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Targeting the Vulnerable and the Choice of Vulnerability Measures: Review and Application to Pakistan

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In this paper, the concept of vulnerability of the poor's welfare and its practical measures are scrutinised in order to derive implications for targeting poverty reduction policies toward vulnerable households. As illustration, various measures of vulnerability proposed in the literature are applied to a panel data-set collected from rural Pakistan. The empirical results show that different vulnerability rankings can be obtained depending on the choice of the measure. By utilising these measures, we can identify who and which region is more vulnerable to a particular type of risk. This kind of information is useful in targeting poverty reduction policies. Since the nature of vulnerability is diverse, it is advisable to use the whole vector of various vulnerability measures.

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Keywords: Vulnerability, Poverty, Risk, Consumption Smoothing, Pakistan.

1. INTRODUCTION

In this paper, the concept of vulnerability of the poor's welfare and its practical measures are scrutinised in order to derive implications for targeting poverty reduction policies toward vulnerable households. How different is the concept of vulnerability from that of poverty in a narrow sense and how significant is the expansion of the poverty concept into vulnerability? How has the vulnerability concept been operationalised into measures that can be estimated from quantitative and qualitative data? And what is the weakness of these measures we need to keep in mind when we would like to target our policies toward vulnerable households based on these measures? These are the issues addressed in this paper.

Recently, interest on the dynamic characteristics of poverty in low-income countries has increased, partly due to the availability of high quality panel data and partly due to the development of microeconometric tools to analyse household dynamics under uncertainty [Dercon (2005); Fafchamps (2003); Townsend (1994); Udry (1994)]. Much attention is now paid to poverty dynamics and security issues in designing poverty reduction policies as well [World Bank (2000)]. An emerging consensus is that poor households are likely to suffer not only from low income and consumption on average,

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but also from fluctuations of their welfare. The concept of vulnerability is often employed in these analyses of the poverty dynamics. In the non-technical literature, Chambers (1989) described vulnerability as "defenselessness, insecurity, and exposure to risk, shocks, and stress" (p. 1), while the World Bank (2000) described it as "the likelihood that a shock will result in a decline in well-being" (p. 139). This paper accepts these non-technical definitions and attempts to translate them into the terminology of economics. A natural way to define vulnerability in economics terms is to define it as a loss in forward-looking welfare due to low expected consumption, high variability of consumption, or both [Ligon and Schechter (2003)].

There exists an emerging literature in development economics that attempts to operationalise the concept of vulnerability.[1] One strand of the literature approaches this issue based on the expected utility theory. Another strand proposes measures of vulnerability that are readily estimable from household datasets, without specifying the household utility function. These attempts are reviewed in the second section of this paper.

As illustration, these measures of vulnerability are empirically estimated in the third section, using a panel dataset collected by the author in the North-West Frontier Province (NWFP),[2] Pakistan. The empirical exercise investigates the robustness of ranking households based on various vulnerability measures.[3] Pakistan is a part of South Asia, where more than 500 million people or about 40 percent are estimated to live below the poverty line [World Bank (2000)]. In recent debates on poverty in Pakistan, the issue of vulnerability has been mentioned frequently [e.g., Pakistan (2003); World Bank (2002)]. Furthermore, the poverty incidence in Khyber Pakhtunkhwa is higher and agriculture is more risky than in other parts of Pakistan. These additional hardships make the Kyber Pakhtunkhwa case study an interesting one to investigate vulnerability. In the final section, implications of vulnerability analyses to poverty reduction policies are discussed.

2. ANALYTICAL FRAMEWORK

2.1. Basic Concept of Welfare under Uncertainty

This paper assumes that the welfare level of an individual belonging to household i in period t is determined by the level of per-capita real consumption, y_{it}. The most important determinant of y_{it} is household income per capita, x_{it}. Due to exogenous shocks occurring to the income generating process, such as drought, flood, price changes in the world commodity markets, sickness and injury to the labour force, and changes in policies, x_{it} fluctuates. However, y_{it} need not to be equal to x_{it}. Households can smooth consumption over time and across states of nature using various assets and insurance

[1]See for example, Ligon and Schechter (2002), Hoddinott and Quisumbing (2003), Calvo and Dercon (2005) and Dercon (2006) for a survey of the literature on vulnerability analyses in developing countries.

[2]In April 2010, the constitution of Pakistan was amended, including the renaming of the former NWFP as "Khyber Pakhtunkhwa." In this paper, since all data correspond to a period before this constitutional amendment, the expression "NWFP" is used to infer the current province of "Khyber Pakhtunkhwa."

[3]Among the existing studies, Ligon and Schechter (2004) implemented a similar exercise of comparing the performance of various vulnerability measures. They investigated the cases of Vietnam and Bulgaria.

arrangements, *ex post* [Townsend (1994); Udry (1994); Kurosaki and Fafchamps (2002)]. When households' *ex post* risk-coping measures are limited, possibly due to the underdevelopment of credit and insurance markets in low income countries, they may adopt income smoothing measures, such as income diversification and asset portfolio choices [Morduch (1994); Kurosaki and Fafchamps (2002)]. Since these attempts to avoid unnecessary fluctuations in consumption are usually far from perfect, fluctuations in consumption as well as income are commonly observed in a household panel dataset, including the one used in this paper.

An implicit assumption underlying this discussion is that households have risk-averse preferences. Since the focus of this paper is on the well-being of people whose average consumption is low, a small reduction of consumption might imply a serious survival crisis for such people. Thus the assumption of risk aversion can be justified. Unwanted fluctuations in future consumption indeed imply a loss in *forward-looking* welfare. This loss is regarded as vulnerability in this paper. The vulnerability concept thus captures an aspect that cannot be captured by orthodox poverty measures that aggregate the deprivation of *current* welfare below the poverty line. Herein lies the significance of the vulnerability concept.

