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EFFECTS OF INCOME DISTRIBUTION ON GROWTH

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Abstract

Several theories hold that income distribution affects economic growth. Some of them use cross-section country regression analysis to demonstrate their beliefs. This procedure has such a bulk of problems that its results should be analyzed carefully. Theories supported by this kind of empirical verification are most affected. Results suggest that a relationship between income distribution and economic growth exists but it seems to be nonlinear, complex and dynamic. Alternative statistical methods can be used in combination with historical studies and case studies, where institutions are included, for a better understanding of prevalent linkages.

Keywords: income distribution, economic growth, economic development, country studies, cross-sectional models,

JEL Classification: C21, O11, O15, O40, O50

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By Edgar Pardo-Beltrán

In his article about economic growth, Robert Barro (1991) identified empirically the main issues that affect per capita growth rate of the real gross domestic product (GDP) of countries. He measured that impact using not only typical economic variables (e.g., initial levels of real per capita GDP, real public consumption/GDP ratio), but also variables related to human capital (e.g., illiteracy rate, primary and secondary-school enrollment rate), social aspects (e.g., number of assassinations), and political facts (e.g., capitalist, mixed, or not capitalist countries; number of revolutions and coups per year). Given that he included human capital in his model, he needed to explain in an endogenous way how it changes over time using economic, social-political and demographic variables. He also used such explanatory variables for private investment ratios.

However, this was not enough. Because he found differences among some world regions that were not explicitly considered in the variables used in his regressions but nevertheless have high explanatory power, Barro included dummy variables in his regressions of economic growth, fertility and physical investment. In particular, he distinguished African and Latin American countries from the rest of the world to indicate "that some regularities are missing from the model." (p.435) Indeed, some features, such as the long-run development model applied, the evolution of terms of trade and even inequality[2], might be some of the missing regularities.

The aim of this article is to show both the theoretical and empirical analyses of the relation between inequality and economic growth rate, particularly in the sense of how the former affects the latter. It will be seen that not all theories have considered such causality relevant, and also that some empirical attempts to establish relevant international regularities between income distribution and economic growth have been very troublesome, suggesting that either the use of other or a combination of empirical methods might compensate for some methodological weaknesses.

[1] The author is grateful to Eugene Canjels, Duncan Foley, Willi Semmler and Lance Taylor for their comments and suggestions. Obviously, they are not responsible for omissions or errors made.

[2] It is well-known that Latin America has the highest income concentration of the world and simultaneously has exhibited a below-average economic growth in the last decades. See for example Deininger and Squire (1996), Table 5 of page 584.

Important theoretical and empirical warnings can be drawn from reviewing the relationship between income concentration and growth.

1. Theoretical Approaches

All economic theories have said something about the relationship between growth and both income and wealth distribution[3], which has long been the subject of controversy. Models improved recently by mainstream theorists have been based mainly on the endogenous growth theory and the endogenous theory of economic policy, both of which meet some resistance even within the mainstream. However, most available data files have been set up in terms of these recent models. Moreover, most such models, which are explored in the second part of this section, have used a political mechanism to explain how distributive social conflict reduces the rate of economic growth. In addition, those models have been used to test whether or not aspects such as foreign trade or human capital growth contribute to increased inequality and in this way to slowed GDP growth, particularly in developing countries.

1.1. Earlier Theories

Among Classical economists, (Smith, Ricardo, Marx, etc.) output growth was a saving-driven process. Higher investment was due to a higher rate of capital accumulation, which stemmed from higher profits obtained by capitalists. The investment level, therefore, was determined exclusively by the saving rate, so that a more egalitarian pattern of income distribution (in favor of the work force) would reduce national saving and slow economic growth. Consequently, the trade-off between growth and distribution was unavoidable. This conclusion continued to be accepted by the Neoclassical school.

Only in the first half of the 20th century were some voices heard against that creed. The loudest objection came from Keynes (1936)[4], who considered inequitable distribution of wealth and failure

[3] Solimano (1998) presented a recent update of this issue.
[4] See especially the last chapter of Keynes' *General Theory*.

to provide full employment to be the two outstanding faults of contemporary economic society. He pointed out that inequality emerged from

> the [wrong] belief that the growth of capital depends upon the strength of the motive towards individual saving and that for a large proportion of this growth we are dependent on the savings of the rich out of their superfluity. (p. 372)

In addition, based on his effective demand principle, but specifically on both his fundamental psychological law and theory of investment, Keynes (1936) believed that "measures for the redistribution of incomes in a way likely to raise the propensity to consume may prove positively favourable to the growth of capital." (p. 373)

Another important voice of disagreement with the existence of such a trade-off was Kalecki (1971, especially Chapter 14). He said that given an independent investment function depending on the rate of profits and on the rate of capacity utilization, and assuming monopolist competition that implied prices formation based on markup, it is aggregate demand and the distribution of income that determine economic growth. In addition, Kalecki showed that income distribution between wages and profits can change endogenously among sectors but the overall distribution does not change unless one or more of the following factors changes: bargaining power of unions, the tax system, or the governmental incomes and prices polices. Thus, the class struggle does affect income distribution, but in a more complex way than Say's law indicates. In consequence, it is possible to have an income distribution shift toward wages and simultaneously to achieve a higher rate of economic growth because of the existence of an excess of capacity utilization.

Notwithstanding these criticisms, but especially as an answer to the pessimist view of the Harrod-Domar problem of "knife-edge", Solow (1956) developed his growth model to account for the capital labor ratio variable and to be dependent on the relative wage-capital rentals. Here, there is a saving-driven growth that, along with the assumptions of perfect competition, constant returns to scale and market clearing, guides the economy to a stable path of steady growth with full employment guaranteed by factor-prices flexibility. Input prices are determined by their respective marginal productivities. In turn, capital and labor shares of national income depend on both capital output ratio and marginal productivities. This is a microeconomic explanation where each factor earns what it deserves according to "objective" (i.e., market) conditions. The saving rates of labor

and capital are constant, so the aggregate rate is also given and independent of income distribution. In this way, income distribution does not directly affect economic growth, though it is possible to have the reverse causality: Economic growth determines income distribution. Although he did not use any aggregate demand function, Solow (1988) confessed during his Nobel lecture that he would like to have developed an additional explanation of his model based on it.

In contrast, Kaldor (as discussed in Solimano [1998]), assuming different saving rates for workers and capitalists, solved the Harrod-Domar instability problem by using changes in the income distribution through the endogenous "forced saving" process as the principal mechanism for the attainment of macroeconomic equilibrium. Thus, the causality goes from growth to income distribution and from investment to savings. The direction of the relationship between investment and savings means that growth is investment-driven, but unlike the Keynes and Kalecki models, Kaldor assumed full employment and found an inverse relationship between wages and growth.

1.2. Endogenous Growth-Endogenous Policy Theories

Over the last ten years, the mainstream theorists have begun to study more seriously the relationship between distribution and growth. Although there are facts that explain it[5], this reappearance in the academic world has mainly been associated with the emergence and improvement of endogenous growth theory. Given its particular nature, scholars have usually used this theory along with an explanation extracted from the theory of endogenous economic policy.

According to Solimano (1998), this literature rests on three methodological assumptions. First, it reverses the direction of the causality of the Solow model and the Kuznets curve, so that causality goes from distribution to growth. Second, the new models seem to show investment-driven growth. Solimano did not address the fact that this assumption is misleading because in the formula where investment usually appears in such models, it is defined as a function of the marginal propensity to save and of the income level --that is, the level of aggregate saving. There is no equation explaining investment. So decisions thought to diminish inequality will reduce economic growth as the

[5] Facts such as the end of the Reagan, Bush and Thatcher era, the solution of the debt crisis of the 1980s, decreased attention given by policy makers to stabilization problems but increased concern about both the importance of institutions in capitalist economies and the social effects of adjustment programs in developing countries.

