

# ECONOMIC OPENNESS, DEMOCRACY, AND INCOME INEQUALITY

## An Empirical Analysis

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Scholars have studied effects of economic openness and democracy on national income inequality in two literatures. In democracy studies, scholars agree democracy reduces inequality but empirical evidence is ambiguous. In globalization studies, effects of economic openness on inequality are debated but have not been rigorously examined. This article is the first systematic statistical study of the effects of both economic openness and democracy on income inequality. These effects need to be studied together. The authors measure national income inequality from a comprehensive Gini coefficient data set. Economic openness is measured from trade flows, foreign direct investment inflows, and financial capital inflows. The period studied is 1960 to 1996, the unit of analysis is a country decade, and the sample includes 69 countries. The authors find that democracy and trade reduce income inequality, foreign direct investments increase income inequality, and financial capital does not affect income inequality. Policy implications are discussed.

**Keywords:** globalization, national Gini, statistical analysis, policy

**H**ow does the economic openness of a country affect its distribution of income? How does the level of democracy affect a country's distribution of income? These questions are addressed in two literatures. The effect of economic openness on the distribution of income is studied in the literature on economic globalization (e.g., Held, McGrew, Goldblatt, & Perraton,

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1999; Rodrik, 1997).<sup>1</sup> Although the exact definition and scope of globalization are debated, scholars agree that the current globalization implies growing economic openness of countries to trade, foreign direct investments (FDI), financial capital flows, and—to a lesser extent—labor mobility (e.g., Held et al., 1999; Hughes, 2000). Existing studies offer conflicting theoretical expectations of the effects of economic openness on the distribution of income, but these studies do not provide rigorous empirical analyses of their claims. The effect of democracy on income distribution is an important topic in the literature on democracy (Chan, 1997). Scholars agree that democracy implies a national political regime based on free elections and broad political representation (e.g., Diamond, 1999). Existing studies argue that democracy reduces income inequality, but the empirical evidence is inconclusive. Some studies find a negative effect of democracy on income inequality, other studies find a positive effect, and a third group finds no effect at all.

So far, these two literatures have remained largely on separate courses. We argue that the effects of these forces on income distribution need to be studied together. Although both economic openness and democracy are said to affect income inequality, many studies also argue that openness affects democracy (e.g., Drake, 1998; Held et al., 1999; Im, 1996; Li & Reuveny, *in press*; Whitehead, 1996). Empirical studies of income inequality that exclude either economic openness or democracy as causal determinants can incorrectly attribute the effect of one force to the other.

Taking a broader view, economic openness and democracy stand at the center of liberalism. The literature on liberalism, emphasizing the importance of free choice, comprises two main streams (Zacher & Matthew, 1995). Republican liberalism argues that democracy, the preferred political regime, reduces income inequality. Commercial liberalism (classical and neoclassical economics) argues that free market capitalism is the preferred economic regime.<sup>2</sup> Although the issue of income inequality was central for classical economists, it has received relatively little attention in neoclassical economics (Ferreira, 1999). We believe this issue deserves more attention. Capitalism and democracy are not easy companions. Although democracy is based on the principles of “one person, one vote” and representative government, capitalism is based on the principles of *laissez faire* and private enterprise. Furthermore, democracy is often associated with income redistribution policies (e.g., progressive taxation), but capitalism typically rewards individuals with different levels of incomes. Hence, democracy may promote income

1. The issue also is debated in policy and popular circles. For example, see Wolf (2000), Soros (1997), and World Bank Poverty Net (2000).

2. For a review article focusing on the streams of liberalism, see Zacher and Matthew (1995).

equality, whereas capitalism may promote income inequality. A skewed income distribution, in turn, could lead to a skewed distribution of political power, which negates democracy and therefore its effect on inequality.

Our empirical work differs from previous studies in three ways. First, we study the effects of both democracy and economic openness on income inequality. The dependent variable is measured by the Gini coefficient. The independent variables include democracy, trade, FDI, and financial capital inflows. Second, we use World Bank data on national Gini coefficients from 1960 to 1996. Third, our sample is larger than the samples used in previous studies, and we also perform separate analyses for the developed countries (DCs) and the less developed countries (LDCs).

The remainder of this article is organized as follows: the following section discusses the effects of democracy and economic openness on income inequality, the next section describes the empirical research design and data, the third section presents the results, the fourth section conducts sensitivity analyses, and the last section summarizes our results and discusses the implications for policy making.

## EFFECTS OF DEMOCRACY AND ECONOMIC OPENNESS ON INCOME INEQUALITY

### EFFECTS OF DEMOCRACY

The claim that democracy promotes an egalitarian distribution of income can be traced back to the late 18th century. Many scholars argue that democracy increases the opportunities for participation, allowing the poor to demand more equitable income redistribution (e.g., Boix, 1998; Chan, 1997).<sup>3</sup> As suffrage expands, reelection-oriented democratic leaders are held accountable to the voters and become increasingly attuned to their needs. Democratic governments are inclined to help the lower and middle classes by adopting redistributive policies such as welfare spending, progressive taxation, minimum wage laws, price subsidies, and public work provisions. In contrast, authoritarian leaders are accountable to a powerful and rich minority. They tend to adopt public policies benefiting this minority—policies that maintain or increase income inequality.<sup>4</sup>

3. See also Bollen and Jackman (1985); Sirowy and Inkeles (1991); Lappe, Collins, Rosset, and Esparza (1998); and Human Development Report (2000).

4. Some scholars argue that autocracies suppress wages to industrialize their economies (e.g., Schamis, 1991). Others note that industrialization in autocracies can also reduce inequality (e.g., Birdsall, 1998).

