Impact of Redistribution on Income Inequality and Economic Growth in Pakistan

Faisal Munir[1], Nasir Mehmood[2] and Amir Zeb[3]

Abstract

This study based on the empirical evidence on the impact of redistribution on inequality and growth in Pakistan. After doing a comprehensive literature review and by amplifying results from the empirical data from Pakistan in the period of 1990 to 2013, there is found a negative relationship between inequalities and growth in per capita. Redistribution assumed to be more in the societies where high inequality exists, but if we see in our study there is the stage where inequality is increasing over the last 30 to 40 years, GINI coefficient showed an increasing trend. This story took another root when money supply, trade openness, urbanization and tax collection also used in the model as control variables and tried as instruments for redistribution, and all are effecting growth in a significance and positive manor at the same time redistribution and inequality found negative determinants for per capita income in the 2SLS regression. Main point of our study is that our results have shown that redistribution is not significant measure for reduction in inequality however, over the last 30 years inequality is increasing rapidly and redistribution is also increasing in at low growth rates. And in case of Pakistan redistribution is effecting growth to negative same as inequality; the coefficients for redistribution and inequality are significantly negative. But this may be because of shorter time period of data is been used. In long run may be results come different in future studies.

Keywords: Redistribution, Income inequality, Economic growth.

Introduction

This short study on redistribution, growth and inequality is found from the inspiration from the article by Ostry et al. (2014)[4] and from a speech by our well known economist Christine Lagrade head of IMF as she said while addressing on economic inclusion & financial integrity. “rising income inequality is in the leading stories of today, and its dark shadow is covering about the whole economy of the world, many others would argue in against this that the world should care about the inequality of opportunities not about the inequality of output. The problem behind this the opportunities are also not equal, but I will say money can buy always better quality health and education”

Several dynamics are accountable for the atypical rise in income inequality around the global economy. Technological modifications, globalization and wage compression are some of the much spoken about felons. Recently, Prof Picketty has submitted that inequality is inborn in the Mother Nature of capital. It’s been argued that the share from labor in total national income in developing nations, which simply indicated that the capitalist class is taking big part from total national income.

An interesting statement by Hirschman and Rothschild that inequality is like a heavy traffic jam in a small tunnel in the way to development process and when traffic from one

[1] *M.Phil Economics Scholar, University of Gujrat, Pakistan*
[2] *Lecturer, Government College Sambrial, Punjab, Pakistan*
[3] *M.Phil Economics Scholar, University of Gujrat, Pakistan*
[4] IMF discussion Note based on Redistribution, Inequality and Economic Growth

lane begins to move, it will give hope to have chance for the drivers in other lanes to move forward. But if the movement continues in only one lane and others stay stuck, then the staying drivers will become frustrated and may become dangerous.

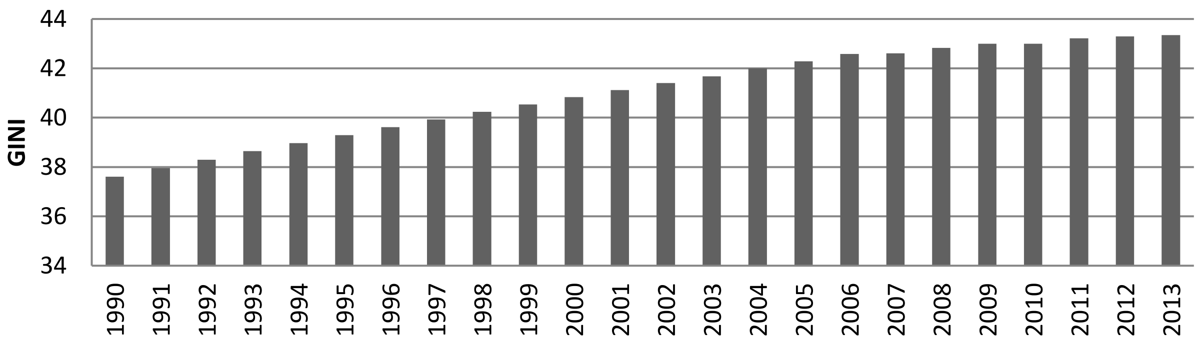
Study Questions

1. Unequal societies are tending into high levels of redistribution?
2. For a mentioned redistribution level, low inequality will boost the growth?
3. Growth and redistribution generally have positive relationship, but may be in some cases redistribution found negatively effecting in growth determination?
4. Whether Kuznets hypothesis for inequality and per capita income is applying in this case study or not?

