INCOME INEQUALITY AND REDISTRIBUTION OF INCOME IN THE ERA OF GLOBALIZATION

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<u>ABSTRACT</u>

In this study we have explored globalization-welfare relationship for the economy of Pakistan. We analyze the relationship between trade openness, social expenditure (expenditure on education, health and social safety nets) and income distribution by using data on Gini-coefficient to represent income inequality in the country, government expenditure on education, health and safety nets to represent redistribution of income within the country and openness (sum of export and import as ratio of GDP) to represent globalization or trade liberalization. Moreover, study also explores the effect of population growth, urbanization and economic development on income inequality. The data over the period of 1975 to 2012 is used to empirically investigate globalization-welfare relationship. Our study concludes that globalization though may promote economic development but it does not affect income distribution in Pakistan. The positive and significant results for the social spending further claim that re-distributive policy of Government is not supportive in reducing the gap between rich and poor.

Key words: Income inequality, trade openness, government social spending and ARDL

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1.   INTRODUCTION

Literature on nexus between globalization and government spending is impressive [Atif et.al. (2012); Rudra (2004); Rodrik (1997) and McGuire (1999)]. The literature is growing rapidly. Developing countries' analysts have explored the positive effects of welfare programs [see for example Mesa-Lago (1994); Huber (1996); Weyland (1996); Mcguire (1999)]. Unfortunately, Pakistan lack empirical evidence on the distributional impact of government social spending. Although Government of Pakistan has taken number of initiatives to have some form of redistribution policies, however, Pakistan continues to have high levels of inequality as compared to other Least Developed Countries that are open to trade. This situation is alarming. This paper therefore tries to identify the nexus between trade and social spending for the period 1975-2012.

International evidence suggests that government social spending influence poverty and distribution of income. Pakistan's low level achievement in terms of reducing inequality, given the likely adverse economic impact of trade openness, point towards the fact that government policy has an important role to play in near future. Thus exploring the effect of social spending improve the income distribution in an era of globalization is necessary for the concerned policy makers.

Literature on globalization – social spending provide mixed result [see for example Quinn (1997); Rodrik (1997); Garrett (2001); Kaufman and Segura-Ubiergo (2001); Rudra and Haggard (2001) and Rudra (2002)]. Rodrik (1997) and Quinn (1997) have shown that openness have positive impact on welfare. However, Garrett (1998 and 2001); Rudra and Haggard

(2001) stress that increasing the trade will result in unequal distribution of income only when government does not provide support to the effective population through social spending.

Literature exploring such effects provides ambiguous evidence. For example, Dollar and Kray (2002) found out that openness affect income inequality while Lundberg and Squire (2003) and Barro (2000) predict no impact. Furthermore, Edwards (1997), Higgins and Williamson (1999), and Calderón and Chong (2001) using the data of developed countries, found no support for the argument. Barro (2000) and Ravallion (2001) point out that openness affects inequality, but developed countries appeared to experience decreased inequality with openness.

Most recently, Atif et.al. (2012) tested the causal effect of globalization on income inequality for 68 developing countries and found that developed countries show support for the hypothesis. Jaumotte et.al. (2013) assessed the impact of the financial globalization and trade openness on income inequality, the former support the hypothesis while the latter does not. Whereas Faustino and Vali (2011) showed that trade openness among OECD countries reduce income inequality but FDI causes inequality.

Moreover, literature also hypothesized that when a country opens up to trade its factor endowments effect inequality. However, very few researchers found support for this hypothesis. For example, Dollar and Kray (2002) found no effect but Spilimbergo et al (1999) and Fischer (2001) point put that income inequality is associated factor endowments. They argue that countries that are more open to trade and are relatively skill abundant have high inequality, while countries more open to trade but are capital abundant have lower inequality.

Keeping in view the findings of earlier studies, we have developed a simple model to investigate the relationship among openness, government social spending and income inequality. In formulating the model we also consider three more factors; economic development, population and urbanization. These factors are included in the model as they are

said to be important determinant of inequality. Using the ARDL approach, we analyze the short run and long run effects of openness on income inequality.

The article proceeds as follows. Second section provide the model specification, third section discuss the estimation technique and present the data explanation. The fourth section reports the results. Final section provides overall conclusions.