Democracy affects the distribution of income through the process of competing pressures: The government is subject to pressure from interest groups. By promoting a more equal distribution of political power, democracy gives rise to labor unions and political parties that represent the lower and middle classes as well as to public policies that redistribute income to their constituents. The more organized and vital these groups are, the more successful they are at influencing policy making. As described by Lenski (1966), democracy redistributes political power in favor of the majority and therefore leads to policies that reduce inequality.<sup>5</sup>

Previous empirical studies of the effect of democracy on income inequality exhibited several limitations. Some authors describe a few specific historical episodes, arguing, for example, that the expansion of suffrage in Western Europe in the early 1900s reduced income inequality (Justman & Gradstein, 1999; Lindert, 1994). When income inequality was measured directly in statistical studies, the data were limited. E. N. Muller (1988), for example, measured income inequality using the Gini coefficient (as we do) but only for 1970. Other scholars used larger samples but employed indirect measures of income inequality.<sup>6</sup>

The statistical evidence on the effect of democracy on income inequality is mixed. E. N. Muller (1988), Moon (1991), and Rodrik (1998) reported that democracy reduces inequality. However, Bollen and Jackman (1985), Deininger and Squire (1996), and Gasiorowski (1997) reported that the effect of democracy on income inequality is statistically insignificant. Chan (1997) reported mixed findings, whereas Simpson (1990) argued that income inequality rises with democracy up to some level of democracy and then declines.<sup>7</sup>

#### EFFECTS OF ECONOMIC OPENNESS

In broad terms, economic openness creates winners and losers in a society. The effects of openness on income distribution depend on the identity of the

5. For details see, for example, Gasiorowski (1997), E. N. Muller (1988), Moon (1991), Lindert (1989), and Lipset (1959). Alesina and Rodrik (1996) formalized these ideas by presenting an economic model in which the expansion of suffrage makes a poor individual the swing vote, leading to redistributive taxes that provide the poor with more income.

6. For example, Chan (1997) used government expenditures in areas expected to transfer income from rich to poor (e.g., health, housing, and education). Gasiorowski (1997) used the growth rates of industrial wages to gauge changes in income inequality. Rodrik (1998) used labor wages as a percentage of GDP.

7. In their literature survey, Sirowy and Inkeles (1991) reported that six studies find the effect of democracy on income inequality is negative and that six studies find the effect is positive or statistically insignificant.

winners and the losers. We discuss these effects in four categories: international trade, FDI, foreign financial capital, and international labor mobility.

*Trade.* According to the Heckscher-Ohlin model of international trade, countries export goods that intensively use their abundant factors of production and import goods that intensively use their scarce factors. Building on this model, Stolper and Samuelson (1941) predicted that trade would raise the incomes of the owners of abundant factors and reduce the incomes of the owners of scarce factors.<sup>8</sup> Because the DCs are relatively well endowed with skilled labor and capital, their imports are expected to hurt their unskilled labor, whereas their exports should benefit their capital owners and skilled labor. In contrast, the LDCs are relatively well endowed with unskilled labor. Therefore, their imports should hurt their capital owners and skilled labor and their exports should benefit their unskilled labor. Hence, trade should raise income inequality in the DCs and reduce it in the LDCs. Wood (1994) found evidence in favor of the Stolper-Samuelson model. However, Robbins (1996) argued that wage inequality rose in many LDCs, contrary to the prediction of Stolper and Samuelson. It is also reported that in many LDCs, trade shifts income to resource-intensive sectors (Inter-American Development Bank, 1998).<sup>9</sup>

The Stolper-Samuelson (1941) theorem does not describe the only channel through which trade can affect income inequality. Rodrik (1997) argued that trade makes it easier for firms in the DCs to substitute unskilled labor with cheap imports, weakening labor's bargaining power and reducing wages. According to Birdsall (1998), trade intensifies economic competition, which reduces prices of basic consumption goods. This benefits the poor more than the rich because the poor spend relatively larger shares of their incomes on basic consumption goods. The competition also diminishes the monopoly position enjoyed by the upper class, reducing income inequality (Birdsall, 1998). Another argument is that trade increases labor productivity, which leads to increased wages and reduced inequality (Held et al., 1999). To the extent that trade reduces the wages of unskilled labor, it provides incentives for workers to acquire education and for firms to employ more unskilled labor, again reducing inequality (Blanchard, 2000). Finally, the

8. The Stolper and Samuelson (1941) theorem deals only with the distribution of income. It is well established in the trade literature that economic gains from trade outweigh economic losses.

9. Slaughter and Swagel (1997) attributed wage inequality in DCs to technological-change bias toward skilled labor, whereas Minford, Riley, and Nowell (1997) argued that trade and technological innovation contribute equally to wage inequality. However, Rodrik (1997) argued that the evidence in favor of a technological-change driver of wage inequality in DCs is weak.

winners from trade could compensate the losers, reducing inequality, although such compensation typically is not done on a voluntary basis (Rodrik, 1997; Salvatore, 1998).

*FDI.* FDI typically involves multinational corporations (MNCs), whose effects on income inequality are debated.<sup>10</sup> Some analysts argue that FDI raise inequality. First, MNCs can pressure host governments to cut welfare expenditures and curb labor unions to reduce wages, both of which hurt the lower and middle classes. The threat of MNCs leaving the country also reduces workers' wages because it reduces their bargaining power (Nafziger, 1997; Salvatore, 1998). Second, MNCs are said to repatriate profits from the LDCs, leaving them underdeveloped and hurting their poor (Baran, 1973; Jenkins, 1996; Lall, 1974; Nafziger, 1997). Third, the capital-intensive techniques used by MNCs are said to promote unemployment among unskilled laborers and to distort income distribution by creating an economy with a small advanced sector and a large backward sector (Jenkins, 1996; Lall, 1985; R. Muller, 1979; Nafziger, 1997; Robbins, 1996). Fourth, MNCs are said to pay low wages in labor-intensive industries such as footwear and clothing and to push domestic suppliers to follow suit to reduce the MNCs' purchasing costs (Barnet & Cavanagh, 1994; Held et al., 1999). Fifth, domestic tax systems are not well suited to tax MNCs. The smaller tax base reduces government revenue—and therefore welfare expenditures—which hurts the poor more than the wealthy (Hatzius, 1997; Human Development Report, 1999).

In contrast, several studies argue that MNCs provide LDCs with capital and technology, improve their corporate governance, and propagate better management practices. These forces, in turn, raise labor productivity and promote economic growth (Batra & Tan, 1997; Blomstrom & Kokko, 1996; Coe, Helpman, & Hoffmaister, 1994; Hanad & Harrison, 1993; Markusen & Venables, 1999; Organization for Economic Cooperation and Development, 1994). It follows that FDI should reduce income inequality via the Kuznets (1955) effect (see Research Design section). Dollar and Kraay (2000) also supported this view; they argued that economic growth raises the income of the poor proportionally more than that of the rich, making FDI a useful tool in reducing poverty (Stiglitz, 1998). In this spirit, Borenszstein, De Gregorio, & Lee (1994) found that MNCs promote economic growth in LDCs, and

10. Foreign direct investments (FDI) entails the acquisition of a lasting management interest in an enterprise operating in an economy other than that of the investor or the creation of a subsidiary of a domestic firm in a foreign country. Portfolio investments cover private transactions in securities. For details, see World Development Indicators (1999).

