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I. Introduction

Economists' interest in inequality and wealth distribution raises not only from the fact that societies value equality for its own sake but also from the functional reasons relating inequality and economic growth (Ray, 1998). Economic inequality has been defined as "the fundamental disparity that permits one individual certain material choices, while denying another individual those very same choices" (*ibid.*, p. 170). Understanding whether or not there is a trade-off between inequality and growth is fundamental in order to study the effects of inequality on aggregates, such as income, employment, wealth, and growth rates, especially for developing countries.

However, wealth distribution as a cause rather than a consequence of economic growth has only recently, in the late 1980s, become part of the agenda of institutions such as the World Bank, breaking the tradition of Simon Kuznets' (1955) inverted-U hypothesis (Birdsall and Londoño, 1997). Neo-classical economic theories have often regarded inequality "as an unpleasant, yet unavoidable, precondition for growth" (Clarke, 1995: p. 403). Only more recent studies have started suggesting an inverse relationship between inequality and economic growth. This new literature has encouraged policy makers and international institutions to pay greater attention to the distributional implications of traditional economic policies in order to avoid increases in inequality that may hurt overall growth (Deininger and Olinto, 1999).

In order to assess whether high initial inequality leads to slow economic growth in developing countries, this paper will start by reviewing the main literature and by presenting arguments and evidence against and in favour of this proposition (Section II). Section III will present the general model used by this paper. The model is based on modern growth theory and its idea of conditional convergence in which inequality is included on the ground of the links established in Section II. Section IV will outline the data sources and their transformations as well as analyse their main trends. Sections V and VI will present the model and the steps followed to estimate it, and an analysis of the significance and robustness of the results with respect to the applied theory. The results will show that higher initial income and land inequalities are negatively correlated with long-term growth. Section VII will outline the shortcomings of the study and some suggestions to improve it in future research. Finally, in Section VIII, the main findings will be summarised and some policy implications will be drawn based on the results and on previous studies.

II. Inequality and growth: theory and evidence

Kuznets' (1955) inverted-U hypothesis suggested that the early stages of development exacerbate inequality and that later stages of development improve equality. Early studies, as well as more recent ones, tried to support this hypothesis (Paukert, 1973 in Ray, 1998). However, new research shows that while economic growth does not consistently affect inequality either way, thus discrediting Kuznets' hypothesis, inequality seems to affect economic growth (Deininger and Squire, 1998).

Several theoretical models have been constructed to assess the impacts of an unequal distribution of resources on the development process. There are two main contradictory theories relating income and wealth inequality to growth (Attanasio and Binelli, 2003). The classical approach proposes a positive relationship between inequality and growth through individual savings and incentives to invest, while the contrasting views underline the negative effects that an unequal distribution of resources has on growth.

There are three arguments in the literature suggesting that inequality enhances growth (*ibid.*). The first one, developed by Kaldor (1956, in Thorbecke and Charumilind, 2002), argues that the marginal propensity to save is higher among the rich than among the poor, implying that a higher degree of initial income inequality will yield higher aggregate savings, capital accumulation and growth. This argument has been criticised by Ray (1998), among others, because it implies monotonicity in the relationship between saving propensities and income levels. According to the second argument, wealth polarisation is necessary to promote new activities and technologies because of investment indivisibilities created by high fixed costs for investment projects (Attanasio and Binelli, 2003). The third argument is based on incentive considerations and says that, in the presence of moral hazard, a reward scheme can enhance workers' incentives and maximise aggregate production. This line of reasoning has also been questioned because, in the presence of a high degree of risk and risk-averse people, performance-related pay may result in efficiency losses (*ibid.*).

On the other hand, scholars have highlighted five main channels through which inequality has a growth-reducing effect. The first one, developed by Alesina and Rodrik (1994) and Persson and Tabellini (1994), focuses on the decision-making mechanism of fiscal policy and taxation by developing political economy models based on the median voter theorem. In these models, under an unequal distribution of income or wealth in which the mean income exceeds the median income, the demand for income redistribution is high and the median voter will prefer more redistributive policies, such as taxes on incremental earnings. In unequal societies, these taxes are high and distortionary since they reduce the incentives to accumulate wealth and, therefore, lower growth. However, in highly unequal societies, the rich may prevent redistributive policies through lobbying and undemocratic means. Nevertheless, since lobbying activities would consume resources with adverse effects for economic performance, inequality can have a negative effect on growth through the political channel even if no redistribution occurs (Barro, 2000). A second channel operates through the impact of income inequality on encouraging unproductive rent-seeking activities, such as lobbying, which reduce the security of property rights (Thorbecke and Charumilind, 2002). Thirdly, in models with credit markets imperfections, such as asymmetric information and limitation of legal institutions, the borrowing capacity of individuals depends on the income level and collaterals' availability. Therefore, a highly unequal distribution of wealth affects negatively aggregate investment and economic growth because poor agents cannot obtain loans to finance potentially profitable investment projects, such as human capital investments (Attanasio and Binelli, 2003). Thus, a distortion-free redistribution of assets and income from rich to poor can raise the average productivity of investment and the rate of economic growth (Barro, 2000). A fourth channel associates inequality directly with the production of public "bads", such as political and social instability. According to Deininger and Olinto (1999), an unequal distribution of wealth increases violence and social discontent, illegal activities are more likely to surge and protests can result in riots and coups d'état. Social instability and lack of law enforcement affect economic growth through the direct damage produced, the need to spend resources on preventive activities, and the negative impact of the induced insecurity of property rights on investment incentives. Lastly, a more equal society leads to a greater share of the middle class, which produces a strong negative effect on fertility, and this, in turn, has a significant and positive impact on growth (Thorbecke and Charumilind, 2002).

These conflicting views may together explain the impacts of inequality on economic growth depending on a country's stage of development, as suggested by Galor (2000, in Thorbecke and Charumilind, 2002). At an early stage of development, inequality would promote growth because physical capital is scarce and its accumulation requires saving. On the other hand, at a later phase of development, the increased availability of physical capital raises the return on investment in human capital. Faced with credit market imperfections, the poor might find the access to capital curtailed and therefore find it difficult to invest in human capital. Income inequality would then result in a poverty trap and lower growth.

Turning to the empirical evidence, one can notice that the literature is as divided as it is for the theoretical basis. First studies, such as Alesina and Rodrik (1994) and Clarke (1995), found a strong negative correlation between income inequality and growth. However, in later studies, such as Deininger and Squire (1998), this relationship turned out to be insignificant or much weaker. Further studies using panel data analysis, such as Barro (2000), have found a zero, nonlinear, or even positive relationship between income inequality and growth. However, panel methods have been highly criticised for the use of high frequency data that cannot test a relationship that operates through long-run mechanisms, which are fairly stable over time (Attanasio and Binelli, 2003). On the other hand, a number of recent studies, such as Persson and Tabellini (1994), Birdsall and Londoño (1997), Deininger and Squire (1998) and Deininger and Olinto (1999), find that reductions in countries' growth rates are caused by an unequal distribution of assets, such as land distribution, and not by income inequality. Therefore, due to differences in data, income vs. asset distribution, and methods, cross-sectional vs. panel technique, the empirical literature has produced ambiguous results regarding the existence and the magnitude of a possible impact of inequality on growth (Deininger and Olinto, 1999).

III. Framework for empirical analysis

The general model that this paper will use in order to test whether high inequality in developing countries leads to slower economic growth is based on modern growth theory and its idea of conditional convergence. This model is derived from an extended version of the neoclassical growth model, the Solow model. In the long run, in the absence of technological change, the output level in the economy depends on the amount of capital accumulated and determines the level of investment and saving, which, in turn, determine the level of capital accumulated. However, the accumulation of both physical and human capital faces diminishing returns to the factor, implying that the economy will converge to a steady-state level of capital per capita and, thus, to a steady-state level of output (or income) per capita. Therefore, in the absence of technological progress, a country cannot sustain per capita income growth indefinitely (Blanchard, 2002).

At the heart of the Solow model is the prediction of convergence, which, in its strongest form, states that, *ceteris paribus*, poorer countries tend over time to catch up with rich countries on the same steady state of output growth. As the accumulation of capital faces diminishing returns, capital will move to the poorer countries in which capital is scarce relative to labour and, thus, the return to capital is higher. This implies that an economy's growth rate varies inversely with its level of development, usually represented by the initial level of GDP per capita (Barro, 2000). The model can be summarised in a simple equation: $g = f(y)$, where g is the growth rate of per capita output and y is the initial level of per capita output.

However, in the conditional convergence model, the growth rate of GDP per capita depends not only on the initial level of GDP per capita but also on a number of variables that may change across countries (*ibid.*). This allows countries to converge to different steady states at equilibrium although they start at the same stage of development. An example often used by scholars is the difference in the economic performances between East and South-East Asian countries compared to Latin American countries (Birdsall and Londoño, 1997). This model can be summarised by the equation: $g = f(y, z)$, where z consists of all those variables that purport to explain the level of a country's steady state growth path and can depend on such things as governmental policies, institutions and the character of the national population (*ibid.*). The z variables can include the rate of savings in the economy and the growth rate of population. It is important to notice that the savings rate and the growth rate of population do not affect the long-run growth rate of per capita income (which is zero in the absence of technological change), but only the long-run level of income. The effect that the savings rate and the growth rate of population have on the long-run level of income takes place through changes in the steady-state level of capital per capita, which in turn affects the steady-state level of per capita output (or income).

In this framework, inequality can be included in the model as part of the z variable because of the connections between inequality and growth analysed in Section II. For example, in the case of imperfect credit markets, inequality can lower the efficiency of investment, thus shifting down the production function and reducing the steady-state level of capital per capita and output per capita. Because of the difficulties to find data on wealth distribution (Attanasio and Binelli, 2003) and the distribution of human capital, as in the model by Birdsall and Londoño (1997), this analysis will rely on data on the distribution of income and land, the latter as a proxy for asset inequality, taking into account the fact that there might not be a perfect correlation between them. In particular, data on land distribution is useful because, firstly, possession of land is a major determinant of individuals' productive capacity and their ability to invest especially in agrarian economies where land can be the only available asset, and secondly, in contrast to income, the distribution of land is calculated rather easily (Deininger and Olinto, 1999). This way, one will be able to determine whether there is a relationship between income and land inequalities and growth. However, this analysis will not be able to explain through which channels, if any, this relationship operates. This is in not the aim of this paper, although the effects of inequality on growth through the investment and the education channels will be analysed more in detail in Section VI, following the suggestion of Deininger and Olinto (1999).

In practice, the theory will be tested by means of cross-country regressions since it is not possible to test it via time series analysis because inequality changes are too slow (Ray, 1998). The actual estimating equation will be: $g_i = a + b_1 y_i + b_2 p_i + b_3 k_i + b_4 i_i + b_5 l_i + b_6 h_i + e_i$, where g is the growth rate of per capita output, y is the initial level of per capita output, p is the growth rate of population, k is the investment share of GDP, i is the distribution of income, l is the distribution of land, h is the measure of human capital and e is the error term. Therefore, on the left-hand side, the dependent variable is the growth rate of GDP per capita, while, on the right-hand side, the explanatory variables are the initial level of GDP per capita, the growth rate of population, the investment share of GDP, income distribution, land distribution, and the level of education as a measurement of the level of human capital. In addition, a slight modification of this model without the growth rate of population will be estimated because, firstly, this variable is often not included in the literature and, secondly, it appears not to be significant in the final model. Including irrelevant variables could make variables related to growth switch signs or become insignificant (Clarke, 1995). This model can be summarised in the equation: $g_i = a + b_1 y_i + b_2 k_i + b_3 i_i + b_4 l_i + b_5 h_i + e_i$.

The time period considered goes from 1965 to 1994. The final model that will be presented takes into consideration the entire period of thirty years, however this paper will present also regressions considering two or three sub-periods of fifteen and ten years respectively, as in the models by Persson and Tabellini (1994) and Barro (2000). Other studies, such as Alesina and Rodrik (1994) and Clarke (1995), only include data for a fifteen or twenty-five year period although they consider one single period. This issue is very important because the distribution of land and, to a smaller degree, of income change very slowly in time. In addition, every economy is subject to shock effects that can affect its path towards the steady state for a long time (e.g. the oil crises of 1973 and 1979-80). This would mean that it is necessary to consider a period as large as possible in order to analyse the effects of different levels of distribution on economic growth (Attanasio and Binelli, 2003). Moreover, in such circumstances it is difficult to assert how long the short run and the long run are, however this paper will assume that a ten-year period constitutes the short run, while a thirty-year period constitutes the long run.

IV. Data sources and description

The data includes 39 developing countries chosen according to the fact that they are, or were until 1994, considered developing countries and to the availability of data. A complete list of the countries is included in the Appendix.

The rate of GDP growth (GDPGROWTH) is calculated in percentage terms. It is measured by regressing $\ln(\text{GDP per capita}) = a + b\ \text{time}$, where the variable time depends on each period, and then multiplying the coefficient b by 100. The data on GDP per capita are in real dollars (1996 constant prices, chain series) and are taken from the Penn World Tables. Initial GDP per capita (INITGDP) is measured by the GDP per capita in real dollars (1996 constant prices, chain series) at the beginning of each period and, therefore, it is also taken from the Penn World Tables. The growth rate of population (POPGROWTH) is in percentage terms and it is measured by taking the average of the rates of growth of population for each year according to the period and then multiplied by 100. The rate of growth of population for each year is calculated by the equation $\left(pop_{t+1} - pop_t\right)/pop_t$. The data on population is taken from the Penn World Tables. Investment share of GDP (INVSHARE) is in percentage terms, it is measured by calculating the average of the value of the investments share of GDP for each year according to the period and it is taken from the Penn World Tables. The Gini coefficient for income distribution (INCGINI) is measured at the beginning of each period and it is taken from both the Deininger and Squire database (1996b) and the World Income Inequality Database 2 by the World Institute for Development Economics Research (WIDER, 2004). Data on income distribution can be very flawed for a number of reasons – for example, they can be derived from synthetic estimates from national accounts data or from surveys that covered urban but not rural areas – and this is the reason why this paper includes the high quality data of the Deininger and Squire database (1996b) based on a set of minimum standards (Deininger and Squire, 1996a, 1998). These standards rely on observations based on nationally representative surveys encompassing all the important types of income (Deininger and Squire, 1996a, 1998). The Gini coefficient for land distribution (LANDGINI) is measured at the beginning of the whole period and it is taken from Deininger and Olinto (1999) and Taylor and Hudson (1972)[1]. Lastly, the level of education (HUMANCAP), which is used as a proxy for the level of human capital, is calculated as the average schooling years for the total population over the age of 25 measured at the beginning of each period and it is taken from the Barro-Lee dataset. A complete list of all the data is contained in the Appendix.