Economists are now focusing determinately on the empirical and theoretical links between increasing inequality, risks to crises, and sustainable growth, Rajan (2010) highlights how inequality deepened the influence and financial cycle, seeding the crisis while Stiglitz (2012) given the emphases on the starring role of political economy issues (particularly the impact of the elite) in letting financial left-over to balloon into the future crisis. Ostry (2011) expresses that the high equality in economy can create sustainable growth, this study was based on analysis from long term periods and penal countries evidence. The study will also helpful to make consensus on the argument that the inequality can be harmful for growth, health and education levels. This may also cause for reduction in investments, political instability with unstable economic growth. But that equality appears to drive advanced and more maintainable growth does not, in itself, provision exertions to redistribute. In specific, inequality may obstruct growth at least in part for the reason that it calls forward exertions to redistribute over and done with the fiscal structure, efforts that themselves may dent growth. In such a condition, even if inequality is evil for growth, transfers and taxes may be specifically the incorrect remedy. And literature on this notch rests controversial, the impression of a tradeoff among redistribution & growth trimly implanted in policymaker's consciousness. The adverse effect of redistributive policies is certainly the fundamental theme tune of Okun (1975) prominent book on the tradeoffs among effectiveness and equity and on the efficiency "leaks" that efforts to decrease inequality beget.

In case of Pakistan there is a big phenomenon for regional inequality, studies on inequality in Pakistan given results that the inequalities between the districts is higher than inequality within district. The chief elite have favored certain districts over the others and this inclination of regional preferentialism is still unending.

Figure No.1: Inequality Trend



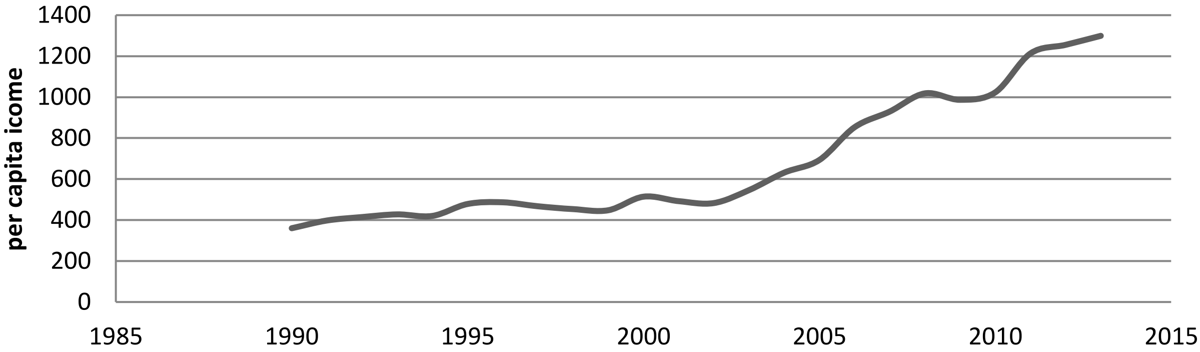
Sources Jamal (2006) and World Bank

Barro (2000) made a study on panel data and tested the Kuznets curve[5] on that data,

[5] Kuznets curve suggested Inverted U shaped relationship between Per capita Income and Inequality

and if we see same in case of Pakistan the relationship between income inequality and per capita income is showing the same trend mentioned in the Kuznets curve for inequality and poverty. Other trends are showing the time series trend in the simple chart for inequality index and for per capita income, as Pakistan is well known developing country by having at 145th ranked in human development and at 128th in gender inequality index ranking from 160 countries in 2014 human development report, so there is same type of initial stage is showing inequality increasing over the time, by having some ups and downs in growth per capita, but per capita is increasing sharper than inequality.