Blomstrom, Lipsey, and Zejan (1992) found that FDI promotes technology transfer from DCs to LDCs. Other scholars argue that MNCs cannot easily relocate from one country to another to reduce their labor costs because lower wages also are associated with lower labor productivity. Hence, labor's bargaining power is not necessarily diminished by FDI (Lawrence, 1994). Furthermore, the host governments can regulate the operation of MNCs, thus controlling their effects on host economies (Kurzer, 1993; Vernon, 1971).

A relatively small number of studies empirically investigate the effects of FDI on wages in LDCs (Klein, Aaron, & Hadjimichael, 2001). They find that MNCs tend to pay higher wages for skilled labor, indirectly supporting the claim that FDI promotes income inequality by enhancing the premium on skilled labor.<sup>11</sup> Several studies in the field of sociology argue that FDI promotes income inequality by reducing the power of labor unions to pull low-wage workers up the income ladder, thus distorting the occupational structure of LDCs and marginalizing workers displaced as a result of the capital-intensive nature of FDI (Bornschier & Chase-Dunn, 1985; Sullivan, 1983).<sup>12</sup>

*Foreign financial capital.* Several authors argue that to attract foreign financial capital, governments engage in liberal reforms (e.g., they reduce taxation and government expenditures, privatize state-owned enterprises, and deregulate markets). These reforms may hurt labor and increase income inequality (Germain, 1997; Held et al., 1999; Strange, 1996). A related issue is the tendency of economic openness to increase the frequency and magnitude of financial crises due to volatile money movement across countries. Financial crises hurt the poor more than the wealthy (Human Development Report, 1999). As the crises ensue, the economy enters a recession, the tax base erodes, public budgets are slashed, welfare expenditures decline and the rate of unemployment rises. Because the wealthy can better weather recessions than the poor, the poor suffer more and income inequality increases.

A competing view argues that financial openness does not necessarily imply the end of the welfare state. Financial markets allocate funds to places that need them the most, as they pay higher rates of return (Wooddall, 1995). Foreign capital also allows countries to consume more than they produce and to invest more than they save, promoting economic development and reducing income inequality (Nafziger, 1997). Financial openness forces governments to become more prudent, efficient, and accountable to the public

11. See case studies by Aitken, Harrison, and Lipsey (1996) for Mexico and Venezuela, Feenstra and Gordon (1995) for Mexico, Graham and Wada (2000) for Mexico, and Dipak and Mazaheri (2000) for Africa.

12. After empirical analysis, Tsai (1995) rejected this argument, whereas Dixon and Boswell (1996) and Alderson and Nielson (1999) supported it.

because financial markets penalize corrupt, deficit-oriented, inflationary, and inefficient governments with higher interest rates and currency crises (Wooddall, 1995). Better governmental policy making can reduce income inequality by improving tax systems, property rights, and public welfare programs (Held et al., 1999). Foreign money also can be used to fund social security. Consequently, governments can spend more of their budgets on poverty reduction (Normand, 1996).

*International labor mobility.* Labor mobility across countries (migration) can affect the distribution of income within countries. We consider this empirically complex topic to be outside the scope of our article and defer it to future research. In the past several decades, international labor flows have generally been from LDCs to DCs. Accordingly, let us consider a two-country, North-South theoretical framework. The North is endowed with more skilled labor and less unskilled labor than is the South. The wages for skilled labor are higher than they are for unskilled labor. It follows that unskilled labor migration from South to North reduces income inequality in the South and raises it in the North (O'Rourke, 2001). Contemporary migration to DCs typically involves unskilled labor from LDCs. Some immigrants from LDCs have joined the middle classes in DCs. However, immigrants from LDCs typically take on the lower paying jobs in the DCs. As a result, the unskilled workers in DCs can move to better paying jobs (Held et al., 1999). It follows that the effect of labor migration on income inequality is theoretically ambiguous. Empirically, the sizes of contemporary international labor migration generally have been small and their effects on wages have been marginal and mixed.<sup>13</sup>

#### HYPOTHESES

The literature argues that democracy reduces income inequality, as in Hypothesis 1. Because some empirical studies report that the effect of democracy on inequality is not statistically significant, Hypothesis 1 may not be supported in our empirical test. In contrast to democracy, the overall (or net) effect of economic openness on income inequality is theoretically ambiguous. To focus our analysis, we posit directional Hypotheses 2 through 4 on the effect of openness. Because all competing theories on the effects of

13. For a survey of empirical results, see Ichino (1993). For results from the United States, Canada, and Australia, see Borjas (1987, 1990, 1993). Labor migration flows were much higher in the late 1800s and early 1900s than today. Data from 1870 to 1913 show that inequality fell in the origin-poor European countries and rose in the destination new world countries (Williamson, 1997).



openness seem equally plausible, Hypotheses 2 through 4 may be rejected in our empirical test.

*Hypothesis 1:* Democracy reduces income inequality.

*Hypothesis 2:* Trade increases income inequality in DCs and reduces it in LDCs.

*Hypothesis 3:* FDIs reduce income inequality.

*Hypothesis 4:* Financial capital inflows reduce income inequality.

## RESEARCH DESIGN

We employ a pooled time-series, cross-sectional research design. The sample includes 69 countries during the period from 1960 to 1996. Because economic openness and the level of democracy are generally higher in DCs than in LDCs, we examine the robustness of the results from the full sample in separate samples for the DCs and the LDCs. The DCs in our analysis are members of the Organization for Economic Cooperation and Development, whereas the LDCs are not.

We design our research to measure the net effects of economic openness and the level of democracy on income inequality. We do not intend to measure the strength of each of the competing forces discussed in the Effects of Democracy section. To assess the effect of each of the causal mechanisms would require a very large data collection effort that would include variables such as wages, international technology transfers, government welfare expenditures, breakdown of FDI and trade by sectors, taxes, government transfer payments, and various attributes of political parties. The collection of these data is deferred to future research as a useful extension of this analysis.