Classical and Neoclassical economists believed. Actually, what this theory treats as endogenous is saving rather than investment.

The third methodological assumption Solimano (1998) mentions is that political mechanisms can be used to show how income distribution affects growth. Thus, the process is not exclusively economic. For example, if there are two targets that economic authorities have to deal with, let us say growth and equality, they might identify the former as the most important. Nevertheless, both the specific grade of social conflict and the political process that an economy may have will finally determine to what degree each target is actually important and how each will be achieved. So, whereas the economic mechanism is based on the outstanding role given to saving as the force that drives growth, economic policies are not only a result of technocratic discussion but also of a social and political agreement.

Political mechanisms are exemplified through the introduction or modification of income tax that negatively affects the profitability of either human or physical capital. According to this argument, it is the relative preference for distributive policy that determines the new higher tax burden on such inputs and therefore the lower pace of economic growth. Hence, there is an inverse relationship between the reduction of inequality and the rate of economic growth, which acts indirectly on growth through investment decisions made after direct taxes have been paid.

In this theory, the political and social preferences for equality and growth policies are revealed in the voting process. These sorts of citizen preferences are a function of the endowments of capital, land, talents, skills, and raw labor.

> The more concentrated is income distribution toward labor, the more biased policies might be toward redistribution as fewer people, relatively speaking, benefit directly from the rewards of capital accumulation and growth. In turn, the more numerous and powerful is the capitalist class in society, the more likely it is that probusiness, progrowth policies will be adopted. The observed growth outcome, in turn, is the result of the political-economic equilibrium, often a reduced form of taxes, government expenditure, and technological parameters[6].

Consequently, in contrast to the Keynes and Kalecki models, this theory leads to the conclusion that income concentration is harmful for growth, for three worrisome reasons. First, the more unequal

[6] Solimano (1998), pp. 52-53.

the income distribution, the higher the income taxes and the degree of implementation of redistributive policies, thus discouraging private accumulation of physical and human capital. Second, a high concentration of income and wealth can increase social tension and be a source of political instability. Investment and economic growth can also be deterred in this way. Third, inequality of wealth impedes poor people's access to credit and therefore obstructs their investing in education and other opportunities that may increase their market value as human capital, thus slowing down investment and growth.

Solimano (1998) says that we should not be so pessimistic. The message of the Kuznets curve, for example, is that beyond a certain threshold of income per capita, the growth process will reduce, by itself and in the long run, differences in income distribution. Furthermore, policies such as a broad education access program will contribute both to economic growth and to increased income levels for a huge portion of the population. In addition, it is known that a more equitable distribution of income and economic opportunities also contributes to the alleviation of social conflict and political instability. However, Solimano's recommendation is not acceptable because most developing countries need to solve inequality problems immediately or in the medium term, at least. Otherwise, they might not exist in the long run, which is what mainstream scholars are concerned about.

More details about endogenous growth theory (including endogenous policy theory) are given below in the empirical studies section. In general, models based upon this theory support its hypothesis with revealing data, where a negative correlation appears between inequality and growth. The discussion on data is showed below, in the second section.

1.3. Alternative Theories

Other scholars, such as Structuralists and Neomarxists, have also addressed the relationship between income distribution and growth. Structuralist theory resembles that of Keynes and Kalecki, with some slight differences. Structuralists believe that income distribution affects aggregate demand and therefore short-term output and long-run growth[7]. This relationship comes

[7] See Bardhan (1988).

from the acceptance that economic actors --i.e., institutions and both social groups and "classes"-- have different degrees of economic power and hence can influence prices or quantities in certain markets. These actors vary from economy to economy and over time, so the resulting economic power reveals prevalent institutional arrangements and is a product of the actor's own country's history. By identifying these actors, it is possible to specify market inflexibilities and therefore to establish the main macroeconomic relationships and adjustment mechanisms shaping economic behavior (Taylor, 1990). Patterns of both output growth and income distribution will thus be observable through the structural transformation of the economy --i.e., the structural change that accompanies economic development (Syrquin, 1996).

Although in general Structuralists have said that inequality and mass poverty pose severe limits to the expansion of domestic markets, some of them consider it possible to ask whether income redistribution to labor is growth-depressing (profit-led growth) or growth-enhancing (wage-led growth). Indeed, Taylor (1994) says that the net effect on growth depends on the combination of different circumstances: First, how much aggregate consumption is positively associated with wage share; second, whether or not a higher wage share (i.e., lower profit share) can depress profitability and cut investment; third, whether or not exports decline with a higher wage share, to the extent that international competitiveness is reduced because of an appreciation of the real exchange rate. In consequence, wage-led growth positively affects the growth rate of the GDP when higher consumption brings about a strong response of investment to capacity utilization. In contrast, if equality policy is applied in an economy dominated by profit-led growth, an increase in the wage share cuts aggregate demand, capacity utilization, investment and growth. In this case, progressive income redistribution reduces output growth.

Neomarxists, on the other hand, have believed that profit and wage share are determined by the relative bargaining power of capitalists and workers. These class relations are mediated by social institutions that may go from firms up to the national political system, depending on the nature of the conflict and the relative power of firms, unions and government. Moreover, Neomarxists assume that profits are the main determinant of capital accumulation and that this, along with technological change, is the main driving force in the growth process. However, they see different shades of this process, from the assumption of steady state paths up to emphasizing the institutional

framework, including cases of endogenous profit and labor squeeze cycles. Different shades are also observable regarding effects of large-scale capital-intensive capitalist production on traditional productive activities, marginal groups, the labor force and the urbanization process in developing countries.

2. The Data Problem

It has recently been found that empirical results regarding the relationship between inequality and growth are strongly sensitive to the sources, coverage and reliability of the data used. Indeed, many criticisms made have to do with this issue, especially because most such studies have been done by using cross-country regression analyses. For Levine and Zervos (1993), this empirical approach led to misunderstandings for several reasons. First, regression analysis presupposes that observations are drawn from a distinct population. This presumption can be held when countries have more or less the same social, historic, economic and geographic patterns, but not for studies that cover all regions of the world or even regions that are quite different for periods of 20 years or more. So, cross-country regressions help to evaluate the strength of partial correlations but not of behavioral relationships, such the effect of redistributive policy on growth.

Second, in general, data used for cross-section analysis are often inconsistently and inaccurately measured. It is usual to find inequality statistics suffering from errors of measurement that cause misleading results, especially when inequality variables go on the right side of the regression[8]. Third, cross-section studies based on data sets such as the International Financial Statistics, or Summers and Heston's, do not contain policy actions variables to verify the results of programs adopted to diminish inequality or alternatively to encourage investment. In spite of these limitations, Levine and Zervos (1993) believe that cross-country regressions could be useful when accompanied by other analytical methods that revealed responses to policy changes, such as control variables and different policy indicators.

[8] Gujarati (1995), for example, distinguishes between the consequences of having this kind of error in the dependent variable versus in the independent variables, with the latter being more troublesome. In such circumstances, ordinary least square "estimators are not only biased but also inconsistent, that is, they remain biased even if the sample size increases indefinitely" (469).

Nevertheless, among their conclusions Levine and Zervos highlight that the empirical connection between policy indicators and growth is quite sensitive to slight alterations in the independent variables and to small changes in the sample of the countries. These aspects were more deeply explored by Weede (1997), constituting his main attack on the works of Persson and Tabellini (1994), and of Alessina and Rodrik (1994). For Weede, there was no robust relationship between inequality and growth, though he recognized that the debate is not yet closed.

