European Journal of Business and Management
ISSN 2222-1905 (Paper) ISSN 2222-2839 (Online)
Vol.8, No.6, 2016

Income Inequality and its Impact on Economic Growth: Evidence from Jordan

Ahmad Aref Assaf*
Dean/ Faculty of Economics & Administrative SciencesSchool of Economics, Zarqa University/ Jordan
This article funded by DSR/ Zarqa University

Abstract

The relationship between economic growth and income distribution equity resulting from this growth is differing. , while some believe that the inequality in income distribution contributes primarily to the achievement an increase in economic growth, others argue that the inequality in income distribution leads to reduce economic growth. This study aims to identify the relationship between economic growth and equity in the distribution of income in Jordan. The study uses deductive approach through the development of the assumptions and premises relating to both economic growth represented by GDP as dependent variable, and income inequality represented by the Gini coefficient, in addition to another set of variables that affect the economic growth and related to inequality of income distribution such as: final consumption, capital accumulation, total revenues of the state, number of the population in the state, public spending of the state, as independent variables.

The results of the assessment in the model clear that the final consumption which has a coefficient of (1.268) which is considered to be highly significant, leads to the expansion of economic activity, which in turn leads to higher economic growth, when final consumption increases by one unit, GDP increases by 1.59 at the assessment of the model. The general government consumption which has a coefficient of (0.900) is considered to be highly significant, when government consumption increases by one unit, GDP increases by 0.88 at the assessment of the model. The population variable which had a coefficient of (- 2.210) is considered to be highly significant, when population increases by 1 million, GDP increases by 0.88 at the assessment of the model.

Keywords: inequality in income distribution, Gini coefficient, economic growth, Jordan.

1. Introduction

The relationship between economic growth and income distribution equity resulting from this growth is differing., while some believe that the inequality in income distribution is an incentive for economic growth because high-income groups has a high marginal propensity to save that directs to financing investment; hence, contribute primarily to the achievement an increase in economic growth, which is the view of the classical economists. Others argue that the inequality in income distribution leads to a lack of access to the individuals who make up the majority of the population, which reduces the effective aggregate demand which reduce economic growth and that, is the view of the Keynesians. On the other hand Kuznets, who has devoted his work in the study of economic growth conditions argued that the inequality in income distribution is low in the early stages of the process of economic growth and is set to rise until it reaches the highest rates, and then heading to stabilize, then decline in the advanced stages of Economic growth.

Then, it requires - as Kuznets views - to achieve a high rate of economic growth before the redistribution of income in favour of low-income groups, in contrast to the low start distribution of income, which is a breakdown of poverty. Therefore, the state plays an important role in developing countries, which revealed a lack of improvement in the living standard of its citizens adequately, which alerted to the need for attention to the issue of income distribution and the study of the relationship between economic growth and equity in the distribution of income.

2. Objectives of the study

This study aims to identify the divergence of views in the form of the relationship between economic growth and equity in the distribution of income through the views of some economic thinkers and applied studies in this field, next to test the Kuznets hypothesis in income distribution in Jordan, and its impact on economic growth. On the biases of that Kuznets is the most prominent economists who were interested in studying the subject.

3. Problem of the study

The study problem is the debate about the form of the relationship between economic growth and equitable distribution of income, while some studies have found that the inequality in income distribution is low in the early stages of the process of economic growth, and is set to rise until it reaches the highest rates, and then

heading to stabilize, then decline in the advanced stages of economic growth as posited by Kuznets, other studies have concluded that growth may occur without justice in the distribution of income, and justice in the distribution of income is due to the state policy.

4. Hypothesis of the study

The study assumes that the inequality in income distribution is low in the early stages of economic growth, and is set to rise until it reaches the highest rates, and then heading to stabilize, then decline in the advanced stages of economic growth in Jordan, and as posited by Kuznets, the general behaviour of the variation in the Income distribution in the stages of economic growth takes the inverse of the letter (U). The study also assumes that the lack of inequality in the distribution of income adversely affects the GDP growth; hence, economic growth during the study period.