2.2. Vulnerability Analysis Based on the Expected Utility Theory

When the preference of household i is represented by a von Neumann-Morgenstern utility function, $U_i(y_i)$, with $U'_i(.)>0$, $U''_i(.)<0$, and given the distribution of y_i, we can calculate the value of the expected utility, $\mathrm{E}[U_i(y_i)]$, which is a convenient measure of welfare under uncertainty. Ligon and Schechter (2002, 2003) thus proposed a convenient way of defining vulnerability, V_i, as the deviation of the welfare from the level corresponding to the poverty line without uncertainty:

$$V_i = U_i(z) - \mathrm{E}[U_i(y_i)], \quad \cdots \quad \cdots \quad \cdots \quad \cdots \quad \cdots \quad \cdots \quad (1)$$

where z is the poverty line, exogenously fixed. Equation (1) can be decomposed as

$$V_i = \{U_i(z) - U_i(\mathrm{E}[y_i])\} + \{U_i(\mathrm{E}[y_i]) - \mathrm{E}[U_i(\mathrm{E}[y_i|W])]\} + \{\mathrm{E}[U_i(\mathrm{E}[y_i|W])] - \mathrm{E}[U_i(y_i)]\}, \quad (2)$$

where $\mathrm{E}[y_i|W]$ indicates the expected consumption level conditional on a vector of aggregate variables W, such as weather shocks. The first term on the right-hand-side of Equation (2) shows the vulnerability due to income poverty, the second term shows the vulnerability due to welfare fluctuations arising from aggregate shocks, and the last term shows the vulnerability due to welfare fluctuations arising from idiosyncratic shocks. By aggregating over individuals belonging to a particular group, we can calculate the value of the group's vulnerability with neat decomposition. This is what Ligon and Schechter (2002, 2003) implemented for the case of Bulgaria.

One aspect that cannot be directly analysed in their approach is endogenous income smoothing adopted by households. The size of income shocks may not be a fixed household characteristic. Faced with uninsurable income shocks, households may choose an income portfolio that yields a low return and low risk. In such a case, the expected consumption level, $\mathrm{E}[y_i]$ in Equation (2), may decline, but the real cause of the decline is not the income poverty but the uninsurable aggregate or idiosyncratic risks. A straightforward but only recently developed approach to incorporate this aspect into a

vulnerability analysis is to completely specify a stochastic dynamic programming model for households and then to employ simulation analyses [Elbers and Gunning (2003); Zimmerman and Carter (2003)]. Then, the total measure of vulnerability can be further decomposed into several factors by simulating the household economy under different counterfactual scenarios.

However, this approach requires panel data with detailed household information over a long period. Such high quality panel data are seldom available from developing countries. In addition, the simulation results of this approach are difficult to interpret due to its complicated dynamic interference. Furthermore, to make the model computationally tractable, the number of state variables needs to be limited to one or two (or at most three). This limits the applicability of the simulation approach. The methodology by Ligon and Schechter (2002, 2003) can be understood as a shortcut to avoid this problem by employing drastic assumptions to simplify the household's optimisation problem.

2.3. Measures of Vulnerability in the Existing Literature

In contrast to the utility-based approach described above, a more traditional approach has been to use practical measures of vulnerability that are readily estimable from household datasets without specifying a microeconomic model of households. Panel data of households usually include information on household income, consumption, demographic characteristics, and assets. Since the household welfare is determined by per-capita real consumption (y_{it}), most of the vulnerability measures are the transformation of the observed level and variability of y_{it} in one way or another. The transformation can be interpreted as a crude approximation of $U_i(z) - \mathrm{E}[U_i(y_i)]$ in Equation (1). In this review, such measures are broadly classified into two: those based on the observed level of variability of y_{it} in the past and those capturing the expected poverty in the future. The two are intrinsically interrelated. Since vulnerability is a forward-looking concept, measures based on the dynamics of consumption in the past can be interpreted as a proxy for the dynamics of consumption in the future.

2.3.1. Measures Characterising Consumption Changes in the Past

(i) Those who Fell into Poverty

If it is assumed that only the deprivation below the poverty line (z) should matter when vulnerability is evaluated, a transition matrix analysis can be employed. Given panel data with information on y_{it} and $y_{i,t+1}$, households are classified into four categories: those who remained poor ($y_{it}<z$ and $y_{i,t+1}<z$); those who fell into poverty ($y_{it}\geq z$ and $y_{i,t+1}<z$); those who escaped poverty ($y_{it}<z$ and $y_{i,t+1}\geq z$); those who remained non-poor ($y_{it}\geq z$ and $y_{i,t+1}\geq z$). The second type of households may be regarded as vulnerable. This analysis closely replicates the non-technical definition of vulnerability as "the likelihood that a shock will result in a decline in well-being" [World Bank (2000), p. 139]. See Sen (1981), Grootaert and Kanbur (1995) and Sen (2003) for empirical application of this approach.

(ii) Size of Consumption Decline

It may not be necessary to employ poverty lines in vulnerability analyses if the major concern is on the household's exposure to downside risk regardless of the level of

consumption. Then, given a two-period panel dataset, the lower Δy_{it} (or $\Delta \ln(y_{it})$), the more vulnerable the household is. This is the approach adopted by Ravallion (1995), Jalan and Ravallion (1999), and Glewwe and Hall (1998).

(iii) Decomposition of Poverty Measures into Transient and Chronic Components

When the household consumption level y_{it} falls below the poverty line z, the welfare level of the household may go down substantially, accelerating as poverty deepens. Most of the popular poverty measures, such as FGT measures [Foster, *et al.* (1984)], are the average over individuals of an individual's poverty score function $p(z, y_{it})$, which takes the value of zero when $y_{it} \geq z$ and a positive value when $y_{it} < z$. Then, the increase of a household's poverty score attributable to the variability of y_{it} can be interpreted as a measure of vulnerability. This is achieved by subtracting $p^C{}_i$ (= $p(z, \mathrm{E}[y_i])$), the chronic poverty score, from $p^P{}_i$, i.e. the time average of $p(z, y_{it})$, or the total poverty score [Ravallion (1988)]. The residual component of observed poverty can be attributable to risk, denoted by $p^T{}_i$, which is a measure of household-level transient poverty, thus a measure of vulnerability.[4]

Since this decomposition is both practically manageable and has a theoretical foundation (the expected utility hypothesis), it has been applied to a number of household datasets from developing countries to analyse the dynamics of poverty [Ravallion (1988); Jalan and Ravallion (1998, 2000); McCulloch and Baulch (2000)]. As an extension, Kurosaki (2006b) investigated the sensitivity of this decomposition to the poverty line or to the average consumption level and finds that poverty measures associated with prudent risk preferences (such as Clark-Watt's measures) perform better than FGT measures.

