Quest Journals
Journal of Research in Humanities and Social Science
Volume 3 ~ Issue 6 (2015) pp:37-41
ISSN(Online) : 2321-9467
www.questjournals.org

Research Paper

Sixty years later, is Kuznets still right? Evidence from Sub-Saharan Africa

Olivier Habimana
College of Business and Economics,University of Rwanda
Fellow at Jönköping International Business School, 551 11 Jönköping; Sweden

Received 03 June, 2015; **A**ccepted 15 June, 2015 © The author(s) 2015. Published with open access at**www.questjournals.org**

ABSTRACT:-*Kuznets argued that Inequality first rises in the early stage of development and as the country develops, inequality starts to fall resulting in a famous inverted-U curve known as Kuznets curve. This paperseeks to investigate the validity of the Kuznets curve in Sub-Saharan Africa (SSA) based on a sample of twenty-nine countries for a period of thirty-twoyears starting from 1980. Evidence from the random effects model suggests that inequality as measured by the Gini coefficient is positively and significantly related to the level of development as measured by per capita income. Sub-Saharan Africa is still on the upward segment of the Kuznets curve.*

Keywords:-*Development, inequality, Kuznetscurve, Sub-Saharan Africa.*

I. INTRODUCTION

In his seminal paper, Kuznets (1955) found that inequality was higher in developing countries than in the developed ones. Seven years later, Kuznets extended the study and the sample; his analysis led to the conclusion that inequality is closely related to the stage of development of a country. Inequality first rises in the early stage of development (as measured by per capita income) and as the country develops, inequality starts to fall. The latter findings resulted in the famous inverted-U curve between Gini coefficient and per capita GDP. Since then, the Kuznets curve has been popular in economic literature.

Kuznets defined development process as the move from agriculture to industry. As Barro (2000) points out, the movement from agricultural to industry described by Kuznets can also be represented, nowadays, by a shift from the financially unsophisticated system to the modern financial system, or by a shift from an old technology to recent and more advanced techniques. In this context, technological innovations require a process of familiarization and re-education which, in turn, tends initially to raise inequality, and subsequently as more people take advantage of the new techniques, inequality tends to fall.

Gradstein and Moshe (1997) present a model where, in the early stages of development, a small fraction of the upper income class controls the political process so that a regressive redistributive policy occurs. Then economic growth leads to an expansion of political participation and ultimately a progressive redistributive policy will take place and inequality will be reduced.

Moreover, Barro (2000) finds evidence of a stable Kuznets'inverted-U curve in a panel of countries; inequality increases for per capita GDP less than $1636 and declines thereafter. This result is in line with what Kuznets mentioned in his 1955 publication:at lower stages of development, inequality rises and then falls when economic development reaches a certain level.

On the other hand, Deininger and Squire (1996) find no evidence of the inverted-U Kuznets curve; instead, they find a significant relationship between initial income inequality and subsequent growth. Thus, their main finding is that initial level of income inequality is an important determinant of economic growth.

Two years later, Deininger& Squire (1998) obtain evidence of an aggregate Kuznets relationship in a cross-sectional analysis. However, their results are sensitive to the addition of regional dummies. Adding the dummy for Latin American observations makes the Kuznets curve vanish, suggesting that the cross-sectional result may be affected by middle-income countries of Latin America that are characterized by relatively high inequality. They argue that any differences between their results and those reported in the literature are not due to the data used in the analysis but rather to different approaches followed, time series instead of cross-section. However, after adding a wide variety of cut-off points from a per capita GDP of US$1000 to US$10, 000, the

results offer virtually no support for an increase of inequality at low levels of income and a decrease at higher income levels as suggested by Kuznets' inverted-U relationship. They come up with a conclusion that either the Kuznets curve is too flat to be noticeable in the data and thus unlikely to be of relevance for policy-makers, or is not relevant for developing countries.

Deutsch and Silber (2004) basing on data collected by the International Labour Organization (ILO), instead of the inverted-U shaped, they found the inverted-J curve linking per capita GDP and inequality. The rising section of the curve was found to be mainly the consequence of the increasing share of wages (as originally argued by Kuznets), although the increasing inequality of the distribution of property income played also a role. The declining section of the Kuznets Curve observed during the second phase was the consequence of three factors: the rising inequality of property income and other sources, the decreasing share of entrepreneurial income and the important role played by transfers, an income source negatively correlated with total income.