The dependent variable, income inequality within countries, is measured by the Gini coefficient, which is computed based on the Lorenz curve. In this curve, the cumulative percentage of income held by shares of society appears on the y axis, whereas the percentage of the population holding the particular income share appears on the x axis. The 45-degree line from the origin denotes perfect income equality (e.g., 10% of the people hold 10% of national income). Because perfect income equality is never observed empirically, the Lorenz curve is below this line. The Gini coefficient measures the area between the 45-degree line and the Lorenz curve, expressed as the percentage of the area between the x axis and the line. Thus, a Gini coefficient of 100 denotes perfect income inequality, whereas a Gini of zero denotes perfect equality.<sup>14</sup>

14. For details see, for example, Nafziger (1997) and World Development Indicators (1999).

The Gini coefficient is an ideal measure of income inequality. As noted, previous studies have used alternative measures of income inequality due to the lack of comprehensive Gini data. We take advantage of the income inequality data collected by Deininger and Squire (1996). Although their data set has the most comprehensive coverage, it contains missing values. To that effect, as in Easterly (1999) and Higgins and Williamson (1999), all the variables in the model are computed as decade averages. Hence, the unit of analysis is country decade.<sup>15</sup>

Deininger and Squire (1996) noted that although their Gini data generally are of good quality, differences in data sources and data analysis methods across countries may cause measurement errors in a pooled sample.<sup>16</sup> Using these data, Easterly (1999) applied all the available information from Deininger and Squire (1996) in computing the Gini decade averages under the assumption that the measurement errors are randomly distributed and are captured in the statistical model's error term. We use the data computed by Easterly. To examine the robustness of our Gini-based results, we also employ the share of income held by the top 20% of the national population as an alternative measure of income inequality.<sup>17</sup>

Since the Gini coefficient is bounded between 0 and 100, using ordinary least squares (OLS) regression could be problematic (OLS assumes that the dependent variable is unbounded). The usual practice is to transform the bounded variable into an unbounded indicator. We transform the Gini coefficient into an unbounded measure using the formula  $\log [\text{Gini} / (100 - \text{Gini})]$ .<sup>18</sup> But we also assess the robustness of results using the untransformed Gini coefficient.

We measure economic openness by using flows of trade, FDI, and portfolio investments. The importance of these flows to a country depends on their magnitude relative to the size of the domestic economy. Accordingly, we divide each of these flows by GDP. The economic openness data are taken

15. The Deininger and Squire (1996) data include 111 countries, covering the period from 1890 to 1996, but the data coverage is very limited before 1960. The Gini decade averages we use are computed by Easterly (1999), covering four decades (the 1960s to the 1990s). These data are available at <http://www.worldbank.org/research/growth/ddlife.htm>.

16. For example, the Gini coefficient may be computed from the level of income or the level of expenditure. In the case of income, individual welfare may be measured before or after payment of taxes. The aggregation of individual levels of welfare may vary across countries in the mixing of individual and household units.

17. The appendix provides the mean, minimum, and maximum values for the Gini data for each country in the sample. The country with the highest mean level of inequality is South Africa (Gini = 62.3), and the country with the lowest mean level of inequality is Hungary (Gini = 25.17).

18. Log denotes natural logarithm. The transformed variable equals  $-\infty$  for Gini = 0 and  $+\infty$  for Gini = 100. See Pindyck and Rubinfeld (1991) for technical details.

from World Development Indicators (1999). Trade openness is the sum of the total import and export values as a share of a country's GDP. FDI inflow is the value of net inflows of FDI as a share of a country's GDP. Portfolio inflow is the value of net inflows of portfolio investments as a share of a country's GDP.

Democracy level is the level of democracy in a country computed based on the Polity III data set (Gurr & Jagers, 1999; Jagers & Gurr, 1995). This widely used data set provides two indices of political regime characteristics. The 10-point democracy index measures the democratic characteristics of the regime. The 10-point autocracy index measures the autocratic characteristics of the regime. Mansfield and Snyder (1995), Londregan and Poole (1996), and others observed that many governments may have both democratic and autocratic characteristics. Consequently, they measure the level of democracy as the difference between the democracy index and the autocracy index, a practice we also adopt here. The democracy measure ranges between -10 (the most autocratic regime) and 10 (the most democratic regime).

The model includes control variables frequently used in previous studies. GDP per capita (GDPPC) is expressed in purchasing power parity – adjusted international dollars. Kuznets (1955) hypothesized that below some level of GDPPC, income inequality rises with GDPPC; above this level, income inequality declines with GDPPC. This pattern is known as the Kuznets curve. Previous empirical results on the Kuznets curve are mixed. Ahluwalia, Carter, and Chenery (1979) and Higgins and Williamson (1999), for example, find evidence supporting the Kuznets hypothesis. Deininger and Squire (1998) found no supporting evidence. If Kuznets was right, the coefficients of GDPPC and GDPPC<sup>2</sup> should be positive and negative, respectively. The level of education and the share of agriculture in GDP, which can also affect income inequality, are indirectly included in the model. Both variables tend to be highly correlated with GDPPC.

Our third control variable is the one-decade-lagged Gini coefficient—the level of past income inequality. The inclusion of this variable is consistent with the observed tendency of inequality to persist over time. Several theoretical reasons account for this tendency. First, wealth concentration typically correlates positively with political influence, generating arrangements favoring wealth owners.<sup>19</sup> Second, people tend to marry those from the same socioeconomic group. Consequently, the children of the rich (or poor) group remain in the original group, perpetuating income differences across groups. Third, in cases where the poor and the rich belong to different ethnic groups,

19. For example, in 1950, 65% of all the agricultural land in Latin America was held by 1.5% of the farm owners. This inequality has increased since then (Birdsall, 1998).

racial discrimination can institutionalize the current income distribution (Lewis, 1994). Fourth, education can promote upward social mobility, but acquiring education is costly. Poor people tend to have more children than do rich people (Heerink, 1994). Thus, education spending per child tends to be smaller for the poor, ensuring a vicious circle. The poor remain less educated and earn less, and income inequality persists (Dasgupta, 1993).