5. Methodology of the study

The study uses deductive approach through the development of the assumptions and premises relating to both economic growth represented by GDP as dependent variable, and income inequality represented by the Gini coefficient, in addition to another set of variables that affect the economic growth and related to inequality of income distribution such as: final consumption, capital accumulation, total revenues of the state, number of the population in the state, public spending of the state, as independent variables. Inductive Approach also used through the extrapolation of the data for the study variables. Then the statistical method (SPSS) through multiple regression equation used to measure the impact of the independent variables on the dependent variable.

6. Inequality and economic growth

Over the last decades, a large body of theoretical and empirical research attempted to determine whether inequality is good or bad for growth. Theoretical work has provided mechanisms supporting both possibilities, and the large empirical literature attempting to discriminate between these mechanisms has been largely inconclusive. This section provides a brief overview of both theoretical and empirical works, highlighting the main methodological and measurement issues and setting the stage for the new work.

7. Theoretical literature

Alternative theories predict that inequality can affect growth in either a positive or negative direction. Greater inequality might reduce growth if:

1. Greater inequality becomes unacceptable to voters, so they insist on higher taxation and regulation, or no longer trust business, and pro-business policies, all of which may reduce the incentives to invest (this refers to the “endogenous fiscal policy” theory, see Bertola 1993; Alesina and Rodrick 1994; Persson and Tabellini 1994; Bénabou, 1996; Perotti 1996). In extreme cases, inequality may lead to political instability and social unrest, with harmful effects on growth (Alesina and Perotti, 1996; Knack and Keefer, 2000).
2. In presence of financial market imperfections, implying that the ability to invest of different individuals depends on their income or wealth level. If this is the case, poor individuals may not be able to afford worthwhile investments. For example, lower-income households may choose to leave full-time education if they cannot afford the fees, even though the rate of return (to both the individual and society) is high. In turn, under-investment by the poor implies that aggregate output would be lower than in the case of perfect financial markets.
   Interestingly, the idea that higher inequality may result in under-investment in human capital by the poorer segments of society has also spurred a significant amount of research on the consequences of inequality on social mobility and the allocation of talents across occupations (Banerjee and Newman, 1993; Fershtman et al., 1996, Owen and Weil, 1998, Maoz and Moav, 1999, Checchi, et al., 1999, and Hassler et al., 2007).
3. If the adoption of advanced technologies depends on a minimum critical amount of domestic demand. While originating from Murphy et al. (1989) modelling of the first stages of industrial take-off, and therefore initially perceived as tangential to the case of advanced economies, the domestic demand channel has recently been put forward again in, for example, the recent debate on the consequences of rising US inequality for economic performance (Krueger, 2012, Bernstein, 2013).

On the other hand, greater inequality might increase growth if:

1. High inequality provides the incentives to work harder invest and undertake risks to take advantage of high rates of return (Mirrlees, 1971; Lazear and Rosen, 1981). For example, if highly educated people are much more productive, then high differences in rates of return may encourage more people to seek education.
2. Higher inequality fosters aggregate savings, and therefore capital accumulation, because the rich have a lower propensity to consume (Kaldor, 1956; Bourguignon, 1981).

8. Empirical evidence

The large empirical literature attempting to establish the direction in which inequality affects growth is summarized in table (1). Table highlights that there is no consensus on the sign and strength of the relationship; furthermore, few works seek to identify which of the possible theoretical effects is at work. This is partly traceable to the multiple empirical challenges this literature faces, ranging from the poor quality of available data to the limited possibilities of capturing changes in the shape of income distribution and an estimation approach reflecting a lack of time series variation.