(iv) Excess Sensitivity of Consumption to Income

A variant to these approaches defines a household as vulnerable to risk when y_{it} shows excess sensitivity to shocks in x_{it}, due to insufficient insurance. Typically, an empirical model

$$\Delta y_{it} = a_0 + b_{vt} D^v{}_t + \xi_i \Delta x_{it} + \Delta u_{it}, \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (3)$$

is estimated, where $D^v{}_t$ is a village-year dummy, a_0, b_{vt}, and ξ_i are coefficients to be estimated, and u_{it} is an error term. Then the size and statistical significance of ξ_i show how household i is vulnerable to idiosyncratic income shocks.[5] Although Amin, *et al.* (2003) is the first study that explicitly defines the estimate for ξ_i as a measure of vulnerability, followed by Skoufias and Quisumbing (2005), earlier studies that estimate ξ_i interpret it as a measure of vulnerability implicitly, such as those by Jalan and Ravallion (1999) and Dercon and Krishnan (2000). This measure of vulnerability is a very partial one in the sense that it captures the *potential* degree of suffering from adverse

[4]Note that for this approach to be consistent with a risk-averse behaviour of households, the poverty score function $p(z, y_{it})$ should be increasing and convex with the size of deprivation z-y_{it}. For this reason, the squared poverty gap index is the most popular choice as a functional form for $p(z, y_{it})$.

[5]For a theoretical base of this interpretation, see Townsend's (1994) model of Pareto-optimal risk sharing among villagers. Since the model assumption of Pareto-optimality is unlikely to be satisfied in the empirical reality, his theoretical model should be regarded as a benchmark to evaluate the actual situation. See also Ravallion and Chaudhuri (1997) for further notes required in implementing empirical analyses based on his model.

shocks in terms of how much consumption is likely to fall when income is reduced by a *fixed amount* due to exogenous shocks.

Kurosaki (2006a) extended the equation above by treating the positive and negative shocks separately and defined vulnerability only when a household hit by a *negative* shock *reduces* its welfare level. He also allowed the vulnerability parameter to differ across households systematically according to the household asset status. Therefore, in the empirical model of Kurosaki (2006a), ξ_i differs depending on the sign of Δx_{it} and it is approximated as a linear function of household attributes that are likely to affect the level of consumption smoothing at the household level. In the next section, ξ_i is estimated based on the approach by Kurosaki (2006a).

2.3.2. Measures Capturing Expected Poverty in the Future

Another strand of studies propose a measure of "vulnerability to poverty," defined as the expected value of a poverty score in the near future, conditional on the information up to the last period of the household (panel) data. A general model according to Chaudhuri (2000) and Chaudhuri, *et al.* (2002) could be written as

$$\pi_i = \mathrm{E}[p(z, y_{i,T+1}) \mid I_T],$$

where I_T is the information set included in the panel dataset of length T. As a poverty score function, headcount index (HCI) is the most popular one because π_i in this case has an intuitive meaning of the future probability of household i falling below the poverty line given the current information. Although the HCI-based measure of vulnerability is useful in assessing the poverty status of households, it does not account for the depth of poverty below the poverty line. Because of this shortcoming, it may not be a good indicator of vulnerability to risk. For instance, when the variability of welfare becomes larger (mean-spreading risk), the measure becomes smaller for households whose average welfare status is below the poverty line, although the welfare level of such households is likely to decline because of the increase in risk.[6] Noticing this problem, Kamanou and Morduch (2005) proposed that $\pi_i - p(z, y_{i,T})$ should be a measure of vulnerability rather than π_i itself and convex functions such as those associated with the squared poverty gap should be used for function $p(.)$ rather than the one associated with the headcount measure.

In estimating π_i, Chaudhuri (2000) and Chaudhuri, *et al*. (2002) suggested that it can be estimated from cross-section information only, if an identifying assumption is accepted that the expected level of $y_{i,t+1}$ is a function of household attributes in t and the time-series variance of $y_{i,t+1}$ is the same as the cross-section variance of y_{it}, which is also a function of the same variables.[7] Since the identifying assumption is hard to accept, it is not adopted in the next section of this paper. At the other extreme from Chaudhuri's assumption, McCulloch and Calandrino (2003) estimated π_i using observed values of time-series means and variances of y_{it} for each i. This methodology is useful if T is

[6]See also Ravallion's (1988) decomposition, where he demonstrated that not all poverty measures respond positively to the increase in consumption variance. The headcount index has the least desirable property.

[7]Extending this approach based on the cross-section variation of y_{it}, Christiaensen and Subbarao (2005) incorporated observed time-series variation of semi-macro variables.

sufficiently large, but their dataset includes only five time periods. In between, Pritchett, *et al.* (2000), Mansuri and Healy (2001), and Kamanou and Morduch (2005) estimated π_i using cross-section variation of Δy_{it}. See Ligon and Schechter (2004) for Monte Carlo experiments varying the number of periods T, in order to see how the different measures perform.

For the case of Pakistan, Mansuri and Healy (2001) estimated π_i using five-year panel data collected by the International Food Policy Research Institute (IFPRI), covering districts of Dir, Attock, Faisalabad, and Badin, for the period 1986-87–1990-91.[8] It is important that their estimates are based on the information on cross-section variation of Δy_{it} (observed changes in consumption), which is available only from panel data. Following their approach, in the next section, the expected value of the headcount measure is estimated for Khyber Pakhtunkhwa using a model where the mean and variance of Δy_{it} are assumed to be functions of household attributes in the initial period.

In non-technical literature, the vulnerable are sometimes defined as those who are just above the poverty line z. For instance, Pakistan's Poverty Reduction Strategy Paper calls those whose income is between 100 percent and 125 percent of z "transitory vulnerable" [Pakistan (2003), Figure 3.1, p. 13]. This concept can be interpreted as an application of π_i (the probability of being below the poverty line in the near future). If we admit that purely cross-section data do not contain meaningful information on the individual-level income variability over time, the only alternative is to assume that the variance of the individual-level income variability over time is constant. With this simplifying assumption, the individuals who were just above the poverty line z are those subject to the largest risk of being poor in the near future among the non-poor. In other words, the concept of the vulnerable as those who are just above z has a theoretically-sound base. The underlying assumption is more acceptable than Chaudhuri's (2000) assumption applied to a purely cross-section data that the time-series variance of y_{it} can be inferred from its cross-section variance.

2.3.3. Measures Using Information other than Income and Consumption

Since economists tend to focus on monetary aspects of well-being, vulnerability measures reviewed so far are defined on the consumption space. However, we need to recall that consumption is only one of the determinants of well-being. When other determinants such as education, health, mortality, and so on, are controlled for, we can infer the level and variability of welfare only from looking at the level and variability of consumption.