The inclusion of past income inequality in the model also helps to control for the effect of potentially relevant but omitted structural variables, such as the ethnic and demographic structures of society. Many studies adopt this modeling strategy (e.g., Bollen, 1979; E. N. Muller, 1995; E. N. Muller & Seligson, 1994). As Burkhart and Lewis-Beck (1994) put it, "With such a pervasive control in place, it is more difficult for spurious effects to be reported" (p. 905).

Statistical models for pooled time-series cross-sectional data may exhibit heteroskedasticity and serial correlation. Although these problems do not bias the estimated coefficients, they could result in inefficient and biased standard errors for the coefficients. To deal with these potential problems, we estimate the model using OLS regression with Huber-White robust standard errors clustered over countries. These estimated standard errors are robust to both heteroskedasticity and to a general type of serial correlation (Wiggins, 1999). The inclusion of the lagged dependent variable in the model also helps to absorb temporal dependence in the data, as shown by Beck and Katz (1995a, 1995b).

## EMPIRICAL RESULTS

Table 1 presents the estimated coefficients and their standard errors from the full sample, the DCs, and the LDCs.<sup>20</sup> As is typically done, the statistical significance levels of the estimated coefficients are investigated with a one-tailed *t* test because our hypotheses are signed.<sup>21</sup>

All the models in Table 1 have a relatively good fit to the data, with the adjusted  $R^2$  ranging from 0.52 (in the DCs sample) to 0.69 (in the all-country sample). The joint significance level of the model's independent variables from the *F* test is statistically significant at a level better than 1% in all the samples, which supports our model specification.<sup>22</sup>

20. The number of countries in our full sample is smaller than the number of countries in the Deininger and Squire (1996) data due to missing data points for the other variables in our model.

21. Estimation was performed using STATA Version 7.0.

22. We also check for high collinearity using the variance inflation factor. We find no high collinearity in the sample of less developed countries (LDCs) but high collinearity in the devel-

Table 1  
*Income Inequality, Democracy and Economic Openness*

|                         | All                         | Less Developed<br>Countries   | Organization<br>for Economic<br>Cooperation<br>and Development |
|-------------------------|-----------------------------|-------------------------------|--|
| Democracy level         | -0.0125***<br>(0.0033)      | -0.0112***<br>(0.0037)        | -0.0125**<br>(0.0056)  |
| Trade openness          | -0.0013**<br>(0.0006)       | -0.0013**<br>(0.0008)         | -0.0026**<br>(0.0013)  |
| Portfolio inflow        | 0.0074<br>(0.0166)          | 0.0340<br>(0.0367)            | 0.0059<br>(0.0157)   |
| FDI inflow              | 0.0632***<br>(0.0229)       | 0.0518**<br>(0.0290)          | 0.0590***<br>(0.0218)  |
| GDPPC                   | -1.91e - 06<br>(1.08e - 05) | 3.92e - 05**<br>(2.20e - 05)  | 8.51e - 07<br>(1.54e - 05)                                     |
| GDPPC <sup>2</sup>      | 1.90e - 10<br>(4.40e - 10)  | -2.98e - 09**<br>(1.28e - 09) | 2.07e - 10<br>(4.85e - 10)                                     |
| Past income inequality  | 0.7181***<br>(0.0590)       | 0.7163***<br>(0.0693)         | 0.4901***<br>(0.0755)  |
| Constant                | -0.1307***<br>(0.0402)      | -0.1898***<br>(0.0510)        | -0.2718***<br>(0.0682)   |
| Observations            | 142                         | 99                            | 43   |
| Adjusted R <sup>2</sup> | 0.69                        | 0.62                          | 0.52   |

*Note:* Huber-White robust standard errors are in parentheses and are adjusted for country. *N* is the number of observations in each sample. This number differs from the number of decades multiplied by the number of countries in a sample due to missing data and the inclusion of the lagged dependent variable. FDI = foreign direct investments; GDPPC = GDP per capita.

\*\**p* = .05. \*\*\**p* = .01.

The effect of democracy on income inequality is statistically significant at the 5% level for the DC sample and at the 1% level for the LDC and all-country samples. The effect of democracy is always negative, indicating that democracy reduces the level of income inequality. When using better data of income inequality (relative to previous studies of the effect of democracy on inequality), including economic openness in the model, and controlling for the Kuznets (1955) curve and past income inequality, our results support Hypothesis 1: Democracy reduces income inequality within countries.

oped countries (DC) and all-country samples. Using the matrix of variance decomposition, we identify the sources of high collinearity to be gross domestic product per capita (GDPPC) and GDPPC<sup>2</sup>. These variables are correlated by construction, a quality shared by all models that include the Kuznets (1955) curve. Nevertheless, this result suggests caution in interpreting the Kuznets curve coefficients for the DC and all-country samples.

The effect of trade openness on income inequality is negative and statistically significant at the 5% level for all the samples, indicating that trade openness reduces income inequality. This result supports Hypothesis 2 with regard to LDCs but not DCs. As discussed in the Effects of Democracy section, trade generates both inequality-increasing and inequality-decreasing effects. Hence, our findings can be interpreted as representing the net effect of trade on income inequality within countries, which in turn reduces income inequality.

The effect of FDI inflows on income inequality is positive and statistically significant at the 5% level for the DC and the LDC samples and at the 1% level for all countries. This result shows that FDI inflows increase income inequality. Again, FDI can generate both inequality-increasing and inequality-decreasing effects. According to our results, the net effect of FDI is to raise income inequality. We need to reject Hypothesis 3.

The effect of portfolio inflow on income inequality is positive in all samples, but it is never statistically significant. These results are consistent with the observation that the rise in portfolio investment inflows is a relatively recent phenomenon. If financial market integration continues to deepen, portfolio investments may significantly affect income inequality in the future. In any case, our results do not support Hypothesis 4.

Another relevant question is whether the sizes of the effects of economic openness and democracy on income inequality are statistically different for the DC and LDC samples. To answer this question, we constructed dummy variables—indicating whether a country is a DC or LDC, respectively—and computed interaction terms of these variables and our independent variables. We then test, for example, whether the coefficient for trade openness of the DCs equals that for the LDCs. The test results indicate that the sizes of the effects of economic openness and democracy on income inequality, although statistically significant in both the DC and the LDC samples, are not significantly different across the two samples.