Table 1 Recent Empirical Literature Summary

Authors	Sample	Data	Distribution	Measure of inequality	Income inequality data set	Estimation method	Effect of inequality on growth
Al sied Zeinab Tawfiq (2015)	Egypt 1988-2013	Panel	Income	Gini coefficient	Kuznets		Negative effect on growth
Halter, Oechslinand Zweimuller (2014)	90 countries 1966-2005	Panel	Income	Gin coefficient	Deininger and Squire, UNUWIDER	System GMM, First-diff GMM	First-diff GMM: positive link in whole and in sub-samples by income. System GMM: positive in rich and negative in poor countries
Batran, Ahmad (2013)	10 Countries 1980 -2010	Panel	Income	Gini coefficient	Deininger and Squire	System GMM	Negative effect on growth resulting from changes in inequality in any direction
Ostry, Berg And Tsangarides (2014)	90 countries 1960-2010	Panel	(Market and disposable) Income	Gin coefficient	SWIID	System GMM,	Look at both net inequality and redistribution (the difference between market and disposable income inequality). Inequality is estimated to have a negative effect on growth, redistribution is not significant.
Castellò (2010)	102/56 countries 1960-2000	Panel	Income, Human capital	Gin coefficient, Distribution of education by quintiles	UNUWIDER Luxembourg IncomeStudy	System GMM	Income: Negative for the whole sample; Negative for poor and positive for rich countries; Human Capital: Negative for the whole sample; Negative for poor and inconclusive for rich countries
Voitchovsky (2005)	21 (developed Countries) 1975-2000	Panel	Income	Gin coefficient; 90/75 and 50/10 ratios	Luxembourg Income Study	System GMM	Insignificant considering aggregate inequality; Positive at the top of inequality distribution; Negative at the bottom of inequality distribution
Knowles (2005)	40 countries 1960-1990	Crosssection	Income	Gini coefficient	Deininger and Squire	OLS	Negative for the whole sample; Insignificant for high/mid income countries and negative for low-income countries; Insignificant for gross-income and negative for expenditures
Banerjee and Duflo (2003)	45countries 1965-1995	Panel	Income	Gini coefficient	Deininger and Squire	Kennel regressions	Negative effect on growth resulting from changes in inequality in any direction

***Source**: adapted and updated from Cingano, F. (2014), "Trends in Income Inequality and its Impact on Economic Growth", OECD Social, Employment and Migration Working Papers, No. 163, OECD Publishing. http://dx.doi.org/10.1787/5jxrjncwxv6j-en*

For the first hypothesis of the study that is the general behavior of the inequality in income distribution in the stages of economic growth in Jordan takes the inverse of a character (U), and depending on the time series of the rates of GDP growth and Gini coefficient during the time period of the study, and from which emerged from chart number (1), it is clear that the shape of the relationship between them does not take the inverse of a character (U) as assumed by Kuznets Hence, this study shows a non-application of Kuznets cycle in the form of the relationship between GDP in Jordan and the Gini coefficient as a measures of inequality in income distribution.

