Trade, Poverty and Employment: Empirical Evidence from Pakistan

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Abstract

This study investigates the development effects of trade liberalization in Pakistan. The results show that the effect of trade liberalization on per capita GDP is insignificant, though the sign is positive. However its effect on employment is negative. Although trade theory predicts that trade openness is the potential source of economic growth that in turn spills over its positive effects on labor market but this study reveals jobless-openness phenomenon in Pakistan. It is also found that trade liberalization has increased income inequalities because it creates winners and losers simultaneously that results in negative welfare impact. As far as eradication of poverty is concerned, it has been found that trade accentuates, not ameliorates, and that it intensifies, not diminishes, poverty in the case of Pakistan. The role of human capital emerged as a favorable factor in enhancing per capita GDP and eradication of poverty. The conclusion of this study is that trade liberalization is not pro-development in the case of Pakistan and investment in human capital is the effective tool for development and fighting against poverty.

I. Introduction

It is a general perception among academic researchers and policy makers that open economies, in the long run, are relatively more rewarding than closed economies and outward looking economies contribute relatively more to economic development of a country as policies towards openness significantly increase economic growth and employment while reduce poverty and inequality. In the short-run, nevertheless, one of the steps towards openness-trade liberalization hurts poor actors in the economy. It is not necessary that successful open regimes, even in the long run, benefits all

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economic actors equally and may leave many people behind in poverty traps. Trade liberalization by its nature, in affect, implies a new adjustment in the economic setup of a country that is likely to have distributional effects that normally hurt poor people in the economy.

The recent anti-globalization critics argue that trade liberalization- or openness to trade, causes adverse consequences on economic development in general and on income distribution, poverty and employment in particular. In the wake of trade liberalization episodes, issues of inequality, poverty and employment are drawing significant attention of development practitioners and policy makers. The critics argue that trade liberalization does not ameliorate but accentuates, and that it does not diminish but intensifies, inequality, poverty and unemployment in poor countries. In literature two arguments namely static and dynamic are used to explain the relationship between trade liberalization and economic development.

The static argument builds on the channel between real wages of unskilled workers and trade liberalization in poor countries. This argument is basically a natural conjecture of Stolper-Samuelson theorem which predicts that free trade reduces poverty in poor countries because they use their comparative advantages to export labor intensive goods. Trade liberalization leads to increase in demand of exports and when these exports based on labor intensive techniques of production then demand and wages for unskilled labor are likely to rise, thereby reducing poverty.

This argument has been confirmed empirically by Anne Krueger's (1983)'s multi country project on the theme of effects of free trade on employment and wages of workers in developing world. Another argument, based on microeconomic theories, also predicts that free trade helps in reducing poverty because foreign competition in the wake of trade liberalization reduces domestic prices that, in turn, increase consumer surplus and reduce poverty.

The dynamic argument builds on two steps. Where, initially, trade increases growth and in second step, the growth reduces poverty. For instance, Dennis Robertson (1940) characterized trade as an "engine of growth." In regard to the growth reduces poverty, Smith (1776) argued that when society is "advancing to the further acquisition . . . the condition of the laboring poor, of the great body of the people, seems to be the happiest." Macdonald and Majeed (2010) analyze the poverty effects of economic growth in a sample of 65 developing countries and find out that growth helps in reducing poverty.

According to new growth theory, trade liberalization extends the markets, restructures labor market towards more innovative activities that require more human capital, induces an increase in research and development and increases knowledge flow among countries (see for example Romer, 1994).

The trade liberalization incurs some costs as well. One major cost to the government of developing countries is a loss of tariff revenues in the wake of trade liberalization. According to an estimate tariff revenues accounts 10-20% of government revenues in developing world. The compensation of this loss, in developing countries, naturally requires imposition of non-tariff taxes to maintain the government budget, nevertheless, such type of government tax policies cause economic distortions.