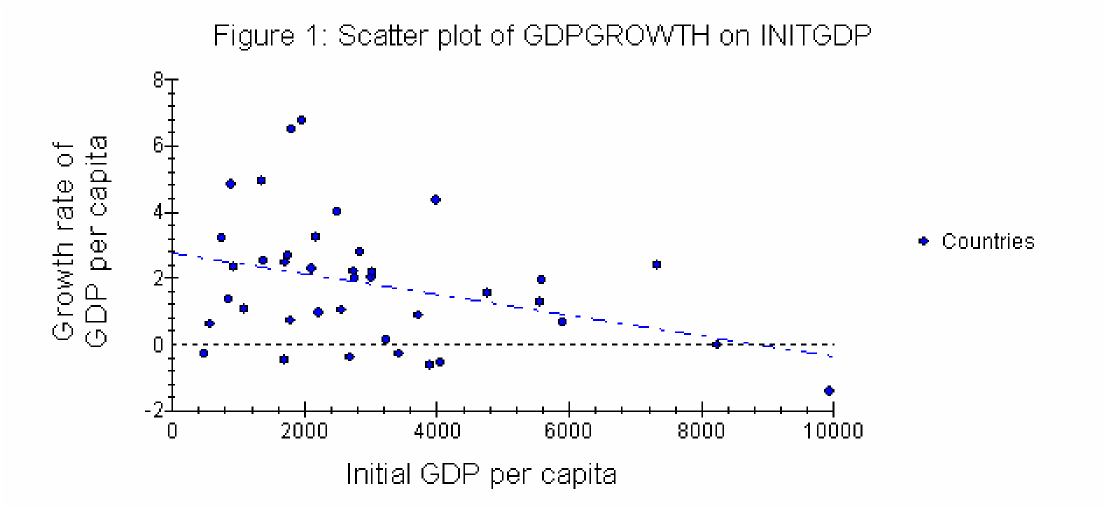
It is now important to present some figures, more in particular some scatter plots, in order to look at the general features of the data presented. By looking at the scatter plot of a variable on another variable, one can determine a general relationship between the two, but this, of course, does not take into account the other explanatory variables. One can also observe if there is any outlier in the data, which is not the case because all the data are more or less close to each other. This is confirmed by the summary statistics for all the variables (table 1). Moreover, the scatter plots present the best-fit line to show the general relationship between the variables. Since the final model includes the whole period from 1965 to 1994, the scatter plots and the summary statistics are presented only for this whole period.

Table 1: Summary Statistics

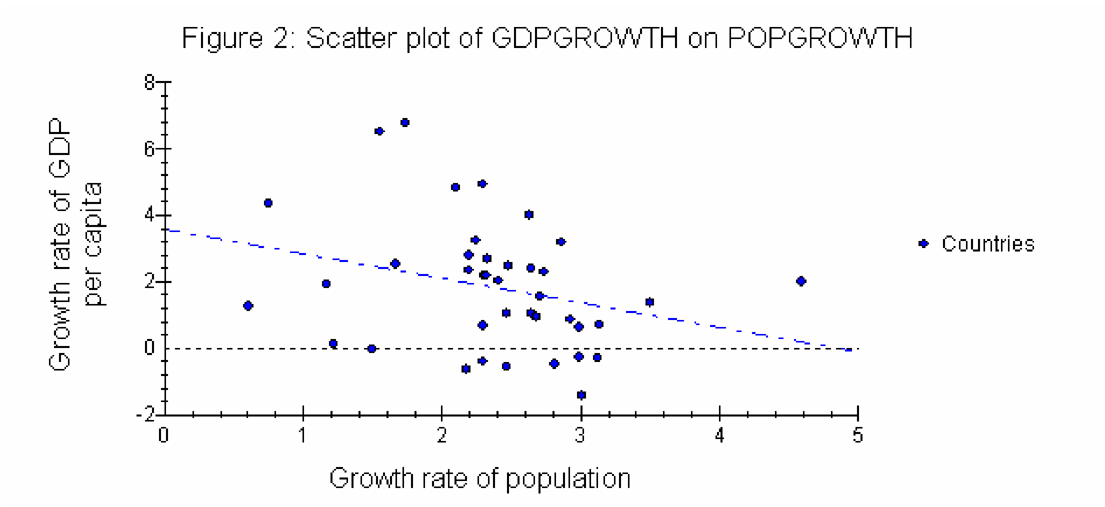
	GDPGROWTH	INITGDP	POPGROWTH	INVSHARE	INCGINI	LANDGINI	HUMANCAP
Maximum	6.7684	9933.3	4.5881	31.034	62.000	92.300	7.0980
Minimum	-1.4241	485.68	0.6065	1.9066	31.140	33.850	0.7060
Mean	1.8358	3007.2	2.3777	15.547	45.960	68.611	2.8322
Std. Dev.	1.9118	2138.7	0.7416	6.6190	8.7292	14.810	1.4720
Skewness	0.7104	1.4247	-0.0512	0.5161	0.0841	-0.4161	0.6089
Kurtosis -3	0.2677	1.8656	1.3775	-0.1150	-0.9684	-0.7071	0.0156
Coef. of var.	1.0414	0.7112	0.3119	0.4257	0.1899	0.2158	0.5198

Figure 1 shows the relationship between the growth rate of GDP per capita and the GDP per capita at the beginning of the period. One can see a not too strong negative relationship, which is in line with the conditional convergence framework in which poorer countries tend to catch up with richer countries depending on the specific features of each country.

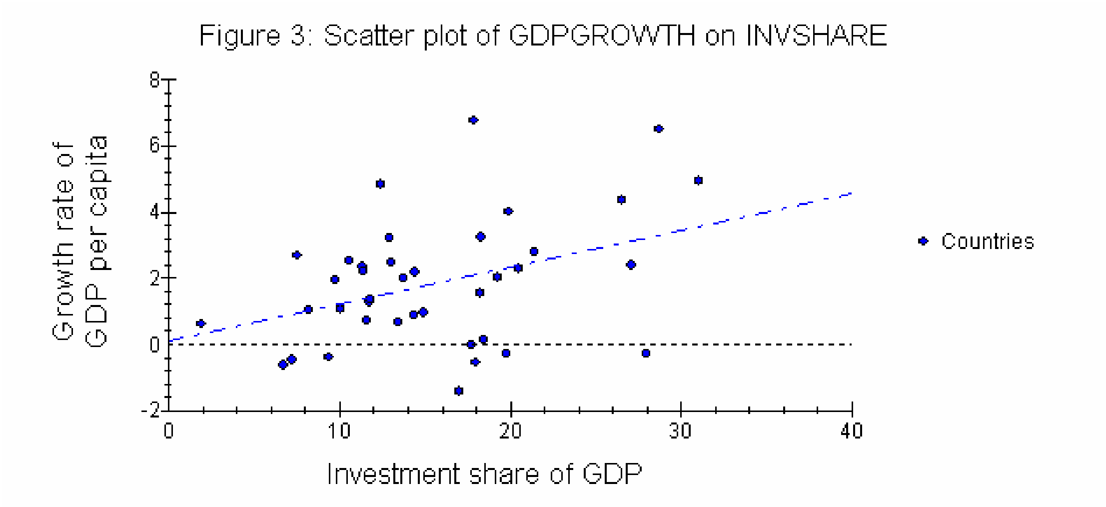
[1] The Gini coefficient for land distribution is taken from Deininger and Olinto (1999), with the exception of the Dominican Republic, South Africa, Taiwan and Trinidad and Tobago. Data for these countries were taken from Taylor and Hudson (1972).



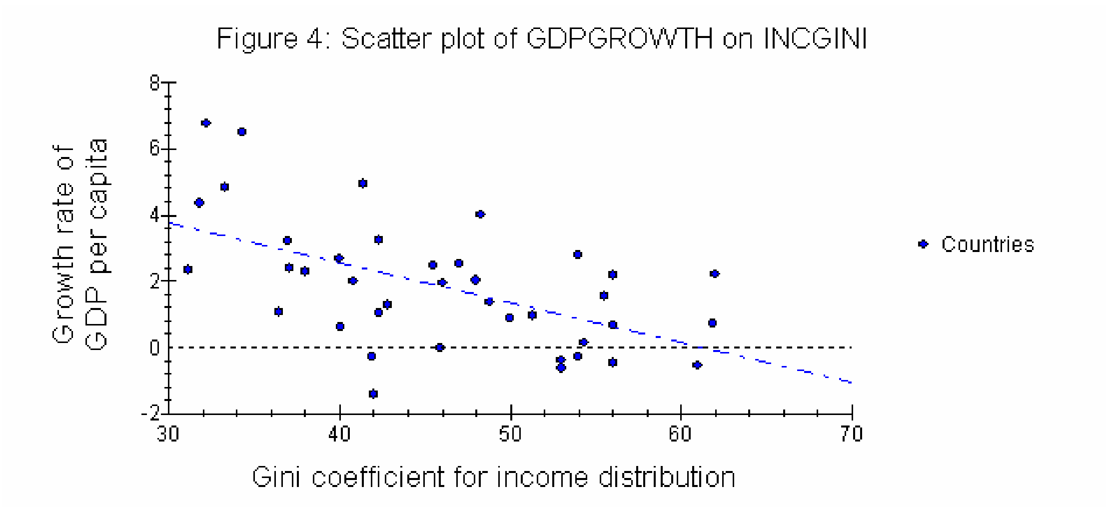
In the same way, the rate of growth of GDP per capita is inversely related with the rate of growth of population (figure 2), because, for a given savings ratio, a country ends up with a lower steady state of income per capita when the population is larger.

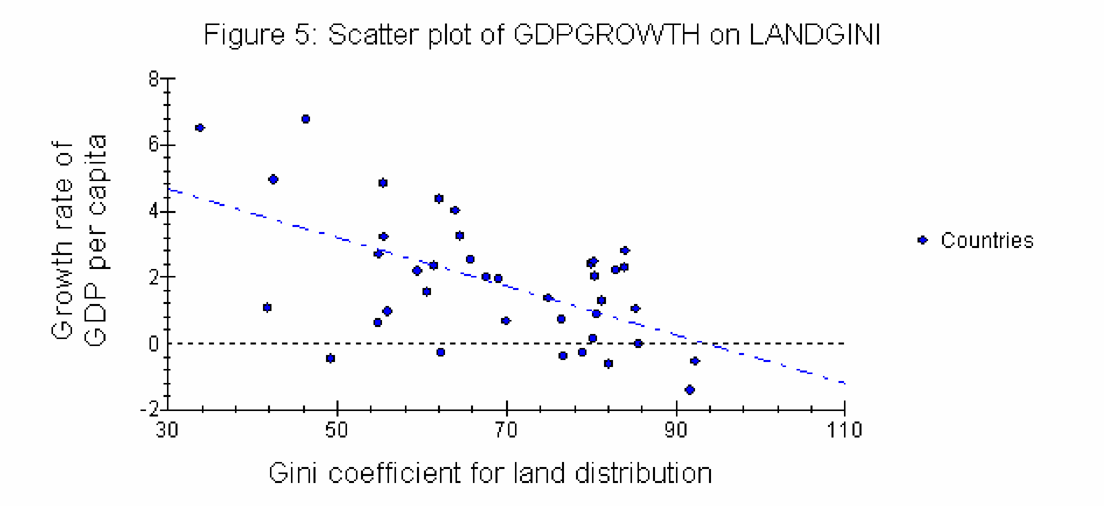


Conversely, the growth rate of output per capita is positively related with the percentage share of investment in the economy. Figure 3 shows a rather strong relationship between the two elements.

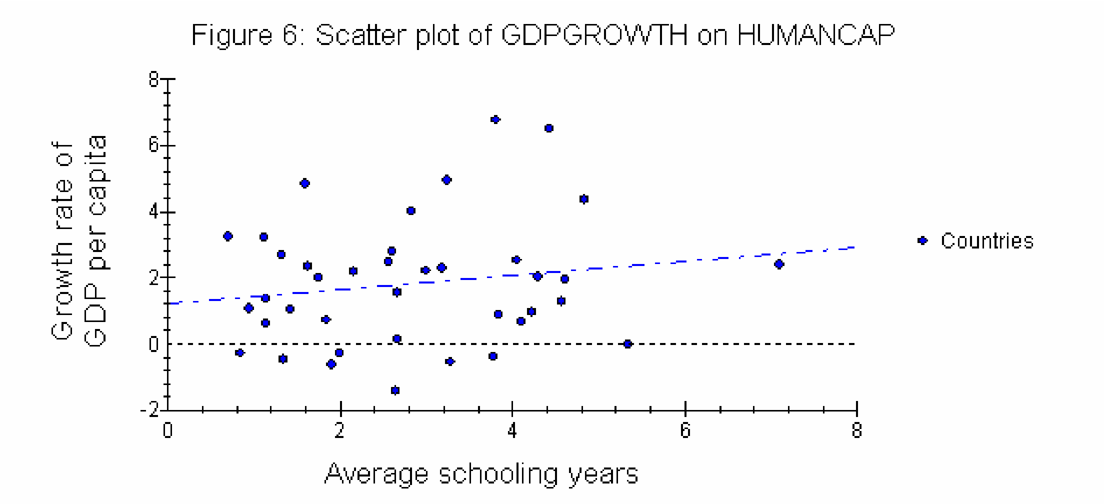


Figures 4 and 5 show the relationship between the growth rate of GDP per capita and the Gini coefficients respectively for income and land distribution. One can observe a strong negative relationship in both cases, thus backing one of the sides of the literature that supports the idea that a more unequal distribution of wealth, in this case proxied by income and land, has growth-reducing effects. However, it is important to repeat that this is not a complete analysis because it is not considering the other explanatory variables that are included in an OLS regression.