Other authors, such as Sarel (1997), and Bruno, Ravallion and Squire (1996), also mention the high sensitivity of the empirical results to the data used to measure inequality. However, the most exhaustive study ever done concerning the reliability of income distribution data was that developed by Deininger and Klaus (1996). They collected a broad set of existent data on Gini coefficients and on individual quintile groups' income shares and analyzed them in terms of reliability, definitions used, coverage and sources of information.

In addition to the methodological problems of cross-section works described above, the results of such studies, when they are used to study inequality aspects, might be different. This might occur despite their covering both the same countries and the same period of time, first, because of the definition applied to measure the Gini coefficient. The best data, according to many authors including Deininger and Klaus (1996), are those based on the individual rather than the household as the unit of observation. Such data should cover all populations (urban and rural) as well as different sources (not only wage earners) and types (including non-monetary) of real incomes. Furthermore, it would be preferable to use surveys based on (pretax) income rather than on expenditure. Moreover, they have suggested that the information should be based on primary and official sources.

Deininger and Klaus (1996) assembled more than 2,600 observations for most countries of the world. Once they applied their standards for quality, their observations reduced to 682 for 108 countries. But some problems still remained. For example, many of the countries had few observations (the average is 6 observations per country), only 65% of the observations were based on primary sources, 546 observations (80%) referred to income surveys and only 312 out of 682 (46%) used the individual as a unit of observation. So these 682 observations were reliable but not

defined according to a unique set of common features. Still the widest set of inequality data available, all empirical studies made afterwards used this work as source of information despite its limitations.

Along with that exercise, Deininger and Klaus (1996) evaluated the studies of Persson and Tabellini (1994) and Alessina and Rodrik (1994), finding that the former included countries with data of low quality and that one-third of the Gini coefficient observations differed five or more points from the closest acceptable observation. Deininger and Klaus reran the regression done by Persson and Tabellini using only high-quality observations of the country sample. Thus, they did not accept Person and Tabellini's hypothesis about the inverse relationship between inequality and growth. In Alessina and Rodrik's work (1994) they found higher quality data, but some of the observations also had high deviations with respect to the most reliable observations.

Time series analysis appears then as an alternative to empirical studies regarding income concentration. Nonetheless, it is also limited by the lack of sufficient data. This empirical approach is important not only to country-specific studies but also in showing whether or not the inverted U-Kuznets curve exists, relating inequality to development. Kuznets said that in the early stages of a country's development income inequality increases as output level is higher, but once the country has reached a certain threshold, income concentration begins to diminish as output continues increasing. Notice that in the original version of the Kuznets curve causality went from the income *level* to inequality, whereas in the endogenous growth and policy theories it goes from income distribution to the *change* in income. Finally, another data problem is that variations of the Gini coefficient year-to-year are minimal, making it difficult to detect important changes on income distribution in the short term even though they actually occurred.

3. Recent Empirical Studies

Most recent studies have concentrated on demonstrating the existence of the inverse relationship between income distribution and growth, though many have also looked for some evidence of the Kuznets curve. This section discusses the main results of such studies and explains how trade, wage trends, and assets ownership can affect either growth or income distribution.

One study on income distribution and growth based upon both endogenous growth and endogenous policy theories was done by Perotti (1992). He applied an overlapping-generations model to describe economic structure where growth is the result of private investment in education and there is no capital market. He explained the political mechanism by an endogenous median voter process that reveals individual preferences toward distribution in the form of higher taxes. So, the lower the pretax income on the median voter relative to the average, the higher her or his preferred tax rate, and, consequently, her or his share of government expenditure in the GDP.

Furthermore, his model highlighted asymmetries between poor and rich countries. That is, the pattern of income distribution associated with high rates of growth varies greatly with the level of per capita income of an economy. Therefore, the two preconditions to achieve higher growth rates are different between poor and rich countries. Indeed, for a poor economy, such preconditions are:

> first, the high-income group must be rich enough to start with. Second, the middle class (where the median voter is) should not be too distant from the high-income, in order not to have an incentive to tax heavily the rich now and prevent them from investing in education. [In contrast, t]he configuration of income distribution that is most favorable to growth in a rich economy is essentially the opposite. Here, high growth will result if the low-income class invests in education. Therefore, high growth will occur under two conditions: first the low income class should not be so poor to start with that no level of redistribution will enable it to invest in education. Second, the middle class should not be too much richer than the low-income class. (p. 313)

In this model, growth occurs through a "trickle-down" process, which begins with investment that encourages growth and increases resources available for future redistribution. Some of the redistributed resources are invested, and the process continues indefinitely, generating endogenously an inverted U curve between inequality and income per capita growth *a la* Kuznets. This "trickle-down" process also works in developing countries, but not in poor countries with egalitarian income distribution, because the potential investors, the richer people, would not have enough resources. In such cases the process needs at least an intermediate level of inequality in order to work successfully in terms of investment and growth.

Using cross-section country data, Perotti (1992) regressed the rate of GDP growth on per capita GDP during the sample period 1970-85, the shares of the third and top quintile of income at the beginning of the period, the multiplicative interaction of these shares with per capita GDP, and a vector of control variables. He concluded that his model explained the negative effect of income

distribution on growth, but the underlying political process seemed to be less well supported by data. Indeed, testing the relationship between public expenditure and inequality, he found that some of the income-distribution variables were not statistically significant to explain public expenditure. It is curious that theoretically he explained the political mechanism in terms of decisions involving taxes, but empirically he demonstrated it with public expenditure.

Alessina and Rodrik (1994) in general followed Perotti's arguments (1992) that the initial configuration of resources shapes the political struggle for income and wealth distribution, which, in turn (through median voter process), affects long-run growth. Alessina and Rodrik (1994) theoretically assumed that income distribution does not change over time, implying the absence of a dynamic interaction between distributive variables and growth. They concluded, as did Perotti (1992), that high inequality is conducive to the adoption of growth-retarding policies. In their regressions, the rate of growth of the GDP depends mainly on its initial conditions, primary-education level, and Gini coefficients of income and land. They also introduced a dummy variable for democratic countries, but it did not have significant results, meaning that the political system does not help to explain differences in the rate of economic growth.

Almost simultaneously, Persson and Tabellini (1994) achieved similar results. They tried with different regressions and different samples (e.g., democratic, nondemocratic, OECD countries) to show that distributive conflict negatively affects investment, because it leads to policies that do not protect property rights and do not allow full private appropriation of returns from investment, and in these ways hinder economic growth. Thus, they ran two basic regressions, one for GDP growth and the other for investment. However, while they accepted, as did Alessina and Rodrik (1994), that the political mechanism through government expenditure was not significant and that transmission channels deserved more investigation, they also concluded, unlike Alessina and Rodrik, that the relationship between income distribution and growth is more evident in democracies.

This last conclusion led to strong criticism from authors such as Weede (1997) and Deininger and Squire (1996), discussed above in the second section. In addition, Weede (1997) showed that initial GDP, government outlays, social security transfers, democratic age and the top quintile of income distribution do affect economic growth for industrialized countries during 1960-1985. In turn,

Deininger and Squire (1996) suggested that any analysis should include both Gini coefficients and income shares because they are complementary. They did not show any regression but they stated that there is no systematic relationship between growth and changes in aggregate inequality, because the changes in the Gini coefficient tend to be small. "This lack of change suggests that efforts to find systematic links between inequality and aggregate growth may have to be rethought." (p. 587) Changes in income shares could be a better alternative[9].