In literature, a striking example of the favorable effects of trade liberalization is considered growth miracle in East Asian countries. These countries followed outward looking development approach by the mid 1960s. These countries invested in human capital and followed trade liberalization polices which enable them to produce high economic growth rates, exports and living standards. The high growth rates not only helped these countries to improve their living standards but also enabled them to survive during the oil shocks in 1970s and debt crises in 1980s. The per capita income of Taiwan, Korea, Singapore and Hong Kong rose at annual rates of 8.1%, 7.1%, 6.5% and 6.2% over the period 1965-1990[2].

Greenaway *et al.* (2002) examine the growth effects of trade liberalization for 73 developing countries. The overall results of their study suggest that trade liberalization significantly affect economic growth. Using a Computable General Equilibrium (CGE) model Yang and Huang (1997) pointed out that lower tariff rates improve income distribution in China. Tabassum and Majeed (2008) examine the growth effects of trade openness for 65 developing countries over the period 1965-2003. Findings of their study suggest that the trade openness causes a favorable and significant effect on economic growth.

Ali and Tahir (1999) examine the relationship between GDP per capita, poverty and income inequality in Pakistan. There results show that income inequality worsens as GDP growth rate increases while poverty level increases as income inequality increases. The study concludes that GDP per

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[2] See, for further details (Behrman and Srinivasan, 1995).

capita helps in reducing poverty level but deteriorates income inequality at national level. Jamal (2004) also analyzes the impact of GDP per capita and income inequality on poverty level over the period 1973-2003. The study shows that elasticity of poverty with respect to various measures of income inequality is negative and significant.

In literature, several studies investigated the effects of trade liberalization on growth and use cross-country regressions to quantify the growth impacts of trade. Although these studies suggest that free trade causes high growth but growth, in itself, is necessary condition of economic development but not a sufficient condition. There are several other dimensions such as inequality, poverty and employment that can be taken into account while assessing development effects of trade liberalization. This study fills the gap by employing different development indicators for the economy of Pakistan.

Using different development indicators and a simultaneous equations model, this study examines the development effects of trade liberalization over the period from 1970-2006 for Pakistan. The rest of the discussion is structured as follows. Section II explains the model and theory of variables. Section III introduces the data set and construction of variables. Section IV puts forward the main findings from empirical analysis. Section V presents a summary of results with some policy implications.

II.   Variables Justification and Methodology

In this section a brief description of theory of variables and specified equations has been provided. The relationship of trade development is to be measured by tracing the effects of trade liberalization on four indicators of the economic development. The following indicators have been used to proxy the level of economic development in Pakistan: per capita GDP, poverty, income inequality and employment.

2.1.   Per Capita GDP

The level of per capita GDP is generally used to measure the level of economic development in a country. This study uses it as a dependent variable to asses the overall economic development effects of trade liberalization. Human capital and capital stock are standard variables that are used in PGDP regression equations. This study also follows the conventional approach of literature. The expected signs for both variables human and physical capital are positive. The expected effect of trade liberalization on PGDP is positive.

106

2.2.   Poverty

The most important thing that determines poverty level is the income of people. In this study per capita income has been taken at aggregate level. Lack of education is a principal factor of income poverty and absence of reasonable income/earnings cannot overcome the poverty of education. Hence, income poverty and education poverty have a mutually reinforcing relationship both at macro and micro levels (Tilak, 2005). The education is more conducive variable in reducing poverty as it is the source of more productive and employment opportunities. The expected behavior of this variable is negative. Furthermore, education is an important opportunity and absence of it constitutes poverty. We can say that poverty of education is a vital portion of human poverty. It is true that education is an important and effective tool of poverty eradication whether it is specifically the income poverty or broadly the human poverty.

Trade liberalization by its virtue increases the inflow of goods and services across countries that put downward pressure on domestic prices, thereby increasing consumer surplus and reducing poverty. Thus, expected relationship between trade liberalization and poverty is a negative one. In addition, trade liberalization also extends the existing markets and enhances employment that is negatively related with poverty. So we can expect that poverty may reduce in response to a rise in GDP, education, employment and trade liberalization.

