidential systems. While this aspect was not perceived by us as the main motivation for pursuing this work, the robustness of the finding begs further empirical analysis and the development of theoretical foundations for the study of the effect of political institutions on inequality.

References

Abramson, P. and R. Inglehart, 1995, *Value Change in Global Perspective*, University of Michigan press, Ann Arbor, MI.

Ahluwalia, Montek S. (1976), "Inequality, Poverty and Development", *Journal of Development Economics*, No.3.

Almond, G. and S. Verba, 1963, *The Civic Culture: Political Attitudes and Democracy in Five Nations*, Princeton University Press, Princeton, NJ.

Arrow, K.J., 1983, "Optimal and voluntary income distribution," ch. 15 in *Collected Papers of Kenneth J. Arrow*, vol. 1, The Belknap Press of Harvard University Press, Cambridge, MA.

Atkinson, A.B. and J. Micklewright, 1992, *Economic Transformation in Eastern Europe and the Distribution of Income*, Cambridge University Press, Cambridge.

Beck, T., G. Clarke, A. Groff, P. Keefer, and P. Walsh (2000), "New tools and new tests in comparative political economy: The Database of Political Institutions, World Bank Policy Research working Paper No. 2283, February 2000.

Becker, G.G., 1974, "A theory of social interactions," *Journal of Political Economy*, 82, 1063-93.

Bisin, A. and T. Verdier, 2000, "A model of cultural transmission, voting and political ideology," *European Journal of Political Economy*, 16, 5-29.

Boix, C., 2000, "Democracy and inequality," working paper, http://home.uchicago.edu/~cboix/dem-ineq.pdf

Bollen, K. and R.W. Jackman, 1985, "Political democracy and the size distribution of income," *American Sociological Review*, 50, 438-457.

Collier, P., 1998, "The political economy of ethnicity," *Proceedings of the Annual World Bank Conference on Development Economics*, Washington DC.

Deininger, K. and L. Squire (1996), "A new data set measuring income inequality", *World Bank Economic Review*, vol. 10:565-91.

Deininger, K. and L. Squire (1998), New ways of looking at old issues: inequality and growth. *Journal of Development Economics*, vol, 57:259-87.

Easterly, W. (2000) "The Middle Class Consensus and Economic Development," World Bank Policy Research Department Working Paper 2346.

Flemming, J.S. and J. Micklewright, 2000, "Income distribution, economic systems and transition," Ch. 14 in *Handbook of Income Distribution*, A.B. Atkinson and F. Bourguignon, eds. Elsevier, North-Holland.

Gradstein, M. and M. Justman, 2000, "Human capital, social capital, and public schooling," *European Economic Review*.

Gradstein, M. and B. Milanovic, 2000, "Does Liberte=Egalite?"

Granato, J., Inglehart, R. and D. Leblang, 1996, "The effect of cultural values on economic development: Theory, hypotheses and some empirical tests," *American Journal of Political Science*, 40, 607-631.

Hillman, Arye and H.-W. Urspung (2000), "Political culture and economic decline", *European Journal of Political Economy*, vol. 16, No. 2, July.

Hochman, H.M. and Rodgers, J.D., 1969, "Pareto optimal redistribution," *American Economic Review*, 59, 542-547.

Jackman, R.W. and R.A. Miller, 1996, "A Renaissance of political culture?" *American Journal of Political Science*, 40, 632-59.

Kaelble, Hartmut and Mark Thomas (1991), "Introduction", in Y.S. Brenner, Hartmut Kaelble and Mark Thomas (eds.), *Income Distribution in Historical Perspective*, Cambridge and Paris:Cambridge University Press and Editions de la Maison des Sciences de l'Homme.

Lenski, G., 1966, *Power and privilege: A theory of social stratification*, New York: Mc-Graw Hill.

Li, Hogyui, Lyn Squire and Heng-fu Zou (1998), "Explaining international and intertemporal variations in income inequality", *The Economic Journal*, vol. 108: pp. 26-43, January 1998.

Lipset, S.M., 1959, "Some social requisites of democracy: Economic development and political development," *American Political Science Review*, 53, 69-105.

Meltzer, A. and S. Richard, 1981, "A rational theory of the size of government," *Journal of Political Economy*, 89, 914-927.

Milanovic, Branko (1994), "Determinants of Cross-country Income Inequality: An Augmented Kuznets' Hypothesis", *World Bank PRE Working Papers Series*, No. 1246, January 1994.

Milanovic, B., 1998, *Income, Inequality, and Poverty during the Trnasition from Planned to Market Economy*, The World Bank, Washington DC.