List and Gallet (1999) analyse data of 71 countries which included both lower-developed and higher-developed countries, over the period 1961-1992. They find that for lower-developed and middle-developed countries, the Kuznets curve is indeed an inverted U-curve. For higher developed countries, however, the relationship between income inequality and income per capita becomes positive again. They finally suggest that the renewed positive relationship might rest on the shift away from a manufacturing base towards a service base in these countries. This result looks consistent with the current reality, where in various countries, even the poor ones, we observe a shift to the service sector, either from agriculture as it is the case for various developing countries or from industry, as far as developed and emerging countries are concerned.

In his research, Oshima (1994) finds the Kuznets curve in developing countries to be more ambiguous. Looking at long-term trends, he concluded that the 'Kuznets relationship' is all, but absent in Asian countries. Deininger& Squire (1998) argue that it was due to large indivisibilities in late 19th century technology, which prevented all, but the richest part of the population from accumulating capital, thus facilitating industrialization only at the cost of growing inequality over time.

These results emphasize how findings are not only sensitive to the data used, but also to the methods applied. Overall, there is supporting evidence that the Kuznets curve is an empirical regularity. This research is a contribution in this regard and aims at testing this regularity in Sub-Saharan Africa. The rest of this paper is organized as follows: section two describes the data sources and the variables. Section three presents the econometric model. Section four discusses the results, and the last section concludes.

II. DATA

The data analysed in this study are from the World Bank's World Development Indicators (WDI) and Worldwide Governance Indicators (WGI). The sample consists of 29 Sub-Saharan African Countries for a period of thirty-two years starting from 1980.

The variables of interest are grouped into four dimensions. The first dimension consists of variables on inequality, which are the Gini coefficient and the income share held by the richest 10% of the population. The second dimension, that measures the level of development, consists of GDP per capita. The third dimension consists of variables on fertility and human capital: Total Fertility rate (number of children per woman aged 15-49); average years of secondary schooling (age 15 and above) and average years of tertiary schooling (age 25 and above). The fourth dimension consists of saving, political stability indicator, trade openness and the share of services in GDP.

III. ECONOMETRIC MODEL

The Kuznets curve has the following specification:

$$\text{Ineq}_{it} = f(\text{Per capita Gdp}_{it},\ \text{Square of Per capita Gdp}_{it}) \quad (1)$$

Where Ineq_{it} is a measure of inequality in country i in year t, and is measured by the Gini coefficient. The function expresses the Kuznets curve; it is quadratic in log (GDP per capita) as originally specified by Kuznets (1955).

The choice is made between two models of panel data regression: random effects model (REM) and fixed effects model (FEM). The difference between the two models is a function of the assumptions made about the error term. The REM assumes that the error term is randomly related to the independent variables or to country-specific effects while the FEM assumes that the relationship between the error term and the independent variables is not random. FEM helps to deal with omitted variable bias while Random effects model enables estimation with lower sample-to-sample variability by partially pooling information across units. (Gelman and Hill, 2007)

Moreover, Random effects models do not involve the estimation of a set of dummy variables, but instead only the mean and standard deviation of the distribution of units; therefore saving degrees of freedom. (Clark and Linzer, 2013)

Furthermore, besides theoretical considerations, this study deals with developing countries whose data are scarce and limited; especially when it comes to panel data. Thus, in the present context, estimating the FE model is not convenient as it would require to include country dummies, therefore reducing the degrees of freedom necessary to estimate the coefficients of interest.

The Hausman test performed on our model fails to reject the null hypothesis that the differences in the coefficients of the RE and FE models are not systematic; therefore a RE model is appropriate.

Moreover, it turns out that the relationship between inequality and per capita GDP in our sample isnot quadratic but linear.

As a result, themodel is then specified as:

$$Ineq_{it} = \beta \log(\text{Per capita GDP})_{it} + \gamma_i X_{it} + \alpha + \mu_i + \varepsilon_{it} \quad (2)$$

Where, $\mu_i$is the between-entity error; ε_{it} is the within-entity error; α is the constant; $X_{it.}$ Other control variables.

IV. RESULTS

Fig. 1 below shows a positive relationship between Gini and per capita GDP. The same figure reveals that there are in fact two groups of countries. Thefirst group, which is the biggest, includes country with a Gini coefficient less than 0.60 and per capita GDP below 650 US dollars. The second group in which we find Botswana, Swaziland and South Africa, is characterized by relatively high per capita GDP and higher inequality.

