Agricultural Productivity and Poverty: Empirical Evidence from Pakistan

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Introduction

- Target by UN To reduce poverty .
- Worst condition of Asia n Africa
- Agricultural based countries
- Definition of Agricultural productivity

- *“Most of the people in the world are poor, so if we knew the economics of being poor we would know much of the economics that really matters. Most of the world's poor people earn their living from agriculture, so if we knew the economics of agriculture we would know much of the economics of being poor” (**Shultz, 1979).***

Pakistan's Overview

- 45 % Agriculture Labor Force.
- 24 % living below the national poverty line.
- 44 million people in LDC pushed in poverty.
- 11.5 % Inflation.
- 17 million food insecure people.
- Unemployment 3.05 %

Main Objectives

To reflect these objectives, the study will be articulated around three main objectives:

- Appraisal of total factor productivity (TFP) for crops sectors of Pakistan during past four decades.
- Identifying the determinants of total factor productivity and exploring relationship between Total Factor Productivity and poverty.
- Examining the causality between agricultural productivity and poverty.

Literature Cited

- Wichmann (1997) , Gallup et al. (1997), Mellor (2001) , Thirtle et al. (2001), Datt and Ravallion (1998), Liu (2000)

Economic Model

- *TFP= f(X1, X2, X3)*
- *FPI = g(TFP, PCI, POP,WPI)*
- *POV = k (FPI, PCI, GINI, UNEMP, EXPHT, SN)*

Table 1: Estimation of TFP using TTI for Pakistan

Average TFP Growth Rate: 3.10

Years	TFP	Years	TFP
1969	100	1990	263.32
1970	104.16	1991	269.34
1971	107.62	1992	272.34
1972	113.12	1993	279.34
1973	116.55	1994	284.43
1974	120.23	1995	288.32
1975	123.45	1996	293.32
1976	126.80	1997	296.34
1977	130.36	1998	299.63
1978	131.56	1999	302.34
1979	137.08	2000	314.54
1980	138.73	2001	322.54
1981	152.42	2002	331.45
1982	162.72	2003	338.75
1983	164.50	2004	343.67
1984	185.12	2005	349.65
1985	199.15	2006	352.87
1986	202.12	2007	357.21
1987	213.75	2008	363.02
1988	246.34	2009	366.98
1989	257.56	2010	371.54

Table 3: Regression Results of Research Expenditures using 10 lags (1969-2010)

Dependent Variable: TFP

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-11.30640	2.131127	-5.290468	0.0000
VGET	3.312870	1.506577	2.219894	0.8278
RDKM	5.012572	5.012176	1.120794	0.0000
FERT	4.596166	1.979222	2.322208	0.0290
PDL01	2.207779	1.565452	1.410314	0.1713
PDL02	-0.274548	0.387700	-0.708146	0.4857

R-squared	0.993469	Mean dependent var	288.2260
Adjusted R-squared	0.992108	S.D. dependent var	75.78977
S.E. of regression	6.732774	Akaike info criterion	6.828708
Sum squared resid	1087.926	Schwarz criterion	7.108947
Log likelihood	-96.43062	Hannan-Quinn criter.	6.918359
F-statistic	730.1556	Durbin-Watson stat	1.146397
Prob(F-statistic)	0.000000		

Lag Distribution of RD1	**i**	**Coefficient**	**Std. Error**	**t-Statistic**
. * |	0	.194078	.121695	1.59480
. * |	1	.337774	.183673	1.83900
. * |	2	.435618	.202089	2.15558
. * |	3	.492137	.195805	2.51340
. *|	4	.511859	.187165	2.73480
. *|	5	.499314	.195493	2.55413
. * |	6	.459029	.221684	2.07065
. * |	7	.395532	.248865	1.58934
. * |	8	.313353	.256974	1.21939
. * |	9	.217019	.228405	0.95015
. * |	10	.111058	.147579	0.75254
	Sum of Lags	3.96677	1.55308	2.55413