The effects of GDPPC and GDPPC<sup>2</sup> on income inequality are statistically significant in the LDC sample at the levels of 5% and 1%, respectively. GDPPC has a positive effect on income inequality, whereas GDPPC<sup>2</sup> has a negative effect. These results support the existence of a Kuznets (1955) curve for the LDCs. In the DCs and the all-country samples, the Kuznets curve is not statistically significant. The insignificance of the Kuznets curve for the DCs is to be expected. The Western European countries experienced a Kuznets curve transformation in the late 19th and early 20th centuries (Kuznets, 1955). Because this period is not included in our sample, we do not detect a Kuznets curve effect for the DCs.

The effect of past income inequality on current inequality is statistically significant at the level of 1% in all samples. The positive sign of this effect corroborates our expectation that income inequality exhibits inertia. The realization of equitable income distribution is a lengthy process; hence, one should take a long-run view of the dynamics of income inequality. The relatively large size of the inertia effect in our results suggests that models of income inequality that do not control for this effect may omit an important variable.

So far, we have discussed the sign and significance of the coefficients of democracy and economic openness variables. The coefficient sizes, however, cannot be interpreted linearly from Table 1 because the dependent variable is a nonlinear transformation of Gini. We now assess the sizes of the effects of democracy, trade, and FDI, which are statistically significant in Table 1. We first compute a baseline Gini by setting all variables in Model 1 of Table 1 at their respective means. We then raise democracy, trade, and FDI by one standard deviation at a time and compute Gini again.<sup>23</sup> Next, we illustrate the sizes of these effects in two ways. First, we compute the percentage change in Gini across the two scenarios, showing the absolute influence of these three variables on Gini. Second, we compute the ratio of each of the changes in Gini over the range between the average of the Gini maxima (42.93) and the average of the Gini minima (38.98) across the 69 countries in the sample (see the appendix for the country statistics). This indicates the influence of changes in trade, democracy, or FDI on Gini relative to the variability of Gini in our sample.

The results of these computations are as follows. In absolute terms, a rise in democracy by one standard deviation above its mean reduces Gini by 1.5% (from 40.56 to 39.06). A rise in trade openness by one standard deviation reduces Gini by 1.39% (from 40.56 to 39.17). A rise in FDI by one standard deviation raises Gini by 2.17% (from 40.56 to 42.73). In relative terms, these changes are 38%, 35%, and 55% over the range of Gini between the average of the Gini maxima and the average of the Gini minima in the sample for democracy, trade, and FDI, respectively. These estimated effects of democracy, trade, and FDI on income inequality are substantial.<sup>24</sup>

23. The equation is  $\log [\text{Gini} / (100 - \text{Gini})] = a + bx$ , where  $a$  is a constant,  $b$  is a vector of coefficients, and  $x$  is a vector of independent variables. We solve for Gini in terms of  $a$ ,  $b$ , and  $x$ .

24. Alternatively, one could express the sizes of these effects in terms of their shares out of one standard deviation of Gini (9.77). This would give 15.46%, 14.22%, and 22.21% for democracy, trade, and FDI, respectively, which also are substantial. A third way is to examine the size of our effects as shares of the range between the sample minimum (22.46) and sample maximum (65.38) of Gini. This range understates the size of our effects because the majority of the observations in the sample are far from the tails of the distribution of Gini.

Our results indicate that trade reduces income inequality, whereas FDI raises it. This result may reflect the fact that trade is often associated with welfare programs that compensate the losers from trade, whereas FDI typically is not associated with such programs. In addition, the benefits of trade tend to diffuse throughout the domestic economy, benefiting all consumers. In contrast, the benefits of FDI tend to be concentrated in the industries or the individual firms (in the case of joint ventures) in which the investment takes place. Such concentration of benefits tends to increase income inequality.

In summary, our results support Hypothesis 1 that democracy reduces income inequality. We find that trade openness reduces income inequality, supporting Hypothesis 2 with regard to LDCs but not DCs. FDI increases income inequality, rejecting Hypothesis 3. Foreign financial capital inflows reduce income inequality, not supporting Hypothesis 4.

### SENSITIVITY ANALYSES

In this section, we conduct sensitivity analyses to evaluate the robustness of our results. We use alternative measures of income inequality, exclude the lagged income inequality from the model, and employ alternative estimators. The results for the all-country sample are presented in Table 2. The results for the LDC and DC samples are consistent with those in Table 2 and are not reported here.<sup>25</sup> Overall, the effects of democracy and economic openness reported in Table 1 are replicated and robust across the six experiments reported in Table 2.

The models presented in Table 1 employ a transformed Gini coefficient as the dependent variable. To assess the robustness of these results, we use alternative measures of inequality. In column 1 of Table 2, income inequality is measured as the share of national income held by the top 20% of the population. The data for this measure come from Deininger and Squire (1996) and Easterly (1999). In column 2, we use a nontransformed Gini coefficient as in Easterly (1999) and E. N. Muller (1988).<sup>26</sup>

The inclusion of the lagged Gini in the models presented in Table 1 may reduce the variance to be explained by other variables. In column 3 of Table 2, we exclude the lagged Gini for a robustness check. Recall, however, that the lagged Gini is part of our theoretical model specification.

25. Statistical results for the LDC and DC samples as well as the by-country statistics for Gini and the sample descriptive statistics are available from the authors upon request.

26. As noted, the transformation of the Gini coefficient is needed because it is bounded. However, this transformation may introduce nonlinear effects, and so is not used in some studies.