It is not a coincidence that this skepticism about the negative relationship between inequality and growth has been shared by others who, as Deininger and Squire, have worked in the International Monetary Fund (IMF), the World Bank (WB) or the Inter-American Development Bank (IADB)[10]. Moreover, they have emphasized that the reverse causality and the positive relationship is the dominant, meaning that the correct analyses should go from economic growth to inequality. They preferred to talk about poverty levels rather than income distribution. Sarel (1997), for example (from the IMF), using the Deininger and Squire (from the WB) data set, concluded that higher growth rate, higher income level, higher investment rate, real depreciation and improvement in terms of trade contribute to the improvement of income distribution. Unfortunately, his article has many theoretical and empirical weaknesses. The study by Bruno, Ravallion and Squire (1996), from the WB, also concluded that there is no intrinsic trade-off between long-run aggregate economic growth and overall equity. Their study was much better than Sarel's, though it had some general and ambiguous ideas and did not show any raw data. Nevertheless, it took the realistic view that the political mechanism is mediated by lobbying actions rather than by median voter behavior.

In 1996, Alessina and Perotti published an article answering many of the criticisms that had emerged. With a bigger sample (71 countries for the period 1960-85) and more reliable data they once again confirmed their findings about the inverse relationship between inequality and growth, though they also recognized another transmission channel: the relationship in which income inequality exacerbates social discontent and hence increases social-political instability (SPI). This instability creates uncertainty in the politico-economic environment, thereby reducing investment.

[9] Deininger and Squire found just one exception to the general conclusion drawn: Colombia, "from 1970 to 1980, where a growth rate of slightly more than 2 percent was associated with a slight decrease (0.9 percent) in the income of the poor" (p. 588).
[10] Levine and Zervos have worked for the WB, for example.

Thus, investment and SPI are endogenous within the model. SPI is measured by using different indicators of social (deaths) and political (assassinations, coups) aspects. Alessina and Perotti included three dummy variables in the SPI variable to distinguish cultural and historical differences among regions and found that only the dummy for Latin America was significant. They also proved the statistical robustness of the results obtained.

Later, Deininger and Squire (1997) repeated that there is a small relationship between overall growth and changes in inequality measured with the Gini coefficient. However, they found a strong systematic relationship between overall growth and income growth of the poorest population quintile. They concluded that positive effects of growth outweighed its negative impact (recall that investors are usually rich people).

3.1. Trade, Wages, and Inequality

According to Edwards (1997), who has worked for the IADB, trade, along with wages, productivity and obviously income distribution, has the same problem: data limitations. Particularly for trade, the indicators used do not necessarily show policies adopted, though they should. Thus, it is better to use more than one indicator to analyze the impact of trade on growth and income distribution. In relating only the initial trade situation of the 1970s and the Gini coefficient in the 1980s, Edwards found that countries with more distorted trade regimes had a more concentrated income distribution, though he did not establish what the possible causal relationship would be. He also showed that both reformer (i.e., those with a trade liberalization policy) and non-reformer countries experienced a reduction in income inequality during this period. Based on this, he included in his cross-section country data set other variables, such as education, economic growth, inflation, per capita GNP and dummy variables for trade reform and for developed countries, drawing a number of conclusions: First, countries that initially had a more distorted external sector experienced an increase in inequality. Second, trade liberalization has not significantly affected changes in income distribution. Third, trade policy has had different effects on less developed countries and advanced nations. Fourth, countries that improved particular aggressive educational programs from the 1960s to the early 1980s experienced a reduction in inequality. Fifth, these results are still subject to some measurement problems and the shortcomings of cross-country analyses.

On the other hand, Amadeo (1996) showed that Argentina, Brazil, Chile and Mexico have experienced a common pattern that is easy to extend to other Latin American countries. They faced the problem of stabilizing their economies based on an exchange-rate anchor at the same time that they introduced trade and financial liberalization. This combination of macroeconomic and growth policies led these economies to lower inflation but also to a lower growth path, because one of the theoretical preconditions for the success of these policies was not attained: wages flexibility. Appreciation of the real exchange rate reduced the country's competitiveness due to sticky wages. As wages did not go down as might have been expected, the current account of the balance of payments became more negative. Thus, aggregate demand, which was falling as an expected result of the stabilization policy, decreased further. Hence, stabilization with liberalization worsened income distribution. The causal relationship went from lower growth to more income concentration. Nonetheless, Amadeo emphasized that there were other important channels through which income differences were enlarged. One of them has to do with wages.

Indeed, examining the effects of trade liberalization on the industrial sector, Amadeo (1996) found that the exposure of these countries to greater international competition increased labor productivity, due to the fact that greater efficiency was accompanied by the statistical effect of a reduction of the employment rate through dismissals, outsourcing, subcontracting, new managerial strategies, and so forth. The more productive and more expensive workers continued working or were hired. On the other hand, liberalization facilitated the incorporation of more technological change, usually complemented by skilled labor. In consequence, both higher productivity and technological progress brought about an increase in the average real wage, a broader difference in relative wages between skilled and unskilled labor, and additional unemployment. Therefore trade liberalization also made income distribution worse in this way, though both theorists and policy makers predicted the opposite effect: reduction of both real and relative wages, and higher employment.

The same tendency toward higher relative wages of skilled labor regarding unskilled labor has been especially observed in the United States. Murphy, Riddle and Romer (1998), basing their work on the General Purpose Technology (GPT) approach, pointed out that this trend has not been easily

identified, for both theoretical and empirical reasons. Theoretically speaking, the use of models based on the Neoclassical assumption that labor is homogeneous allowed no possibility for differential wages existence. In contrast, Murphy *et al* argue that one of the characteristics of the labor market is precisely its segmentation. Skilled and unskilled labor can substitute for each other, but not in a perfect manner. Furthermore, technological change usually replaces unskilled and some forms of skilled labor with machines or technical methods that need specific skilled labor. Consequently, technological progress and more educated workers are complementary. This fact, then, can reduce unskilled labor wages in absolute and/or relative terms.

From the empirical perspective, Murphy *et al* (1998) show that this widened differential in wages between skilled and unskilled labor has been caused rather by supply than by demand factors. In general, according to them, the behavior of relative wages is the outcome of a race between technological change and increased educational attainment. The distributive effects are a corollary of this interaction. New technologies can cause large changes in the relative marginal productivity of different inputs, bringing about "changes in prices and offsetting changes in patterns of investment throughout the economy." (p. 293) However, "[e]vidence from labor markets suggest that relative wages for more educated workers do fall when the supply of educated workers outpaces growth in demand." (p. 289) Thus government, through educational and training programs, can control that tendency, as indeed Canadian officials have done, according to Murphy *et al* (1998). Other factors, related more to technological change and its market dynamics (which do not grow at smooth, constant and equal rates such as in endogenous growth models), can also alter current paths.

Stabilization based upon the exchange rate, both trade and financial liberalization, the existence of segmented labor markets as well as the negative distributive consequences of the two former have been broadly discussed by Structuralists. They have used institutional and historical analyses at the country level, as opposed to cross-country regressions[11]. According to this group of theorists, the right procedure is first to analyze each case separately and then extract the main regularities and differences among study cases in order to achieve more conclusive statements.

[11] See Ocampo and Taylor (1998) and Taylor (1999) for Latin American countries, and Pieper and Taylor (1998) for Turkey, Eastern Europe, Sub-Saharan Africa, South Korea as well as for Chile and Mexico. The methodology used by Structuralists can be seen in Syrquin (1988) and Taylor (1990).

3.2. Assets Ownership

Some authors have also studied how assets property is distributed and what relationships might it have to either income distribution or economic growth. It is clear that income and assets distributions are different and that usually the second is more concentrated than the first. If they are not the same, the effect of each on economic growth might be dissimilar. Deininger and Squire (1997) confirmed the existence of a strong negative association between initial distribution of land and subsequent growth, but not for OECD countries. In contrast, Alessina and Rodrik (1994) and Alessina and Perotti (1996) found that countries that experienced land reform in the aftermath of World War II, and hence reduced inequality in land ownership, tended to have higher growth than countries with no land reform.