2.3.   Income Inequality

Trade liberalization by its nature implies reallocation and adjustment of economic resources in an economy and thus likely to have distributional effects. According to the Kuznets curve, the relationship between PGDP and income inequality is an inverted U-shape which implies that at lower levels of economic development inequalities increase while at higher levels of economic development income inequalities fall. In order to capture Kuznets curve, this study introduces two variables PGDP and PGD in the inequality equation. The expected sign for PGDP is positive while the expected sign for PGDP is negative.

The inflation has been used as another variable in inequality equation. High inflations increase the gaps between rich and poor thereby increasing inequalities in the economy. The effect of trade liberalization on inequality could be either way. It may have reduced or increased inequalities in Pakistan.

107

2.4. Employment

It is generally considered that an increase in PGDP cause positive effect on employment level because it implies that wheel of the economy is turning and creating jobs. However, the effect of GDP on employment can be reverse as well when labor-intensive techniques of production have declining trend. The expected relationship between trade liberalization and employment is positive because trade liberalization by its nature implies specialization in goods and services where a country has comparative advantages and developing countries have comparative advantages in labor intensive techniques of production. So it is expected that trade liberalization will increase the demand for unskilled labor force, thereby increasing employment in the country.

Having discussed theory of variables, this study specifies following four mutually dependent equations:

$$PGDP_t = \gamma_0 + \gamma_1 EMP_t + \gamma_2 HK_t + \gamma_3 KP_t + \gamma_4 TL_t + \varepsilon_t \qquad (1)$$

$$POV_t = \alpha_0 + \alpha_1 G_t + \alpha_2 PGDP_t + \alpha_3 EMP_t + \alpha_4 HK_t + \alpha_5 TL_t + \varepsilon_t \qquad (2)$$

$$G_t = \beta_0 + \beta_1 PGDP_t + \beta_2 (PGDP_t)^2 + \beta_3 CPI_t + \beta_4 TL_t + \varepsilon_t \qquad (3)$$

$$EMP_t = \vartheta_0 + \vartheta_1 PGDP_t + \vartheta_2 W_t + \vartheta_3 KP_t + \vartheta_4 TL_t + \varepsilon_t \qquad (4)$$

This study specifies a model which contains four mutually dependent equations. The specified equations contain four dependent variables that are per capita GDP, poverty, inequality, and employment level. The model contains following independent variables: human capital, capital stock, real wages, inflation and trade liberalization. The trade liberalization variable has been inserted in every equation to test for its effects on different indicators of economic development.

$PGDP_t$ = It is determined by dividing the GDP by population of the country.

POV_t = Poverty for the purpose of this study is measured by Head Count Ratio Index.

EMP_t = Employed labor force is that portion of the total labor force which is employed in paid jobs and self-employed.

G_t = The Gini coefficient measures income inequality. It is based on the percentage share of income received by different proportions of the population

HK_t = It is measured as literate population as a percentage of total population.

CPI = It stands for Consumer Price Index which is an indicator of inflation.

W = It denotes real wage rates, which have been measured as dividing the annual wage rates by corresponding CPI.

KP_t = Estimated capital stock for the private sector at the end of the year t. The series of KP_t used in the regression equation is estimated by the following method.

$$K_1 = I_1 / g + \delta$$

Where

g = compound growth rate of GDP at constant price (1959-60=100) and δ is rate of depreciation per year. Here δ = 0.05. I_1 is gross fixed capital formation in the initial period.

K_2 = $(1 - \delta) K_1 + I_1$ and so on.

TL = It shows trade liberalization, which has been constructed by taking the ratio of total trade (exports plus imports) and GDP.