Therefore, it is desirable to extend the vulnerability analysis with a focus on welfare indicators other than consumption. In this direction, Carter and May (2001) first searched for an asset that is highly correlated with various determinants of welfare, and then applied the vulnerability measures surveyed in this subsection to this asset. Alternatively, Dercon and Krishnan (2000) regarded the change of body mass index (BMI) as an index of individual's vulnerability and applied the vulnerability measure of excess sensitivity to income shocks (ξ_i) to the BMI change in Ethiopia. Similar analyses can be applied to education investment as well, as done by Jacoby and Skoufias (1997)

[8]Their methodology and results are summarised in World Bank (2002), pp. 28–32, and pp. 135–138.

and Sawada and Lokshin (2009). These authors showed that less landed households in South Asia are more vulnerable to education interruption than more landed households.

3. EMPIRICAL APPLICATION TO PAKISTAN

3.1. Data

As illustration, this section applies the various measures of vulnerability reviewed in Subsection 2.3 to a panel dataset compiled from sample household surveys implemented in 1996 and 1999 in the Peshawar District, Khyber Pakhtunkhwa.[9] The incidence of income poverty in Khyber Pakhtunkhwa was estimated at around 40 to 50 percent throughout the 1990s, the highest among the four provinces [World Bank (2002)]. Not only income poverty but also the deprivation in other aspects of human development is serious in Khyber Pakhtunkhwa. Achievement in education and health development in Khyber Pakhtunkhwa is lagging behind other provinces and gender disparity in education is especially huge in rural Khyber Pakhtunkhwa.

Three villages surveyed are similar in their size, socio-historical background, and tenancy structure, but are different in levels of economic development (irrigation and market access). Table 1 summarises characteristics of the sample villages and households. Village A is rainfed and is located some distance from main roads. This village serves as an example of the least developed villages with high risk in farming. Village C is fully irrigated and is located close to a national highway, so serves as an example of the most developed villages with low risk in farming. Village B is in between.

Out of 355 households surveyed in 1996, 304 households were resurveyed in 1999. From these sample households, a balanced panel of 299 households with two periods is compiled for analysis in this section. Average household sizes are larger in village A than in villages B and C, reflecting the stronger prevalence of an extended family system in village A. Average landholding sizes are also larger in village A than in villages B and C. Since the productivity of rainfed land is substantially lower than that of irrigated land, effective landholding sizes are similar among the three villages.

Real consumption per capita, y_{it}, was calculated by summing annual expenditures on each consumption item including its imputed value when domestically produced, divided by the household size and by the consumer price index.[10] Average consumption per capita is lowest in village A and highest in village C, although intra-village variation is much larger than inter-village variation. During the three years since the first survey, Pakistan's economy suffered from macroeconomic stagnation, resulting in an increase in poverty [World Bank (2002)]. Reflecting these macroeconomic shocks, the general living standard stagnated in the villages during the study period.

[9]See Kurosaki and Hussain (1999) and Kurosaki and Khan (2001) for details of the 1996 household survey and the 1999 household survey, including the definition of "household". Regarding the issues discussed in this paper, Kurosaki (2006b) investigated the sensitivity of Ravallion's poverty decomposition into transient and chronic components, and Kurosaki (2006a) estimated the excess sensitivity parameter of consumption to incomes, using the same dataset.

[10]The actual number of household members was used in this paper as a measure of household size. Alternatively, the household size can be estimated in terms of an equivalence scale that reflects differences in sex/age structure and corrects for the scale economy [Lanjouw and Ravallion (1995)]. Results under the alternative specifications were qualitatively the same as those reported in this paper.

Table 1

Sample Villages and the Panel Data (Khyber Pakhtunkhwa, Pakistan)

	Village A	Village B	Village C
1. Village Characteristics			
Agriculture	Rainfed	Rain/Irrig.	Irrigated
Distance to Main Roads (km)	10	4	1
Population (1998 Census)	2,858	3,831	7,575
Adult Literacy Rates (1998 Census)	25.8	19.9	37.5
2. Characteristics of Panel Households			
Number of Sample Households	83	111	105
Average Household Size			
in 1996	10.75	8.41	8.95
in 1999	11.13	7.86	9.3
Average Farmland Owned			
in 1996 (ha)	2.231	0.516	0.578
in 1999 (ha)	2.258	0.517	0.595
Average per Capita Income			
in 1996 (Nominal US$)	194.4	231.2	336.6
in 1999 (Nominal US$)	147.8	164.7	211.6
Average per Capita Consumption			
in 1996 (Nominal US$)	134.4	157.0	200.8
in 1999 (Nominal US$)	133.5	143.1	198.3

Source: The author's calculation (the same for the following tables).

Notes: (1) "Average per capita income" and "Average per capita consumption" are averages based on individuals. They were calculated as the household average with household size as weights.

(2) "Average farmland owned" is an average over all the sample households.

The official poverty line determined by the Government of Pakistan is adopted in this section. It is set at 673.54 Rs in 1998-99 prices per month per adult, which is estimated econometrically as the total consumption expenditure amount corresponding to the food consumption of 2,350 kcal per day per adult. Based on this poverty line, 55.0 percent of individuals are classified as "always poor" ($y_{it} < z$ in both periods), 13.1 percent as "usually poor" ($\text{average}_t[y_{it}] < z$ and $\max_t[y_{it}] \geq z$), 16.4 percent as "occasionally poor" ($\text{average}_t[y_{it}] \geq z$ and $\min_t[y_{it}] < z$), and 15.5 percent as "always non-poor" ($y_{it} \geq z$ in both periods) in this dataset [Kurosaki (2006b)].

3.2. Empirical Results

The main question to be asked is: What is the best criterion for targeting the most vulnerable? To answer this question, three candidates for the targeting criterion were investigated: (i) geographical targeting: villages A, B, or C, (ii) land-based targeting: households belonging to the land-owning families versus others,[11] and (iii) education-based targeting: households whose head was educated in formal schools versus others.

[11]To avoid endogeneity problems and to control for life-cycle factors, we adopt the classification whether the household belongs to the land-owning families, rather than the classification based on the current landholding status. The two classifications are positively correlated but the correlation coefficient is less than one.