Milanovic, B., 1999, "Explaining the growth in inequality during the transition," *Economics of Transition*, 7.

Milanovic, Branko (2000), "The median voter hypothesis, income inequality and income redistribution: An empirical test with the required data", *European Journal of Political Economy*, September 2000.

Muller, E.N., 1988, "Democracy, economic development, and income inequality," *American Sociological Review*, 53, 50-68.

Perotti, Roberto (1996). "Growth, income distribution, and democracy: What the data say", *Journal of Economic Growth* 1, 149-187.

Persson, T. and G. Tabellini, 1999, "Political economics and public finance," NBER WP 7097, http://www.nber.org/papers/w7097.

Rodrik, D., 1999, "Democracies pay higher wages," *Quarterly Journal of Economics*, 114, 707-738.

Rothschild, M. and J.E. Stiglitz, 1973, "Some further results on the measurement of inequality," *Journal of Economic Theory*, 6, 188-203.

Sirowy, L. and A. Inkeles, 1990, "The effects of democracy on economic growth and inequality: A review," *Studies in Comparative International Development*, 25, 126-157.

WIDER (1999), World Income Inequality Database, World Institite for Development Economics Research, United Nations Development Programme, version Beta 3, 8 November 1999.

APPENDIX: RELIGIOUS COMPOSITION OF THE COUNTRIES

Country	Religious composition	Assigned dominant religion
Armenia	Largest share Armenian Orthodox (94%), Russian Orthodox, Protestant, Islamic, Yazdi communities	Communist; Orthodox
Australia	26% Roman Catholic, 50% various Protestant	Protestant
Austria	77% Roman Catholic, 5% Protestants	Catholic
Belgium	Roman Catholic 75%	Catholic
Burkina Faso	Majority animist belief (65%), between 25% and 30% Muslims, some 10% Christian-mainly Roman Catholic	African traditional
Bangladesh	85% Muslim, 16% Hindu, some Buddhist and Christian	Muslim
Bulgaria	Most are Bulgarian Orthodox Church (85%), and 13% Muslim.	Communist; Orthodox
Bahamas	Most inhabitants profess Christianity, largest are Anglican, Baptist, Roman Catholic & Methodist Churches, overall various Protestants 52%, Catholics 19%.	Protestant
Belarus	Major religion Eastern Orthodox (90%), and few Muslim and Jew	Communist; Orthodox
Bolivia	Almost all Christianity, majority are Roman Catholic (95%)	Catholic
Brazil	Almost all Christianity, 90% Roman Catholic	Catholic
Barbados	Almost all Christianity, largest is Angelican Church, small group of Hindus, Muslims & Jews; overall 67% Protestant, 4% Catholic.	Protestant
Botswana	50% Christian; 50% traditional animist beliefs.	African Christian/traditional
Cent. Af. Rep.	Christian between 33% and 50%, Muslims between 5% and 15%, traditional beliefs about 25%	African Christian/traditional
Canada	45% Roman Catholic, 26% Protestants Churches, other numerous religions	Christianity mixed/Judeo
Switzerland	48% Protestants, 44% Catholic.	Christianity mixed/Judeo
Chile	89% Roman Catholic, 11% Protestant	Catholic
China	Confucianism, Buddhism, Daosim, also small Muslim and Christian minority (officially Communist)	Communist
Cote d'Ivoire	63% traditional beliefs, 25% Muslims, 12% Roman Catholic	African traditional
Cameroon	51% traditional beliefs, 33% Christian, 16% Muslims	African Christian/traditional
Colombia	95% Roman Catholic, also Protestant and Jewish.	Catholic
Costa Rica	95% Roman Catholic, remaining are also Christian	Catholic
Czechoslovakia	Communist	Communist
Czech Rep.	40% Roman Catholic, 5% Protestant	Catholic