2. MODEL ESTIMATION TECHNIQUE AND DATA EMPLOYED

2.1 Model

To test the relationship among income inequality, provision of social service (income redistribution) and trade openness (globalization), we first develop relationship between income inequality and globalization.

$$GINI = f\ (OP) \tag{1}$$

Here, 'GINI' stands for Gini-coefficient; it is a standard measure of income inequality. Higher Gini represent higher level of inequality. 'OP' in equation (1) stands for trade openness. Openness effects inequality through different channels.

Anderson (2005) identifies some channels through which increased trade openness could affect income inequality. First is relative factor returns - when a country opens to trade the demand for its abundant factors increases, this increase the returns of that factor. Secondly, if openness benefits the poor by increasing their income, it would increase asset accumulating and thus investment. In the long run this will contribute in reducing inequality. Thirdly, openness may expand employment and wages in selected regions, which in turn would affect income distribution. Finally, Anderson (2005) suggests that countries more open to trade implement redistribution policies more effectively as particular group in a society will suffer a loss of income due to trade.

Previous research has documented that increased international trade introduce new sources of economic volatility into domestic political economies, fostering market uncertainty and economic insecurity. State sponsored social assistance is supposed to mitigate the potentially disruptive effects of integration by compensating the losers of economic openness. Hence, if people can easily access social services (redistribution of income) it will help in reducing income inequality.

$$\text{GINI} = f\,(\text{OP, LSS}) \qquad\qquad (2)$$

Where, SS represents provision of social service and LSS is the log of social services. Government commitment for the provision of social service is captured here by the government expenditure on health, education and social safety nets. If this expenditure is redistributive, then LSS will be negative and significant or vice versa.

In exploring the nexus between globalization and welfare, one cannot ignore other factors that are considered as important determinant of income inequality. Among such factors, economic development, population and urbanization are important one [Kuznets (1955); Crenshaw (1992); Burkhart (1997); Sheahan and Iglesias (1998); Boschi (1987); Vanhanen (1997)].

First, economic development, considering Kuznets (1955) argument study expects negative and significant relationship between economic development and income inequality. Kuznets hypothesizes an inverse U-shaped (means, non-linear relation) relationship between development and inequality. According to the theory inequality in the economy first increases but as countries develop it begins to decrease. Hence Per-capita GDP variable is included in the model as representing level of economic development. To incorporate the non-linearity per-capita GDP variable is squared.

$$\text{GINI} = f\,(\text{OP, LSS, PGDP, PGDP}^2) \qquad\qquad (3)$$

Further to this, population growth is also hypothesis to have an inverse relationship with inequality. The reason is that growth in population increase burden on the country's economic

resources and therefore on the share of income among the population. Thus including population growth our model become:

$$\text{GINI}=f \text{ (OP, LSS, PGDP, PGDP}^2\text{, POP)} \qquad (4)$$

Where, POP represent population growth rate.

Finally, urbanization, urbanization also effect inequality. Growth in the urban population leads to more employment opportunities at the same time it increases the social ills hence its effect on income inequality is ambiguous.

$$\text{GINI} = f \text{ (OP, LSS, PGDP, PGDP}^2\text{, POP, UB)} \qquad (5)$$

UB in equation 5 is the growth in urban population.

To test the relationship among the variables included in equation (5) we will estimate the following baseline equation:

$$GINI_t = \alpha_0 + \beta_1\,GINI_t + \beta_2 OP_t + \beta_3 LSS_t + \beta_4 PGDP_t + \beta_5 PGDP^2{}_t + \beta_6 POP_t +$$

$$\beta_7 UB_t + \mu_t \qquad (6)$$

Where, subscript 't' is time period.

2.2. The Data

For empirical estimation, this study employed the data on Gini coefficient (GINI), representing the income inequality (income distribution). The interpolated series is constructed from the UN-WIDER dataset. A quadratic curve was fitted on the actual observations by regressing log of poverty measure (or log of Gini Coefficient) on time and time square variables [see Haroon, (2006) for more detail].SS represents provision of social service which is constructed by adding government spending on Health, Education and Social safety nets. The data for SS is taken out from Federal budget, Government of Pakistan & 50 years of Pakistan. Economic development, proxied by per capita GDP (PGDP), population growth (POP), urbanization (UB), growth in urban population, and openness (OP), import plus export as percent of GDP, a common

measure of globalization, taken from World Development Indicator (WDI, 2013). Analysis is performed by using the annual data spanning the period from 1975 to 2012.

