Income Inequality and Economic Growth Revisited. A Note

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Abstract
The relationship between income inequality and economic growth is estimated using dynamic panel estimation on a sample covering 112 emerging countries for the period 1980-2014. The results show that income inequality has a positive influence on economic growth for richer countries, in line with the classic theory, and a negative effect for poorer countries, as argued by the political economy approach.

Keywords: Economic Growth, Income Inequality, Emerging Countries.
JEL Codes: O11, O15, O47, C23

1. Introduction

The income inequality-economic growth relationship has been widely analysed in the literature. However, no consensus regarding the effect of inequality on growth has yet been reached. The theoretical literature presents two main approaches. The classic theory postulates a positive association between inequality and growth through the saving rate (Stiglitz, 1969). The political economy approach holds that inequality harms economic growth through social instability (Alesina and Perotti, 1996) and credit market imperfections (Galor and Zeira, 1993). Both approaches find empirical support (Delbianco et al., 2014; Lee and Son, 2016; and references therein). An increasing empirical literature shows that the inequality-growth relationship can be either positive or negative, depending on the different scenarios considered or on the properties of the distribution of income (Voitchovsky, 2005; Delbianco et al., 2014; and Lee and Son, 2016).

The hypothesis in this paper is that the effects of inequality on growth depend on the stage of development of each economy. Thus, at early stages, the effects are negative because the political economy approach holds. At higher stages they are positive since the classic theory prevails. We assume that, in highly developed countries, the needs of lower-income people are less pressing, and therefore higher inequality does not cause as much social unrest as it could generate in less developed economies, but that it favours greater savings and investment by the rich population, which in turn fosters economic growth.

To test our hypothesis, we divide the sample according to the level of income, the degree of income inequality, monetisation as a proxy of credit constraints, political stability, and the level of savings. For each subsample we analyse the inequality-economic growth relationship. Section 2 presents the data and the variables. In Section 3 the model specification and empirical results are shown.

2. Data and variables

Our sample covers 112 emerging countries during the period 1980-2014. All data were obtained from the World Bank. To overcome the unbalanced panel, the data is transformed into a five-year average. The explained variable is growth rate (GROWTH) of the Gross Domestic Product (GDP). We use the Gini coefficient (GINI) as an indicator of income inequality. As a proxy of credit constraint, we use the degree of monetisation measured by the percentage of the monetary aggregate M2 over the GDP (M2). For political stability (PS), we use the *Political Stability and Absence of Violence* Indicator. Savings serve as a proxy for investment.

The control variables are those found as robust by Levine and Renelt (1992): the investment/GDP ratio (INV), education (HK) measured as the average number of years of total schooling (15 years or more), openness measured as the sum of exports plus imports to GDP (OPEN) and population growth (POP) (Summary Statistics in Appendix).

Table 1. Mean of Initial Income

	HIGH	LOW
INITIAL INCOME	5558.99	680.49
Income Equality	3763.84	2878.20
M2	5836.48	4164.67
Political Stability	3580.30	1953.54
INV	3666.009	2410.4

Note: High: those countries with values above the median. Low: those below the median

3. Methodology and results

To test our hypothesis, for each subsample in Table 1 we estimate:

$$y_{i,t} - y_{i,t-1} = (\alpha - 1)y_{i,t-1} + \beta X_{i,t} + \delta GINI_{i,t-1} + \mu_{i,t}$$

where $y_{i,t}$ is the log of GDP of country *i* in period *t*, and $X_{i,t}$ denotes the set of control variables (current or lagged. Our variable of interest is the Gini coefficient, lagged one period. Finally, $\mu_{i,t}$ is the error term and α, β and δ are the set of parameters to be estimated. The temporal unit is the mean quinquennial observations, starting in 1980-1984. The lagged HK and GINI coefficients are included because their impact on the real economy may take longer than five years to take effect (Voitchovstky, 2005).

To estimate the above expression, the Arellano-Bond specification (Arellano and Bond, 1991; Roodman, 2015) is used. Lagged variables and quinquennial dummies were used as instruments. The results appear in Table 2.