III. Data and Estimation Procedure

This study uses annual data set for empirical investigation over the period 1970-2006. In the case of poverty and inequality variables annual observations are missing for some of years. The missing values have been filled using data interpolation methods. The variables are measured in million of rupees at constant prices with 2000 as the base year. The data has been derived from different sources. The data on poverty, inequality and employed labor force has been derived from *Pakistan Economic Survey (various issues)* while data on CPI, PGDP deflator, population, human capital, exports and imports has been taken from *World Development Indicators (WDI)*. The data on real wages is collected from *Pakistan Labor Force Survey (various issues)*. Data on private investment is collected from the Statistical Year Book (various issues).

The economic development indicators used in this study are mutually dependent on each other. This study uses four dependent variables; however, these dependent variables are also supposed to affect each other. For example, following Kuznets curve, economic development (PGDP) determines inequality while inequality, in turn, also affects PGDP. Such interdependence among development indicators raises the issue of endogeneity that needs to be tackled effectively. In order to cure the problem of endogeneity, a system of equations and GMM econometrics technique has been used for this study. For estimation of the model using GMM econometrics technique a sufficient number of instruments is required. Following a standard approach in literature

109

the equations have been estimated using lagged first difference as instruments (Majeed and Ahmad, 2009).

IV.   Empirical Results and Interpretation

Empirical results of the model, in which the openness index (sum of export and import as a percentage of GDP) is used to represent trade liberalization, are reported in table-1. The first column provides the list of variables. The second column provides the estimates obtained from 1st equation of the model with dependent variable PGDP already specified. The third column reports the results of the 2nd equation where poverty is a dependent variable. The results for 3rd equation, where inequality is a dependent variable, have been reported in the fourth column. Finally, last column of the Table 1 shows the results obtained for last equation (4) of the model, where employment is a dependent variable. Overall, results reported in Table-1 indicate that number of parameter estimates which are theoretically consistent are considerably higher than that of inconsistent results.

The estimated values for the adjusted R^2 indicate that overall fitness of the model is good. Nevertheless, adjusted R^2 values are relatively high in case of equations 1 and 4 and low in case of equations 2 and 3. Such a variation in adjusted R^2 could be explained by taking account of following factors: First, equations I and 4 use dependent variables in transformed form and equations 2 and 3 use dependent variables in the form of indexes. Second, equations 1 and 4 suffer from the problem of auto correlation that was removed by applying AR (1). Third, PGDP and employment, dependent variables in equation 1 and 4, may have high correlation that explains high values of adjusted R^2. The problem of auto correlation has been detected by Durbin Watson test and it has been removed by using auto regressive scheme, AR (1). The problem of multicollinearity is not plaguing the results of this study because endogeneity of key variables of concerns has been tackled using system of equations and GMM technique of estimation. Furthermore, a major symptom of multicollinearity- high adjusted R^2 and few significant variables has not been found in the results of this study.

The coefficient on trade liberalization in the first equation of the model turns out to be insignificant with positive sign that is inconsistent with prior expectations. According to the predictions of new growth theory trade liberalization extends markets, restructures labor market towards more innovative activities, induces an increase in research and development and

increases knowledge flow among countries. However, in case of Pakistan, trade led growth hypothesis is not significant. The primary reason could be

Table: 1. Parameters Estimates of the GMM Model

Variables	PGDP	Poverty	Gini	Employment
C	1119 (1.44)	-269 (-2.08)**	-2.10 (-5.98)*	-19.57 (-1.66)***
PGDP	-	0.06 (2.01)**	0.001 (7.55)*	0.015 (5.13)*
(PGDP)^2	-		-1.34E-07 (-6.87)*	
EMP	5.56E+09 (2.25)**	-3.14 (-2.06)**	-	-
GINI	-	20.97 (1.65)***	-	-
CPI	-	-	0.002 (2.05)**	-
HK	20.8 (2.24)**	-5.69 (-1.77)***	-	-
INV	0.32 (6.93)*	-	-	-0.002 (-1.71)***
W		-	-	-0.06 (-2.13)**
TL	386 (0.58)	64.5 (2.01)**	0.27 (2.25)**	-28.14 (-1.28)
R$^-$2	0.98	0.31	0.39	0.95
D.W	1.42	2.046	1.86	1.69
AR (1)	0.57 (5.98)*			0.61 (7.14)*