Table 2  
*Income Inequality, Democracy, and Economic Openness (all countries)*

|                        | Top 20%<br>Income           | Untransformed<br>Gini      | Without Past<br>Inequality   | Country Fixed<br>Effect      | Decade Fixed<br>Effect      | Random<br>Effect            |
|------------------------|-----------------------------|----------------------------|------------------------------|------------------------------|-----------------------------|-----------------------------|
| Democracy level        | −0.0032***<br>(0.0010)      | −0.3004***<br>(0.0797)     | −0.0125**<br>(0.0073)        | −0.0111*<br>(0.0076)         | −0.0130***<br>(0.0036)      | −0.0147***<br>(0.0043)      |
| Trade openness         | −0.0002**<br>(0.0001)       | −0.0316**<br>(0.0153)      | −0.0014*<br>(0.0010)         | −0.0025<br>(0.0026)          | −0.0013**<br>(0.0006)       | −0.0012**<br>(0.0007)       |
| Portfolio inflow       | 0.0041<br>(0.0035)          | 0.2196<br>(0.3847)         | −0.0014<br>(0.0233)          | 0.0096<br>(0.0157)           | 0.0040<br>(0.0151)          | 0.0057<br>(0.0188)          |
| FDI inflow             | 0.0103***<br>(0.0029)       | 1.4552***<br>(0.5495)      | 0.0884***<br>(0.0318)        | 0.0586**<br>(0.0335)         | 0.0566***<br>(0.0223)       | 0.0686***<br>(0.0187)       |
| GDPPC                  | 2.15e − 06<br>(2.18e − 06)  | −1.50e − 05<br>(0.0003)    | −4.19e − 05*<br>(2.54e − 05) | −3.96e − 05*<br>(2.62e − 05) | 2.78e − 06<br>(1.42e − 05)  | −5.02e − 06<br>(1.56e − 05) |
| GDPPC <sup>2</sup>     | −7.47e − 11<br>(9.12e − 11) | 3.37e − 09<br>(1.05e − 08) | 8.61e − 10<br>(1.06e − 09)   | 1.27e − 09*<br>(8.11e − 10)  | −4.89e − 11<br>(5.81e − 10) | 3.17e − 10<br>(6.28e − 10)  |
| Past income inequality | 0.7352***<br>(0.0521)       | 0.7141***<br>(0.0629)      |                              | 0.0290<br>(0.1839)           | 0.7266***<br>(0.0588)       | 0.6033***<br>(0.0616)       |
| Constant               | 0.1166***<br>(0.0252)       | 11.0658***<br>(3.2733)     | −0.2021**<br>(0.0950)        | −0.1399<br>(0.1323)          | −0.1337***<br>(0.0505)      | −0.1635***<br>(0.0560)      |
| Observations           | 104                         | 142                        | 142                          | 142                          | 142                         | 142                         |
| Adjusted $R^2$         | 0.75                        | 0.68                       | 0.25                         | 0.92                         | 0.71                        | 0.70                        |

*Note:* Huber-White robust standard errors adjusted for country are in parentheses except for the random effect model.  $N$  is the number of observations in each sample. This number differs from the number of decades multiplied by the number of countries in the sample due to missing data and the inclusion of the lagged dependent variable. FDI = foreign direct investments; GDPPC = GDP per capita.

\* $p = .10$ . \*\* $p = .05$ . \*\*\* $p = .01$ .

The results reported in Table 1 are generated from OLS regression with robust standard errors. Columns 4 through 6 of Table 2 present the results from two other estimators: fixed effects with robust standard errors and random effects. We employ two versions of the fixed-effects estimator, introducing country or decade dummies into the model. The fixed-effects estimator controls for the possibility that some countries or decades are marked by large income inequality. As noted in the literature, the fixed-effects estimator has serious limitations. First, the country and decade dummy variables are atheoretical and absorb many of the variations in the dependent variable that are attributable to the model's independent variables.<sup>27</sup> Second, the country dummy variables and other country-dependent variables (e.g., GDPPC) tend to be collinear. The random-effects estimator parameterizes the error term associated with different cross-sections and is useful for cross-nationally dominated panels.<sup>28</sup>

Table 2 suggests that the results from Table 1 are robust against the exclusion of the lagged dependent variable, alternative estimators, and alternative measures of income inequality. In all cases, the effect of democracy is statistically significant and negative, reducing income inequality. The effect of portfolio investment inflows is insignificant in all six models, as shown in Table 1. The effect of FDI inflows is always statistically significant and positive, again as in Table 1. The effect of trade openness is negative in all cases, reducing inequality, and is statistically significant in all but the case of the country fixed-effects estimator. We believe that this insignificant result reflects the noted limitations of the fixed-effects estimator.

The control variables in Table 2 replicate the spirit of Table 1. The effect of past income inequality is positive in the five cases reported and is significant in all cases except for the country fixed-effects estimator. The effects of GDPPC and GDPPC<sup>2</sup> are consistent with Table 1 in four of the six cases. Columns 3 (without past income inequality) and 4 (country fixed effects) are the exceptions. The weaker results without past income inequality support our model specification. An argument against using the lagged dependent variable is that it causes insignificant results. Our results from the model including the lagged dependent variable, however, are more significant than are those from a model without this variable. Because we also have theoretical reasons for including past income inequality in the model, we believe column

27. As summarized by King (2001), most methodologists agree that using better models, better measures, and robust estimation is preferable to fixed effects estimation.

28. An alternative estimator is the panel-corrected standard error (Beck & Katz, 1995b). Because our sample is cross-nationally dominated with only four decades, the panel-corrected standard error estimator is not suitable for our application. We thank Neal Beck for this comment.

3 suffers from model misspecification bias. In column 4, the effects of GDPPC and GDPPC<sup>2</sup> are significant, but their signs are not consistent with the Kuznets (1955) curve. We believe this weaker result reflects the previously mentioned limitations of the fixed-effects estimator.<sup>29</sup>

## CONCLUSION

Scholars have investigated the effects of economic openness and democracy on income inequality in two separate literatures. In studies of democracy, scholars agree that democracy reduces income inequality, but the empirical evidence is mixed. In the literature on globalization, the effects of economic openness on income inequality are debated, but they have not been examined rigorously. To the best of our knowledge, our analysis is the first systematic statistical study of the effects of both economic openness and democracy on income inequality. We argue that the two effects need to be studied together. In other words, the exclusion of one variable or the other can lead to incorrect inferences on the determinants of income inequality.

Our empirical analysis covers 69 countries during the period from 1960 to 1996. We have focused on the effects of trade, FDI, foreign financial capital inflows, and democracy on income inequality. We find that a higher level of democracy reduces the level of income inequality within countries. Trade openness is associated with more equitable income distribution within countries, FDI is associated with greater income inequality, and foreign financial capital inflows have no statistically significant effect on income inequality. All the findings are robust across different measures of income inequality, and alternative statistical estimators and model specifications.

Our findings suggest various policy implications. To the extent that their goal is to bring about a more equitable distribution of income, international organizations such as the International Monetary Fund, the World Bank, and the World Trade Organization may condition new memberships, continued memberships, or various assistance programs upon improvements of democracy. Democratic DCs that are interested in reducing income inequality in other countries also may make liberal political reforms a condition of foreign aid.