Figure No.2: Per capita trend



Source : World Bank

Review of Literature

Literature on inequality and growth is found from 1950 to 2014 but most of the studies found in the 1990's. Most of the studies have used panel data for analysis and some have cross country comparisons and some have time series data. Relationship between growth in per capita income and inequality are found may be positive in case of developing countries where with increase in per capita income and with industrialization, globalization and technological advancements inequality increasing as mentioned in the Kuznets's hypothesis for inequality and per capita income. Some studies are given the concept about redistribution in income and market to check its impact on inequality and growth which are as follows.

Ostry et al. (2014) estimated the relationship between growth rate of per capita GDP, inequality and redistribution they find that there is a negative relationship between redistribution and inequality but with growth the inequality have short term impact with growth. Estimation are done through GMM on panel data, they found that more unequal societies are more encouraged to redistribute. And redistribution comes and generated throw growth.

Dahlbya and Ferede (2013) estimated the same concept that redistribution is more required where inequality increasing with growth, this study was based on cross sectional data from US and Canadian states, where redistribution found the most effecting indicator for reduction in inequality. Results were presented in very simple technique, linear regression model and 2SLS were used to present results in a systematic way.

Solt (2009) analyzed the finest effort so far to discourse these problems, merging evidence from existing surveys to deduce comparable series of the Gini index for net income and market gross inequality for as various countries for possible time periods. He accumulates measures for inequality from existing surveys, creating a judgment about when the excellence of the survey permits annexation in the dataset. Difference between gross and net inequality is used for the calculation of redistribution. That result was the best effort at that time. Showed a harmfully effect by inequality on growth and redistribution is an act for reduction in inequality.

Knowles (2001) estimated the empirical relationship between inequality and growth by using penal data and econometric technique GMM by using annual data for the period of 1960 to 1990. The study argues that there is significantly negative correlation is present between growth and inequality. Some other literature which is used in the concept building for this study and for making the theoretical background is mentioned bellow.

Table 1: Econometric studies review

Key studies	**Data, technique**	**Variables**	**Concluding remarks**
Ostry et al. (2014)	Whole data set of WDI and OECD treated in medium and long term effects through GMM	Per capita income were treated as dependent while redistribution, inequality, population, investment, openness and some others are used as independent.	Not significant effect direct from inequality to growth but inequality is affected through redistribution. And inequality can't be neglected while growing alone per capita GDP
Dahlbya and Ferede (2013)	Cross sectional Penal data from Canadian and US states and applied OLS and 2SLS	Real per capita GDP growth is treated as dependent and Gini from total, market and disposable income, debt, tax, population, investment and some other were treated as independent.	Recovering from inequality through redistribution can foster growth and relationship is statistically significant between three measures of inequality and growth.
Dalgaard et all. (2005)	Penal data from 1977 to 1999 and GMM is applied.	Dependent: growth rate of GDP and independent: tax on income and property, employment, collective arrangements and security laws	Concluded that there is positive significant relationship between redistribution, tax and growth. Which will leads to reduce inequality
Li & Zou (2002)	Cross country data from 1950 to 1992, and OLS, instrumental 2SLS applied	Dependent: real per capita GDP growth and Gini index and independent: inflation, education, population, urbanization and openness	Inflation effecting negative on income distribution, reduce income for the poor and reduce the growth of per capita
Knowles (2001)	Penal data set used from the period of	Dependent: growth rate of per capita	Concluded that there is negative and

	1960 to 1990 and GMM applied.	GDP and independent: education, per capita income, investment and inequality	significant relationship between growth and inequality
Barro (2000)	Penal data from 1965 to 1995, penal data regression is applied with 10 years periods	Dependent: per capita GDP and investment and independent: rule of law, democracy, education and inflation	Inequality encourage growth in richer sectors and significant application of inequality growth Kuznets's curve is present in the data
Heyse (1996)	Penal data from developing countries from 1960 to 1990 and fixed effect is found in the model	Dependent: Real per capita GDP and independent: education, investment and Gini index.	Positive relationship is found in specific developing countries. One percent increase

Materials and Methods

Theoretical Relationship between Redistribution, Inequality and Economic Growth

Does redistribution and income inequality have emotional impact a country's growth? If so, why and how? Theories about the association between redistribution, inequality and growth are plentiful and wide-ranging; economists have concentrated most of their consideration on the following instrumental mechanisms: imperfections in capital market, policy reactions to inequality, savings proportions and civil discord.