In figure 6 one can see a rather weak positive relationship between the growth rate of GDP per capita and the level of education in the economy. In fact, a higher level of education should enhance productivity, which, in turn, is one of the main features that allow a country to grow in the long run.



In addition, it is useful to present scatter plots of the distributions of land and income on the share of investment in output and the level of education because the latter represent some of the theoretical channels through which inequality affects growth. However, figures 7, 8 9 and 10 do not show any particularly strong negative relationships, as it should be the case if a more unequal distribution of income and land were to affect economic growth through these channels. Also, one of these relationships, the one between the land distribution and the level of education, is positive although rather weak.

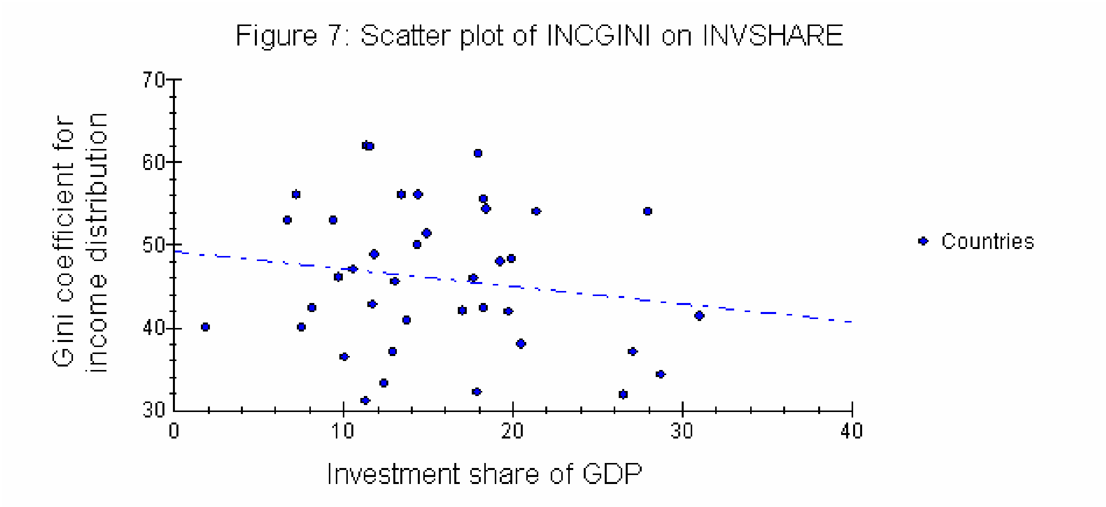


Figure 7: Scatter plot of INCGINI on INVSHARE
Gini coefficient for income distribution
Investment share of GDP
Countries
30
40
50
60
70
0
10
20
30
40

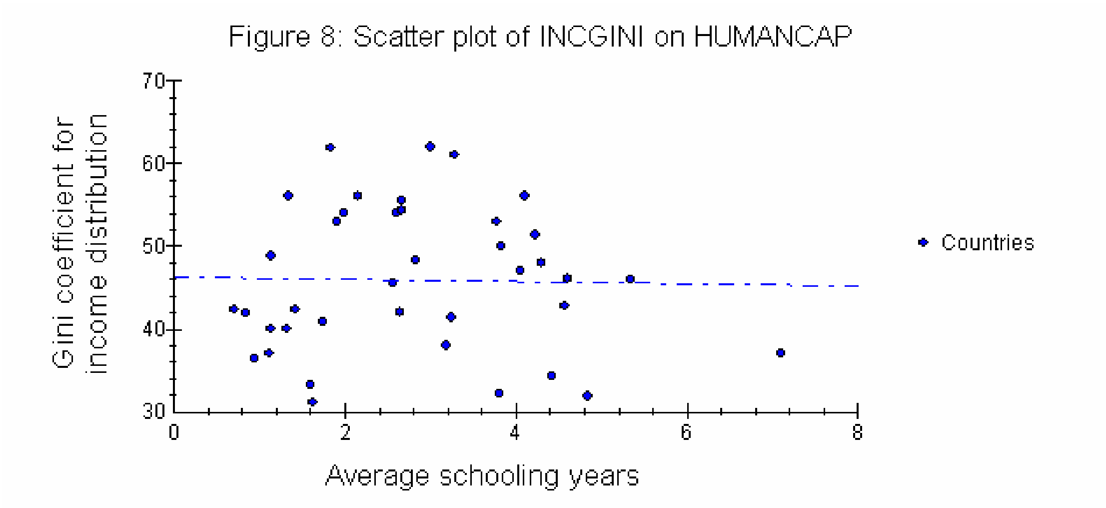


Figure 8: Scatter plot of INCGINI on HUMANCAP
Gini coefficient for income distribution
Average schooling years
Countries
30
40
50
60
70
0
2
4
6
8

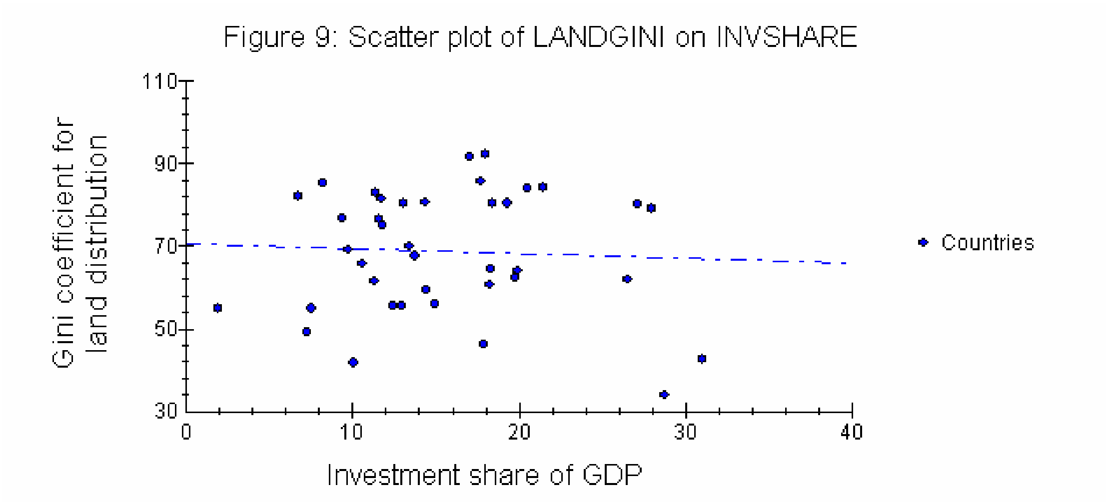
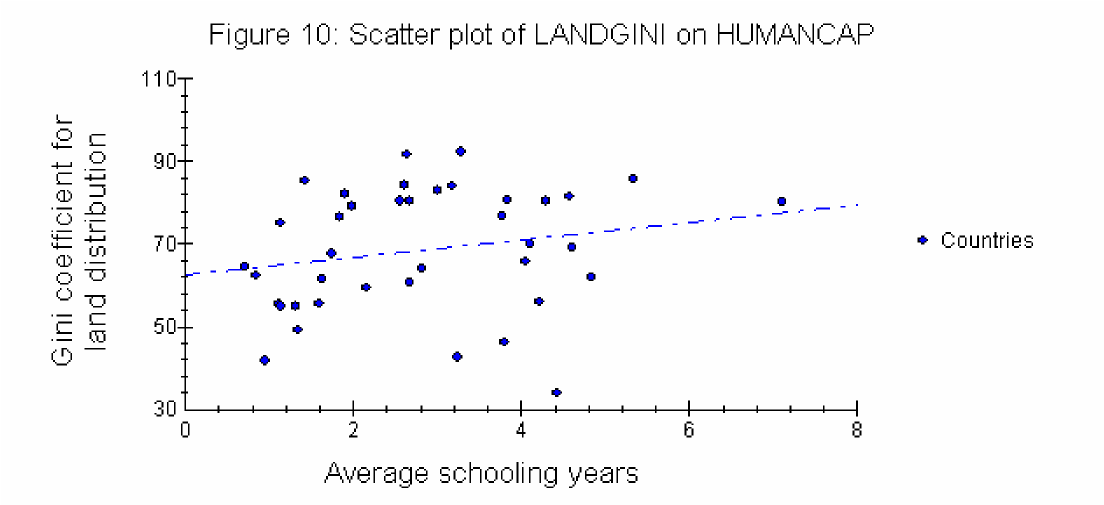


Figure 9: Scatter plot of LANDGINI on INVSHARE
Gini coefficient for land distribution
Investment share of GDP
Countries
30
50
70
90
110
0
10
20
30
40



Furthermore, by looking at the correlation matrix for whole period 1965-1994 (table 2), one can see that the correlations between the explanatory variables are low, meaning that none of the variables affects another variables, thus excluding the problem of multicollinearity. One exception is the level of education variable, however even in this case the correlation is never above 0.6, which is considered a threshold for the problem of multicollinearity. A further exploration of these issues is needed with the use of regression analyses. On the other hand, one can see rather high correlations between the dependent variable, the rate of growth of GDP per capita, and the explanatory variables, with the exemption of the growth rate of population and the level of human capital. This would suggest that there are rather strong relationships between them, as shown already in the scatter plots.

Table 2: Estimated Correlation Matrix of Variables

	GDPGROWTH	INITGDP	POPGROWTH	INVSHARE	INCGINI	LANDGINI	HUMANCAP
GDPGROWTH	1.0000	-0.3506	-0.2861	0.3867	-0.5526	-0.5704	0.1635
INITGDP		1.0000	-0.2263	0.1564	0.1083	0.4933	0.5620
POPGROWTH			1.0000	-0.1287	0.1671	0.0612	-0.4874
INVSHARE				1.0000	-0.1625	-0.0521	0.4231
INCGINI					1.0000	0.4442	-0.0227
LANDGINI						1.0000	0.2086
HUMANCAP							1.0000

V. Model estimation

Following the models set out by Persson and Tabellini (1994) and Barro (2000), the first model regressed divides the whole time period from 1965 to 1994 into three sub-periods of ten years each. As outlined in Section III, the model regresses the growth rate of GDP per capita per year (GDPGROWTH) upon the initial level of GDP per capita (in 1965, 1975 or 1985 depending on the period considered) (INITGDP), the growth rate of population per year (POPGROWTH), the average percentage share of investment in GDP across the period (INVSHARE), the initial Gini coefficients for income and land distribution (INCGINI and LANDGINI) and the level of human capital proxied by the average schooling years in the total population over age 25 at the beginning of each period (HUMANCAP). In addition, as discussed in Section III, a reduced form of the model that excludes the growth rate of the population is estimated, thus for every period there are two regressions, one with and one without the growth rate of population. Moreover, the variables included both in the full model and in its reduced form will always remain the same.

Table 3 shows the OLS (ordinary least squares) results for the ten-year periods 1965-1974 (regressions 1 and 2), 1975-1984 (regressions 3 and 4) and 1985-1994 (regressions 5 and 6), both for the model with the growth rate of population and the one without it. In all the subsequent tables with the OLS results, the coefficients in bold are significant at 5 per cent level, the ones in red are significant at 10 per cent and the normal ones are not significant. Besides the coefficients, the table also shows the t-ratios in brackets underneath each coefficient, the R-squared and the F-statistic.

Table 3: Ordinary Least Squares Estimations

	Reg. 1 (1965-1974)	Reg. 2 (1965-1974)	Reg. 3 (1975-1984)	Reg. 4 (1975-1984)	Reg. 5 (1985-1994)	Reg. 6 (1985-1994)
GDPGROWTH	Dep. Variable	Dep. Variable	Dep. Variable	Dep. Variable	Dep. Variable	Dep. Variable
INITGDP	-0.00036	-0.00035	-0.00041	-0.00041	-0.00010	-0.00034
	(-1.5891)	(-1.5409)	(-1.8750)	(-1.9060)	(-0.6531)	(-0.1907)
POPGROWTH	-0.59214		0.22781		**-1.40440**	
	(-1.3022)		(0.3287)		(-3.6409)	
INVSHARE	**0.13263**	**0.13420**	0.01827	0.02520	0.10226	0.08852
	(2.7442)	(2.7111)	(0.2859)	(0.4236)	(1.9487)	(1.4441)
INCGINI	-0.04495	-0.05003	-0.03417	-0.03031	-0.05519	-0.06344
	(-0.9907)	(-1.0953)	(-0.6235)	(-0.5740)	(-1.3847)	(-1.3613)
LANDGINI	0.00751	0.00451	**-0.07845**	**-0.07707**	**-0.06453**	**-0.07551**
	(0.2449)	(0.1457)	(-2.5650)	(-2.5791)	(-2.5828)	(-2.5998)
HUMANCAP	0.31376	0.44027	**0.78474**	**0.71828**	0.07747	0.27896
	(0.9728)	(1.4168)	(2.1243)	(2.3553)	(0.2972)	(0.9350)
R-squared	0.36201	0.32820	0.43872	0.43682	0.64983	0.50477
F-statistic	**3.0262**	**3.2243**	**4.1687**	**5.1192**	**9.8974**	**6.7271**

If one considers a ten-year period as the short run because, as explained in Section III, the distribution of land and income change very slowly in time, one can say that, with the exception of the third period, the model explains only a rather small percentage of the variations in the growth rate of

GDP per capita over the short run. For the first and the second periods, the R-squared, which shows how much of the variations of the dependent variable are explained by the variables considered, is below 50 per cent for both the model with the growth rate of population and the one without it.

Although the model as a whole is significant in every regression as one can see by looking at the F-statistic, most of the variables are not significant. In the first period only the investment share in GDP is significantly different from zero[2], in the second period the distribution of land and the level of education and in the third period the distribution of land and the growth rate of population are significant. These results would suggest that some other explanatory variables are missing from the model and that, in the short run, the distribution of income is not correlated with the growth rate of GDP per capita while land distribution is, at least in the second and third periods. However, if one looks at the diagnostic tests, one can notice a problem with the functional form in regression 1, suggesting that some variables are missing or that the variables considered do not have a linear relationship with the growth rate of GDP per capita, and another with the normality of the error term in regression 6, implying that the error term is nor normally distributed (see complete OLS estimations in the Appendix). These failed diagnostic tests invalidate the model in these two regressions.