Note: The t-statistics are given in parentheses (***), (**) and (*) indicate statistical significance at 10%, 5% and 1% levels, respectively.

unsustainable growth pattern over the study period in this country. Furthermore, institutional strength, good governance and macroeconomic stability play an important role in transferring the true effects of trade openness on PGDP. Human capital plays an important role in determining PGDP. The level of employment is also positive and significant in explaining PGDP.

The impact of trade liberalization on poverty is positive and significant implying that trade is not beneficial for poor people in the country. Even if trade liberalization is linked to more rapid growth, this does not necessarily

imply that it is an effective instrument for reducing poverty. For instance, if a growth strategy based on trade openness leads to a significant worsening of income inequality of households at the bottom of the income strata, it may not make any discernible in-roads in alleviating poverty. In such state of affairs it would be essential for outward orientation to promote growth at a "sufficiently rapid" pace for the poor to have any chance of benefiting via "trickle down" effects. However, the political sustainability of such inequitable growth is doubtful; the distributional character of economic growth matters as much as the rate of growth

The effect of education in reducing poverty is significant with correct negative sign. It implies that investment in human capital through education is the effective tool in eradicating poverty. This variable has multiple positive dimensions, as it increases the productivity of a worker. General awareness among the people has been increased and they find the opportunities in the market. The education is more conducive variable in reducing poverty as it is the source of more productive and employment opportunities. Furthermore, education is an important opportunity and absence of it constitutes poverty. We can say that poverty of education is a vital portion of human poverty. It is true that education is an important and effective tool of poverty eradication whether it is specifically the income poverty or broadly the human poverty. The coefficient of trade liberalization in the employment equation turns out to be different as compared to other development indicators. The results show that increased trade has reduced employment levels in the country that is not consistent with prior expectations as free trade by its virtue extends market and provides more employment opportunities. However, findings may imply that trade liberalization has changed the labor proportion in production process where share of labor has decreased while capital has increased.

This negative relationship between trade liberalization and employment implies that increased trade is not contributing in overall employment of the country. The demand for skilled labor in the wake of trade openness could sustainably reduce the demand for unskilled labor that can cause adverse effects on overall employment of the country. The effect of employment on PGDP is positive and significant. PGDP has also affected employment significantly and positively.

The coefficient on PGDP in poverty equation turns out to be positive and significant which is not consistent with the earlier studies. There are two plausible reasons of such positive relationship. First, it is quite possible that a

rise in population undermines the rise of GDP. Secondly, the growth of PGDP causes further inequalities that potentially spill over negative effects on poverty. This phenomenon has been supported with the positive sign of Gini coefficient in explaining poverty and positive sign of PGDP in explaining Gini. So, high growth prospects enhance the existing gaps between rich and poor and deprived portion of the economy remain behind despite growth bearing facts.

Employment is an important factor which can reduce poverty levels in a country. Results of this study show that the effect of employment on poverty is favorable and significant at 5 % level of significance. The relationship between trade liberalization and poverty is positive and significant. It means trade liberalization in case of Pakistan is not good for poor actors of the economy. This finding also lends support to the better interpretation of inverse relationship between trade and employment. It can be argued that trade liberalization decreases employment and lower levels of employment, in turn, yield high incidence of poverty as employment and poverty are negatively associated.

The relationship between trade liberalization and income distribution also turns out to be positive and significant at conventional level of significance (5%). It means trade liberalization increases the gap between rich and poor people in the country. As discussed before, trade liberalization has changed the production structure where proportion of unskilled and semi-skilled labor force has declined while share of capital has increased. It means returns have changed in the favor of capital owners, thereby increasing existing income inequalities in the economy. Findings of this study suggest that Kuznets curve holds in the case of Pakistan since non-monotonic effect of economic development on inequality is negative and significant while its linear effect is positive and significant.