Table 2. Dynamic Panel results

		Initial Income		Income Equality		M2		Political Stability		INV	
Dependent Variable: GROWTH	Total	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
GROWTH (-1)	0.08	-0.10	-0.06	0.03	-0.33**	-0.24*	-0.34	-0.06	-0.25	-0.04	-0.12
	(0.10)	(0.13)	(0.16)	(0.10)	(0.16)	(0.14)	(0.24)	(0.12)	(0.19)	(0.17)	(0.18)
GINI(-1)	0.26	0.56**	0.16	0.48**	0.03	-0.08	-0.14	0.70***	-0.25**	0.05	0.17
	(0.16)	(0.26)	(0.13)	(0.19)	(0.14)	(0.11)	(0.29)	(0.23)	(0.12)	(0.10)	(0.19)
INV	0.24**	0.37**	0.03	0.12	0.39***	0.29***	-0.47	0.25**	0.08	0.10	0.40*
	(0.10)	(0.18)	(0.10)	(0.10)	(0.11)	(0.10)	(0.35)	(0.12)	(0.17)	(0.08)	(0.21)
HK(-1)	-0.45	0.81**	0.57	0.82	0.41	-0.39	4.87*	0.92	1.10**	0.18	2.18**
	(0.40)	(0.39)	(0.73)	(0.55)	(0.39)	(0.32)	(2.65)	(0.76)	(0.52)	(0.31)	(0.96)
POB	-1.52	-0.47	0.51	0.03	-0.67	-2.62***	8.26**	-1.90	-1.15	-1.06	5.66*
	(0.95)	(1.21)	(1.50)	(0.80)	(1.99)	(0.57)	(4.05)	(1.67)	(1.38)	(0.83)	(3.31)
OPEN	0.06*	-0.04	0.06**	0.03	-0.01	0.00	0.17**	-0.04	-0.01	-0.02	0.21***
	(0.04)	(0.03)	(0.03)	(0.04)	(0.04)	(0.03)	(0.09)	(0.04)	(0.03)	(0.02)	(0.08)
Observations	185	107	78	80	105	135	50	100	85	105	80
Countries	70	38	32	35	49	59	29	49	34	51	40
Hansen Overid (p-value)	0.253	0.458	0.641	0.543	0.591	0.550	0.896	0.581	0.542	0.560	0.651
Hansen Excluding Group (p-value)	0.299	0.336	0.631	0.366	0.474	0.508	0.852	0.533	0.418	0.693	0.538
Hansen Exogenous (p-value)	0.260	0.778	0.469	0.880	0.755	0.521	0.703	0.542	0.760	0.187	0.724

Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1
The Hansen test does not reject the hypothesis of no over-identification and exogeneity of the instruments, thereby validating the results obtained.

Columns (2) and (3) show that income inequality is positive and significant only for richer countries, as stated by the classic theory. These results hold when the subsample is divided in terms of income equality and political stability. For income equality, columns (4) and (5) show that GINI is significant for those countries with higher income equality, which could indicate the existence of a threshold beyond which inequality encourages growth. For PS, columns (8) and (9) show that income inequality is positive and significant for stable (richer) countries, and negative and significant for less stable (poorer) countries, as argued by the political economy approach. When the sample is divided in terms of M2 and INV, income inequality is not significant.

These results support our hypothesis of a positive inequality-growth relationship for richer countries, in accordance with the classic theory, and of a negative relationship for countries with lower income (i.e. politically unstable countries), as predicted by the political economy approach.

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APPENDIX

Variable	Obs.	Mean	Std. Dev.	Min.	Max.
Economic Growth	710	1.71	4.34	-30.26	33.50
Initial Income	770	3120	4879	143	36069
Gini	425	40.37	9.95	19.40	74.33
M2	673	38.44	24.73	1.23	185.71
PI	449	-0.52	0.88	-3.09	1.40
Investment	679	21.57	8.10	2.53	65.93
HK	616	5.44	3.08	0.05	13.16
POP	787	1.88	1.40	-4.64	14.93
OPEN	693	74.58	38.19	0.67	310.58