3. EMPIRICAL FRAMEWORK

3.1. Testing Unit Root

The test of unit root determines the order of integration of a time series. According to Engle and Granger (1987), a non-stationary series will be integrated of order d if it achieves stationary after differentiated d. times. This notion is usually written as Xt ~I (d). Hence, all the variables are tested for the order of integration using the Augmented Dickey-Fuller (ADF) test. The ADF test is calculated with intercept and trend with a null hypothesis of non-stationarity against an alternative of stationarity. ADF test is based on the following form of equation:

$$\Delta Y_t = \beta_1 + \beta_2 t + \beta Y_{t-1} + \alpha_i \sum_{i=1}^{m} \Delta Y_{t-i} + \varepsilon_t$$

3.2. Autoregressive Distributed Lag (ARDL) Approach

In this study, the long- and short-run relationships among Pakistan's income inequality (GINI), globalization (Openness) and social services are estimated using ARDL approach. According to Pesaran et.al., (2001) ARDL has many advantages over simple cointagration test. First, it can be applied regardless of the stationary properties of the variables and allows for long-run procedures. More specifically ARDL can be applied independently whether the series are I(0) or I(1). Second, ARDL model takes sufficient numbers of lags and lastly, ARDL derive error correction model (ECM) without losing long run elasticities. The ARDL modeling can be written as follows:

$$\Delta GINI_t = \alpha_0 + \sum_{i=1}^{n} \alpha_{1i} \Delta GINI_{t-1} + \sum_{l=0}^{n} \alpha_{2i} \Delta OP_{t-i} + \sum_{m=0}^{n} \alpha_{3i} \Delta LSS_{t-i} + \sum_{n=0}^{n} \alpha_{4i} \Delta PGDP_{t-i}$$
$$+ \sum_{p=0}^{n} \alpha_{5i} \Delta PGDP^2{}_{t-i} + \sum_{q=0}^{n} \alpha_{6i} \Delta POP_{t-i} + \sum_{r=0}^{n} \alpha_{7i} \Delta UB_{t-i} + \beta_1 GINI_{t-1}$$
$$+ \beta_2 OP_{t-i} + \beta_3 LSS_{t-i} + \beta_4 PGDP_{t-i} + \beta_5 PGDP^2{}_{t-i} + \beta_6 POP_{t-i} + \beta_7 UB_{t-i}$$
$$+ \mu_t$$

Where,

Δ denotes the first difference operator,

α_0 is the drift component,

μ_t is the usual white noise residuals.

$\beta_1 - \beta_7$ are the long-run coefficients while $\alpha_1 - \alpha_7$ represent the short-run elasticities of the model.

The presence of long-run relationships among the GINI, OP, LSS, PGDP, PGDP2, POP, UB, is tested using the Bound Test approach. The test uses F-statistics. The null hypothesis is no cointegration among the variables against the alternative of presence of cointegration among the variables. This can be written as:

Ho: $\beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = \beta_6 = \beta_7 = 0$

i.e., there is no cointegration among the variables.

Ha : $\beta_1 \neq \beta_2 \neq \beta_3 \neq \beta_4 \neq \beta_5 \neq \beta_6 \neq \beta_7 \neq 0$

i.e., there is cointegration among the variables.

This can also be denoted as follows:

F_{GINI} (GINI │ OP, LSS, PGDP, PGDP^2, POP, UB).

Critical values are given by Pesaran et al. (2001) for the cointegration test. The lower critical bound assumes all the variables are I(0) meaning that there is no cointegration relationship among the variables. The upper bound assumes that all the variables are I(1) meaning that there is cointegration among the variables. When the computed F-statistic is greater than the upper

bound critical value, then the H_0 is rejected. If the F-statistic is below the lower bound critical value, then the H_0 cannot be rejected. When the computed F-statistics falls between the lower and upper bound, then the results are inconclusive.

4. EMPIRICAL ANALYSIS

The first practice in applying any co-integration technique is to determine the degree of integration of each variable. For this reason, the ADF test is employed. The test results are presented in table 1. The results of table 1 indicate that the variables are integrated I*(1)*.