Following these results, the second model estimated regresses the same variables outlined above but it divides the whole period into two sub-periods of fifteen years each. This follows the models by Alesina and Rodrik (1994) and Clarke (1995), which both consider fifteen-year periods to test the relationship between inequality and economic growth. Also in this case, the full model is presented alongside its reduced form without one explanatory variable, the growth rate of population. Table 4 shows the OLS results for the two periods 1965-1979 (regressions 7 and 8) and 1980-1994 (regressions 9 and 10), each with and without the growth rate of population.

[2] In order to avoid repetitions in the following analysis, this paper will simply state that a variable is significant if its coefficient is significantly different from zero.

Table 4: Ordinary Least Squares Estimations

	Reg. 7 (1965-1979)	Reg. 8 (1965-1979)	Reg. 9 (1980-1994)	Reg. 10 (1980-1994)
GDPGROWTH	Dep. Variable	Dep. Variable	Dep. Variable	Dep. Variable
INITGDP	**-0.00042**	**-0.00042**	-0.00009	-0.00004
	(-2.2550)	(-2.2842)	(-0.7229)	(-0.3058)
POPGROWTH	-0.15110		**-1.2386**	
	(-0.3633)		(-3.5659)	
INVSHARE	**0.09569**	**0.09438**	**0.11069**	0.08887
	(2.1924)	(2.1988)	(2.7555)	(1.9230)
INCGINI	-0.03949	-0.04105	**-0.07733**	**-0.08670**
	(-1.0344)	(-1.0968)	(-2.3370)	(-2.2581)
LANDGINI	0.00155	0.00076	**-0.06821**	**-0.08161**
	(0.0606)	(0.0302)	(-3.5994)	(-3.7743)
HUMANCAP	0.45491	0.49534	-0.13844	0.09547
	(1.6212)	(1.9489)	(-0.6655)	(0.4154)
R-squared	0.34939	0.34670	0.73157	0.62490
F-statistic	**2.8641**	**3.5026**	**14.5350**	**10.9953**

As it was the case in the ten-year periods, there are big differences in the results between these two fifteen-year periods as well. In the first fifteen years, both the model with the growth rate of population and the one without it only explain slightly less than 35 per cent of the variation in the growth rate of GDP per capita. On the other hand, in the second fifteen years, the full model explains 73 per cent of these variations, while the smaller version explains 62 per cent of them because the growth rate of population is a significant explanatory variable for this period. It is possible to notice that the model estimated gives much better results for the third ten-year period (1985-1994) and for the second fifteen-year period (1980-1994) than for the other periods considered. A possible explanation for these results is that the shocks that occurred in the 1970s, such as the oil shocks, were strong enough to affect the path to the steady state in most economies and, therefore, their economic growth.

In both fifteen-year periods the model is significant, although some variables are not significant, especially for the first fifteen years. In particular, in the first period only the initial GDP per capita and investment share in GDP are significant at 5 per cent, while the level of education becomes significant at 10 per cent once the growth rate of population is eliminated from the model. On the other hand, in the full model of the second period the growth rate of population, the investment share in GDP and the Gini coefficients for both income and land distributions are significant at 5 per cent. This could suggest that an unequal distribution of income and land is correlated with slower economic growth at least in the second period. However, by looking at the diagnostic tests one can notice that regression 7 has a problem of heteroscedasticity, meaning that the variance of the error term is not constant, and that regressions 9 and 10 have problems with the functional form (see complete OLS estimations in the Appendix). These problems again invalidate the models estimated.

Finally, the third model estimated considers the whole period from 1965 to 1994. The study by Deininger and Olinto (1999) provides a research which considers such a long period, although they use a panel data analysis. Table 5 presents the OLS results for this period (regressions 11 and 12), the first one with the growth rate of population and the second one without it.

Table 5: Ordinary Least Squares Estimations

	Reg. 11 (1965-1994)	Reg. 12 (1965-1994)
GDPGROWTH	Dep. Variable	Dep. Variable
INITGDP	**-0.00036**	**-0.00036**
	(-2.8434)	(-2.8107)
POPGROWTH	-0.38800	
	(-1.2166)	
INVSHARE	**0.07413**	**0.06809**
	(2.1618)	(1.9925)
INCGINI	**-0.07036**	**-0.07416**
	(-2.6878)	(-2.8330)
LANDGINI	-0.03329	**-0.03604**
	(-1.8964)	(-2.0547)
HUMANCAP	0.33367	**0.44435**
	(1.6560)	(2.4538)
R-squared	0.65167	0.63556
F-statistic	**9.9778**	**11.5099**

Firstly, one can observe a rather high R-squared in both regressions. In the full model, 65 per cent of the variations in the growth rate of GDP per capita are explained by variations of the explanatory variables, while, in the reduced form, the number goes down to 63 per cent. These results, combined with the overall significance of the model, high F-statistic and the absence of problems in the diagnostic tests, suggest that the model is a good estimation of a growth equation and is better than the models estimated for a shorter period.

Moreover, by looking at the single variables, one can observe that in the full model with the growth rate of population, the latter is not significant and the Gini coefficient for land distribution and the level of education are significant at 10 per cent, while the other variables are significant at 5 per cent. If the growth rate of population is eliminated from the model (regression 12), one can see that all the other explanatory variables are significant at 5 per cent and that the F-statistic is higher, which makes this reduced form the final model since it is the one that gives the best estimation for the data presented. Therefore, the next section will analyse in full details all the coefficients of this model and will relate them to the theory analysed in Sections II and III. It is important to notice already that both the initial income and land distribution variables are significantly correlated with the subsequent economic growth in developing countries.

VI. Interpretation of empirical results

By looking back at the OLS results of regression 12 presented in table 5, one can observe that all the coefficients are significantly different from zero at a 5 per cent level, as seen already in the last section. However, it is now important to look at the signs and the sizes of these coefficients and see if they agree with modern growth theory and with the literature presented on the channels between inequality and economic growth.

The first variable in the table is the initial GDP per capita measured in real dollars. This coefficient has a negative sign, in accordance with classical and modern growth theories. According to such theories, the higher the initial level of output per capita, the slower is the growth rate of output per capita, meaning that, *ceteris paribus*, poorer countries tend to catch up over time with richer ones. The magnitude of the coefficient is 0.00036, which means that if a country is 1,000 real dollars per capita richer, its growth rate of output per capita will be 0.36 percentage points per year slower in the long run. According to the regression results, one can observe that 2 of the 3 percentage points of difference in the growth rate of output per capita between Argentina and Brazil would fade away if they had started at the same level of output per capita at the beginning of the period.

The second variable is the percentage share of investment in GDP. The sign of this coefficient is positive, which is in agreement with growth theory because the higher the level of saving and investment in the economy the higher is the level of output per capita. However, the level of investment, by determining the level of capital accumulation in the economy, does not change the growth rate of output per capita in the long run but it does so in the medium run until the economy reaches its steady state again. The magnitude of the coefficient is 0.06809, meaning that if a developing economy invests one per cent more of its GDP per year, the growth rate of output per capita will be a bit less than 0.07 percentage points faster per year. Although this can seem a very small number, one has to take into account that there is a difference of 30 percentage points between the country with the highest investment levels (Thailand, 31,03%) and the one with the lowest investment levels (Uganda, 1,91%).

In the same way, the level of education, which is used as a proxy of the level of human capital, measured as the average schooling years in the total population over the age of 25, has a positive sign that agrees with growth theory. The amount of capital, which is not only physical but also human, depends on the population’s skills. The higher the initial level of these skills – which can be acquired for example through a formal education – the higher is the level of output per capita. Moreover, a better-educated labour force can improve productivity and technological level in the economy, which have a long-run positive effect on economic growth. The magnitude of this coefficient is 0.44, meaning that if the entire population would go to school for one more year, the growth rate of GDP per capita would be 0.44 percentage points faster per year in the long run.

On the other hand, the coefficients of both the initial income and land distributions measured by the Gini coefficient are negative and significant. These results agree with one side of the literature that argues that a more unequal distribution of income leads to slower subsequent growth, as reviewed in Section II. The coefficient of the income distribution variable is 0.074, which means that if a country's income distribution is one Gini point less, its growth of GDP per capita is 0.074 percentage points faster in the long run. In the same way, the coefficient for the land distribution variable is 0.036, meaning that a country's growth of GDP per capita is 0.036 percentage points faster in the long run if its land distribution is less unequal by one Gini point.

The magnitudes for income and land distribution may seem too little to create significant changes. However, one can observe that the differences between the country with the highest Gini coefficient and the one with the lowest are very large. The most unequal income distribution in this sample is in Colombia, which has a Gini coefficient of 62, while the most equal is in India, which has a Gini coefficient of 31.14 – a difference of over 30 Gini points. By the same token, the most unequal land distribution is found in Peru with a Gini coefficient of 92.3, while the most equal is in South Korea with a Gini coefficient of 33.85 – a difference of almost 60 Gini points.

More generally, by looking at the raw data on income and land distribution by region, one can observe that the most unequal countries are in Latin America, while the most equal ones are in East and South-East Asia, which in many cases went through very effective land redistributions in the post-World War 2 period (Alesina and Rodrik, 1994). Therefore, as it has been argued by Birdsall and Londoño (1997), these findings can be very important in explaining why Latin America has grown slowly for the last thirty years or so. According to the results obtained, if one calculates the unweighted – not weighted for the population – average of the growth rate of GDP per capita and the Gini coefficients for income and land distributions for all Latin American countries and for all East and South-East Asian countries and compares them, one can see that the former grew only 0.9 per cent per year over these thirty years, while the latter grew 3.7 per cent per year. Moreover, the income distribution is more than 10 Gini points higher in the former and the land distribution is more unequal in the former countries by almost 30 Gini points. Thus, if Latin American countries had on average the same income and land distributions as the East and South-East Asian countries at the beginning of the period, the differences in economic growth between the two regions would have been more than halved[3] (see page 54 of the Appendix).

In this context, it will be very interesting to analyse the effects of the present land reform implemented by Venezuela's president Hugo Chavez (The Economist, 2005) on future economic growth. In this sample Venezuela has the second most unequal land distribution with a Gini coefficient of 91.7, the worst economic performance and in 1994 it had a GDP per capita much lower than in 1965. Section VIII will outline in more details the pros and cons of such reforms and which policy may be more efficient to address these issues.

At this point, it is very important to see why the literature on inequality and growth, especially the empirical one, has not always found such results that strongly confirm the hypothesis that initial income and land, or asset, inequalities negatively affect subsequent economic growth. By looking back at the OLS results of the regressions in which the whole period considered was divided into smaller ones, one can observe that these results did not prove any clear relationship between initial inequality and subsequent growth. The income distribution variable has always got a negative sign but it is only significant in the second fifteen-year period (1980 to 1994), while the land distribution variable has a positive sign but it is not significant in the first ten-year period (1965 to 1974) and in the first fifteen-year period (1965 to 1979) and it is negative and significant in the other regressions. As already noted above, this would suggest that in the short run these variables are subject to external shocks that can shift the growth path of the economy towards the steady state. In the long run, instead, these shocks are diluted and the inequality variables have a significantly negative effect on the economic growth. If one looks at the literature, one can see that only few studies have taken into account such a long period, which would suggest that the results could vary substantially depending on the period considered if this period is no longer than fifteen years. This seems especially true for the income distribution variable

[3] The halving of the growth difference that could have been achieved between the Latin American and the East and South-East Asian regions was calculated by multiplying the differences in the Gini coefficients for income and land distributions between the unweighted means for the two regions by the regression results and then by adding the two results together. The number obtained, which is 1.85 percentage points, constitutes the gains in growth rate of output per capita obtained by East and South-East Asian countries through less inequality. If one compares this result to the actual difference in the growth rate of output per capita between the two regions, which is 2.75 percentage points, one can see that the difference in growth could have been less than half of what it currently is.

since the latest studies have argued that only land distribution has a growth-reducing effect, while they have questioned the hypothesis that income inequality has a negative impact on economic growth.

In addition to the impact of inequality on growth, it is interesting to analyse whether one can discern an impact of inequality on investment and the level of education, which could be interpreted as some of the channels discussed in Section II. Table 6 presents the OLS results of two regressions that can be summarised in the equations $k_i = a + b_1 y_i + b_2 i_i + b_3 l_i + e_i$ and $h_i = a + b_1 y_i + b_2 i_i + b_3 l_i + e_i$, where each letter stands for the same variable as in Section III. The first regression (13) expresses the investment share in GDP as a function of the initial GDP per capita and the income and land distribution, while the second regression (14) expresses the level of education, used as proxy for the level of human capital, as a function of the same variables.

Table 6: Ordinary Least Squares Estimations

	Reg. 13 (1965-1994)	Reg. 14 (1965-1994)
INVSHARE	Dep. Variable	
HUMANCAP		Dep. Variable
INITGDP	0.00067	**0.00041**
	(1.1555)	(3.7064)
INCGINI	-0.10863	-0.01034
	(-0.7764)	(-0.3915)
LANDGINI	-0.04324	-0.00586
	(-0.4588)	(-0.3296)
R-squared	0.06265	0.32505
F-statistic	0.7798	**5.6185**

If the coefficients of the income and land distribution variables were significant, one could add these coefficients to the ones obtained for the income and land distribution variables in the growth model (regressions 11 and 12). This would not only result in an even stronger growth-reducing impact of inequality (if the coefficients were negative), but it would also determine through which channels this impact works in a stronger way. However, the results do not show any correlation between inequality and neither investment nor the level of education. The coefficients in both regressions for both income and land distributions are not significant. Therefore, it is impossible to infer anything else about the relationship between inequality and growth.

In conclusion, the overall results are very promising for the future understanding of the relationship between inequality and growth since they clearly show the growth-reducing impact of both income and land inequality.

VII. Limitations of study and suggestions for future research

Overall, this study has proved to be incapable of establishing which channels explain the impact of inequality on growth. This is a very important issue and one that needs to be addressed in much more details by researchers in the future. A full understanding of the nature of this relationship would provide economists and policy-makers with a better picture of the way in which growth can be promoted without hurting the poor in developing countries. This would help reducing poverty as it can be observed from the emphasis that the World Bank and other development institutions have put on these issues in the latest years. Moreover, by establishing the way inequality affects growth one could determine whether income or asset inequality – or any other kind of inequality – has more growth-reducing impacts, and, therefore, which issue needs to be tackled first.