Low income families and individuals having low wealth can't enhance productivity and investment, specifically to enhance human capital by investing in education and financing training programs. Since Non-rich cannot provide security for taking loans, and at the same time personal insolvency laws also making this difficult for the financial institutes for collecting bad loans. So they are unable to offer low interest loans that may not be feasible for non-rich. Informational constraints legal constrains which are preventive for private financial institutes from investing in finance to non-rich, which boost their income, increase their lifetime and increase their output; this would give rise to market failure which is called market defectiveness. So highly unequal distribution of income among the peoples which is increasing the gap between rich to non-rich, the financing to non-rich is creating low investment opportunities because of restrictions by legislations.

Economies of the mainstream in past decades show slightly different situation. The belief is that well-operative markets can assure efficiency; then again the consequence may not essentially be a fair one. In the words of Arthur Okun: "The trade-off between equity and efficiency is our biggest socio-economic trade-off, we can't have our cake of market efficiency and share it equally."

On the other hand political and social unrests increasing disincentives to save, work and to invest through high indirect taxes to compensate the deficiencies in taxation system. Some models have described that cash transfers are more effective than redistribution by taxes, because this can more effective to reduction inequality. While in case of democratic economies redistribution may increase the pressure on growth to become lower in the initial stages of development. This effects the capitalist class as this view is against the W. Lewis who argues that the developing economies should transfer their accumulated capital to a specific capitalist elite class so they can make more beneficial in the process of development in the country to increase in the saving and investment rates.

This theoretical frame work is showing two way effects from redistribution on growth direct and indirect through inequality. This is derived from the model used by Ostry et al.. (2014) some indicators and proxies have changed and some new instruments have added which were used in other studies like Dahlbya & Ferede (2013) have used this with some different indicators for redistribution and used 2SLS for country individual analysis.