Table 2 lists empirical measures estimated from the Pakistan data. In addition to vulnerability measures based on per-capita real household consumption, y_{it}, those based on education and subjective assessment of vulnerability were also calculated. Regarding education, the ratio of individuals belonging to households that experienced a decline in children's enrollment (i.e., those households whose age 6-7 enrollment ratio in 1996 was larger than their age 9-10 enrollment ratio in 1999) was calculated as a measure of education vulnerability. The subjective assessment of vulnerability by the household head is based on questions on whether the household experienced downside risk in 1996-99, and, if yes, how the household responded to the downside risk in 1996-99. Unfortunately, the current dataset does not include useful information on health.[12] In addition to the vulnerability measures, measures of chronic poverty are also reported in the table for comparison. All vulnerability measures in the table require panel data, except for the subjective assessment of vulnerability that can be elicited through retrospective questions. In contrast, most measures of chronic poverty can be estimated from a single cross-section dataset.

Table 2

Definitions of Vulnerability/Poverty Measures Used in the Empirical Analysis

Measure	Definition
Vulnerability Measures (the Larger Its Value, the more Vulnerable)	
1. Those Based on Per Capita Real Consumption (y_{it})	
Cons_decline	Average size of consumption decline (group-average of $-\Delta\ln(y_{it})$)
S_c_decline	Ratio of individuals who experienced consumption decline ($y_{it} > y_{i,t+1}$)
S_fell_poor	Ratio of individuals who "fell into poverty" ($y_{it} \geq z$ and $y_{i,t+1} < z$)
S_occ_poor	Ratio of individuals belonging to the "occasionally poor"
Trans_pov	Ravallion's decomposition: Squared poverty gap attributable to consumption fluctuations
ξ*_neg*	Parameter estimate for "excess sensitivity" of consumption to income decline according to the model of Kurosaki (2006a)
π_0	Expected value of poverty headcount index based on the information on consumption changes
2. Those Based on Non-monetary Measures	
S_enrl_decline	Ratio of individuals belonging to households with the age 6-7 enrolment ratio in 1996 larger than the age 9-10 enrolment ratio in 1999.
S_drisk	Ratio of individuals belonging to households with subjective risk assessment that the household experienced downside risk in 1996-99
S_no_cope	Ratio of individuals belonging to households with subjective risk assessment that the household responded to the downside risk in 1996-99 mainly by reducing consumption
Measures of Chronic Poverty (the Larger Its Value, the Poorer)	
1. Those Based on Per Capita Real Consumption (y_{it})	
Cons_low	Average deprivation below the poverty line [$=(z\text{-average}_t(y_{it}))/z$]
S_chronic	Ratio of individuals whose average consumption was below the poverty line
Chron_pov	Ravallion's decomposition: Squared poverty gap attributable to the low level of average consumption
2. Those Based on Non-monetary Measures	
Edu_head	Household head's schooling years as the deprivation below the overall average
Illiterate	Adult (age 15 and above) illiteracy ratio
S_enrl_low	Ratio of individuals belonging to households with the age 6-7 enrolment ratio in 1996 smaller than unity

[12]Health indicators based on the household head's judgment were collected in the survey but they were subject to severe reporting errors.

The empirical results are shown in Table 3.[13] Among villages, chronic poverty is most serious in village A and least serious in village C. This reflects the survey design. Landed households suffer less from chronic poverty than landless households and households with educated heads suffer less from chronic poverty than households with uneducated heads. The contrast is clearly shown regardless of the choice of a particular measure of chronic poverty.

Table 3

Estimated Values of Vulnerability/Poverty Measures
(Khyber Pakhtunkhwa, Pakistan, 1996-2000)

		By Village			By Land		By Education	
	Total	A	B	C	Landless	Landed	No Educ.	Primary or More
NOB	299	83	111	105	159	140	217	82
Vulnerability Measures (the Larger Its Value, the more Vulnerable)								
1. Those Based on Per Capita Real Consumption (y_{it})								
Cons_decline	–0.033	–0.008	–0.026	–0.063	0.008	–0.076	–0.023	–0.058
S_c_decline	0.274	0.366	0.252	0.207	0.334	0.212	0.294	0.221
S_fell_poor	0.136	0.126	0.131	0.149	0.156	0.115	0.143	0.116
S_occ_poor	0.164	0.157	0.099	0.233	0.140	0.190	0.156	0.187
Trans_pov	0.017	0.021	0.016	0.014	0.018	0.015	0.019	0.011
ξ_neg	0.084	0.053	0.092	0.105	0.165	0.001	0.073	0.111
π_0	0.586	0.720	0.662	0.387	0.679	0.490	0.610	0.522
2. Those Based on Non-monetary Measures								
S_enrl_decline	0.073	0.082	0.048	0.089	0.076	0.070	0.067	0.090
S_drisk	0.637	0.714	0.601	0.598	0.634	0.641	0.631	0.652
S_no_cope	0.323	0.416	0.359	0.202	0.334	0.312	0.351	0.251
Measures of Chronic Poverty (the Larger Its Value, the Poorer)								
1. Those Based on Per Capita Real Consumption (y_{it})								
Cons_low	0.066	0.230	0.133	–0.152	0.171	–0.043	0.133	–0.110
S_chronic	0.681	0.816	0.755	0.484	0.810	0.548	0.732	0.545
Chron_pov	0.069	0.102	0.088	0.020	0.082	0.056	0.075	0.054
2. Those Based on Non-monetary Measures in 1996								
*Edu_head**	0.000	0.448	0.088	–0.507	0.311	–0.322	1.000	–2.625
Illiterate	0.753	0.809	0.804	0.651	0.799	0.705	0.850	0.498
S_enrl_low	0.361	0.538	0.361	0.192	0.363	0.358	0.391	0.281

Notes: (1) All figures are weighted averages among households with the number of household members as weights. Thus, these figures can be interpreted as the individual-level averages. "NOB" gives the number of sample households included in each category.

(2) * Indicates that the deviation is from the overall average and then divided by the overall average. For example, the value of 0.448 for *Edu_head* in village A indicates that households in village A have 44.8 percent below the average in terms of the head's schooling years.

[13]The values reported as π_0 and *ξ_neg* are the group averages of $\pi_{0,i}$ and ξ_neg_i that were estimated for each household *i*. $\pi_{0,i}$ was estimated by a model reported in Subsection 2.3.2 with the mean and variance of Δy_{it} as functions of households' initial attributes such as the household size, dependency ratios, the age and education levels of household heads, sources of income, land assets, and other assets. ξ_neg_i was estimated by a model reported in Subsection 2.3.1 (iv) with ξ_i on the income decline approximated by a linear function of similar variables [Kurosaki (2006a)].