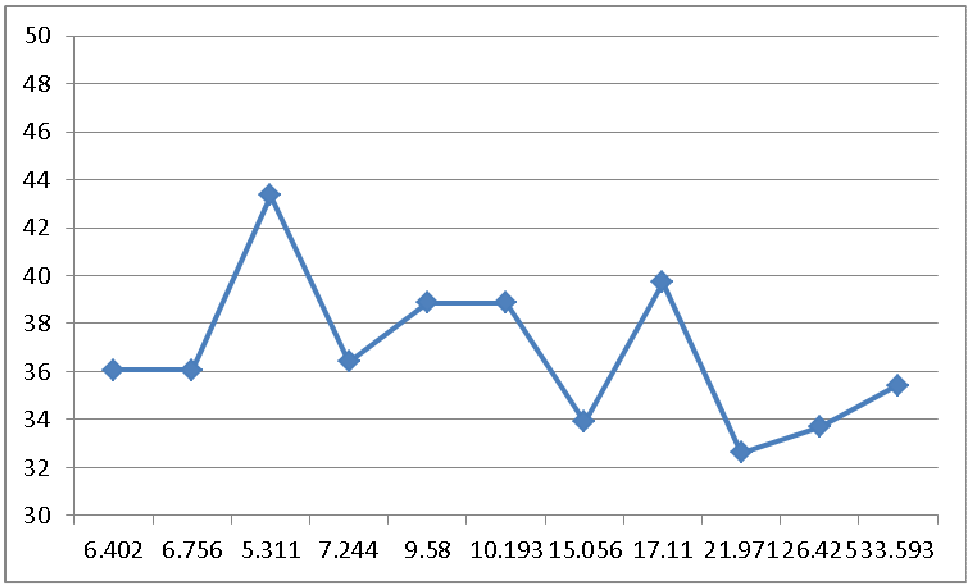

figure 1 Plot for gini index versus GDP

As for the second hypothesis, that is the lack of inequality in income distribution will negatively affect the GDP; and then, economic growth during the study period, a correlation matrix of variables associated with the dependent variable prepared. Then a regression model to determine the impact of variables or the degree of interpretation of the variables in the change that occurs in the dependent variable prepared. In addition, a model drafted to ensures estimate GDP function as the dependent variable, and a range of economic variables to illustrate the effect of the Gini coefficient among these variables in GDP. These variables are: final consumption, capital accumulation, and general revenues of the state and public spending of the state, and the number of population with the Gini coefficient, during that period as independent variables. These variables can be illustrated as follows:

Variables of the Model

Y = GDP

X1 =the Gov. Revenues of the State

X2 = final consumption

X3 = capital accumulation

X4 =Govt. consumption

X5 = the population within the State

X6 =Gini coefficient

The proposed model

$Yt = \beta 0 + \beta 1\ x1 + \beta 2\ x2 + \beta 3\ x3 + \beta 4\ x4 + + \beta 5\ x5 + \beta 6\ x6 + \varepsilon$

9. Method of estimating the model

The model is estimated using multiple linear regression method depending on the method of ordinary least squares (OLS), three mathematical formulas have been experimenting linear, log, and double-log.

After several attempts by statistical software (SPSS) version 18, on that model, we found that the most appropriate formula which gives the best results are logarithmic formula, so as to minimize the problems that typically arise when using variables in absolute image, except the Gini coefficient for its existence the relative image. The appreciation methodology Adopted begin with an extended model, then gradually shortened to the most influential variables in the gross domestic product. This is known as a methodology of «from the general to the specific. » After many attempts to estimate the relationship, the table number (2) represents the correlation matrix:

Table 2 Correlation Coefficients Matrix among the Variables

Variables (+)		Government Revenue (Ln x1)	final consumption (Ln x2)	capital formation (Ln x3)	general gov consumption (Ln x4)	population (Ln x5)	Gini index (Ln x6)	GDP (current prices) (Ln y)
Government Revenue Ln x1	r	1.000	.902**	.877**	.840**	.880**	-.366	.796**
	sig		.000	.001	.002	.001	.299	.006
final consumption Ln x2	r	.902**	1.000	.985**	.986**	.961**	-.388	.953**
	sig	.000		.000	.000	.000	.238	.000
capital formation Ln x3	r	.877**	.985**	1.000	.978**	.921**	-.416	.960**
	sig	.001	.000		.000	.000	.203	.000
general gov.consum Ln x4	r	.840**	.986**	.978**	1.000	.933**	-.493	.982**
	sig	.002	.000	.000		.000	.123	.000
Population Ln x5	r	.880**	.961**	.921**	.933**	1.000	-.266	.847**
	sig	.001	.000	.000	.000		.429	.002
Gini index Ln x6	r	-.366	-.388	-.416	-.493	-.266	1.000	-.630
	sig	.299	.238	.203	.123	.429		.051
GDP (current prices) Ln y	r	.796**	.953**	.960**	.982**	.847**	-.630	1.000
	sig	.006	.000	.000	.000	.002	.051	