By the same token, while some authors have thought that the transmission mechanism of the effects of inequality on growth plays through political structure, others have believed it works mainly through the financial system, which offers services and goods that not everybody can afford. Credit is proportionately given to individuals who have higher collateral (e.g., investors and rich people). With the use of such financial services, both income and assets distributions can become more concentrated. This can reproduce not only the unequal property of physical capital but also of human capital, limiting for instance the access of poor people to education. For example, Deininger and Squire (1997) concluded that initial land inequality is significantly and negatively related to the average educational attainment in the population. "Thus, the evidence suggests that credit markets, not the political system, should be seriously considered as a mechanism through which inequality slows economic growth." (p. 41). For their part, Levine and Zervos (1993) found that some indicators of the level of financial-sector development are robustly associated with long-run growth, including some of those indicators that register changes in financial policies. However, they felt that those linkages deserve further study.

4. Regressions Results

Based on the cross-section country data set used by Barro (1991)[12], it is possible to review the effect of inequality on fertility, the interaction between the Gini coefficient and other variables as well as the social-political instability hypothesis. There was insufficient information to prove other hypotheses, such as the effect of either the financial system or land ownership on political instability, investment and growth. The regression sets included only those factors that had the highest statistical significance or were interesting for a particular reason. Many others were left out because they did not seem significant (at the 5% level) or interesting.

Having presented the limitations of this kind of exercise, which were discussed in the second section, we ran five sets of regressions in order to identify the possible determinants of, first, the growth rate of real per capita GDP for the period 1960-85 (GR6085); second, the average of 1965 and 1985 total net fertility rates (FERTNET); third, the Gini coefficient (GINI) as a proxy of income inequality; fourth, the average from 1960 to 1985 of the ratio of real domestic investment (private plus public) to real GDP (INV); and fifth, the number of assassinations per million population per year (ASSASS) as a proxy of social and political instability. The sample size varies from 57 to 98 because of missing data.

The first set of regressions (Table 1) tries to identify the main determinants of economic growth. We include economic variables, social-political indicators, Gini coefficient, a combined effect of inequality with economic variables, and dummy variables for regions differences. Among the economic variables are GDP of 1960 (GDP60), availability of human capital with primary (PRIM60) and secondary (SEC60) education in 1960[13], the ratio of real government consumption expenditure net of spending on defense and education to real GDP (HSGVXDXE), total investment (INV) and the deviation of the investment deflator from the sample mean (PPI60DEV). In turn, the social-political indicators are showed in variables such as the number of revolutions and coups per year (REVCOUP) and of assassinations (ASSASS). The inequality indicator (GINI) appears alone to measure its direct effect, but also combined with initial GDP (GINI*GDP60), initial primary

[12] Barro used the Summers and Heston (1988) international comparison project, but after the publication of his article (1991) their data set was corrected and updated, thus impeding the ability to obtain Barro's exact results.
[13] PRIM60 and SEC60 are respectively enrollment ratios for primary and secondary education.

education enrollment (GINI*PRIM60) and investment (GINI*INV) in order to detect some indirect or interactive effects of income distribution. The dummy variables for African (AFRICA) and Latin American (LAAMER) countries relied on the possibility of the existence of some other explanatory variables that are not explicitly considered among the regression (e.g., historical, social and cultural differences).

Table 1 reveals that both dummy variables are statistically significant to explain economic growth. In other words, for all equations showed, regional differences of Africa and Latin America contribute to an explanation of economic growth. Notice that, when these variables are left out of the regressions in equations 2 through 5, part of those regional differences are captured by the GINI coefficient, which is significant in all but the second equation, though its significance has increased with regard to equation 1. Even in equations 2 through 5 the GINI coefficient has a negative impact on growth, as endogenous growth theory predicts, but it disappears in the remainder[14]. So it is possible to say that according to the data available there is no statistically significant direct influence of inequality on economic growth.

However, inequality becomes significant when it is combined (in a multiplicative way) with initial per capita GDP (equations 7 through 11) or investment (equations 7,10 and 11). In the case where per capita GDP and its combined effect with GINI appear simultaneously (equation 8), neither variable is significant. The same problem occurs with investment (equations 8 and 9) and primary education (equations 7 and 8). In contrast, when any of them (GDP60, PRIM60 or INV) appears alone, without its respective combined effect with GINI, it is significant. The same occurs when only the combined effect is left alone. This situation might indicate a multicollinearity problem, but it also might indicate some statistical fragility of GINI with respect to control variables. Moreover, this would also indicate that the relationship between inequality and the rest of the variables is complex and dynamic. GINI would have an indirect effect on growth rather than a direct effect. Hence, these would be other reasons for disregarding cross-section analysis as the right procedure.

[14] Recall that other approaches have also predicted the same effect for other reasons and using different empirical methods other than cross-section country regressions.

Summing up, dummy variables, the combined effect of GINI with initial GDP and investment, initial human capital with a primary education level, and the political instability represented by revolutions and coups are all consistently significant and have their respective expected signs. That is, human capital encourages economic growth while political instability deters it. The other significant variable is public consumption (HSGVXDXE). Here it exerts a definitive negative effect that before has not been captured so consistently[15], without explicitly setting any financial constraint. This result cannot automatically be extended to public investment.

Table 2 refers to the determinants of net fertility (FERNET). This was included because Barro (1991) mentioned that

> Some theories in which the initial values of human capital and per capita GDP matter for subsequent growth rates also suggest relations with physical investment and fertility….In growth models with endogenous fertility per capita growth and net fertility tend to move inversely. For example, a higher initial stock of human capital leads to higher growth and lower fertility. (p.422)

Indeed, in all equations showed in Table 2, initial human capital (measured as primary, PRIM60, and as well secondary, SEC60, educational levels) is statistically significant to explain subsequent net fertility. However, this is not the case with the initial per capita GDP (GDP60). Even more curious is the rate of growth of per capita GDP during 1960-1985 (GR6085), which is also significant for all cases showed in Table 2 instead of the initial GDP[16]. Both human capital and economic growth have the expected negative effect on net fertility.

Furthermore, the ratio of government transfer payments to nominal GDP (GTRAN) is also significant and negatively related to fertility. On the other hand, neither of the dummy variables for regional differences (AFRICA and LAAMER) is significant for fertility (equation 4 of Table 2). In turn, the negative correlation between mortality (MORTCAV) and fertility is not statistically significant (equation 5). Moreover, the Gini coefficient has the expected positive sign and is statistically significant in all cases. In developing countries it is usual that lower income couples have on average more children than richer households, so in countries with higher income differences, there tends to be a higher net fertility. Therefore, according to Table 2, net fertility is

[15] In Easterly and Rebelo (1993), for example.
[16] We first tried with 1 set of the same variables showed in the 5 equations of Table 2, including initial GDP, and then with another set of the same variables but excluding GR6085, and in neither case was GDP60 significant.

affected by primary and secondary educational levels, governmental transfers, economic growth, and by inequality.

In Table 1 we saw that inequality has a combined effect on economic growth through initial GDP and investment. Now in Table 3 we see what variables are simultaneously affecting inequality, in order to identify the presence of a sort of dynamic process. It shows that initial primary education (PRIM60), the rate of growth of per capita GDP (GR6085), net fertility (FERTNET), and regional differences of Latin America (LAAMER) and Africa (AFRICA) are all statistically significant to explain worsened income distribution along the seven equations. The latter two, then, show that regional differences matter to an explanation of both less economic growth and worsening inequality. Only initial secondary education (SEC60) has a negative effect on inequality, but it is only significant in equations 1 (at the 12.3% level) and 2 (at the 10.98% level). In contrast, investment is also positive and significant in the first three regressions, but its statistical importance vanishes when SEC60 and assassinations (ASSASS) are left out of the equations. These results suggest that economic forces essentially exerted a higher inequality tendency between the 1960s and 1980s. It was not possible to evaluate whether fiscal policy helped to compensate that trend, but we might suppose that, due to the growing concern of policy makers about stabilization since the 1970s and the Latin American debt crisis of the 1980s, it does not occur in developing countries, at least.