The relationship between inflation and inequality is positive and significant at conventional level of significance. It means high inflation rate increases poverty incidence in the economy. In fact inflation hurts poor hard and redistributes income in favor of rich people in the economy. The positive impact of inflation on income inequality found in this study is consistent with Kemal at al. (2002).

I applied Wald tests on the various null hypothesis involving sets of regression coefficients. The results are shown in table 2. The P-value indicates that this analysis rejects the null hypothesis that regression coefficients of all

the variables in the four simultaneous equations are equal to zero. The null hypothesis that regression coefficient in each equation is also rejected as shown by the p-values. The same exercise has been done for trade liberalization variable in the all four equations jointly. The test results confirm

Table: 2. Results of Wald Test on Parametric Restrictions

Null hypotheses	Chi-Square Statistic	Computed Rejection Prob.
Regression coefficients of all the variables in the four equations are equal to zero	26888.02	0.000
Regression coefficients of all the variables in the PGDP equation are equal to zero	927.81	0.000
Regression coefficients of all the variables in the poverty equation are equal to zero	48.15	0.000
Regression coefficients of all the variables in the inequality equation are equal to zero	91.15	0.000
Regression coefficients of all the variables in the employment equation are equal to zero	178.87	0.000
Regression coefficients of the trade liberalization variable in the four equations are equal to zero	10.27	0.036
Regression coefficient of the trade liberalization variable in the PGDP equation is equal to zero	0.34	0.558
Regression coefficient of the trade liberalization variable in the poverty equation is equal to zero	4.04	0.044
Regression coefficient of the trade liberalization variable in the inequality equation is equal to zero	5.07	0.024
Regression coefficient of the trade liberalization variable in the employment equation is equal to zero	1.64	0.199

the joint significance of trade liberalization in the model. The null hypothesis that trade liberalization do not affect PGDP can not be rejected. However the hull hypothesis that trade liberalization does not have affect in the system seems rejected.

V.   Conclusion and Policy Implications

The objective of this study has been to assess the development effects of trade liberalization using PGDP, poverty, inequality and employment as development indicators. For this purpose the study used a time series data over the period 1970-2006. The data are derived from the World Development Indicators (WDI) 2006, *Pakistan Economic Survey (various issues)* and *Labor Force Survey (various issues)*. GMM model is employed for the estimation of

the relationship of PGDP, poverty, inequality and employment with their potential determinants based on the time series data.

Although it is generally considered among economists and policy makers that trade liberalization generates more gains and increases the development level of a country. Nevertheless, in the case of Pakistan, trade liberalization has not affected development indicators in a desirable manner. All chosen development indicators show that trade liberalization has not yielded a desirable outcome. Though it has affected PGDP positively but this effect is not significant. The results have revealed that trade liberalization accentuated not ameliorated inequality and poverty in the case of Pakistan. Similarly, the relationship between trade and employment turns out to be negative. On the one hand, high imports of raw material and machinery in the wake of moves towards free trade have affected PGDP positively. While, on the other hand, exports of capital-intensive manufacturing goods led to decrease of employment in country.

The role of human capital emerged as a most favorable factor in enhancing economic growth and eradication of poverty because education is an important opportunity and absence of it constitutes poverty. We can say that poverty of education is a vital portion of human poverty. It is true that education is an important and effective tool of poverty eradication whether it is specifically the income poverty or broadly the human poverty. The central message of this study is that trade liberalization is not pro development in case of Pakistan and investment in human capital is the effective tool for development and fight against poverty.

Based on study's result, it is recommended that Pakistan needs to invest heavily in the basics of human development. In order to combat with jobless-openness, it might be appropriate to give more importance to the production of labor intensive products. Since Kuznets curve holds in Pakistan, it necessitates the importance of high and sustained economic devolvement in the economy.

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