The gap between South African countries and the rest of SSA is expected to narrow over time. Asit can be observed in Fig.1, countries are following the same North-East path towards high per capita income and high inequality.

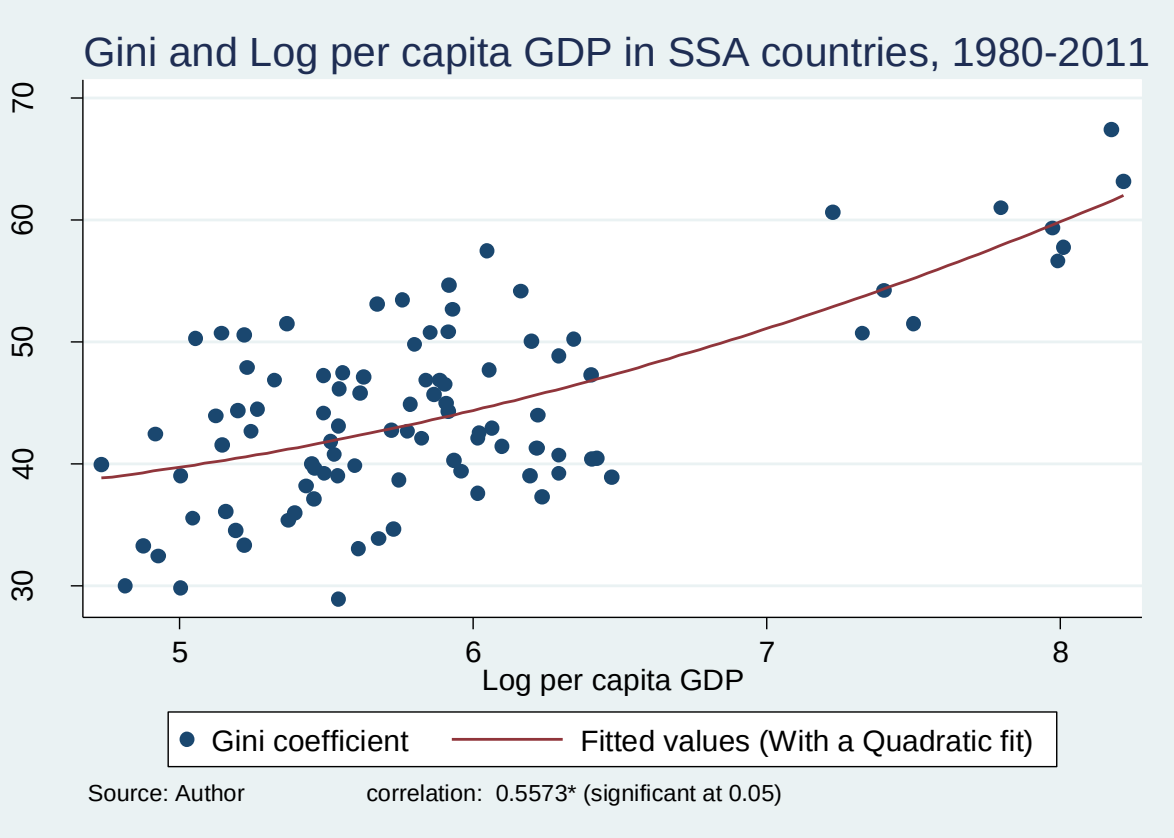

Fig. 1 Gini and per capita GDP in Sub Saharan Africa

To further assess the significance of the Kuznets curve, the following table reports the results of random effects models.

Table 1 Inequality and Per capita GDP in Sub Saharan Africa

	(1)	(2)	(3)
VARIABLES	Gini	Gini	Income Share of the richest 10%
LogpercapitaGDP	6.164***	8.256**	5.869**
Secondary educ.		13.63	12.21
Tertiary educ.		-1.260	-19.17
Fertility		6.811**	4.636
Fertility*Sec. Educ.		-2.518	-2.392
Saving %GDP		0.00597	0.0127
Serv.share of GDP		0.298	0.317
Openness		0.0710	0.0527
Political stab.		-2.172	-1.319
Constant	9.020	-62.00*	-42.38
Observations	114	82	82
R-squared	0.31	0.41	0.45