FRG/Germany	45% Protestant, 39% Roman Catholic	Christianity mixed/Judeo
Djibouti	More than 90% Muslims, 6% Christian	Muslim
Denmark	87% Evangelical Lutheran Church, small percentage other Protestent, and Catholic	Protestant
Dominican Republic	More than 90% Roman Catholic, small communities of Protestants and Jews	Catholic
Algeria	Almost all Muslims (99%)	Muslim
Ecuador	More than 90% Roman Catholic	Catholic
Egypt	Between 80% and 90% Muslim, others Christians mainly Copts	Muslim
Spain	Almost all Roman Catholic (99%)	Catholic
Estonia	62% Evangelical Lutheran Church, 30% Orthodox	Communist; Protestant
Ethiopia	Nearly half of the population are members of the Ethiopian Orthodox Church (North and Southern plateau), the rest: Christian, Muslim and Animist	Orthodox
Finland	85.7% Evangelical Lutheran Church, almost all Christian	Protestant
Fiji	53% Christians(mainly Methodists), 38% Hindus, 8% Muslims	Mixed
France	81% Roman Catholic, other Christians, some Muslims and Jews	Catholic
Gabon	60% Christians, mainly Roman Catholic	“New” Christian
Gambia	85% Muslims, 10% Christians, small numbers of Animists	Muslim
UK	The Church of England dominant, some Roman Catholicism, Methodists and Baptists	Protestant
Ghana	38% traditional beliefs, 30% Muslim, 24% Christians	Mixed
Guinea	Most inhabitants (85%) are Muslims, 8% Christian, some traditional animist beliefs	Muslim
Guinea-Bissau	Animism (65%) and Islam (30%) are principal religions, 5% Roman Catholics and other Christians	African traditional
Greece	97% Greek Orthodox	Orthodox
Guatemala	About 80% Roman Catholic, about 20% Protestants	Catholic
Guyana	57% Christianity, about 30% Hindu, Islam about 10%	Mixed
Hongkong		Confucian
Honduras	97% Roman Catholic	Catholic
Hungary	65% Catholic church, 20% Calvinist, 5% Lutheran Church	Communist; Catholic
Indonesia	87% Islam, about 10% Christians, remainders are Hindus and Buddhists	Muslim
India	80% Hindu, 11% Muslim, others are Christians, Sikhs, Buddhists, Jains and other minorities	Hindu/Buddhist
Ireland	About 95% Roman Catholics, 5% Protestants	Catholic
Iran	Great majority (95%) Muslims	Muslim
Israel	81% Judaism, 14% Muslims	Christianity mixed/Judeo
Italy	About 90% Roman Catholic	Catholic
Jamaica	Church of God' is the most numerous, majority population (56%) are various Protestant	“New” Christian
Jordan	More than 90% Muslims, 8% Christians	Muslim
Japan	Major religion: Shintoism and Buddhism; also Christian minority	Confucian
Kazakhstan	Predominant religion is Islam (47%), 15% Eastern Orthodox	Communist; Muslim

Kenya	28% Catholic, 20% Protestants, about 20% African traditional beliefs, 8% Muslim	African Christian/traditional
Kyrgyzstan	The major religion is Islam (70%)	Communist; Muslim
Korea, South	Confucianism, Buddhism and Chundo Kyo are principal traditional religions; large percentage of Christians (between 25% and 45%)	Confucian
Laos	Communist	Communist
Sri Lanka	Nearly 70% Buddhists, 15% Hindus, 8% Muslim, 8% Christian	Hindu/Buddhist
Lesotho	90% Christians, largest denominations are Catholic, Lesotho Evangelical and Anglican Churches	"New" Christian
Lithuania	Predominantly Roman Catholic (80%), 10% Orthodox, small minorities of Lutherans and Calvinists	Communist; Catholic
Luxembourg	95% Roman Catholic, and small minority of Protestant	Catholic
Latvia	Most are Lutherans or Roman Catholics, 37% Russian Orthodox or Old Believers	Communist; Protestant
Morocco	Vast majority Muslim (99%)	Muslim
Moldova	Largest denomination is Eastern Orthodox Church	Communist; Orthodox
Madagascar	More than 50% Animist beliefs, 43% Christians, remainders are Muslims	African Christian/traditional
Mexico	90% Roman Catholic	Catholic
Mali	About 80% Muslims, 18% traditional Animist beliefs, 1.2% Christians	Muslim
Mongolia	No state religion but Buddhism is being encouraged	Communist; Hindu/Buddhist
Mauritania	Almost all Muslims	Muslim
Mauritius	50% Hindu, about 30% Christians, 17% Muslims	Buddhist/Hindu
Malawi	75% Christianity, 10% traditional beliefs, 10% Muslims, Hindu minority	"New" Christian
Malaysia	Between 55% and 60% Muslims, 19% Buddhists, some Hindus, Christians and some traditional beliefs	Muslim
Niger	95% Muslims, most remainders follow traditional beliefs	Muslim
Nigeria	47% Muslims, 35% Christians, 18% Animist beliefs	Mixed
Nicaragua	Almost all are Roman Catholics (95%)	Catholic
Netherlands	33% Roman Catholics, 25% Protestants	Christianity mixed/Judeo
Norway	86% Evangelical Church, almost all profess Christianity	Protestant
Nepal	90% Hindu, 5% Buddhist, 3% Muslims	Hindu/Buddhist
New Zealand	42% various Protestants (18% Angelican Churchs, 13% Presbytaerians), 13% Catholic	Protestant
Pakistan	Islam-State Religion, 97% Muslims	Muslim
Panama	85% Roman Catholics, 15% Protestants	Catholic
Peru	90% Roman Catholic	Catholic
Philippines	84% Roman Catholics, 4% Protestants, 6%Philippine Independent Church, 5% Muslims	Catholic
Papua New Gui	90% profess Christianity (most Protestant)	"New" Christian
Poland	More than 90% Roman Catholic Church	Communist; Catholic
Puerto Rico	Most Roman Catholic	Catholic