Among the seven vulnerability measures based on per-capita real consumption, four measures show the contrast among villages, landholding status, and education status very similar to the one found from chronic poverty measures. The four measures include the average consumption decline (*Cons_decline*), the ratio of individuals who experienced a consumption decline (*S_c_decline*), the size of transient poverty a la Ravallion (1988) (*Trans_Pov*), and the expected value of poverty headcount index (π_0).

On the contrary, the ratio of individuals belonging to the "occasionally poor" (*S_occ_poor*) shows an exactly opposite pattern: the ratio is higher in village C, among landed households, and among educated households. This is because this measure of vulnerability puts a heavy weight on consumption variability on the condition that the chronic poverty level is not high. The reason for the ratio of individuals who fell into poverty (*S_fell_poor*) to be higher in village C is similar, although this ratio is higher among landless and among uneducated households. The estimates for the excess sensitivity parameter to income decline (ξ*_neg*) show that landless households are more vulnerable than landed households, reflecting the advantage of landholding in consumption smoothing [Kurosaki (2006a)]. Against the expectation that more educated households are more able to smooth consumption, ξ*_neg* is higher for educated households than for uneducated households. Kurosaki (2006a) showed that the unexpected result was due to a fact that households with educated heads were on average richer than others so that they had room to reduce consumption expenditure when hit by a negative shock without reducing the core components of consumption. After controlling for the difference in average consumption level, ξ*_neg* was found to be smaller for educated households than for uneducated households.

Table 3 also reports three vulnerability measures based on education and subjective risk assessment. *S_no_cope* shows a contrast similar to the one found from chronic poverty measures. This ratio shows the household's subjective assessment that the household had no other way to cope with income decline than to reduce their consumption. Therefore, the inability to cope with downside risk through asset markets or through reciprocity networks is closely related with the depth of chronic poverty. Those who are chronically poor are also very vulnerable in this sense. On the other hand, *S_enrl_decline* (the ratio of individuals belonging to households who experienced a decline in their children's school enrolment ratio) does not show such a contrast. This is because this measure of education vulnerability becomes positive only when households were able to send some or all of their children to school in the initial period. In rural Pakistan, many of the households who suffer from chronic poverty do not send their children to school at all [Sawada and Lokshin (2009)]. In such cases, this measure of education vulnerability is not very useful; measures of chronic deprivation in education could be more useful.

Let us summarise the empirical answer to the main question. First, among the three villages, households in village A seem more vulnerable than those in villages B and C. Six out of the ten vulnerability measures in Table 3 show this ranking. However, several vulnerability measures that put a heavy weight on the decline of a determinant of well-being do not agree with this conclusion (vulnerability is highest in village C, not in village A), since these measures become positive only when the initial welfare status is not at the bottom. Second, households belonging to the land-owning families are less

vulnerable than others. Eight out of the ten vulnerability measures in Table 3 support this contrast. Here again, several vulnerability measures do not agree with this pattern, especially when the measures are sensitive to farming risk. Third, households whose head is educated are less vulnerable than others. Six out of the ten vulnerability measures in Table 3 show this contrast. Several measures, especially the measure of education vulnerability, show the opposite pattern, mostly due to the reason that they can take a positive value only when the initial enrolment ratio was strictly positive. Fourth, these results show that it is not possible to draw a definite conclusion regarding the best criterion for targeting the most vulnerable: geographical, land-status, or education-status. Depending on the choice of vulnerability measures, the conclusion differs.

For those vulnerability measures that are the average of continuous scores at the household level, correlation coefficients using micro observations were calculated and reported in Table 4.[14] Most of the coefficients among the four vulnerability measures were small in absolute values. This indicates that these measures capture different aspects of vulnerability. Since each of them has information not included in others, these measures can be employed simultaneously as complementary measures. When correlation coefficients between the vulnerability measures and the chronic poverty measures were calculated (Table 4), the expected value of headcount index (π_0) was found to be highly correlated with the chronic poverty measures based on per-capita real consumption (*Cons_low* and *Chron_Pov* in the table). This is as expected since the expected HCI decreases with the observed consumption level by definition. Therefore, the information gain additional to the one already included in chronic poverty measures may not be large if the expected HCI is employed while it is likely to be substantially large if other measures of vulnerability are employed. Since these measures capture different aspects of the welfare cost of consumption variability, all of them can serve as useful tools to extend the poverty analysis in the dynamic context.

Table 4

Correlation Coefficients among Vulnerability/Poverty Measures (Khyber Pakhtunkhwa, Pakistan, 1996-2000)

	Vulnerability Measures				Chronic Poverty Measures	
	Cons _decline	*Trans _pov*	*ξ_neg*	π_0	*Cons _low*	*Chron _pov*
Vulnerability Measures (the Larger Its Value, the more Vulnerable)						
Cons_decline	1.000	–0.049	0.170	0.536	0.034	0.015
Trans_pov		1.000	–0.006	0.003	0.084	–0.113
ξ_neg			1.000	0.224	0.059	–0.067
π_0				1.000	0.691	0.632
Measures of Chronic Poverty (the Larger Its Value, the Poorer)						
Cons_low					1.000	0.627
Chron_pov						1.000

Note: Correlation coefficients are calculated among households with the number of household members as weights.

[14]See Ligon and Schechter (2004) for similar exercises done for the cases of Vietnam and Bulgaria.

4. CONCLUSION

This paper surveyed the literature on the concept of vulnerability of the poor's welfare and its practical measures and then applied the measures to a panel dataset collected in rural Pakistan. By specifying a household's utility and the expected flow of its consumption, it is possible to decompose vulnerability into several sources and to evaluate the impact of policy changes numerically. However, this utility-based methodology requires drastic assumptions to simplify the household's optimisation problem, or, simulations based on a stochastic dynamic model using high quality panel data. In contrast, there have been proposed a number of practical measures of vulnerability that are readily estimable from household datasets, such as the average consumption decline, the sensitivity of consumption changes to income changes, the component of observed poverty attributable to the fluctuation of consumption, and the probability of falling below the poverty line in the future. The empirical exercise showed that different conclusions can be drawn on the question who is more vulnerable, depending on the choice of the measure.

These results suggest that the various measures of household vulnerability to risk are useful tools to extend the poverty analysis in the dynamic context. Each of the existing measures captures different aspects of vulnerability. Most of them include information not included in chronic poverty measures. This kind of information is especially useful in targeting poverty reduction policies. Since the nature of vulnerability is diverse, it is not advisable to search for a single index of vulnerability. Instead, the whole vector of various vulnerability measures could be employed as a useful source of information. When the majority of the measures unanimously indicate a particular group to be vulnerable, the group should be targeted with the first priority for any type of poverty/vulnerability reduction policies. When only a subset of the measures indicate another group to be vulnerable, the group should be targeted with a policy that attempts to reduce the particular type of risk.