The most recent literature suggests that only asset inequality, proxied by land inequality, matters, however it is important to stress that access to services, such as health care, and the distribution of human capital may be very important explanatory variables in this analysis. The study by Birdsall and Londoño (1997) shows how an unequal initial distribution of educational attainments, which could be a proxy of the level of human capital, can be a significant factor in reducing economic growth. A more equal educational attainment among the population could promote more similar values, avoiding internal conflicts and social turmoil that are one of the main causes of economic stagnation in many countries, especially in Sub-Saharan Africa. Moreover, by including these variables, one would be closer to an approximation of wealth distribution, which is theoretically the accurate variable to analyse the relationship between inequality and growth. Unfortunately, the wealth distribution variable is practically impossible to calculate and, in the same way, the human capital distribution variable can be very difficult to estimate.

This point brings this study a step forward, to a discussion on the availability of data. Especially in the case of Sub-Saharan African countries, it can be very difficult to get hold of data for land and income distribution. This can affect the final results as most of the data available pertains to Latin American and South and South-East Asian countries. The lack of data risks to transform this study into a comparison of regional performances and not into a study whose results can have a worldwide relevance. Moreover, even for Latin American countries, data are not always accurate, although the new datasets by Deininger and Squire (1996b) and by the WIDER (2004) have contributed greatly to tackling this problem.

The last issue to be taken into account is the fact that cross-country regressions can only be used to identify average patterns in the data and are not necessarily reliable to identify effective policy interventions (Attanasio and Binelli, 2003), although this paper will give some general implications of the results obtained at the policy level. In this context, it would be fundamental to go into more depth by analysing some case studies based on reliable micro data, which can provide a fundamental "contribution to test the relevance of market imperfections in the inequality-growth relationship" (*ibid.*: p. 10). In this kind of analyses it is very important to consider the specific needs and features of different countries and be able to include them before drawing any conclusion only on the basis of average estimates.

VIII. Conclusions and policy implications

This paper has shown through a cross-country analysis that initial income and land inequalities have a growth-reducing impact in the long run. However, this study could not provide more details on the relationship between inequality and growth because it could not establish the channels through which inequality affects growth. Therefore, in order to draw some policy implications, one has to take into account evidence from other studies.

The results of this study suggest that policies that lead to large increases in the inequality of asset and income distribution or to irreversible asset and income losses have acute consequences for a country's economy, in particular for the poor sectors. Among these policies, one can identify measures of deregulation and privatisation of state assets, especially in Eastern European countries, that were not implemented in an appropriate regulatory framework. These measures can lead to huge jumps in inequality in a very short period of time, which are very costly to reverse (Deininger and Olinto, 1999).

Moreover, in the presence of imperfect information and incomplete markets for risk and insurance, policies to improve the functioning of financial markets and to establish safety nets during crises may prevent shocks from causing increases in inequality and complete loss of assets for vulnerable groups in society. Such policies are justified not only in terms of equity, but also as a means to ensure citizens' access to economic opportunities and sustainable economic growth in the long run (*ibid.*). This may not only reduce inequality, but may also allow for faster growth for a given level of inequality.

In addition, the results of this study suggest that in countries characterised by high levels of inequality, redistribution of assets in particular could be considered as an important policy option. One should attach more importance to asset redistribution than to income redistribution because the former can lead to efficiency gains when credit markets do not exist or are imperfect for the poor groups in society. However, asset redistribution, for example in the form of land reforms, has a long history of failed attempts and it can result into more costs than benefits (Deininger and Olinto, 1999). In such cases, a better approach would be to improve the access of poor sectors to productive assets through education, health care, and microcredit schemes.

Therefore, this analysis highlights factors, such as land reform and access of the poor to legal and credit systems, as fundamental to open up opportunities in unequal societies and to eliminate privileges held only by the rich (Birdsall and Londoño, 1997). The acknowledgement of the importance of access to assets and opportunities for the poor in order to raise their income and to come out of poverty and poverty traps has created growing support for microentreprise programs and microcredit schemes. The Grameen Bank, founded by Muhammad Yunus in Bangladesh, is a prime example in this context (Yunus, 1998). Through its loans usually assigned to groups of four people without collateral, the Grameen Bank avoids imperfect information problems proper of credit markets, as discussed in Section II. Also, thanks to the low interests charged on them, the bank provides access for poor people to small amounts of credit that can make a big difference considering that there are sectors of the population living off one or two dollars a day. By the same token, participation “with voice and choice” (Birdsall and Londoño, 1997: p. 36) of the poor can contribute to ensure equal access to assets that will raise incomes in developing countries, which is, ultimately, the most important challenge for the coming years.

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Appendix

Data

Period 1965-1974

	GDPGROWTH	INITGDP	POPGROWTH	INVSHARE
Argentina	2.639998	8235.0970	1.550022	19.044360
Bangladesh	-1.771333	1089.1081	2.742490	10.814803
Bolivia	-0.087680	2694.4337	2.398329	11.490764
Brazil	6.810061	2842.6747	2.565243	23.013906
Colombia	3.518739	2745.6398	2.701844	11.286235
Costa Rica	2.915474	3725.2770	3.380297	12.572565
Cyprus	4.666835	3986.5878	0.507530	30.708722
Dominican Republic	4.810355	1714.9508	2.931974	11.198654
Ecuador	4.825948	2106.9131	3.000115	23.285994
Egypt	1.377009	1757.2425	2.196525	4.766349
El Salvador	1.154334	3899.0424	3.272727	6.362694
Guatemala	3.320199	2553.9893	2.810901	8.623552
Honduras	1.512878	1787.0353	2.997803	11.649557
India	1.568743	926.9249	2.334726	10.937034
Indonesia	4.788767	895.7868	2.385681	6.526020
Iran	6.315035	3434.1972	2.977635	15.189643
Israel	5.960358	7322.6625	3.158574	31.409696
Jamaica	3.693072	3237.9819	1.361100	26.358741
Jordan	-2.914367	2751.3628	5.124633	9.687126
Kenya	3.335927	846.9558	3.438146	16.046405
Korea, Republic of	7.261665	1802.6505	2.124908	20.455949
Malaysia	3.968591	2497.6887	2.633690	15.488992
Mexico	3.081729	4765.5202	3.266379	18.888931
Pakistan	3.243434	746.0963	3.000178	15.103553
Panama	3.777374	3007.5805	2.865909	24.726088
Peru	2.490667	4050.2482	2.842500	20.806912
Philippines	2.342160	2210.2985	3.074193	13.351939
Senegal	-1.518454	1706.6355	2.831647	8.419030
South Africa	2.563121	5900.5274	2.236123	17.006921
Sri Lanka	1.706953	1385.2092	2.009311	6.065715
Taiwan	7.963753	1968.8381	2.254836	15.784828
Tanzania	2.056140	485.6805	3.034575	32.615268
Thailand	4.395109	1348.1410	3.079249	29.708011
Trinidad and Tobago	2.498246	5589.5238	1.258851	7.731819
Tunisia	5.715625	2173.2931	1.945913	23.082447
Turkey	3.107591	3022.0641	2.453112	12.878480
Uganda	0.639980	581.4876	3.592258	1.392527
Uruguay	1.244012	5553.5501	0.574852	9.934137
Venezuela	-1.472391	9933.3099	3.404182	16.137892

Period 1965-1974

	INCGINI	LANDGINI	HUMANCAP
Argentina	45.90	85.62	5.336
Bangladesh	36.44	41.87	0.948
Bolivia	53.00	76.77	3.774
Brazil	54.00	84.10	2.605
Colombia	62.00	82.93	3.001
Costa Rica	50.00	80.63	3.833
Cyprus	31.82	62.00	4.839
Dominican Republic	45.50	80.30	2.557
Ecuador	38.00	83.99	3.183
Egypt	40.00	54.90	1.320
El Salvador	53.00	82.11	1.900
Guatemala	42.30	85.34	1.426
Honduras	61.88	76.50	1.837
India	31.14	61.42	1.629
Indonesia	33.30	55.47	1.598
Iran	41.88	62.30	0.843
Israel	37.08	80.05	7.098
Jamaica	54.31	80.29	2.665
Jordan	40.80	67.65	1.745
Kenya	48.80	74.95	1.136
Korea, Republic of	34.34	33.85	4.426
Malaysia	48.30	64.01	2.820
Mexico	55.50	60.66	2.665
Pakistan	37.00	55.59	1.121
Panama	48.00	80.40	4.295
Peru	61.00	92.30	3.283
Philippines	51.32	56.00	4.222
Senegal	56.00	49.27	1.343
South Africa	56.00	70.00	4.101
Sri Lanka	47.00	65.73	4.052
Taiwan	32.24	46.30	3.807
Tanzania	54.00	78.99	1.987
Thailand	41.40	42.55	3.242
Trinidad and Tobago	46.02	69.10	4.608
Tunisia	42.30	64.56	0.706
Turkey	56.00	59.45	2.156
Uganda	40.07	54.88	1.138
Uruguay	42.79	81.30	4.574
Venezuela	42.00	91.70	2.636

Period 1975-1984

	GDPGROWTH	INITGDP	POPGROWTH	INVSHARE
Argentina	-0.881454	9925.2728	1.536469	19.231480
Bangladesh	2.088727	963.4251	2.531256	9.945706
Bolivia	-1.419920	2922.4635	2.214436	8.938137
Brazil	0.966553	5165.6740	2.296837	23.830109
Colombia	1.608790	3714.8430	2.259177	11.611442
Costa Rica	-1.198447	4834.2079	2.969444	14.209958
Cyprus	7.061559	4515.4576	0.482800	26.563484
Dominican Republic	2.415306	2578.3004	2.394387	14.468848
Ecuador	1.186324	3500.5377	2.826905	22.631254
Egypt	4.888108	1690.8384	2.457029	11.085970
El Salvador	-3.886338	4460.4882	1.648692	6.879212
Guatemala	0.915753	3438.3442	2.557524	9.081942
Honduras	1.348452	1984.2732	3.336284	11.329736
India	2.037029	1093.9633	2.258222	11.520907
Indonesia	5.154876	1417.5463	2.142535	13.591666
Iran	-3.913802	5024.4594	3.476706	25.679925
Israel	1.430789	10999.2492	2.105297	25.828642
Jamaica	-1.795747	3962.2624	1.390815	14.842730
Jordan	6.527974	2357.5091	3.855550	16.375606
Kenya	0.814136	1137.9175	3.778629	11.703563
Korea, Republic of	5.121493	3656.5494	1.536436	29.389248
Malaysia	4.960059	3590.3932	2.448319	21.446079
Mexico	2.408497	6465.4373	2.723372	18.849362
Pakistan	3.658053	1019.3377	2.978440	12.165779
Panama	4.258871	4214.5321	2.376772	19.270507
Peru	-1.839337	5339.7971	2.599920	17.402702
Philippines	1.322670	2795.0248	2.397420	17.936796
Senegal	-0.798618	1575.5405	2.872377	6.821401
South Africa	0.940671	7556.3606	2.346979	15.066183
Sri Lanka	2.828955	1658.8179	1.619694	13.184426
Taiwan	6.305180	3917.3329	1.852058	19.607575
Tanzania	-0.750432	578.0371	3.180166	32.850412
Thailand	4.496885	2076.0186	2.271507	29.181257
Trinidad and Tobago	4.467649	7337.6790	1.490097	13.496546
Tunisia	2.540998	3622.3007	2.517028	18.621460
Turkey	0.156997	4340.5115	2.313944	13.065752
Uganda	1.543291	617.2478	2.394612	1.409552
Uruguay	0.021549	6500.7467	0.576649	15.435551
Venezuela	-2.357018	8246.7087	3.137347	21.660846

Period 1975-1984

	INCGINI	LANDGINI	HUMANCAP
Argentina	35.30	85.62	6.024
Bangladesh	36.28	41.87	1.021
Bolivia	53.00	76.77	3.745
Brazil	55.34	84.10	2.780
Colombia	47.82	82.93	3.975
Costa Rica	44.40	80.63	4.480
Cyprus	31.82	62.00	7.258
Dominican Republic	45.00	80.30	3.314
Ecuador	38.00	83.99	3.987
Egypt	38.00	54.90	1.320
El Salvador	48.40	82.11	2.729
Guatemala	49.72	85.34	1.885
Honduras	61.88	76.50	2.092
India	29.17	61.42	2.405
Indonesia	34.60	55.47	2.631
Iran	42.28	62.30	1.881
Israel	36.44	80.05	8.150
Jamaica	44.52	80.29	3.413
Jordan	40.80	67.65	2.759
Kenya	52.00	74.95	1.428
Korea, Republic of	39.10	33.85	5.929
Malaysia	53.00	64.01	4.042
Mexico	55.70	60.66	3.413
Pakistan	31.45	55.59	1.693
Panama	49.00	80.40	5.135
Peru	55.00	92.30	4.363
Philippines	45.18	56.00	5.412
Senegal	51.30	49.27	1.912
South Africa	49.00	70.00	4.530
Sri Lanka	35.30	65.73	5.071
Taiwan	31.20	46.30	4.992
Tanzania	44.00	78.99	1.946
Thailand	41.74	42.55	3.764
Trinidad and Tobago	46.09	69.10	5.300
Tunisia	44.00	64.56	1.250
Turkey	51.00	59.45	2.122
Uganda	40.07	54.88	1.263
Uruguay	40.54	81.30	5.686
Venezuela	43.63	91.70	3.770