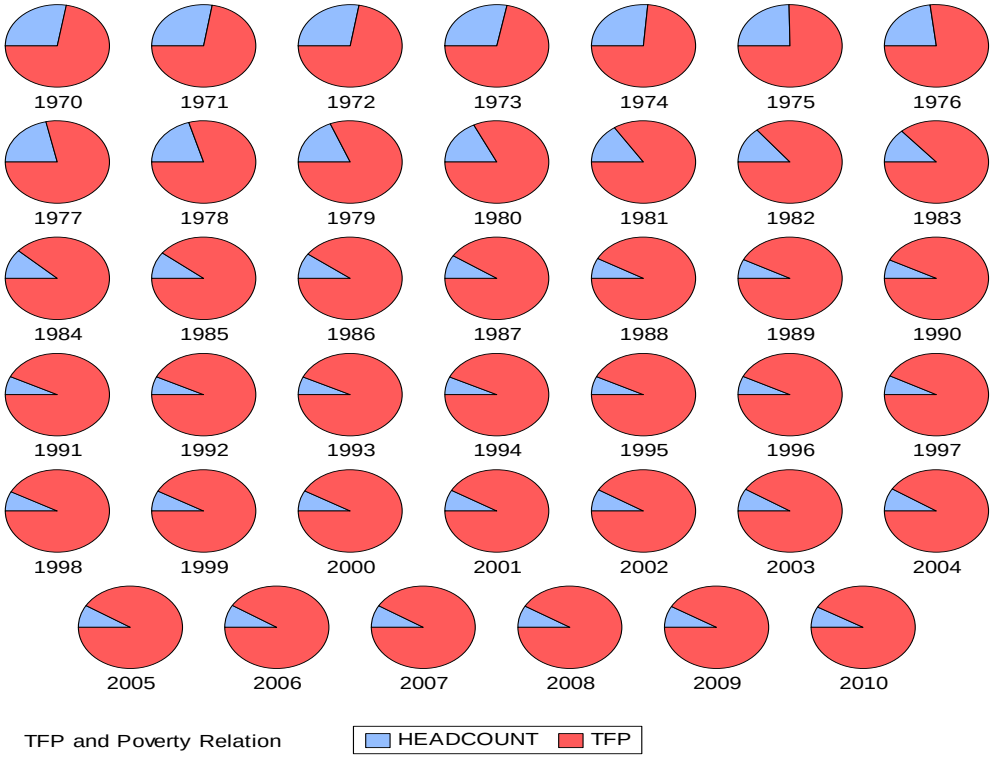
Table 5: Regression Analysis of equation (7) using SURE Model (1980-2010)
Dependent variable: Food Price Index (FPI):

	Coef.	Std. Err.	z	P>z
FPI				
POP	0.2546	0.2543	1.98	0.012
TFP	-0.0281	0.0130	-2.16	0.032
WPI	0.1683	0.0689	2.44	0.015
PCI	0.0128	0.0140	0.92	0.359
Constant	-11.6452	9.4299	-1.23	0.217

Table 6: Regression Analysis of equation (8) using SURE Model
Dependent Variable: Headcount Ratio

	Coef.	Std. Err.	z	P>z
headcount				
PCI	-0.2451	0.1223	-2.00	0.054
Gini	0.6138	0.3533	1.74	0.082
UNEMP	1.6735	0.5247	3.19	0.001
EXPHT	-6.9014	2.0291	-3.40	0.001
SN	-16.9580	8.3530	-2.03	0.135
FPI	0.0705	0.0356	1.98	0.029
constant	67.2262	14.0611	4.78	0.000

Linkage between poverty n productivity



Conclusion &Policy Needed

With an increase in TFP, food prices may fall down, would help in improving the consumption of the poor.

Social safety nets may helps in reducing the poverty to some extent.

Few actions are recommended, and govt. can play important roles in all two of these:

- Investment in agriculture research
- It seems that if government improves safety nets and provides more food coupons, zakat and other safety measures, that may reduce the poverty to some extent.
- Therefore, we may suggest that along with an increase in productivity, there must be parallel subsidized polices for the poor to reduce the poverty.

Appendix

Social safety nets, or "socioeconomic safety nets", are non-contributory transfer programs seeking to prevent the poor or those vulnerable to shocks and poverty from falling below a certain poverty level. Safety net programs can be provided by the public sector (the state and aid donors) or by the private sector (NGOs, private firms, charities, and informal household transfers). Safety net transfers include:

- Cash transfers
- Food-based programs such as supplementary feeding programs and food stamps, vouchers, and coupons
- In-kind transfers such as school supplies and uniforms
- Conditional cash transfers
- Price subsidies for food, electricity, or public transport
- Public works
- Fee waivers and exemptions for health care, schooling and utilities
- On average, spending on safety nets accounts for 1 to 2 percent of GDP across developing and transition countries.

Food Price Index is a measure of the monthly change in international prices of a basket of food commodities. It consists of the average of five commodity group price indices (representing 55 quotations), weighted with the average export shares of each of the groups.

Gini coefficient measures the inequality among values of a frequency distribution (for example levels of income). A Gini coefficient of zero expresses perfect equality, where all values are the same (for example, where everyone has an exactly equal income). A Gini coefficient of one (100 on the percentile scale) expresses maximal inequality among values (for example where only one person has all the income).

Head-Count Ratio Absolute poverty may be ensured by the number or 'head count' of those whose incomes fall below the 'poverty line'. The poverty line sets a level below which persons live in absolute human misery and their health is always in jeopardy.

in order to define the **poverty line**, most of the studies

(a) Have determined the minimum nutritional level of subsistence,

(b) Have estimated the cost of this minimum diet, and

(c) On the basis of the per capita consumption expenditure,

have delineated the line of poverty. Where change have in the magnitude of poverty have to be estimated between two different years, account has been taken of changes in the price level by using deflators of one type or another.