(+) all variables were expressed in the natural logarithm form

Table (2) indicates the person correlation values among the independent variables and the correlation values between the independent variables and the dependent variable GDP (current price). The correlation values were high (> 0.70) and statistically significant as all the related probabilities (significant values were < 0.05). It was noted that the Gini index has a negative weak (- 0.266) relationship with population variable while the relationship with the other variable becomes in a negative and moderate degree (0.30 – 0.69). concerning the relationship of the independent variables with the dependent variable (GDP) in the current price it was noticed all the independent variables (except Gini index) had a positive strong relationship with GDP while Gini index had a non-significant (0.051) negative relationship with GDP

In order to investigate the importance of the each independent variable contributing to the dependent variable (GDP) standard multiple linear regressions was performed. The results are included in the table (3)

TABLE 3 Model summaries resulting from multiple regression analysis

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	DW
1	.999[a]	.998	.994	.04783	2.077

Table (3) reflects the values of coefficients of determination (R Square) and the adjusted R Square and the test of serial auto correlation among the residuals of the prediction model predicted values (DW) .the value of R Square(0.998) tell that the six impendent variables can predict the GDP (using the data expressed by the time series 1998 – 2013) with a percentage of 99.8 %. The Durbin –Watson test for serial auto correlation was (2.077) this results suggests an acceptable auto correlation among the residuals as it ranges between (1.50 – 2.50)

TABLE 4 ANOVA test results for model significance

Model		Sum of Squares	DF	Mean Square	F	Sig.
1	Regression	3.493	6	.582	254.476	.000*
	Residual	.007	3	.002		
	Total	3.500	9			

The result of one way ANOVA was (254.476) is considered to be statistically significant as the probability (sig) value was < 0.05. This result tell that the regression model is accepted statistically with all the independent variables are included to predict GDP.

Table 5 Coefficients related to regression model derived

Model		Un standardized Coefficients		Standardized Coefficients	t	Sig.	Co linearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	25.446	3.702		6.874	.006		
	Government Revenue lnx1	-.039	.058	-.053	-.672	.550	.106	9.411
	final consumption lnx2	1.268	.353	1.591	3.588	.037*	.003	300.700
	capital formation lnx3	-.542	.178	-.636	-3.051	.055	.015	66.540
	general govconsum lnx4	.900	.266	.886	3.376	.043*	.009	105.393
	Population lnx5	-2.210	.362	-.888	-6.099	.009*	.031	32.441
	Gini index lnx6	-.191	.333	-.027	-.574	.606	.296	3.378

Table (5) shows the coefficient values of the independent variables being used to predict GDP. Three independent variables were statistically contributing to the prediction of GDP. They are the final consumption which has a coefficient of (1.268) with a probability of (0.037), the general government consumption which has a coefficient of (0.900) with a probability of (0.043) and the population variable which had a coefficient of (-2.210) with a probability of (0.009).

The other three variables (government revenue, capital formation and Gini Index) were not statistically contributing to the prediction of GDP. Out of these results the prediction equation will be:

GDP = 25.446 – 0.039 (government revenue) + 1.268(final consumption) - 0.542 (capital formation) + 0.900(general government consumption) – 2.210 (population) – 0.191 (Gini index).

10. Conclusion

1. The result shows a non-application of Kuznets cycle in the form of the relationship between GDP in Jordan and the Gini coefficient as measures of inequality in income distribution.
2. The results of the assessment in this model clear that the final consumption which has a coefficient of (1.268) which is considered to be highly significant, leads to the expansion of economic activity, which in turn leads to higher economic growth, when final consumption increases by one unit, GDP increases by 1.59 at the assessment of the model. The general government consumption which has a coefficient of (0.900) is considered to be highly significant, when government consumption increases by one unit, GDP increases by 0.88 at the assessment of the model. The population variable which had a coefficient of (- 2.210) is considered to be highly significant, when population increases by 1million, GDP increases by 0.88 at the assessment of the model.
3. The variables government revenue, capital formation and Gini Index were not statistically contributing to the prediction of GDP.
4. The study showed that although the Jordanian economy was growing relatively in high rate during the study period, however, the distribution of income in this period has been uneven, which means that the pattern of economic growth in Jordan did not lead to lower inequality in income distribution over the past 28 years that the study period, where the Gini index ranges between 32.63 - 39.71 points, have been shown no significant effect of inequality in income distribution on GDP.