Table 1

UNIT ROOT - Augmented Dickey-Fuller (ADF)

Variables	LEVEL INTERCEPT& TREND	1ST DIFFERENCE INTERCEPT& TREND
GINI	-3.07	-91.04*
OP	-2.84	-7.24*
PGDP	4.91	-4.23*
LSS	-2.48	-6.69*
POP	-2.56	-6.03*
UB	-2.56	-6.25*

Before estimating the short-run and long-run relationship among the variables we first explored the existence of co-integration among the variables using Bound test approach. Table 2 reports F-statistics for Bound test with critical values. The critical values are given by Persan et al., (2001). The F-statistics are greater than upper bounds critical values at significance level either 0.01 or 0.05. The results provide support for the existence of long-run relationship among Gini, openness, social services, per capita GDP, population growth & urban share in Pakistan.

Table 2

F - Statistics

Lag	1	2	3	4	5	6	7	8	9	10
With PGDP	674.15	495.90	352.40	166.99	97.93	528.78	204.49	257.63	193.27	386.48
Without PGDP	794.01	1385.20	903.31	431.86	373.77	713.24	927.08	728.84	815.48	2224.16

Note: The relevant critical values for Bounds test are taken from Pesaran, Shin & Smith (2001). [For unrestricted intercept and no trend and number of regressors = 7]. They are 3.74 – 5.06 at the 99%; 2.86 – 4.01 at the 95%; and 2.45 – 3.52 at the 90% significance levels respectively * and ** denotes that F-statistics falls above the 99% and 95% upper bond, respectively.

After establishing the existence of cointegration the long run elasticities are estimated. The estimation of long run elasticities based on ARDL Bound test requires selection of lag length for variables. Lag length is selected by using minimum value of Akaike Information Criteria (AIC). The optimum lag used in the two-step ARDL procedure is 1. The results are reported in Table 3. Variables in the model has yielded statistically significant coefficient with expected sign except for $PGDP_t$, OP_t and UB_t. The implied long run coefficient shows significant and positive elasticity of square of $PGDP_t$. Although nonlinear term is significant with expected sign but as linear term is not showing significant effect, hence we conclude that our model does not provide support for Kuznet hypothesis. Rudra (2004) exploring the Kuznet hypothesis argued that if variable explaining investment opportunities and political impact, that are usually drives the logic of Kuznet's hypothesis, are excluded from the model then the existence of nonlinearity may not be proved. The same is true for our model. However to explore the hypothesis in greater detail in the latter stages PGDP square is kept only.

The long run elasticity of social spending is significant however; positive indicating that increase in the government spending for the provision of social service will increase the income inequality further within the country in the long run. It is documented that 1 percent rise in social spending will rise the inequality by 0.077 units. The same is true for the urban population share. A 1% rise urban population share raise the inequality by 25% in the long run.

Table 3

Long Run Model on Income Inequality

Regressor	With Constant & Trend			
	With PGDP (1,1,0,0,0,0,1)		*Without PGDP* (1,1,1,1,0,1)	
	Coefficient	T-Ratio[Prob]	Coefficient	T-Ratio[Prob]

OP	1.18	.11[.92]	-0.07	-.59[.56]
LSS	-122.42	-.10[.92]	7.71	5.33[.00]*
PGDP	-14064.8	-.11[.91]	-	-
PGDP2	0.025	.12[.91]	0.001	2.60[.02]**
POP	17.22	.12[.91]	0.67	.367[.72]
UB	-664.01	-.11[.92]	25.40	3.53[.00]*
Constant	15382.5	.11[.92]	-572.55	-3.26[.00]*
Trend	335.13	.11[.92]	-12.66	-4.82[.00]*

Finally, using the lagged level of variables we estimated the error correction model. The short-run lag length (1,1,1,1,0,1) is selected on the basis of AIC (Akaike Information Criterion). The results are reported in table 4. Again, regression with PGDP and without PGDP is reported for the comparison. However, the interpretation of the model without PGDP is discussed in greater detail. This is because in the long run study fails to provide evidence for the Kuznets Hypothesis.

The results indicate that the sign of coefficient of lagged ECM term is negative and significant at 1% level of significance. This further confirms the established long run relationship among the variables. The value of lagged ECT term shows that changes in GINI from short run to long run is corrected by almost 2 percent every year with high significance.