Portugal	Almost all are Roman Catholic (97%)	Catholic
Paraguay	Almost 90% Roman Catholic, small Protestants minority	Catholic
Romania	83% Romanian Orthodox Churches, 6% Catholic	Communist; Orthodox
Russia	Largest religion Russian Orthodox (85%), some Muslims, and Buddhists	Communist; Orthodox
Rwanda	Most Christians (74%), 25% traditional Animist beliefs	"New" Christian
Sudan	About 70% Muslims, 25% Animists, 5% Christians	Muslim
Senegal	94% Muslims, 4% Christians, mostly Roman Catholic, and a small number of Animists	Muslim
Singapore	Principal religions are Taoism, Confucianism, Buddhism, Islam, Christianity and Hinduism	Confucian
Sierra Leone	About 30% each of Muslim and traditional beliefs, 10% Christians	Mixed
El Salvador	88% Roman Catholic	Catholic
Soviet Union	Communist	Communist
Slovakia	60% Roman Catholic Church, 8% Protestants (Evangelical Church)	Catholic
Slovenia	Largest religion Roman Catholic	Communist; Catholic
Sweden	Almost 90% Evangelical Lutheran Church	Protestant
Seychelles	Almost all are Christians (90% Roman Catholics)	Catholic
Thailand	Predominantly Buddhism (95%), 4% Muslims, and small Christian minority	Hindu/Buddhist
Turkmenistan	Most population (87%) profess Islam	Communist; Muslim
Trinidad and Tobago	30% Roman Catholics, almost 30% various Protestant, 24% Hindus, 6% Muslims	Mixed
Tunisia	State religion-Islam; almost all inhabitants (98%) are Muslims,	Muslim
Turkey	99% Muslims	Muslim
Taiwan	Predominantly Buddhism, some Muslims, Daoists, Christians (both Catholic and Protestant).	Confucian
Tanzania	40% Christians, 33% Muslim, 25% African traditional beliefs, some Hindus	Mixed
Uganda	More than 60% Christians, 16% Muslims	"New" Christian
Ukraine	Ukranian Orthodox Church (75%), 14% Catholics, some Muslims	Communist; Orthodox
USA	Christianity is predominant religion (various Protestants a plurality)	Protestant
Uzbekistan	Islam-predominant religion; some Orthodox Christian	Communist; Muslim
Venezuela	92% Roman Catholics	Catholic
Vietnam	Communist	Communist
Yemen	Almost all Muslims	Muslim
Yugoslavia	Serbian Orthodox Church (80%), Muslims	Communist; Orthodox
South Africa	Most inhabitants profess Christianity, some traditional African religions, small minority of Hindus and some Muslims	"New" Christian
Zambia	More than 60% Christians, others profess traditional beliefs, some Muslims and Hindus	"New" Christian
Zimbabwe	55% Christians, a large numbers are in traditional beliefs, minority of Muslims and Hindus	Aftrican Christian/traditional

Sources: Most of the data come from the *Europa Yearbook* (BM: what edition), complemented wth the Almanach and a number of Internet sources for more "difficult" countries (e.g. for Ethiopia, http://www.africanconnection.org/docs/factsheets/ethiopia.html, for Sudan, http://www.sufo.demon.co.uk/reli003.htm,

for South Korea and Ivory Coast, http://atheism.about.com/religion/atheism/library/world/KZ/bl_SKoreaReligion.htm, for Fiji, From http://www.fiji.gov.fj/about/hist.html).

[1] See Sirowy and Inkeles, 1990, for a survey of earlier literature There also exists a related literature, which examines the reverse causal link, from inequality to democracy, see Boix, 2000, and references therein. While this paper generally abstracts from this direction, the empirical analysis below takes the possibility of such reverse link into account.