Among the statistically significant variables affecting total domestic investment (Table 4), the accelerator effect (GR6085) shows the highest regression coefficient for all six regressions. This induced effect of GDP growth on investment is accompanied by initial stock of human capital (both PRIM60 and SEC60), which is also statistically significant for all six regressions. Investment deflator (PPPI60) is also significant in all cases, but negatively correlated with investment as expected. In turn, the significance of the Gini coefficient improves a little bit when the initial GDP (GDP60 in equations 1 and 2) and governmental transfers (GTRAN in equations 4 and 5) are left out, because neither of these variables are statistically significant. Hence higher inequality along with economic growth, initial human capital and decreasing investment deflator, encourage investment. Assassinations (ASSASS) affects investment negatively. This particular social-political effect on investment seems to be statistically more robust than revolutions and coups

(REVCOUP in equations 1 to 3), which in contrast are stronger than assassinations in explaining economic growth (Table 1). Additionally, Table 4 confirms that income distribution affects economic growth performance through investment, as shown above in equations 7, 10 and 11 of Table 1. Curiously, regional differences do not help to explain investment behavior.

Table 5 identifies possible determinants of assassinations. Although there might be some multicollinearity problems, it is interesting to notice that this indicator of the social-political situation is mainly affected by other social-political conflict indicators, such as riots (RIOT), revolutions (REVOL), coups (COUP) and government crises (CRISIS). Only the political rights index (POLRIGHT) has a negative correlation, which is not significant. The statistical significance of the dummy variable for Latin America (equations 3, 5, 6 and 7) indicates also that this region has other determinants of assassinations that are not explicitly included in the regressions. In contrast, economic growth (GR6085) and income distribution (GINI) have the expected signs but they are not statistically significant in explaining the social-political situation. This would mean that the social-political conflict seems relatively autonomous with regard to economic performance. This, however, deserves further research.

Finally, all regressions neglect heteroscedasticity problems using White's Test, with cross and no cross terms, at 10% significance. On the other hand, figures 1a, 1b, and 1c look for some evidence of the original Kuznets curve based on the country sample. We could not confirm its existence despite using the GDP of 1975, 1980, and 1985. This, however, does not mean that its existence has been rejected. Instead, these scatter plots rather suggest that the linear regression method may be inappropriate because linkages between income distribution and growth are likely to be nonlinear and the structural relationship might change over time.

5. Conclusions

There is no theoretical consensus about the relationship between inequality (i.e., income and wealth distribution) and growth. Some theories have assumed that there is no causal relationship; others say that it exists but goes from inequality to growth; others that the reverse causality is relevant; still others believe that it might exist under certain circumstances depending on some particular issues.

Moreover, assuming that this systematic association exists, another discussion item is whether the effect is direct or indirect, positive or negative. Again, there is no agreement. Regardless of the theory used, it is interesting to notice that many scholars accept the existence of non-economic variables affecting long-run growth and investment.

To verify empirically which theory or model (among those that may be a part of a theory) best fits reality is especially difficult because it often involves the use of a low-quality or incomplete data set. In addition, not all approaches need cross-section country regressions to demonstrate whether they are right. This type of regression analysis brings about additional methodological problems with results that are highly sensitive to the sample size, the source and the way in which independent variables are included, and the criteria applied to measurements of inequality. Thus, result analyses should be done carefully to avoid misunderstandings. In addition to these problems, the effects of inequality on per capita GDP growth are difficult to isolate empirically. Despite these limitations, cross-section country analysis shows that inequality may exert a multiplicative effect with initial GDP and investment on economic growth, though the former is negative and the latter is positive. Thus, the definite effect of inequality on growth cannot be anticipated.

Some implications of this kind of exercise are very important. First, regression results must be analyzed carefully because they are only valid for the sample used, which may have many flaws. Second, the literature based on both endogenous growth and endogenous policy theories seems to regress in practice two endogenous variables (measures of income distribution and growth) against each other, which makes correlations difficult to interpret in terms of causation or policy effects. Third, these approaches are especially affected with results showed above because of the methodological importance such points of view confer to this kind of regression analysis. Fourth, it is possible that the effect of income distribution on growth is nonlinear and also subject to a sort of feedback process that would be detectable in time series analysis for each country separately. Fifth, it seems unlikely that different countries with different cultures and histories can serve as sample points to uncover the structure of a single unified process, as some theories and statistical methods would require. Sixth, statistical methods should be used in conjunction with other methods, such as historical and case studies --including institutional aspects-- to better understand these linkages.

Bibliography

Alessina, Alberto and Dani Rodrik. Distributive Politics and Economic Growth. The Quarterly Journal of Economics. Vol. 109, (1994): 465-490.

Alessina, Alberto and Roberto Perotti. Income Distribution, Political Instability and Investment. European Journal of Political Economy. Vol. 40, (1996): 1203-1228.

Amadeo, Edward J. The Knife-Edge of Exchange-Rate-Based Stabilization: Impact on Growth, Employment and Wages. Unctad Review. (1996): 1-25.

Bardhan, Pranab. Alternative Approaches to Developing Countries. In Chenery, Hollis and T. N. Srinivasan (eds.), Handbook of Development Economics. Vol. I., Elsevier Science Publishers, 1988.

Barro, Robert J. Economic Growth in a Cross-Section of Countries. The Quarterly Journal of Economics. Vol. 106, (1991): 407-443.

Bruno, Michael, Martin Ravallion and Lyn Squire. Equity and Growth in Developing Countries. Old and New Perspectives on the Policy Issues. The World Bank Policy Research Working Paper, No. 1563, 1996.

Deininger, Klaus and Lyn Squire. A New Data Set Measuring Income Inequality. The World Bank Economic Review. Vol.10, 3, (1996): 565-591.

_____ Economic Growth and Income Inequality; Reexamining the Links. Finance and Development, (1997): 38-41.

Easterly, William and Rebelo. Fiscal Policy and Economic Growth. An Empirical Investigation. Journal of Monetary Economics. Vol. 32, (1993): 417-458.

Edwards, Sebastian. Trade Policy, Growth, and Income Distribution. The American Economic Review. Vol. 87, 2, (1997): 205-210.

Gujarati, Damodar N. Basic Econometrics. Third Edition. McGraw-Hill, Inc. 1995.

Kalecki, Michal. Selected Essays on the Dynamics of the Capitalist Economy, 1933-1970. Cambridge, Cambridge University Press, 1971.

Keynes, John Maynard. The General Theory of Employment, Interest, and Money. First Harvest/Harcourt Brace Edition, 1964 (1936).

Levine, Ross and Sara J. Zervos. What we Have Learned About Policy and Growth from Cross-Country Regressions? The American Economic Review. Vol. 83, 2, 1993: 426-430.

Murphy, Kevin M., Craig Riddel, and Paul Romer. Wages and Technology in the U.S. and Canada. In Helpman, Elhanan (eds.), General Purpose Technologies and Economic Growth. Cambridge, The MIT press, 1998.

Ocampo, Jose Antonio and Lance Taylor. Trade Liberalization in Developing Economies: Modest Benefits but Problems with Productivity Growth, Macro Prices, and Income Distribution. Working Paper Series I, No. 8, Center for Economic Policy Analysis CEPA, New School University. New York, 1998.

Perotti, Roberto. Political-Economic Equilibrium. Income Distribution, Politics, and Growth. The American Economic Review. Vol. 82, 2, (1992): 311-316.

Persson, Torsten and Guido Tabellini. Is Inequality Harmful for Growth. The American Economic Review. Vol. 84, 3, (1994): 600-621.