Period 1985-1994

	GDPGROWTH	INITGDP	POPGROWTH	INVSHARE
Argentina	1.308600	8650.0119	1.400006	14.825830
Bangladesh	2.248251	1164.5790	2.117630	9.441402
Bolivia	0.453032	2542.4826	2.272770	7.771227
Brazil	-0.123696	6150.8399	1.718989	17.466217
Colombia	2.036994	4346.0273	2.001078	11.171327
Costa Rica	1.384736	4642.9379	2.426364	16.266422
Cyprus	4.564211	9568.4892	1.269573	22.357415
Dominican Republic	1.021292	3090.4351	2.113100	13.478755
Ecuador	-0.014023	3929.9587	2.377865	15.627399
Egypt	2.900985	2768.2375	2.328942	6.800925
El Salvador	0.985846	3617.6720	1.596472	6.912858
Guatemala	0.460549	3577.1940	2.560961	6.864783
Honduras	-1.013079	2265.5098	3.075902	11.728451
India	3.199143	1369.2085	1.997303	11.528453
Indonesia	5.069062	2277.6484	1.773880	17.164177
Iran	1.562165	4435.4817	2.512462	18.479660
Israel	2.587472	11998.0022	2.652591	24.050200
Jamaica	1.577659	3295.2522	0.910120	14.093065
Jordan	-3.717714	4450.8708	4.784202	15.186518
Kenya	0.499803	1150.2570	3.286196	7.695859
Korea, Republic of	7.094864	6568.8854	1.001956	36.377365
Malaysia	4.938238	5448.4591	2.801674	22.811962
Mexico	0.291400	7673.3093	2.128307	17.039283
Pakistan	2.826029	1444.5580	2.609700	11.510976
Panama	-0.175612	5843.1071	1.990120	13.836788
Peru	-2.664708	4370.5572	1.961212	15.723328
Philippines	0.676165	2760.0706	2.576222	13.506746
Senegal	-0.821717	1490.6191	2.726794	6.503722
South Africa	-0.810639	7833.8502	2.297301	8.228175
Sri Lanka	2.986309	2261.5163	1.365855	12.475919
Taiwan	6.614623	7510.8843	1.090494	18.311219
Tanzania	-4.538773	632.3536	3.159603	18.429969
Thailand	7.676228	3269.6159	1.543877	34.212684
Trinidad and Tobago	-0.434145	9932.7164	0.755770	7.931987
Tunisia	1.513073	4797.5358	2.279834	13.140230
Turkey	2.111521	4887.2595	2.128584	17.274053
Uganda	2.005181	648.2236	2.988249	2.917847
Uruguay	3.305324	6197.9841	0.667892	9.857000
Venezuela	0.544449	6805.4239	2.474462	13.250670

Period 1985-1994

	INCGINI	LANDGINI	HUMANCAP
Argentina	42.00	85.62	6.676
Bangladesh	36.00	41.87	1.974
Bolivia	52.00	76.77	4.285
Brazil	61.76	84.10	3.486
Colombia	51.20	82.93	4.533
Costa Rica	47.00	80.63	5.333
Cyprus	31.82	62.00	7.128
Dominican Republic	43.29	80.30	4.177
Ecuador	44.53	83.99	5.584
Egypt	37.00	54.90	1.320
El Salvador	48.40	82.11	3.574
Guatemala	58.00	85.34	2.591
Honduras	54.94	76.50	3.561
India	31.49	61.42	3.046
Indonesia	32.40	55.47	3.750
Iran	42.90	62.30	3.281
Israel	37.27	80.05	9.410
Jamaica	43.16	80.29	4.162
Jordan	36.10	67.65	4.308
Kenya	57.30	74.95	3.093
Korea, Republic of	34.54	33.85	7.850
Malaysia	48.49	64.01	5.361
Mexico	50.58	60.66	4.162
Pakistan	32.44	55.59	1.920
Panama	57.00	80.40	6.300
Peru	42.76	92.30	5.786
Philippines	46.08	56.00	6.481
Senegal	51.30	49.27	2.393
South Africa	51.00	70.00	4.955
Sri Lanka	46.00	65.73	5.371
Taiwan	29.20	46.30	6.999
Tanzania	53.00	78.99	2.286
Thailand	47.40	42.55	5.081
Trinidad and Tobago	41.72	69.10	6.503
Tunisia	43.00	64.56	2.478
Turkey	44.25	59.45	3.294
Uganda	33.00	54.88	1.917
Uruguay	41.72	81.30	6.454
Venezuela	45.17	91.70	5.368

Period 1965-1979

	GDPGROWTH	INITGDP	POPGROWTH	INVSHARE
Argentina	1.650900	8235.0970	1.549010	19.637679
Bangladesh	-0.834173	1089.1081	2.689181	9.998318
Bolivia	1.299616	2694.4337	2.415069	11.602727
Brazil	6.077394	2842.6747	2.510072	24.434897
Colombia	3.186639	2745.6398	2.575731	11.166978
Costa Rica	3.005538	3725.2770	3.229734	13.617332
Cyprus	3.101893	3986.5878	0.345673	28.917874
Dominican Republic	4.204212	1714.9508	2.784243	12.827649
Ecuador	5.759793	2106.9131	2.967771	23.796577
Egypt	1.042942	1757.2425	2.233171	6.912679
El Salvador	1.502009	3899.0424	2.971065	7.054783
Guatemala	2.977387	2553.9893	2.728841	9.322614
Honduras	1.669484	1787.0353	3.129017	12.199075
India	1.459798	926.9249	2.324910	11.199332
Indonesia	5.101281	895.7868	2.365085	8.176415
Iran	3.014096	3434.1972	3.075192	18.381537
Israel	3.787751	7322.6625	2.876684	30.524071
Jamaica	1.133536	3237.9819	1.295942	23.176296
Jordan	1.313078	2751.3628	4.661133	11.459851
Kenya	2.627000	846.9558	3.554522	15.103461
Korea, Republic of	7.162236	1802.6505	1.945687	23.220565
Malaysia	4.382766	2497.6887	2.536351	16.401183
Mexico	2.940827	4765.5202	3.168598	18.923234
Pakistan	2.464724	746.0963	3.049966	14.102350
Panama	2.654974	3007.5805	2.766422	23.807208
Peru	1.536590	4050.2482	2.809660	18.994672
Philippines	2.721917	2210.2985	2.851389	14.990259
Senegal	-0.707811	1706.6355	2.850604	8.190074
South Africa	1.854336	5900.5274	2.216600	16.596858
Sri Lanka	1.662950	1385.2092	1.915067	7.492812
Taiwan	7.517967	1968.8381	2.155772	17.206746
Tanzania	1.770872	485.6805	3.069885	33.255301
Thailand	4.464532	1348.1410	2.912487	29.741390
Trinidad and Tobago	3.278755	5589.5238	1.240558	9.736169
Tunisia	5.271506	2173.2931	2.130594	21.609011
Turkey	3.175546	3022.0641	2.369853	13.694348
Uganda	-0.762473	581.4876	3.305713	1.247635
Uruguay	1.975693	5553.5501	0.556277	11.900555
Venezuela	-1.467499	9933.3099	3.453984	19.503261

Period 1965-1979

	INCGINI	LANDGINI	HUMANCAP
Argentina	45.90	85.62	5.336
Bangladesh	36.44	41.87	0.948
Bolivia	53.00	76.77	3.774
Brazil	54.00	84.10	2.605
Colombia	62.00	82.93	3.001
Costa Rica	50.00	80.63	3.833
Cyprus	31.82	62.00	4.839
Dominican Republic	45.50	80.30	2.557
Ecuador	38.00	83.99	3.183
Egypt	40.00	54.90	1.320
El Salvador	53.00	82.11	1.900
Guatemala	42.30	85.34	1.426
Honduras	61.88	76.50	1.837
India	31.14	61.42	1.629
Indonesia	33.30	55.47	1.598
Iran	41.88	62.30	0.843
Israel	37.08	80.05	7.098
Jamaica	54.31	80.29	2.665
Jordan	40.80	67.65	1.745
Kenya	48.80	74.95	1.136
Korea, Republic of	34.34	33.85	4.426
Malaysia	48.30	64.01	2.820
Mexico	55.50	60.66	2.665
Pakistan	37.00	55.59	1.121
Panama	48.00	80.40	4.295
Peru	61.00	92.30	3.283
Philippines	51.32	56.00	4.222
Senegal	56.00	49.27	1.343
South Africa	56.00	70.00	4.101
Sri Lanka	47.00	65.73	4.052
Taiwan	32.24	46.30	3.807
Tanzania	54.00	78.99	1.987
Thailand	41.40	42.55	3.242
Trinidad and Tobago	46.02	69.10	4.608
Tunisia	42.30	64.56	0.706
Turkey	56.00	59.45	2.156
Uganda	40.07	54.88	1.138
Uruguay	42.79	81.30	4.574
Venezuela	42.00	91.70	2.636

Period 1980-1994

	GDPGROWTH	INITGDP	POPGROWTH	INVSHARE
Argentina	-0.542832	10626.8764	1.441988	15.763435
Bangladesh	2.244332	973.2995	2.238404	10.136289
Bolivia	-1.338996	3053.2754	2.175288	7.197359
Brazil	0.473007	6379.7949	1.877307	18.438591
Colombia	1.689664	4311.6895	2.065669	11.545692
Costa Rica	0.445968	5418.6535	2.621003	15.081965
Cyprus	4.709686	7766.4363	1.160930	24.168540
Dominican Republic	0.849820	2916.8963	2.175398	13.269856
Ecuador	-0.717474	4241.5599	2.502152	17.233187
Egypt	2.983599	2423.9249	2.421827	8.189484
El Salvador	0.075328	4158.7141	1.374196	6.381726
Guatemala	-0.612781	4057.3441	2.557416	7.057571
Honduras	-0.705982	2279.7951	3.144309	10.939422
India	3.391590	1158.7324	2.068590	11.458264
Indonesia	4.347119	1895.6555	1.836312	16.678160
Iran	0.800026	4028.6432	2.902677	21.184615
Israel	2.078628	11425.8030	2.400957	23.668288
Jamaica	1.221841	3451.8940	1.145414	13.686729
Jordan	-1.781621	4051.5590	4.515123	16.039649
Kenya	0.505829	1238.5049	3.447458	8.527091
Korea, Republic of	7.263425	4789.8300	1.163179	34.261143
Malaysia	3.315020	4876.4487	2.719438	23.430172
Mexico	-0.442593	7654.7586	2.243440	17.595150
Pakistan	3.515792	1152.0611	2.675579	11.751189
Panama	-0.315155	5344.9411	2.055446	14.748381
Peru	-2.183271	4901.3116	2.126095	16.960622
Philippines	-0.900348	3288.9215	2.513834	14.873395
Senegal	-0.236311	1462.0882	2.769941	6.306028
South Africa	-0.733936	7950.0766	2.370335	10.270661
Sri Lanka	3.212786	1789.5349	1.414839	13.657895
Taiwan	6.611627	5869.2910	1.309153	18.595669
Tanzania	-2.322500	605.6970	3.179677	22.675131
Thailand	6.210011	2730.4726	1.683935	32.326577
Trinidad and Tobago	-0.939614	9593.0539	1.095921	9.704066
Tunisia	1.551233	4363.8054	2.364588	14.953747
Turkey	2.581698	4271.8719	2.227241	15.117842
Uganda	1.831568	443.0530	2.677699	2.565649
Uruguay	1.141539	8027.1677	0.656652	11.583904
Venezuela	-0.325447	7967.0409	2.556676	14.529678

Period 1980-1994

	INCGINI	LANDGINI	HUMANCAP
Argentina	41.00	85.62	6.630
Bangladesh	39.00	41.87	1.681
Bolivia	53.00	76.77	3.971
Brazil	57.78	84.10	2.976
Colombia	54.50	82.93	4.233
Costa Rica	45.00	80.63	4.814
Cyprus	31.82	62.00	7.152
Dominican Republic	45.00	80.30	3.709
Ecuador	38.00	83.99	5.401
Egypt	38.00	54.90	1.320
El Salvador	48.40	82.11	3.283
Guatemala	49.72	85.34	2.342
Honduras	61.88	76.50	2.698
India	29.17	61.42	2.715
Indonesia	35.61	55.47	3.086
Iran	42.28	62.30	2.323
Israel	36.44	80.05	9.135
Jamaica	44.52	80.29	3.602
Jordan	40.80	67.65	2.933
Kenya	52.00	74.95	2.444
Korea, Republic of	38.63	33.85	6.849
Malaysia	51.00	64.01	4.489
Mexico	55.70	60.66	3.602
Pakistan	32.32	55.59	1.737
Panama	47.47	80.40	5.982
Peru	49.33	92.30	5.442
Philippines	45.18	56.00	6.000
Senegal	51.30	49.27	1.989
South Africa	49.00	70.00	4.613
Sri Lanka	42.00	65.73	5.183
Taiwan	27.96	46.30	6.365
Tanzania	44.00	78.99	2.425
Thailand	43.10	42.55	3.765
Trinidad and Tobago	46.09	69.10	6.599
Tunisia	43.00	64.56	1.918
Turkey	51.00	59.45	2.616
Uganda	40.07	54.88	1.641
Uruguay	42.37	81.30	5.800
Venezuela	43.00	91.70	4.930

Period 1965-1994

	GDPGROWTH	INITGDP	POPGROWTH	INVSHARE
Argentina	-0.028860	8235.0970	1.495499	17.700557
Bangladesh	1.053567	1089.1081	2.463792	10.067304
Bolivia	-0.407617	2694.4337	2.295179	9.400043
Brazil	2.795290	2842.6747	2.193689	21.436744
Colombia	2.185282	2745.6398	2.320700	11.356335
Costa Rica	0.862707	3725.2770	2.925368	14.349648
Cyprus	4.341069	3986.5878	0.753301	26.543207
Dominican Republic	2.475504	1714.9508	2.479820	13.048752
Ecuador	2.278785	2106.9131	2.734962	20.514882
Egypt	2.671597	1757.2425	2.327499	7.551081
El Salvador	-0.640908	3899.0424	2.172630	6.718255
Guatemala	1.039894	2553.9893	2.643129	8.190092
Honduras	0.716325	1787.0353	3.136663	11.569248
India	2.326426	926.9249	2.196750	11.328798
Indonesia	4.817730	895.7868	2.100699	12.427288
Iran	-0.281725	3434.1972	2.988935	19.783076
Israel	2.377911	7322.6625	2.638821	27.096180
Jamaica	0.116163	3237.9819	1.220678	18.431512
Jordan	1.992203	2751.3628	4.588128	13.749750
Kenya	1.352297	846.9558	3.500990	11.815276
Korea, Republic of	6.509100	1802.6505	1.554433	28.740854
Malaysia	3.991556	2497.6887	2.627894	19.915677
Mexico	1.546133	4765.5202	2.706019	18.259192
Pakistan	3.195349	746.0963	2.862773	12.926769
Panama	2.016382	3007.5805	2.410934	19.277794
Peru	-0.542997	4050.2482	2.467877	17.977647
Philippines	0.947036	2210.2985	2.682612	14.931827
Senegal	-0.475155	1706.6355	2.810273	7.248051
South Africa	0.675370	5900.5274	2.293467	13.433760
Sri Lanka	2.511821	1385.2092	1.664953	10.575353
Taiwan	6.768439	1968.8381	1.732463	17.901208
Tanzania	-0.303349	485.6805	3.124781	27.965216
Thailand	4.931323	1348.1410	2.298211	31.033984
Trinidad and Tobago	1.926085	5589.5238	1.168240	9.720117
Tunisia	3.231357	2173.2931	2.247591	18.281379
Turkey	2.173992	3022.0641	2.298547	14.406095
Uganda	0.613849	581.4876	2.991706	1.906642
Uruguay	1.261191	5553.5501	0.606465	11.742229
Venezuela	-1.424051	9933.3099	3.005330	17.016469