*** p<0.01, ** p<0.05, * p<0.1

The first column in Table 1reports the results on the relationship between inequality and GDP per capita, and othercontrol variables are added in the second column. In the last column, the share of the 10% richest of the population is the dependent variable instead of the Gini. GDP is measured in constant prices. Education is measured by the average years of schooling in secondary and university in each country. Fertility is measured by the Total Fertility Rate (TFR). An interaction between fertility and secondary education attainment is also added. Other control variables are the national saving as a percentage of GDP; the contribution of the service sector to GDP (this is a proxy to see if the move from agriculture sector to services as an effect of development has any link to inequality as described by Kuznets); openness (sum of imports and exports as percentage of GDP); political stability that measures the likelihood of politically-motivated violence in a country.

The level of development as measured by per capita GDP significantly determines inequality. In the first column the coefficient is 6.16 and is significant at 1% significance level. This coefficient implies that a 1% increase in GDP per capita is associated with an increase of 0.06 in Gini. However, the level of development explains only 31% (see R squared) of the variation in inequality. To check the sensitivity of this result, other control variables are added; the effect of per capita GDP on inequality increases to 8.26, but significance reduces.

The variables included as proxies of human capital have no significant explanatory power for inequality. The coefficients for both average years of secondary and tertiaryeducation are not significant.

Moreover, when the share of the highest 10% in income distribution is taken as a dependent variable, the results obtained are similar to what is obtained using the Gini, though with less magnitude. A 1% increase in per capita GDP is associated with an increase of 0.059in the share held by the highest 10%. This is not surprising as the correlation between the Gini and the share of the highest 10% is almost one and statistically significant. This result is not new; it has been obtained by other researchers, includingBarro(2000). In fact, the increase in inequality in SSA has been driven mainly by the increase in the share of the highest 10% to the detriment of other shares in income distribution.

Furthermore, considering the evolution of income distribution in SSA and the strong correlation between per capita income and the share of income held by the rich, it is worth mentioning that in the presence of high inequality, using per capita income as an indicator of the level of development may be misleading.

V. CONCLUDING REMARKS

The purpose of this paper has been to investigate the relationship between inequality and the level of development in Sub-Saharan Africa, as originally stated by Kuznets (1955). A panel of Twenty nine countries is analysed for a period of thirty-two years. To achieve the objective, a descriptive analysis is presented and three random effects models are estimated. Overall, our findings support Kuznets' hypothesis: at a low stage of development, inequality is positively associated with the level of development as measured by per capita income. SSA is still on the upward segment of the Kuznets curve.

REFERENCES

[1]. Barro, R. (2000).Inequality and Growth in a Panel of Countries, Journal of Economic Growth, 5, pp.5-32.
[2]. Clark, S. and Linzer, D. (2013) Should I Use Fixed or Random Effects? Working Paper 1315, The Society for Political Methodology.
[3]. Deininger, K., & Squire, L. (1996). A new data set measuring income inequality, World Bank Economic Review, 10, pp. 565–591.
[4]. Deininger, K., & Squire, L. (1998). New ways of looking at old issues: inequality and growth. Journal of Development Economics, 57, pp. 259–287.
[5]. Deutsch, J & Silber, J. (2004). Measuring the impact of various income sources on the link between inequality and development: implications for the Kurznets curve, Review of development economics, 8 (1), pp. 110-127.
[6]. Gelman, A. and Hill, J. (2007). Data Analysis Using Regression and Multi-level/Hierarchical Models, Cambridge University Press, 2007.
[7]. Gradstein, M. & Moshe, J. (1997).The Democratization of Political Elites and the Decline in Inequality in Modern Economic Growth: An Integrative Analysis, Paper presented at the Conference on Elites, Minorities and Economic Growth, Bar-Ilan University.
[8]. Kuznets, S. (1955). Economic Growth and Income Inequality, The American Economic Review 45 (1), pp. 1-28.
[9]. List, A. &Gallet, C. (1999). The Kuznets Curve: What Happens After the Inverted-U, Review of Development Economics, 3, pp. 200-206.
[10]. Oshima,T. (1994). Kuznets' Curve and Asian Income Distribution, in Toshiyuki Mizoguchi, et al., eds., Making Economies More Efficient and More Equitable: Factors Determining Income Distribution, New York: Oxford University Press.