Pieper, Ute and Taylor, Lance. The Revival of the Liberal Creed: The IMF, the World Bank, and Inequality in a Globalized Economy. Working Paper Series I, No. 4, Center for Economic Policy Analysis CEPA, New School University. New York, 1998.

Sarel, Michael. How Macroeconomic Factors Affect Income Distribution: The Cross-Country Evidence. IMF Working Papers, 1997.

Solimano, Andres. The End of the Hard Choices? Revisiting the Relationship Between Income Distribution and Growth. In Solimano (ed.), Social Inequality: Values, Growth and the State. Michigan, The University of Michigan Press, 1998.

Solow, Robert M. A Contribution to the Theory of Economic Growth, Quarterly Journal of Economics. Vol. 70, (1956): 65-94.

_____ Growth Theory: An Exposition. New York, Oxford University Press, 1988.

Summers and Heston. A New Set of International Comparisons of Real Product and Price Levels: Estimates for 130 Countries. Review of Income and Wealth. XXXIV, (1988): 1-25.

Syrquin, Moshe. Patterns of Structural Change. In Chenery, Hollis and T. N. Srinivasan (eds.), Handbook of Development Economics. Vol. I. Elsevier Science Publishers, 1988.

Taylor, Lance. Structuralist CGE Models. In Taylor, Lance (ed.), Structuralist Computable General Equilibrium Models: Socially Relevant Policy Analysis for the Developing World. Cambridge: MIT Press, 1990.

_____ Income Distribution, Inflation and Growth. Second printing, Massachusetts Institute of Technology, 1994.

_____ Effects of Balance of Payments Liberalization--Latin America. Mimeo. Center for Economic Policy Analysis CEPA, New School University, New York, 1999.

Weede, Erich. Income Inequality, Democracy and Growth Reconsidered. European Journal of Political Economy. Vol. 13, (1997): 751-764.

TABLE 1
CROSS-SECTION COUNTRY REGRESSIONS
DEPENDENT VARIABLE IS GR6085
(n=77)

VARIABLE	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]
CONSTANT	0.0207	0.0312	0.0332	0.0331	0.0354	0.0239	0.0031	0.0294	0.0289	0.0296	0.0286
	1.8091	*2.8612*	*3.0454*	*3.0220*	*3.3386*	*2.1184*	*0.1608*	*3.6981*	*0.3504*	*4.0035*	*3.7659*
GDP60	-0.0065	-0.0073	-0.0062	-0.0062	-0.0061	-0.0057		0.0001			
	-4.7018	*-5.1384*	*-5.2429*	*-5.1824*	*-5.1795*	*-4.9932*		*0.0217*			
GINI*GDP60							-0.0017	-0.0170	-0.0165	-0.0162	-0.0167
							-5.4960	*-1.2091*	*-5.2636*	*-5.3199*	*-5.3241*
PRIM60	0.0146	0.0166	0.0195	0.0197	0.0202	0.0175	0.0527	0.0426	0.0180	0.0188	0.0257
	1.8056	*2.0416*	*2.4800*	*2.4607*	*2.5770*	*2.2253*	*2.2987*	*1.2174*	*2.3399*	*2.5220*	*2.0220*
GINI*PRIM60							-0.0836	-0.0591			-0.0193
							-1.5565	*-0.7274*			*-0.6741*
SEC60	0.0119	0.0197									
	0.8305	*1.3526*									
HSGVXDXE	-0.0123	-0.1539	-0.1451	-0.1478	-0.1454	-0.1163	-0.1302	-0.1313	-0.1264	-0.1265	-0.1289
	-3.7360	*-4.7118*	*-4.5364*	*-4.5069*	-4.4866	*-3.5971*	*-4.0724*	*-3.9805*	*-3.9566*	*-3.9625*	*-4.0031*
INV	0.0804	0.0847	0.0993	0.0983	0.0866	0.0731		-0.0782	0.0203		
	2.5366	*2.6082*	*3.2210*	*3.1053*	*3.1282*	*2.7372*		*-0.5799*	*0.3956*		
GINI*INV							0.1633	0.3590	0.1246	0.1589	0.1810
							2.6610	*1.1467*	*1.2413*	*3.1371*	*2.9908*
REVCOUP	-0.0143	-0.0169	-0.0176	-0.0173	-0.0181	-0.0149	-0.0158	-0.0159	-0.0162	-0.0164	-0.0160
	-1.8358	*-2.1461*	*-2.2293*	*-2.1384*	*-2.2957*	*-1.9276*	*-2.0578*	-2.0482	*-2.1168*	*-2.1600*	*-2.0900*
PPI60DEV	0.0060	0.0046	0.0052	0.0052							
	1.0824	*0.8210*	*0.9413*	*0.9230*							
GINI	0.0164	-0.0219	-0.0341	-0.0337	-0.0359	0.0083	0.0660				
	0.6977	*-1.0963*	*-1.8980*	*-1.8514*	*-2.0141*	*0.3685*	*1.4112*				
ASSASS				-0.0006							
				-0.1617							
AFRICA	-0.0127					-0.0127	-0.0133	-0.0124	-0.0121	-0.0129	-0.0117
	-2.4661					*-2.5756*	*-2.7820*	*-2.5275*	*-2.5057*	*-3.0427*	*-2.4979*
LAAMER	-0.0128					-0.0135	-0.0110	-0.0101	-0.0108	-0.0118	-0.0099
	-2.6473					*-2.7914*	*-2.2795*	*-2.0624*	*-2.2756*	*-3.0918*	*-2.0711*
R2	0.6016	0.5505	0.5384	0.5386	0.5325	0.5885	0.6148	0.6054	0.6016	0.6007	0.6034

Numbers in Italics below coefficients correspond to respective t-statistics

TABLE 2
CROSS-SECTION COUNTRY REGRESSIONS
DEPENDENT VARIABLE IS FERTNET
(n=59)

VARIABLE	[1]	[2]	[3]	[4]	[5]
CONSTANT	5.8415	5.9060	5.9621	5.8968	6.4729
	9.0111	*9.2506*	*10.4394*	*9.6908*	*9.4213*
GDP60	-0.0938	-0.0832	-0.0897	-0.0907	-0.0918
	-1.1000	*-0.9966*	*-1.1730*	*-1.1645*	*-1.2092*
PRIM60	-1.5323	-1.5596	-1.5707	-1.5493	-2.0915
	-3.5547	*-3.6514*	*-3.7420*	*-3.2978*	*-3.6403*
SEC60	-1.7491	-1.7521	-1.7076	-1.7301	-1.8128
	-2.5833	*-2.6009*	*-2.7033*	*-2.6806*	*-2.8669*
HSGVXDXE	0.4269	0.3921			
	0.2216	*0.2046*			
PPI60DEV	0.1892				
	0.6993				
GINI	2.0973	1.9900	2.0152	2.3343	2.3172
	1.9666	*1.8951*	*1.9507*	*1.8293*	*2.2044*
GTRAN	-4.0811	-4.3489	-4.3292	-4.4084	-3.9354
	-2.5741	*-2.8410*	*-2.8602*	*-2.7681*	*-2.5680*
GR6085	-13.8194	-13.85714	-14.5085	-15.4771	-15.4985
	-2.2950	*-2.3130*	*-2.8851*	*-2.7862*	*-3.0691*
AFRICA				-0.0961	
				-0.3244	
LAAMER				-0.1137	
				-0.4414	
MORTCAV					-17.3968
					-1.3170
R2	0.8747	0.8734	0.8733	0.8738	0.8775

Numbers in Italics below coefficients correspond to respective t-statistics

TABLE 3
CROSS-SECTION COUNTRY REGRESSIONS
DEPENDENT VARIABLE IS GINI
(n=77)