Period 1965-1994

	INCGINI	LANDGINI	HUMANCAP
Argentina	45.90	85.62	5.336
Bangladesh	36.44	41.87	0.948
Bolivia	53.00	76.77	3.774
Brazil	54.00	84.10	2.605
Colombia	62.00	82.93	3.001
Costa Rica	50.00	80.63	3.833
Cyprus	31.82	62.00	4.839
Dominican Republic	45.50	80.30	2.557
Ecuador	38.00	83.99	3.183
Egypt	40.00	54.90	1.320
El Salvador	53.00	82.11	1.900
Guatemala	42.30	85.34	1.426
Honduras	61.88	76.50	1.837
India	31.14	61.42	1.629
Indonesia	33.30	55.47	1.598
Iran	41.88	62.30	0.843
Israel	37.08	80.05	7.098
Jamaica	54.31	80.29	2.665
Jordan	40.80	67.65	1.745
Kenya	48.80	74.95	1.136
Korea, Republic of	34.34	33.85	4.426
Malaysia	48.30	64.01	2.820
Mexico	55.50	60.66	2.665
Pakistan	37.00	55.59	1.121
Panama	48.00	80.40	4.295
Peru	61.00	92.30	3.283
Philippines	51.32	56.00	4.222
Senegal	56.00	49.27	1.343
South Africa	56.00	70.00	4.101
Sri Lanka	47.00	65.73	4.052
Taiwan	32.24	46.30	3.807
Tanzania	54.00	78.99	1.987
Thailand	41.40	42.55	3.242
Trinidad and Tobago	46.02	69.10	4.608
Tunisia	42.30	64.56	0.706
Turkey	56.00	59.45	2.156
Uganda	40.07	54.88	1.138
Uruguay	42.79	81.30	4.574
Venezuela	42.00	91.70	2.636

Ordinary Least Squares Estimations
Regression 1 (1965-1974)

Dependent variable is GDPGROWTH
39 observations used for estimation from 1 to 39
****

Regressor	Coefficient	Standard Error	T-Ratio[Prob]
CONSTANT	4.1215	2.5056	1.6449[.110]
INITGDP	-.3564E-3	.2243E-3	-1.5891[.122]
POPGROWTH	-.59214	.45473	-1.3022[.202]
INVSHARE	.13263	.048329	2.7442[.010]
INCGINI	-.044952	.045372	-.99074[.329]
LANDGINI	.0075117	.030677	.24486[.808]
HUMANCAP	.31376	.32252	.97285[.338]

****
R-Squared .36201 R-Bar-Squared .24238
S.E. of Regression 2.1495 F-stat. F(6, 32) 3.0262[.019]
Mean of Dependent Variable 2.9104 S.D. of Dependent Variable 2.4695
Residual Sum of Squares 147.8479 Equation Log-likelihood -81.3247
Akaike Info. Criterion -88.3247 Schwarz Bayesian Criterion -94.1472
DW-statistic 1.8042
****
Diagnostic Tests
****
Test Statistics * LM Version * F Version
****
A: Serial Correlation *CHSQ(1) = .31203[.576] *F(1, 31) = .25002[.621]
B: Functional Form *CHSQ(1) = 4.4183[.036] *F(1, 31) = 3.9607[.055]
C: Normality *CHSQ(2) = .18367[.912] * Not applicable
D: Heteroscedasticity *CHSQ(1) = .071323[.789] *F(1, 37) = .067789[.796]
****
A: Lagrange multiplier test of residual serial correlation
B: Ramsey's RESET test using the square of the fitted values
C: Based on a test of skewness and kurtosis of residuals
D: Based on the regression of squared residuals on squared fitted values

Regression 2 (1965-1974)

Dependent variable is GDPGROWTH

39 observations used for estimation from 1 to 39

****

Regressor	Coefficient	Standard Error	T-Ratio[Prob]
CONSTANT	2.6311	2.2523	1.1682[.251]
INITGDP	-.3491E-3	.2266E-3	-1.5409[.133]
INVSHARE	.13240	.048835	2.7111[.011]
INCGINI	-.050032	.045678	-1.0953[.281]
LANDGINI	.0045050	.030911	.14574[.885]
HUMANCAP	.44027	.31076	1.4168[.166]

****

R-Squared	.32820	R-Bar-Squared	.22641
S.E. of Regression	2.1720	F-stat. F(5, 33)	3.2243[.018]
Mean of Dependent Variable	2.9104	S.D. of Dependent Variable	2.4695
Residual Sum of Squares	155.6822	Equation Log-likelihood	-82.3316
Akaike Info. Criterion	-88.3316	Schwarz Bayesian Criterion	-93.3223
DW-statistic	1.8225		

****

Diagnostic Tests

****

Test Statistics	* LM Version	* F Version
A: Serial Correlation	*CHSQ(1) = .21756[.641]	*F(1, 32) = .17951[.675]
B: Functional Form	*CHSQ(1) = 2.3521[.125]	*F(1, 32) = 2.0538[.162]
C: Normality	*CHSQ(2) =.30837[.857]	* Not applicable
D: Heteroscedasticity	*CHSQ(1) = .11346[.736]	*F(1, 37) = .10796[.744]

****

A: Lagrange multiplier test of residual serial correlation

B: Ramsey's RESET test using the square of the fitted values

C: Based on a test of skewness and kurtosis of residuals

D: Based on the regression of squared residuals on squared fitted values

Regression 3 (1975-1984)

Dependent variable is GDPGROWTH
39 observations used for estimation from 1 to 39
** Regressor Coefficient Standard Error T-Ratio[Prob]
CONSTANT 6.4881 3.0898 2.0999[.044]
INITGDP -.4098E-3 .2185E-3 -1.8750[.070]
POPGROWTH .22781 .69298 .32874[.744]
INVSHARE .018270 .063908 .28588[.777]
INCGINI -.034171 .054807 -.62347[.537]
LANDGINI -.078450 .030584 -2.5650[.015]
HUMANCAP .78474 .36941 2.1243[.041]
** R-Squared .43872 R-Bar-Squared .33348
S.E. of Regression 2.2788 F-stat. F(6, 32) 4.1687[.003]
Mean of Dependent Variable 1.6573 S.D. of Dependent Variable 2.7913
Residual Sum of Squares 166.1810 Equation Log-likelihood -83.6042
Akaike Info. Criterion -90.6042Schwarz Bayesian Criterion -96.4266
DW-statistic 2.2207
** Diagnostic Tests
** Test Statistics * LM Version * F Version
** A: Serial Correlation *CHSQ(1) = .65063[.420] *F(1, 31) = .52595[.474]
B: Functional Form *CHSQ(1) = .58428[.445] *F(1, 31) = .47149[.497]
C: Normality *CHSQ(2) = .67353[.714] * Not applicable
D: Heteroscedasticity *CHSQ(1) = .25040[.617] *F(1, 37) = .23910[.628]
** A: Lagrange multiplier test of residual serial correlation
B: Ramsey's RESET test using the square of the fitted values
C: Based on a test of skewness and kurtosis of residuals
D: Based on the regression of squared residuals on squared fitted values

Regression 4 (1975-1984)
Dependent variable is GDPGROWTH
39 observations used for estimation from 1 to 39
** Regressor Coefficient Standard Error T-Ratio[Prob]

Regressor	Coefficient	Standard Error	T-Ratio[Prob]
CONSTANT	6.8882	2.8013	2.4589[.019]
INITGDP	-.4108E-3	.2155E-3	-1.9060[.065]
INVSHARE	.025204	.059506	.42356[.675]
INCGINI	-.030314	.052808	-.57403[.570]
LANDGINI	-.077068	.029882	-2.5791[.015]
HUMANCAP	.71828	.30496	2.3553[.025]

** R-Squared .43682 R-Bar-Squared .35149
S.E. of Regression 2.2478 F-stat. F(5, 33) 5.1192[.001]
Mean of Dependent Variable 1.6573 S.D. of Dependent Variable 2.7913
Residual Sum of Squares 166.7422 Equation Log-likelihood -83.6699
Akaike Info. Criterion -89.6699 Schwarz Bayesian Criterion -94.6606
DW-statistic 2.2502
** Diagnostic Tests
** Test Statistics * LM Version * F Version
** A: Serial Correlation *CHSQ(1) = .80764[.369] *F(1, 32) = .67669[.417]
B: Functional Form *CHSQ(1) = .56932[.451] *F(1, 32) = .47406[.496]
C: Normality *CHSQ(2) = .53911[.764] * Not applicable
D: Heteroscedasticity *CHSQ(1) = .44219[.506] *F(1, 37) = .42432[.519]
** A: Lagrange multiplier test of residual serial correlation
B: Ramsey's RESET test using the square of the fitted values
C: Based on a test of skewness and kurtosis of residuals
D: Based on the regression of squared residuals on squared fitted values

Regression 5 (1985-1994)

Dependent variable is GDPGROWTH
39 observations used for estimation from 1 to 39
*** Regressor

Regressor	Coefficient	Standard Error	T-Ratio[Prob]
CONSTANT	10.0564	2.0874	4.8177[.000]
INITGDP	-.1005E-3	.1539E-3	-.65309[.518]
POPGROWTH	-1.4044	.38572	-3.6409[.001]
INVSHARE	.10226	.052476	1.9487[.060]
INCGINI	-.055189	.039857	-1.3847[.176]
LANDGINI	-.064526	.024983	-2.5828[.015]
HUMANCAP	.077471	.26070	.29716[.768]

****

R-Squared	.64983	R-Bar-Squared	.58418
S.E. of Regression	1.6886	F-stat. F(6, 32)	9.8974[.000]
Mean of Dependent Variable	1.5418	S.D. of Dependent Variable	2.6186
Residual Sum of Squares	91.2421	Equation Log-likelihood	-71.9127
Akaike Info. Criterion	-78.9127	Schwarz Bayesian Criterion	-84.7352
DW-statistic	2.4233		

*** Diagnostic Tests
*** Test Statistics

Test Statistics	LM Version	F Version
A: Serial Correlation	*CHSQ(1) = 2.4388[.118]	*F(1, 31) = 2.0679[.160]
B: Functional Form	*CHSQ(1) = .078610[.779]	*F(1, 31) = .062611[.804]
C: Normality	*CHSQ(2) = 2.1166[.347]	* Not applicable
D: Heteroscedasticity	*CHSQ(1) = .46346[.496]	*F(1, 37) = .44498[.509]

****

A: Lagrange multiplier test of residual serial correlation
B: Ramsey's RESET test using the square of the fitted values
C: Based on a test of skewness and kurtosis of residuals
D: Based on the regression of squared residuals on squared fitted values

Regression 6 (1985-1994)
Dependent variable is GDPGROWTH
39 observations used for estimation from 1 to 39
** Regressor Coefficient Standard Error T-Ratio[Prob]

CONSTANT	7.1489	2.2585	3.1653[.003]
INITGDP	-.3412E-4	.1790E-3	-.19069[.850]
INVSHARE	.088518	.061294	1.4441[.158]
INCGINI	-.063438	.046600	-1.3613[.183]
LANDGINI	-.075506	.029043	-2.5998[.014]
HUMANCAP	.27896	.29834	.93503[.357]

**R-Squared .50477 R-Bar-Squared .42974
S.E. of Regression 1.9775 F-stat. F(5, 33) 6.7271[.000]
Mean of Dependent Variable 1.5418 S.D. of Dependent Variable 2.6186
Residual Sum of Squares 129.0404 Equation Log-likelihood -78.6716
Akaike Info. Criterion -84.6716Schwarz Bayesian Criterion -89.6623
DW-statistic 2.2714
** Diagnostic Tests
** Test Statistics * LM Version * F Version
** A: Serial Correlation *CHSQ(1) = .97084[.324] *F(1, 32) = .81692[.373]
B: Functional Form *CHSQ(1) = 1.9277[.165] *F(1, 32) = 1.6640[.206]
C: Normality *CHSQ(2) = 13.1282[.001] * Not applicable
D: Heteroscedasticity *CHSQ(1) = .15311[.696] *F(1, 37) = .14583[.705]
** A: Lagrange multiplier test of residual serial correlation
B: Ramsey’s RESET test using the square of the fitted values
C: Based on a test of skewness and kurtosis of residuals
D: Based on the regression of squared residuals on squared fitted values

Regression 7 (1965-1979)

Dependent variable is GDPGROWTH

39 observations used for estimation from 1 to 39

** Regressor

Regressor	Coefficient	Standard Error	T-Ratio[Prob]
CONSTANT	3.2209	2.1284	1.5133[.140]
INITGDP	-.4221E-3	.1872E-3	-2.2550[.031]
POPGROWTH	-.15110	.41594	-.36327[.719]
INVSHARE	.095688	.043645	2.1924[.036]
INCGINI	-.039489	.038175	-1.0344[.309]
LANDGINI	.0015549	.025653	.060613[.952]
HUMANCAP	.45491	.28059	1.6212[.115]

****

R-Squared	.34939	R-Bar-Squared	.22740
S.E. of Regression	1.7992	F-stat. F(6, 32)	2.8641[.024]
Mean of Dependent Variable	2.6918	S.D. of Dependent Variable	2.0470
Residual Sum of Squares	103.5924	Equation Log-likelihood	-74.3882
Akaike Info. Criterion	-81.3882	Schwarz Bayesian Criterion	-87.2107
DW-statistic	1.9244		