The survey in this paper showed that most of the vulnerability measures summarise micro-level information on consumption and income. Since the welfare of an individual depends not only on consumption but also on other non-monetary aspects such as education and health, extending the vulnerability analysis to incorporate these aspects is important. This is one of the areas that require more research.

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Regional Integration in South Asia: An Analysis of Trade Flows Using the Gravity Model

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The study deals with trade benefits from the free trade agreement of the SAARC countries. It assesses the trade potential and trade creation with member and non-member countries. The gravity model has been used to measure the bilateral trade flows and to assess the trade effect for member and non-member countries.

Two analyses estimate the gravity model. The first analysis is based on cross-sectional data to capture the trade effect individually each year; and the second analysis utilises the pooled data to measure the overall trade effects and trade flows for the period 2003 to 2008. The results from the two approaches show that estimated coefficients are consistent with the model assumptions. Both analyses show that the regional trade agreement of the SAARC countries could divert the trade for member countries as well as for the non-member countries. However, trade volume will increase only if the major partners (Pakistan, India, and Sri Lanka) sign regional trade agreements.

JEL classification: F15
Keywords: Trade; Regional Integration; Gravity Model

1. INTRODUCTION

The role of free trade agreements and regional integration has become an important feature in economic development. Many countries have moved to regional integration to foster their economic development and improve the standard of living of the people through opening up their economies. The NAFTA, the EU, and the ASEAN are examples of successful regional integration. The significance of regional integration has pushed the SAARC (South Asian Association for Regional Cooperation) countries to sign a free trade agreement.

The South Asia Free Trade Agreement (SAFTA) was signed by the seven member countries of the SAARC at Islamabad (Pakistan) on 6th January 2004, and it was implemented on 6th July 2006. According to the agreement, in the first phase, India, Pakistan and Sri Lanka have reduced their custom tariffs to 20 percent since the 1st January 2008 and Bangladesh, Bhutan, Maldives and Nepal have reduced their custom tariffs to 30 percent. In the second phase, all countries will reduce the custom tariffs from 0 to 5 percent within the five years from 2008 to 2013. The first phase has been completed and countries have liberalised their trade within the region at a small degree.

The establishment of the SAFTA obviously creates important challenges as well as opportunities for the South Asian countries. This could have a significant impact on the domestic market, domestic producers, tariff revenues, welfare of the member countries, and

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the level of the regional trade. Therefore there is a need to examine the benefits and trade potentials which are associated with the free trade agreement of South Asian countries.

Indeed the main purpose of the study is to analyse the SAFTA in terms of trade potential and benefits for the member countries. Therefore, study emphasises the assessment of benefits from SAFTA in terms of increase in potential trade, increase in trade volume, increase in trade competitiveness, and trade creation with the member and non-member countries. Specifically the study addresses the following questions: Would the free trade agreement lead to economic gains? And would the integration of SAARC region move the countries toward the trade creation or trade diversion with the member countries and non-member countries?

The study uses gravity model to measure the bilateral trade flows and trade potential between the SAARC countries. With the most recent data; 2003 to 2008, it conducted cross section and pooled analysis to capture the performance individually each year. The limitation of the study is that it is based on data which is collected in South Asian Preferential Trade Agreement (SAPTA) period. Therefore the study has measured the trade potential for SAFTA countries by using the SAPTA performance.

The findings of the study suggest that member countries have less potential for trade if all the countries of the region are taken together in which case there would be some trade diversion within the region. In this context, the reduction of tariff may not affect the level of trade significantly. Also, the study shows that the signing of SAFTA would also divert the trade from other countries. However, in a hypothetical analysis, the study has found that SAFTA would be beneficial only if Pakistan, India and Sri Lanka enter into regional trade agreements. In this case reduction in the tariff level will not only increase the trade level between these countries but also with the non member countries.

This paper consists of five sections. Section 2 provides literature review. Section 3 depicts an overview of regional trade integration in South Asia. Section 4 describes the gravity model and the data sources. Section 5 present empirical results of the gravity model, while Section 6 highlights the conclusions.

2. LITERATURE REVIEW

Indeed the focus of our study is to measure the trade flows between the South Asian countries by employing gravity model. The gravity model is one of the successful stories in theoretical and empirical literature. Tinbergen (1962) in his prestigious work "Shaping the World Economy: Suggestions for an International Economic Policy", proposed this model and suggested that the bilateral trade flows between countries will be directly proportional to the Gross National Product and inversely proportional to the distance between them. Tinbergen's preliminary analysis lacked the theoretical foundation for the proposed model but the studies of Linnemann (1966), Prewo (1978), Anderson (1979), Bergstrand (1985), Anderson and Wincoop (2003) and others justified the gravity model on theoretical foundations.

Linnemann (1966) explained the gravity model as a reduce form of partial equilibrium of export supply and import demand. Anderson (1979) argued for differentiated goods by origin and used expenditure system by taking the share of total traceable goods expenditure as a function of transaction cost variables. The model developed in Bergstrand (1985, 1989, 1990) extended the gravity model to address the issue of monopolistic competition with differentiated goods by country of origin.

The study of Frankel (1999) focused on the relationship of international trade and living standard. It investigated that income and trade are correlated therefore it is difficult to identify the effect of trade on living standard. The study employed the geographic factors to address this problem. It is proposed that the variation in trade which is due to geographic factors can serve as a natural experiment for identifying the effects of trade because geographic factors are not a consequence of income or government policy, and there is no likely channel through which they affect income.

Anderson and Wincoop (2004) highlighted the importance of trade cost within the framework of gravity model and find significance of the trade cost and trade flows. Helpman, *et al.* (2006) further extended the gravity equation by incorporating the heterogeneity of the firms, zero-trade observations, asymmetric trade flows and the extensive margin of trade.

The gravity model has been used extensively in empirical literature. Some studies have used the gravity to analyse the impact of preferential free trade arrangements. Akram (2004) employed the gravity model to estimate the export potential with 154 countries including the SAARC countries for the major 19 sectors of the Pakistan economy. Using the cross sectional data the results of study indicated a higher magnitude of export potential with partner countries.