[2] See also Jackman and Miller, 1996, for a dissenting view.

[3] The dominant religion or ideology usually provides core values for a culture, although other social factors can obviously also shape peoples' values.

[4] A central result in Arrow's paper is that, for a large enough economy, all efficient allocations of income are egalitarian in the sense that the difference between the minimal income level and the average one becomes negligible.

[5] More precisely, this is so unless there is a single individual whose final income is above the minimal income of the receivers; a formal proof is available from the authors.

[6] Specifically, suppose that I is one of these inequality measures and let I_0 refer to its pre-tax value and $I_1(t)$ refer to its post-tax value. Straightforward calculations reveal then that $I_1(t) = (1-t)\, I_0 /(1-B(t))$, so that $dI_1(t)/dt = [-(1-B) + B'(1-t)]I_0 /(1-B(t))^2 < 0$, and $d^2 I_1(t)/dt^2 > 0$. Thus, in both these cases inequality decreases as a result of increased redistribution, albeit at a diminishing pace.

[7] One long run implication of the above proposition, which we, however, do not test directly here, is that democratization should result in a convergence in inequality levels across countries.

[8] The terms "ideology" and "religion" will be used interchangeably.

[9] The Polity98D database (produced in June 2000) can be downloaded from the Internet at http://k-gleditsch.socsci.gla.ac.uk/Polity.html.

[10] Available on the Internet at ftp://isere.colorado.edu/pub/datasets/polity3/polity3.codebook.

[11] For example, in explaining how the variable "Democracy" is constructed, Gurr (1997) writes that the variable is a sum of three elements: competitivness of political participation (coded 1 to 3), competitivness of executive recruitment (coded 1 to 2), and constraints on chief executive (coded 1 to 4). Political participation can be competitive (3 "democracy points"), transitional (2) or factional (1). However, it is left unclear what exact requirements need to be fulfilled in order for political participation to be deemed "competitive"; apparently this is left to the judgment of the authors.

[12] The data come from the 1997 World Bank's *World Development Indicators*.

[13] The calculation is performed as follows. For most countries, we have (from the World Bank sources) GDP per capita in the 1995 US$ for all the years going back to 1960. We also have the benchmark 1995 GDP per capita in $PPP. We then use the relationship

$$\frac{GDP\$_{t,95}}{GDP\$_{95,\,p5}} = \frac{GDPPPP_{t,95}}{GDPPPP_{95,95}}$$

where $GDP\$_{t,95}$ = dollar per capita GDP for year *t* expressed in dollars of 1995, and $GDPPPP_{,t,95}$= PPP per capita GDP for year *t* expressed in international prices (PPP) of 1995, to derive the GDPPPP for the years before 1995.

[14] Kindly provided to the authors by Sampsa Kiiski. The data are also available at <http://www.undp.org/poverty/initiatives/wider/wiid.htm.>

[15] Household dummy is derived from the *Reference unit* variable in WIDER ; welfare indicator dummy is derived from *Income definution* variable in WIDER. We also distinguish between gross and net income or expenditures.

[16] Note that this number is larger than the number of countries with Gini or GDP data alone, because of the countries that may have one or another variable, but not all.

[17] Between 1960 and 1964, the number of countries with GDPPPP per capita data varies between 84 and 90. After 1984, it is never less than 120 countries in each year.

[18] For 19 countries, there is only one observation per country.

[19] There are some exceptions. Ethiopia includes Eritrea until the separation of the two; Pakistan includes both West Pakistan and Bangladesh until 1971. Also, former East Germany (German Democratic Republic) is ignored, and is included only after the Unification in 1991.

[20] Even dramatic regime changes like the Cuban revolution, or democratic changes in Eastern Europe took several years to "percolate" to the level of income distribution. Less radical political changes (partial democratization, strengthening of the opposition parties, greater openness of the media etc.) need even more time to affect inequality.

[21] The country dummies are not shown since we are not per se interested in them.

[22] Protestant countries show a statistically significant negative effect in two cases, and positive effect in one.

[23] See the relationship between level of factor-income inequality and redistribution in Milanovic, 2000. The only non-Judeo-Christian society in that sample is Taiwan (Province of China), and it exhibits features that are markedly different from the rest: there is almost no redistribution and no reduction in inequality through the action of the government tax-and-transfer system. And Taiwan has the most *equal* factor-income level distribution of all the countries in the sample.

[24] A similar point with respect to the role of democracy in prevention of violent conflict in fractionalized societies is made in Collier, 1999, and Easterly, 2000.