** Diagnostic Tests

** Test Statistics * LM Version * F Version

****

Test Statistics	LM Version	F Version
A: Serial Correlation	*CHSQ(1) = .028546[.866]	*F(1, 31) = .022707[.881]
B: Functional Form	*CHSQ(1) = 1.5664[.211]	*F(1, 31) = 1.2972[.263]
C: Normality	*CHSQ(2) = 1.2034[.548]	* Not applicable
D: Heteroscedasticity	*CHSQ(1) = 3.3418[.068]	*F(1, 37) = 3.4676[.071]

****

A: Lagrange multiplier test of residual serial correlation

B: Ramsey's RESET test using the square of the fitted values

C: Based on a test of skewness and kurtosis of residuals

D: Based on the regression of squared residuals on squared fitted values

Regression 8 (1965-1979)
Dependent variable is GDPGROWTH
39 observations used for estimation from 1 to 39
****

Regressor	Coefficient	Standard Error	T-Ratio[Prob]
CONSTANT	2.8675	1.8680	1.5350[.134]
INITGDP	-.4219E-3	.1847E-3	-2.2842[.029]
INVSHARE	.094371	.042919	2.1988[.035]
INCGINI	-.041053	.037430	-1.0968[.281]
LANDGINI	.7608E-3	.025222	.030164[.976]
HUMANCAP	.49534	.25416	1.9489[.060]

****

R-Squared	.34670	R-Bar-Squared	.24772
S.E. of Regression	1.7754	F-stat. F(5, 33)	3.5026[.012]
Mean of Dependent Variable	2.6918	S.D. of Dependent Variable	2.0470
Residual Sum of Squares	104.0196	Equation Log-likelihood	-74.4684
Akaike Info. Criterion	-80.4684	Schwarz Bayesian Criterion	-85.4591
DW-statistic	1.9006		

** Diagnostic Tests
****

Test Statistics	LM Version	F Version
A: Serial Correlation	*CHSQ(1) = .057315[.811]	*F(1, 32) = .047097[.830]
B: Functional Form	*CHSQ(1) = 1.2633[.261]	*F(1, 32) = 1.0712[.308]
C: Normality	*CHSQ(2) = 1.2309[.540]	Not applicable
D: Heteroscedasticity	*CHSQ(1) = 2.2581[.133]	*F(1, 37) = 2.2739[.140]

****

A: Lagrange multiplier test of residual serial correlation
B: Ramsey's RESET test using the square of the fitted values
C: Based on a test of skewness and kurtosis of residuals
D: Based on the regression of squared residuals on squared fitted values

Regression 9 (1980-1994)
Dependent variable is GDPGROWTH
39 observations used for estimation from 1 to 39
*** Regressor
Coefficient Standard Error T-Ratio[Prob]
CONSTANT 11.3949 1.8631 6.1162[.000]
INITGDP -.9026E-4 .1248E-3 -.72293[.475]
POPGROWTH -1.2386 .34736 -3.5659[.001]
INVSHARE .11069 .040172 2.7555[.010]
INCGINI -.077328 .033089 -2.3370[.026]
LANDGINI -.068212 .018951 -3.5994[.001]
HUMANCAP -.13844 .20803 -.66547[.511]
*** R-Squared
.73157 R-Bar-Squared .68123
S.E. of Regression 1.3515 F-stat. F(6, 32) 14.5350[.000]
Mean of Dependent Variable 1.2552 S.D. of Dependent Variable 2.3937
Residual Sum of Squares 58.4456 Equation Log-likelihood -63.2270
Akaike Info. Criterion -70.2270Schwarz Bayesian Criterion -76.0495
DW-statistic 1.9929
*** Diagnostic Tests
*** Test Statistics
* LM Version * F Version
*** A: Serial
Correlation *CHSQ(1) = .0053088[.942] *F(1, 31) = .0042204[.949]
B: Functional Form *CHSQ(1) = 4.2306[.040] *F(1, 31) = 3.7719[.061]
C: Normality *CHSQ(2) = .64876[.723] * Not applicable
D: Heteroscedasticity *CHSQ(1) = 1.5565[.212] *F(1, 37) = 1.5381[.223]
*** A: Lagrange
multiplier test of residual serial correlation
B: Ramsey's RESET test using the square of the fitted values
C: Based on a test of skewness and kurtosis of residuals
D: Based on the regression of squared residuals on squared fitted values

Regression 10 (1980-1994)
Dependent variable is GDPGROWTH
39 observations used for estimation from 1 to 39
*** Regressor Coefficient Standard Error T-Ratio[Prob]
CONSTANT 9.1732 2.0438 4.4882[.000]
INITGDP -.4420E-4 .1445E-3 -.30576[.762]
INVSHARE .088875 .046217 1.9230[.063]
INCGINI -.086700 .038395 -2.2581[.031]
LANDGINI -.081609 .021622 -3.7743[.001]
HUMANCAP .095472 .22981 .41544[.681]
*** R-Squared .62490 R-Bar-Squared .56807
S.E. of Regression 1.5732 F-stat. F(5, 33) 10.9953[.000]
Mean of Dependent Variable 1.2552 S.D. of Dependent Variable 2.3937
Residual Sum of Squares 81.6699 Equation Log-likelihood -69.7515
Akaike Info. Criterion -75.7515Schwarz Bayesian Criterion -80.7422
DW-statistic 2.0061
*** Diagnostic Tests
*** Test Statistics * LM Version * F Version
*** A: Serial Correlation *CHSQ(1) = .0021018[.963] *F(1, 32)= .0017247[.967]
B: Functional Form *CHSQ(1) = 6.9830[.008] *F(1, 32)= 6.9793[.013]
C: Normality *CHSQ(2) = 4.1751[.124] * Not applicable
D: Heteroscedasticity *CHSQ(1) = .21321[.644] *F(1, 37)= .20338[.655]
*** A: Lagrange multiplier test of residual serial correlation
B: Ramsey's RESET test using the square of the fitted values
C: Based on a test of skewness and kurtosis of residuals
D: Based on the regression of squared residuals on squared fitted values

Regression 11 (1965-1994)

Dependent variable is GDPGROWTH

39 observations used for estimation from 1 to 39

****

Regressor	Coefficient	Standard Error	T-Ratio[Prob]
CONSTANT	7.2734	1.5160	4.7978[.000]
INITGDP	-.3639E-3	.1280E-3	-2.8434[.008]
POPGROWTH	-.38800	.31892	-1.2166[.233]
INVSHARE	.074128	.034290	2.1618[.038]
INCGINI	-.070359	.026177	-2.6878[.011]
LANDGINI	-.033297	.017558	-1.8964[.067]
HUMANCAP	.33367	.20149	1.6560[.107]

****

R-Squared .65167 R-Bar-Squared .58636

S.E. of Regression 1.2296 F-stat. F(6, 32) 9.9778[.000]

Mean of Dependent Variable 1.8358 S.D. of Dependent Variable 1.9118

Residual Sum of Squares 48.3803 Equation Log-likelihood -59.5415

Akaike Info. Criterion -66.5415 Schwarz Bayesian Criterion -72.3639

DW-statistic 1.9869

****

Diagnostic Tests

****

Test Statistics * LM Version * F Version

****

A: Serial Correlation *CHSQ(1) = .3657E-4[.995] *F(1, 31) = .2907E-4[.996]

B: Functional Form *CHSQ(1) = 1.4422[.230] *F(1, 31) = 1.1904[.284]

C: Normality *CHSQ(2) = .58658[.746] * Not applicable

D: Heteroscedasticity *CHSQ(1) = .7214E-5[.998] *F(1, 37) = .6844E-5[.998]

****

A: Lagrange multiplier test of residual serial correlation

B: Ramsey's RESET test using the square of the fitted values

C: Based on a test of skewness and kurtosis of residuals

D: Based on the regression of squared residuals on squared fitted values

Regression 12 (1965-1994)

Dependent variable is GDPGROWTH
39 observations used for estimation from 1 to 39
*** Regressor

Regressor	Coefficient	Standard Error	T-Ratio[Prob]
CONSTANT	6.4893	1.3821	4.6951[.000]
INITGDP	-.3623E-3	.1289E-3	-2.8107[.008]
INVSHARE	.068094	.034175	1.9925[.055]
INCGINI	-.074163	.026178	-2.8330[.008]
LANDGINI	-.036038	.017539	-2.0547[.048]
HUMANCAP	.44435	.18109	2.4538[.020]

*** R-Squared
.63556 R-Bar-Squared .58034
S.E. of Regression 1.2385 F-stat. F(5, 33) 11.5099[.000]
Mean of Dependent Variable 1.8358 S.D. of Dependent Variable 1.9118
Residual Sum of Squares 50.6182 Equation Log-likelihood -60.4232
Akaike Info. Criterion -66.4232Schwarz Bayesian Criterion -71.4139
DW-statistic 1.9169
*** Diagnostic Tests
*** Test Statistics * LM Version * F Version
*** A: Serial Correlation *CHSQ(1) = .062448[.803] *F(1, 32) = .051322[.822]
B: Functional Form *CHSQ(1) = 1.6935[.193] *F(1, 32) = 1.4526[.237]
C: Normality *CHSQ(2) = .39153[.822] * Not applicable
D: Heteroscedasticity *CHSQ(1) = .015873[.900] *F(1, 37) = .015065[.903]
*** A: Lagrange multiplier test of residual serial correlation
B: Ramsey’s RESET test using the square of the fitted values
C: Based on a test of skewness and kurtosis of residuals
D: Based on the regression of squared residuals on squared fitted values

Regression 13 (1965-1994)

Dependent variable is HUMANCAP

39 observations used for estimation from 1 to 39

****

Regressor	Coefficient	Standard Error	T-Ratio[Prob]
CONSTANT	2.4722	1.2181	2.0296[.050]
INITGDP	.4114E-3	.1110E-3	3.7064[.001]
INCGINI	-.010337	.026406	-.39148[.698]
LANDGINI	-.0058627	.017785	-.32963[.744]

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R-Squared	.32505	R-Bar-Squared	.26719
S.E. of Regression	1.2601	F-stat. F(3, 35)	5.6185[.003]
Mean of Dependent Variable	2.8322	S.D. of Dependent Variable	1.4720
Residual Sum of Squares	55.5775	Equation Log-likelihood	-62.2458
Akaike Info. Criterion	-66.2458	Schwarz Bayesian Criterion	-69.5730
DW-statistic	1.9172		

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Diagnostic Tests

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Test Statistics	LM Version	F Version
A: Serial Correlation	CHSQ(1) = .070983[.790]	F(1, 34) = .061996[.805]
B: Functional Form	CHSQ(1) = 3.2408[.072]	F(1, 34) = 3.0814[.088]
C: Normality	CHSQ(2) = .38563[.825]	Not applicable
D: Heteroscedasticity	CHSQ(1) = 11.0684[.001]	F(1, 37) = 14.6619[.000]

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A: Lagrange multiplier test of residual serial correlation

B: Ramsey's RESET test using the square of the fitted values

C: Based on a test of skewness and kurtosis of residuals

D: Based on the regression of squared residuals on squared fitted values

Regression 14 (1965-1994)
Dependent variable is INVSHARE
39 observations used for estimation from 1 to 39

Regressor	Coefficient	Standard Error	T-Ratio[Prob]
CONSTANT	21.4625	6.4545	3.3252[.002]
INITGDP	.6797E-3	.5882E-3	1.1555[.256]
INCGINI	-.10863	.13992	-.77640[.443]
LANDGINI	-.043238	.094243	-.45880[.649]

R-Squared	.062653	R-Bar-Squared	-.017691
S.E. of Regression	6.6772	F-stat. F(3, 35)	.77982[.513]
Mean of Dependent Variable	15.5471	S.D. of Dependent Variable	6.6190
Residual Sum of Squares	1560.5	Equation Log-likelihood	-127.2780
Akaike Info. Criterion	-131.2780	Schwarz Bayesian Criterion	-134.6051
DW-statistic	1.4972		

Diagnostic Tests

Test Statistics	LM Version	F Version
A: Serial Correlation	CHSQ(1) = 2.6399[.104]	F(1, 34) = 2.4685[.125]
B: Functional Form	CHSQ(1) = 3.7984[.051]	F(1, 34) = 3.6687[.064]
C: Normality	CHSQ(2) = 1.8717[.392]	Not applicable
D: Heteroscedasticity	CHSQ(1) = .042387[.837]	F(1, 37) = .040257[.842]

A: Lagrange multiplier test of residual serial correlation
B: Ramsey's RESET test using the square of the fitted values
C: Based on a test of skewness and kurtosis of residuals
D: Based on the regression of squared residuals on squared fitted values

Economic Performances in Latin America and East and South-East Asia

	GDPGROWTH	INCGINI	LANDGINI
Argentina	-0.028860	45.90	85.62
Bolivia	-0.407617	53.00	76.77
Brazil	2.795290	54.00	84.10
Colombia	2.185282	62.00	82.93
Costa Rica	0.862707	50.00	80.63
Dominican Republic	2.475504	45.50	80.30
Ecuador	2.278785	38.00	83.99
El Salvador	-0.640908	53.00	82.11
Guatemala	1.039894	42.30	85.34
Honduras	0.716325	61.88	76.50
Jamaica	0.116163	54.31	80.29
Mexico	1.546133	55.50	60.66
Panama	2.016382	48.00	80.40
Peru	-0.542997	61.00	92.30
Trinidad and Tobago	1.926085	46.02	69.10
Uruguay	1.261191	42.79	81.30
Venezuela	-1.424051	42.00	91.70
Latin America	0.951489	50.31	80.83
Bangladesh	1.053567	36.44	41.87
India	2.326426	31.14	61.42
Indonesia	4.817730	33.30	55.47
Korea, Republic of	6.509100	34.34	33.85
Malaysia	3.991556	48.30	64.01
Pakistan	3.195349	37.00	55.59
Philippines	0.947036	51.32	56.00
Sri Lanka	2.511821	47.00	65.73
Taiwan	6.768439	32.24	46.30
Thailand	4.931323	41.40	42.55
East and South-East Asia	3.705235	39.25	52.28