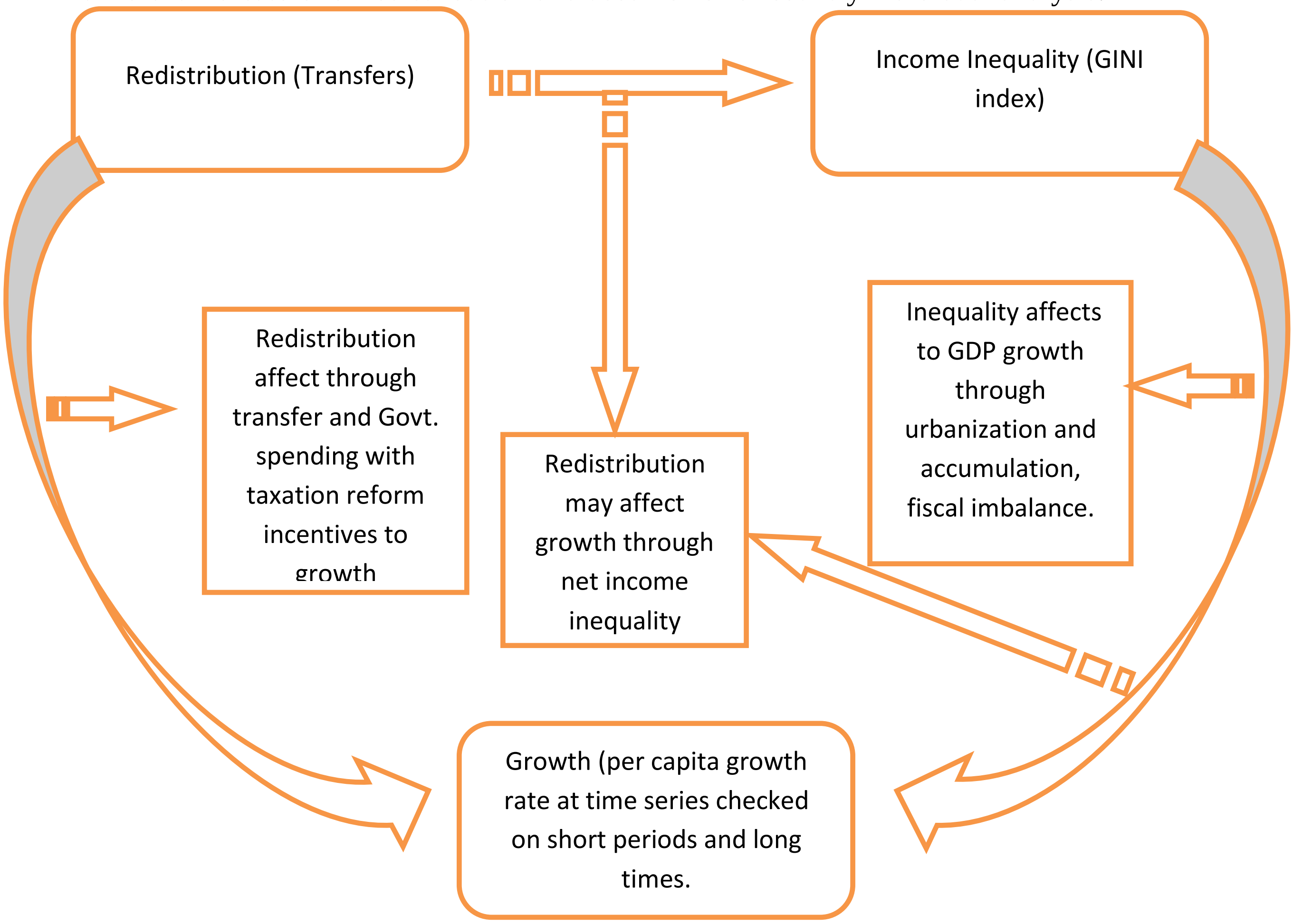


Figure Source: Ostry rt al. (2013) and Author's own Work

Methodology

Model is created with help of up mentioned literature particularly Dahlbya and Ferede (2013) and Ostry et al. (2014). Variable combination is selected according to the significance in the previous studies. We have built up a simultaneous equation modal

$$PCI = \beta_0 + \beta_1 RD + \beta_2 INEQ + \beta_3 MS + \beta_4 TO + \beta_5 POP + \beta_6 URB + \beta_7 GE + \mu$$
$$INEQ = \beta_0 + \beta_1 PCI + \beta_2 RD + \mu$$

Table 2: Variables description

Variable	Description
PCI	Per capita income
RD	Redistribution (total of all taxes to GDP)
INEQ	inequality (GINI index)
TO	Trade (% of GDP). Included as a proxy for openness.
MS	Money Supply (M2 to GDP)

URB	Urban population (%of total population)
POP	Population growth rate

There were some issues in data collection so by the reason of availability problem the data is taken from the period of 1990 to 2013. Data is taken from the world development indicators and Pakistan's economic survey. Redistribution and inequality is being tested in a simultaneous equation model, so the Hausman-Wu test is used for checking endogeniety and instrumental relevance and instrumental regression and 2SLS applied

Table 3: Summary Statistics

Variable	Observations	Mean	St. Deviation	Minimum	Maximum
Per capita Income	24	678.9127	305.7753	360.1594	1299.119
Inequality	24	41.01	1.8654	37.602	43.3451
Redistribution	24	11.163	1.6855	8.7470	13.8154
Money Supply	24	43.45	3.5258	37.4758	49.186
Population	24	2.1829	0.4286	1.65	2.9464
Urbanization	24	33.5957	1.9137	30.576	36.8828
Government expenditures	24	107237	1.9747	7.7808	15.1367
Democracy	24	2.1462	1.3035	0	5
Trade Openness	24	34.075	2.9245	28.1296	38.9095

Results and Discussion

In Redistribution analysis it is important to estimate beyond the simple regression correlation. There is much else to check the dynamics for growth. As we know our variables of interest are interrelated each other. Thus it's been needed to see the relationship clutch up when both redistribution and inequality included simultaneously and with other inclusion of some strong controls. There are some complications in our case that inequality and redistribution may not affect directly to growth but can affect in other ways, by trade openness, money supply, urbanization, and human development also. So the controls are ma also be interrelated Pakistan.