VARIABLE	[1]	[2]	[3]	[4]	[5]	[6]	[7]
CONSTANT	0.1377	0.1517	0.0735	0.0854	0.1595	0.1678	0.1174
	1.7156	*1.8927*	*1.0546*	*1.2252*	*1.9524*	*2.0653*	*1.7542*
PRIM60	0.0758	0.0799	0.0729	0.0771	0.1009	0.1017	0.0958
	1.7522	*1.8401*	*1.6685*	*1.7559*	*2.3599*	*2.3790*	*2.2569*
SEC60	-0.1023	-0.1066			-0.0633	-0.0700	
	-1.5635	*-1.6202*			*-0.0981*	*-1.0908*	
GR6085	0.9470	0.8973	1.2399	1.2005	1.2781	1.2123	1.3743
	1.8490	*1.7447*	*2.5745*	*2.4773*	2.5483	*2.4408*	*2.8959*
INV	0.3034	0.2658	0.2430	0.2007			
	2.1628	*1.9184*	*1.7836*	*1.4963*			
ASSASS	0.0231		0.0243		0.0167		
	1.3890		*1.4495*		*0.9653*		
FERTNET	0.0251	0.0247	0.0351	0.0351	0.0246	0.0243	0.0319
	2.2340	*2.1818*	*3.7748*	*3.7444*	*2.1323*	*2.1107*	*3.4625*
LAAMER	0.1119	0.1136	0.1188	0.1209	0.1171	0.1178	0.12232
	5.3128	*5.3662*	*5.7106*	*5.7801*	*5.4512*	*5.4933*	*5.8040*
AFRICA	0.0879	0.0827	0.0969	0.0918	0.0957	0.0913	0.0963
	3.6847	*3.4884*	*4.1431*	*3.9413*	*3.9594*	*3.8479*	*4.1331*
R2	0.5972	0.5857	0.5827	0.5700	0.5695	0.5636	0.5562

Numbers in Italics below coefficients correspond to respective t-statistics

TABLE 4
CROSS-SECTION COUNTRY REGRESSIONS
DEPENDENT VARIABLE IS INV

VARIABLE	[1]	[2]	[3]	[4]	[5]	[6]
CONSTANT	0.1261	0.0828	0.0881	0.0709	0.0906	0.0900
	4.1343	*1.8757*	*2.0562*	*1.1752*	*1.6605*	*2.3555*
GDP60	0.0048	0.0032				
	0.8733	*0.5469*				
GR6085	1.0312	1.0045	0.8853	0.9764	0.8270	0.8263
	2.6801	*2.4602*	*2.5773*	*2.2650*	*2.1489*	*2.5913*
PRIM60	0.0665	0.0620	0.0669	0.0666	0.0602	0.0610
	2.6289	*2.1659*	*2.4723*	*1.8701*	*1.7432*	*2.2766*
SEC60	0.0925	0.1189	0.1352	0.1281	0.1332	0.1540
	2.1522	*2.3754*	*3.3685*	*2.7085*	*2.8556*	*3.9911*
HSGVXDXE	0.1097	0.1704	0.1428	0.1209		
	0.9340	*1.3020*	*1.1887*	*0.7812*		
REVCOUP	-0.0157	-0.0318	-0.0357			
	-0.5679	*-1.1040*	*-1.2820*			
ASSASS	-0.0118	-0.0202	-0.0205	-0.0235	-0.0254	-0.0259
	-1.0051	*-1.6603*	*-1.6899*	*-1.8462*	*-2.0477*	*-2.2021*
PPPI60	-0.0632	-0.0729	-0.0723	-0.0858	-0.0875	-0.0732
	-4.1715	*-4.1676*	*-4.1659*	*-3.8011*	*-3.9105*	*-4.1820*
GINI		0.1150	0.1130	0.1418	0.1493	0.1377
		1.6385	*1.6211*	*1.5685*	*1.6676*	*1.9955*
GTRAN				0.1318	0.1221	
				1.0486	*0.9798*	
R2	0.6461	0.6749	0.6735	0.6465	0.6422	0.6579
n	98	77	77	59	59	77

Numbers in Italics below coefficients correspond to respective t-statistics

TABLE 5
CROSS-SECTION COUNTRY REGRESSIONS
DEPENDENT VARIABLE IS ASSASS

VARIABLE	[1]	[2]	[3]	[4]	[5]	[6]	[7]
CONSTANT	-0.1602	-0.1305	-0.0892	-0.2386	-0.1093	-0.0152	-0.1093
	-0.4374	*-0.3721*	*-0.7591*	*-0.7261*	*-1.4937*	*-0.1277*	*-1.4937*
RIOT	0.0680	0.0697	0.0750	0.0712	0.0751	0.0707	0.0751
	1.8351	*1.9384*	*2.2344*	*1.9873*	*2.2550*	*2.1028*	*2.2550*
REVOL	2.1855	2.0502	1.5388	2.1353	1.5699	1.7994	1.5699
	3.1287	*3.2285*	*3.1489*	*3.4078*	*3.3827*	*3.4833*	*3.3827*
COUP	-4.3629	-4.4548	-2.8578	-4.4323	-2.8856	-2.9816	-2.8856
	-2.6295	*-2.8195*	*-2.1330*	*-2.8112*	*-2.1793*	*-2.2458*	*-2.1793*
CRISIS	0.5368	0.5675	0.5681	0.5359	0.5635	0.5075	0.5635
	2.1496	*2.3767*	*2.8253*	*2.2738*	*2.8384*	*2.4595*	*2.8384*
POLRIGHT	-0.0302					-0.0313	
	-0.6454					*-0.9967*	
GINI	0.6496	0.3408		0.3790			
	0.6501	*0.4363*		*0.4870*			
GR6085	-3.5212	-3.3188	-0.6940				
	-0.8495	*-0.8950*	*-0.2191*				
LAAMER	0.1802	0.2146	0.2721	0.2310	0.2769	0.2845	0.2769
	0.8358	*1.3197*	*2.2082*	*1.4324*	*2.3011*	*2.3594*	*2.3011*
AFRICA	-0.0060						
	-0.0257						
R2	0.4027	0.3968	0.4259	0.3870	0.4255	0.4342	0.4255
n	57	57	72	57	72	72	72

Numbers in Italics below coefficients correspond to respective t-statistics

Figure 1.a.
Cross-Section Country Data

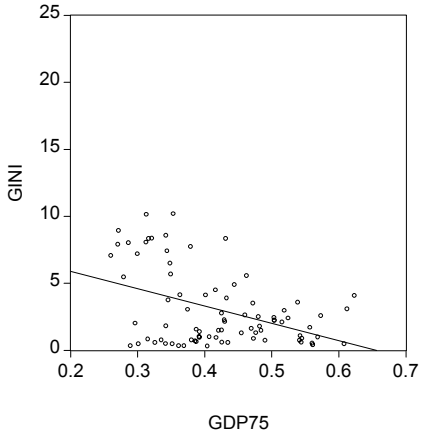

Figure 1.b.
Cross-Section Country Data

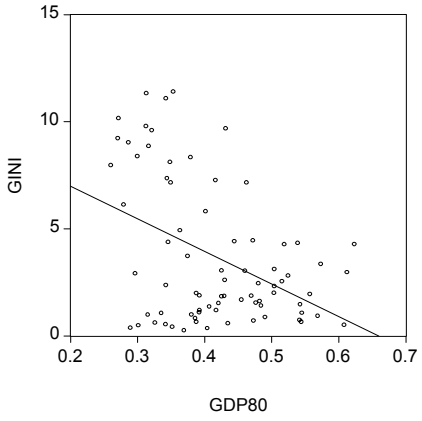

Figure 1.c.
Cross-Section Country Data