Both proponents and critics of economic openness should reassess their claims if their arguments hinge solely on income inequality. Economic openness may improve or worsen income equality, depending on its type. Policy

29. We have also estimated the model in Table 1 with a dummy variable for a communist regime status, as these countries tend to emphasize income equality. The results for the hypothesis testing are similar to those reported in Table 1.

makers seeking a more equitable income distribution could promote international trade while compensating the losers from trade openness. Policy makers also may take measures to reduce the negative effects of FDI. For example, governments may offer subsidies or tax breaks to sectors or regions without FDI and curtail the occurrence of FDI-induced dual economy. At the same time, governments need to be careful not to impose restrictions that entirely drive away FDI. Although the inequality-increasing effect of portfolio investments in our results is statistically insignificant, we believe that the consistently positive coefficient across samples may indicate a need for caution on the part of governments considering liberalization of this type.

Finally, our results indicate that income inequality declines with economic development, but it also tends to persist over time. Governments interested in reducing income inequality need to design welfare programs that help the impoverished. Financial aid from DCs and international organizations to LDCs should be designed to reduce poverty. Regardless of the exact policies taken, we believe that reducing income inequality is important. If history is any guide, failure to reduce income inequality may well result in domestic and international political instability.

#### APPENDIX

##### By Country Sample Statistics for Income Inequality

| Country            | Mean  | Minimum | Maximum |
|--------------------|-------|---------|---------|
| Argentina          | 39.65 | 39.65   | 39.65   |
| Australia          | 37.28 | 34.27   | 41.72   |
| Austria            | 28.67 | 28.67   | 28.67   |
| Bangladesh         | 34.29 | 28.27   | 38.87   |
| Botswana           | 55.11 | 55.11   | 55.11   |
| Brazil             | 53.43 | 53.00   | 53.86   |
| Bulgaria           | 25.50 | 23.20   | 27.80   |
| Canada             | 31.20 | 30.52   | 31.57   |
| Chile              | 50.99 | 46.00   | 54.61   |
| China              | 36.03 | 36.03   | 36.03   |
| Colombia           | 49.91 | 47.90   | 51.82   |
| Costa Rica         | 45.33 | 44.42   | 46.24   |
| Cote d'Ivoire      | 42.41 | 42.41   | 42.41   |
| Denmark            | 29.22 | 26.55   | 32.04   |
| Dominican Republic | 48.30 | 47.61   | 49.00   |
| Ecuador            | 50.97 | 43.00   | 65.38   |
| Egypt              | 38.00 | 38.00   | 38.00   |
| El Salvador        | 44.20 | 44.20   | 44.20   |

## APPENDIX (continued)

| Country           | Mean  | Minimum | Maximum |
|-------------------|-------|---------|---------|
| Finland           | 25.73 | 23.55   | 28.10   |
| France            | 34.62 | 32.05   | 37.19   |
| Gabon             | 61.82 | 61.82   | 61.82   |
| Greece            | 38.70 | 35.74   | 41.66   |
| Guatemala         | 58.66 | 58.66   | 58.66   |
| Honduras          | 53.73 | 53.73   | 53.73   |
| Hungary           | 25.17 | 22.47   | 27.87   |
| India             | 32.03 | 31.43   | 33.03   |
| Indonesia         | 34.27 | 33.96   | 34.59   |
| Iran              | 42.90 | 42.90   | 42.90   |
| Ireland           | 35.80 | 35.80   | 35.80   |
| Italy             | 30.08 | 28.30   | 31.85   |
| Jamaica           | 46.47 | 39.83   | 50.73   |
| Japan             | 34.75 | 34.06   | 35.20   |
| Jordan            | 40.66 | 40.66   | 40.66   |
| Kenya             | 58.43 | 54.39   | 63.60   |
| Malagasy Republic | 43.44 | 43.44   | 43.44   |
| Malawi            | 55.05 | 51.80   | 58.30   |
| Malaysia          | 49.92 | 48.17   | 51.67   |
| Mauritius         | 36.69 | 36.69   | 36.69   |
| Mexico            | 51.21 | 50.31   | 52.45   |
| Morocco           | 45.65 | 39.20   | 54.00   |
| Nepal             | 30.06 | 30.06   | 30.06   |
| The Netherlands   | 29.40 | 29.16   | 29.87   |
| New Zealand       | 38.95 | 35.31   | 41.33   |
| Nigeria           | 42.44 | 36.26   | 51.75   |
| Norway            | 29.01 | 27.04   | 31.08   |
| Pakistan          | 32.37 | 31.15   | 33.59   |
| Panama            | 51.97 | 51.97   | 51.97   |
| Peru              | 51.08 | 45.02   | 57.14   |
| Philippines       | 45.52 | 44.03   | 47.54   |
| Poland            | 26.08 | 25.47   | 26.68   |
| Portugal          | 34.90 | 34.44   | 35.35   |
| Rumania           | 25.33 | 25.33   | 25.33   |
| Senegal           | 49.55 | 49.55   | 49.55   |
| Sierra Leone      | 49.00 | 49.00   | 49.00   |
| Singapore         | 41.56 | 40.71   | 42.41   |
| South Africa      | 62.30 | 62.30   | 62.30   |
| South Korea       | 36.51 | 35.34   | 37.69   |
| Spain             | 31.29 | 26.38   | 36.20   |
| Sri Lanka         | 37.04 | 30.10   | 43.87   |
| Sweden            | 32.05 | 28.88   | 36.99   |
| Switzerland       | 34.31 | 34.31   | 34.31   |
| Thailand          | 47.17 | 44.21   | 50.26   |

(continued)

## APPENDIX (continued)

| Country             | Mean  | Minimum | Maximum |
|---------------------|-------|---------|---------|
| Trinidad and Tobago | 45.66 | 41.72   | 49.60   |
| Tunisia             | 43.62 | 40.49   | 47.22   |
| Turkey              | 47.47 | 43.95   | 51.00   |
| Uganda              | 36.89 | 33.00   | 40.78   |
| United Kingdom      | 30.25 | 28.78   | 32.35   |
| United States       | 36.44 | 35.28   | 37.16   |
| Venezuela           | 46.49 | 42.97   | 49.12   |

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