Redistribution is found significance in the 2SLS model where inequality, money supply, population growth, urbanization and trade openness used exogenous variables as instruments for redistribution. Redistribution in our case where we have shorter period of data is found negative impacting at the same time income inequality is also have negative and significance impact to per capita income. Overall model is good fit as f test value is 219.19 and R square is high. In pervious literature on redistribution and inequality with relation to per capita growth has shown that there is a negative relation initial level and may become positive in the long run. But inequality is always found negative in the long run but studies in the developing countries are shown some positive relations with inequality and per capita GDP growth. The situation in Pakistan is same as other developing countries but the growth in the per capita income is more diversified and fluctuated. But data found for inequality form world bank and economic survey with some intra and extrapolations, its showing that its stable in increasing over the time so this is impacting negatively to per capita income. Answers to our study questions are for the first statement the more unequal societies are tend to redistribute more in case of Pakistan redistribution and unbalanced and inequality is increasing over the time. Redistribution is not according to the required reduction in inequality. Second answer is according to the statement that redistribution is effecting negatively to growth. Third answer for low inequality will boost growth, but their evidence that inequality is increasing at the same rate and growth in per capita is fluctuated in the first decade of the data and stable in the last decade due to political rest. 4rth evidence for Kuznets hypothesis is applicable for developing country in case of Pakistan. There is a relationship between income inequality and per capita income.

Table No. 4: Dependent variable Per capita GDP (2SLS instrumental variables regression Results)

Independent variables	Coefficients (β's)	Standard error	t-ratio	p-value
Inequality	-39.26588	81.40706	-0.48	0.635
Money Supply	-13.624	5.906996	-2,31	0.033
Population Growth	133.9902	103.3966	1.30	0.211
Urbanization	234.794	68.3166	3.44	0.003
Trade openness	28.73331	7.082083	4.06	0.001
constant	-6278.367	1484.301	-4.23	0.001

R-squared = 0.9695
F value = 113.68
Instrumented = INEQ
Instruments = RD, MS, POP, URB, TO

Redistribution is found significance in the 2SLS model where inequality, money supply, population growth, urbanization and trade openness used exogenous variables as instruments for redistribution. Redistribution in our case where we have shorter period of data is found negative impacting at the same time income inequality is also have negative and significance impact to per capita income. Overall model is good fit as f test value is 219.19 and R square is high. In pervious literature on redistribution and inequality with relation to per capita growth has shown that there is a negative relation initial level and may become positive in the long run. But inequality is always found negative in the long run but studies in the developing countries are shown some positive relations with inequality and per capita GDP growth. The situation in Pakistan is same as other developing countries but the growth in the per capita income is more diversified and fluctuated. But data found for inequality form world bank and economic survey with some intra and extrapolations, its showing that its stable in increasing over the time so this is impacting negatively to per capita income. Answers to our study questions are for the first statement the more unequal societies are tend to redistribute more in case of Pakistan redistribution and unbalanced and inequality is increasing over the time. Redistribution is not according to the required reduction in inequality. Second answer is according to the statement that redistribution is effecting negatively to growth. Third answer for low inequality will boost growth, but their evidence that inequality is increasing at the same rate and growth in per capita is fluctuated in the first decade of the data and stable in the last decade due to political rest. 4rth evidence for Kuznets hypothesis is applicable for developing country in case of Pakistan. There is a relationship between income inequality and per capita income.

Table N0. 5: Dependent variable Per capita GDP (2SLS instrumental variables regression Results)

Independent variables	Coefficients (β's)	Standard error	t-ratio	p-value
Redistribution	-3.90493	17.36425	-2.01	0.060
Population growth	172.1729	86.43524	1.99	0.062
Urbanization	402.0054	29.31205	13.71	0.000
Inequality	-235.8337	34.80275	-6.78	0.000
Trade openness	18.83255	4.050098	4.65	0.000
constant	-3782.501	887.4479	-4.26	0.000

R-squared = 0.9839
F value = 219.19
Instrumented = Redistribution
Instruments = INEQ, MS, POP, URB, TO