REFERENCES

Al sied Zeinab Tawfiq (2015), equitable distribution of income and economic growth: the Egyptian case model, *Arab economic research Journal*, issue No. 69.

Alesina, A. and Rodrik, D. (1994) Distributive politics and economic growth. *Quarterly Journal of Economics*, CIX (2): 465-490.

Barro R. and J. Lee (2013) "A new data set of educational attainment in the world, 1950–2010", *Journal of Development Economics*, Volume 104, Pages 184-198

Batran Ahmed Mustafa, (2013), "The relationship between the inequality in income distribution and Economic Growth: An Empirical Study on the period (1980-2010), Master Thesis, Faculty of Economics and Administrative Sciences, *Al-Azhar University, Palestine*.

Bénabou, R. (1996) Inequality and growth. *NBER Working Paper* n° 5658, July.

Benhabib, J. (2003) "The trade-off between inequality and growth," *Annals of Economics and Finance*, Vol. 4(2), pp. 491–507.

Bertola, G. (1993) Factor shares and savings in endogenous growth. *American Economic Review* 83(5): 1184-1198.

Castello-Climent (2010) "Inequality and growth in advanced economies: an empirical investigation," *Journal of Economic Inequality*, Springer, vol. 8(3), pages 293-32

Checchi D., A. Ichino and A. Rustichini(1999), "More equal but less mobile? Education financing and intergenerational mobility in Italy and in the US" *Journal of Public Economics*, 74(3), 351-393.

Cingano, F. (2014), "Trends in Income Inequality and its Impact on Economic Growth", *OECD Social, Employment and Migration Working Papers, No. 163, OECD Publishing*. http://dx.doi.org/10.1787/5jxrjncwxv6j-en

Fershtman, C., K. Murphy and M. Weiss 91996), "Social Status, Education, and Growth," *Journal of Political Economy*, 104(1), 108-32.

Halter D., M. Oechslin and J. Zweimüller (2014). "Inequality and growth: the neglected time dimension," *Journal of Economic Growth*, Volume 19, Issue 1, pp 81-104

Hassler, John, José Rodríguez Mora and Joseph Zeira (2007), "Inequality and Mobility," *Journal of Economic Growth*, 12(3), 235-259.

Kaldor, N. (1955) "Alternative Theories of Distribution," *Review of Economic Studies* 23, 83–100.

Knowles, S. (2005) "Inequality and Economic Growth: The Empirical Relationship Reconsidered in the Light of Comparable Data," *The Journal of Development Studies*, vol. 41(1): 135-159.

Lazear, E.P., and S. Rosen (1981), "Rank-Order Tournaments as Optimum Labor Contracts," *Journal of Political Economy*, Vol. 89(5), pp. 841–64.

Mirrlees, J. (1971) "An Exploration in the Theory of Optimum Income Taxation," *Review of Economic Studies, Wiley Blackwell, Wiley Blackwell*, vol. 38(114), pages 175-208, April

Ostry J., A. Berg and C. Tsangarides (2014) "*Redistribution, Inequality, and Growth*" IMF Staff discussion note, February

Perotti, R. (1996) Growth, income distribution and democracy: what the data say. *Journal of Economic Growth* 1(2): 149-187.

Persson, T. and Tabellini, G. (1994) "Is inequality harmful for growth?" *American Economic Review* 84(3): 600-621.

Voitchovsky (2005) "Does the Profile of Income Inequality Matter for Economic Growth?" *Journal of Economic Growth*, vol. 10(3), pages 273-296, 09.