Table 4

Error Correction Model for INCOME INEQUALITY

DEPENDENT VARIABLE: DGINI

ARDL based on AIC

	With Constant & Trend			
Regressor	*With PGDP* *(1,1,0,0,0,1)*		*Without PGDP* *(1,1,1,1,0,1)*	
	Coefficient	**T-Ratio[Prob]**	**Coefficient**	**T-Ratio[Prob]**
dOP	0.002	1.53[.17]	0.001	1.09[.29]
dLSS	0.079	3.44[.00]*	0.09	3.55[.00]*
dPGDP	9.05	2.73[.01]*	-	-

dPGDP2	-0.000016	-1.04[.31]	0.0001	3.44[.00]*
dPOP	-0.0111	-.37[.72]	0.01	0.36[.71]
dUB	-0.621	-2.44[.02]**	-0.76	-2.86[.01]*
Constant	-9.895	-5.06[.00]*	-9.30	-4.51[.00]*
TREND	-0.216	-10.51[.00]*	-0.21	-9.69[.00]*
ECT(-1)	0.0006	.105[.92]	-0.02	-5.98[.00]*

Table 4 also reports that population growth and openness are insignificant in explaining the inequality in the short run. Moreover, the coefficient of ΔLSS_t, $\Delta URBN_t$ and $\Delta PGDP2_t$ are found to be Granger causing $\Delta GINI_t$ in the short run. From the table it is also evident that 1 percentage increase in the LSS will increase the inequality by 0.0009 unit point in short run.

Based on the empirical findings, the study is indicating that government expenditure for the provision of social service and urban population growth are effective in explaining income inequality. Study draw following conclusions on the basis of the findings:

- Trade liberalization does not found to be affecting income inequality. Thus study rejects the entire hypothesis discussed in earlier studies that trade openness may increase or decrease inequality in the country.

- Although result do not provide support for the hypothesis that openness create income inequality in Pakistan but still positive and significant impact of government commitment for the provision of social service on income inequality is alarming. The government redistributive polices are not effective in reducing the inequality rather it found further widening the gap between rich and poor. This may be because of the quality of the provision of social service provided by the Government. As our redistribution measure is based on the spending on education, health and safety nets and there is impulse theoretical and empirical literature on low quality publicly provided education and health services in the country. Thus for this variable study draw the conclusion that state sponsored social

assistance will only mitigate the potentially disruptive effect of integration if it compensate poor through provision of quality social services.

- For economic development study fails to prove the Kuznets Hypothesis i.e., per-capita GDP variables remains insignificant in the presence of social spending. Study does acknowledge that literature does provide support for the nonlinear relationship between economic development and inequality – Kuznet Hypothesis. But as stated by Rudra (2004) these studies do not incorporated social spending in the model. It is possible that social spending could offset the effects of Kuznet hypothesis.

- For urban population share study conclude that it cause stress in countries resources thus increase inequality in the long run but in the short run urban population share by providing more employment and modern work force reduce income inequality in Pakistan.

To summarize, globalization though may promote economic development butit does not affect income distribution in Pakistan. The positive and significant results for the social spending further claim that re-distributive policy of Government is not supportive.

5.   CONCLUSIONS:

A number of researchers have explored the nexus between globalization and the welfare, but unfortunately, there has not been enough empirical evidence on the distributional impact of government spending in Pakistan. In this paper, we have explored the relationship among globalization, social spending and income distribution for Pakistan economy using long run and short run tests.

Our result does not provide support for the hypothesis that openness affects income inequality. Furthermore, positive and significant impact of government commitment for the provision of

social service on income inequality is also alarming. This point towards the fact that government polices fails to redistribute income to maintain a favorable income distribution. Our estimated results also not support the Kuznet's hypothesis. For this we conclude that as variables like investment and government intervention are excluded from the model we fail to provide evidence for Kuznet's Hypothesis as these variables drive the Kuznet's Hypothesis. In addition to this study also found insignificant effect of population growth on income inequality while urban population growth tend to reduce it by providing employment opportunities and modern work force that lead to greater productivity and income to the hands of poorer in short run. However, in the long run urbanization in Pakistan results in further widening the gap between poor and rich.

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