Conclusion

This study is carried out for the purpose to take a look on the relationship between redistribution, inequality and per capita GDP; it's the individual country analysis taking case of Pakistan. The main focus was to check the impact of inequality to growth and impact of redistribution to inequality and to growth. Conclusion has some dynamics in multiple ways. First inequality is found the most deliberate determinant for per capita income differential and this shows that in case of Pakistan there is a negative impact of inequality on per capita income in the 1990's and after that there is increasing trends in per capita income alongside inequality was also increasing at the same pace. So the conclusion made by Berg & Ostry (2014) is holding back up to this study that the inequality showed robust determinant for growth. Secondly redistribution is found also growth declining effect in the shorter time period where the coefficient for redistribution is negative and have significance t ratio. The financial market inefficiency and fiscal imbalances are also cased the factor for the negative effect from redistribution to growth, because tax collection, urbanization, trade openness and money supply were used as instruments for redistribution. And the main conclusion is that in case of Pakistan we are unable to say that the redistribution can affect the level of inequality significantly. Inequality is increasing sharply with lots of fiscal and social measures already taken by the government, and our population growth and urbanization (growth in urban population) is a big cause for the neglecting of some part of the country to encourage those in investment which already are in the line. This study leaves a lot of study questions for those who are doing research on redistribution and in equality and saying that more redistribution can control the evils of inequality. Because our statement is that in what respect we redistribute to eradicate inequality.

References

- Balakrishnan, R., Steinberg, C., & Syed, M. (2013). The Elusive Quest for Inclusive Growth: Growth, Poverty, and Inequality in Asia. *International Monetary Fund Working Paper*, *13/52*.
- Barro, J. R. (2000). Inequality and Growth in a Panel of Countries. *Journal of Economic Growth*, *5*, 5–32.

- Berg, A., & Ostry, L. D. (2011). Inequality and Unsustainable Growth: Two Sides of the Same 28 Coin. *International Monetary Fund Staff Discussion Note 11/08*.
- Berg, A., Ostry, L. D., & Zettelmeye, J. (2012). What Makes Growth Sustained. *Journal of Development Economics, 98*(2), 149-66.
- Dagdeviren, H., Hoeven, H. V., & Weeks, J. (2000). Redistribution Matters: Growth for Poverty Reduction. *International Labour Organisation*.
- Dahlby, B., & Ferede, E. (2013). Income Inequality, Redistribution and Economic Growth. *The School of Public Policy, 6*(25).
- Dalgaard, C. J., Hansen, H., & Larsen, T. (2005, November). Income Skewness, Redistribution and Growth: A Reconciliation.
- Deininger, K., & Olinto, P. (2000). Asset distribution, inequality, and growth. *World Bank*.
- Heyse, A. (2004). Income Distribution and Economic Growth in Developing Countries: An Empirical Abalysis.
- Jamal, H. (2006). Does Inequality Matter for Poverty Reduction? Evidence from Pakistan’s Poverty Trends. *The Pakistan Development Review, 45*(3), 439–459.
- Knowles, S. (2001). Inequality and Economic Growth: The Empirical Relationship Reconsidered in the Light of Comparable Data. *Centre for Research in Economic Development and International Trade, University of Nottingham, 01/03*.
- Li, H., & Zou, H. (2002). Inflation, Growth, and Income Distribution: A Cross-Country Study. *Annals of Economics and Finance, 3*, 85–101.
- Ostry, J. D., Berg, A., & Tsangarides, C. G. (2014). Redistribution, Inequality, and Growth. *International Monetary Fund Staf Discussion Note, 12/02*.
- Rajan, R. (2010). Fault Lines: How Hidden Fractures Still Threaten the World Economy. *Princeton University Press working Paper series*.
- Solt, F. (2009). Standardizing the World Income Inequality Database. *Social Science Quarterly, 90*(2), 231-42.
- Stiglitz, J. (2012). The Price of Inequality: How Today's Divided Society Endangers Our Future. *W. W Norton & Copmany Report*.
- Zweimüller, J. (2000). Inequality, Redistribution and Economic Growth. *Institute for Empirical Research in Economics University of Zurich, 27*(31), 1-20.