Rahman (2004) applied a generalised gravity model to analyse Bangladesh trade flows with its SAARC trading partners using the panel data estimation techniques. They estimated the gravity model of trade and showed that trade of Bangladesh is positively determined by the size of the economies, per capita GNP differential of the countries involved and openness of the trading countries.

The study of Bhatachariya (2004) estimated the bilateral trade flows of the India and Bangladesh using the gravity model in different tariff reduction scenarios and obtained the simulated results. These results added evidence that India's exports would increase more than its imports from Bangladesh. Further Reihan and Razzaque (2007) measured the trade creation and trade diversion and welfare effects for different regional integration and bilateral FTAs in South Asia with GTAP analysis. The findings of the study suggest that the free trade arrangement will lead to welfare gain for India, Sri Lanka and rest of South Asian countries except Bangladesh.

Although many studies have been conducted to analyse the trade pattern of the SAARC countries, many of them employed the gravity model but only focus on intra-regional trade of India and Bangladesh in free trade agreement arrangement. This study would add to the literature by providing an assessment of trade potential, trade creation and trade diversion effects under the arrangement of SAFTA.

3. REGIONAL TRADE INTEGRATION IN SOUTH ASIA

3.1. Regional Trade Performance[1]

South Asian intraregional trade volume is very low relative to other regions of the world. According to some estimates, it is currently around $5–6 billion per year.[2] India is big player in this region therefore it has dominated regional trade. Its exports have increased more

[1]See Appendix: overview of the macroeconomic indicator of the SAARC countries.
[2]COMTRADE.

than threefold during 1996 to 2008. In contrast, its imports from the South Asian countries remain low. According to IMF trade statistics, India's export share in intraregional trade was 4.42 percent and the import share was only 1.2 percent in the year 2008.

Table 1

Intraregional Trade Shares

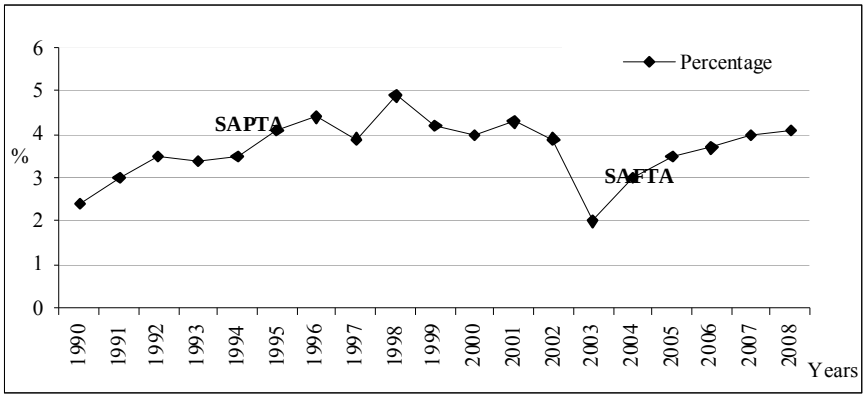
Countries	Exports						Imports					
	1990	1995	1998	2004	2006	2008	1990	1995	1998	2004	2006	2008
India	2.7	5.1	5.6	5.5	6.95	4.42	0.4	0.6	1.1	0.8	1.15	1.2
Pakistan	4	3.2	4.9	3.7	4.15	4.48	1.6	1.5	2.4	3.1	3.5	6.80
Bangladesh	3.1	2.3	2.7	1.6	1.4	2.13	7	17.7	17.5	16.2	21.45	17.6
Sri Lanka	3.7	2.7	2.4	8.6	7.95	7.65	7	11.4	12.9	19.7	25.65	29.68
Nepal	7.7	9.2	36.2	53.3	67.55	–	13.4	17.5	31.7	42.6	51.75	–
Maldives	13.8	22.5	16.6	16.4	17.8	16.40	7.4	4.5	7.7	16.3	16.45	19.67
Bhutan	9.6	87.9	81.9	80.5	–	–	10.9	57.5	59.9	60.5	85	–
South Asia	3.1	4.3	7.3	5.5	5.6	5.7	2	3.8	4.3	4.1	5.25	4.05

Source: IMF Direction of Trade Statistics and UN COMTRADE.

Bangladesh was the second largest contributor to trade within South Asia, both in terms of actual trade volume and as a percentage of overall intraregional trade. It was surpassed by Sri Lanka since 2002 as the second largest intraregional trader. The annual contribution of Bangladesh in exports ranges between 2 to 3 percent. The imports share of Bangladesh increased remarkably from 7 to 22 percent during the period 1990 to 2008. Pakistan's economy is the region's second largest, but its annual contributions to intraregional trade have been moderately increased between 1998 and 2008.

Although the South Asian countries are moving toward open economies, the intra-regional trade in South Asia is very small. It was approximately 2.4 percent in 1990 of total SAARC trade. It has increased only to 4.3 and 4.1 percent by the year 2001 and 2008 respectively (see Figure 1). The trend of trade share show that the percentage trade shares of South Asian countries ranged between 3 and 5 percent. The low level of intraregional trade in SAARC countries is due to slow industrialisation process and identical comparative advantages.

Fig. 1. SAARC Intra-regional Overall Trade



Source: IMF Direction of Trade Statistics.

3.2. Tariff Reduction under Agreement

The South Asian free trade agreement envisages trade and economic cooperation among Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka. In the first phase, Pakistan, India and Sri Lanka are required to reduce their tariff rates to 20 percent within two years. Bhutan, Bangladesh, Maldives and Nepal are required to reduce their tariff rates to 30 percent from the existing tariff rates by the year 2008. Therefore, member countries are liberalising their trade with the proposed tariff reduction rates especially for the South Asian region.

In the second phase, the Pakistan and India would reduce their tariff rates from 0 to 5 percent by the year 2013 and Sri Lanka would reduce these by the year 2014. The other countries would reduce tariff rates from 0–5 percent by the year 2015. Table 2 provides summary of tariff reduction schedule under SAFTA. By January 2015, the SAFTA will be fully implemented and the tariff rates would reduce to zero for all goods except the country's sensitive products.

It is important to point out here that regional economic integration in South Asia holds significance from the perspective of South-South Trade. Recent decades have witnessed an increasing volume of trade among developing countries mainly as a result of free trade agreements. These economies are increasingly engaged in international production systems thus raising the volume of trade among LDCs. All the South Asian economies are developing countries and in this context regional trade agreement will provide an important framework to enhance intra-regional trade.

Regional economic integration in South Asia should also be seen as an important initiative in the context of the recent financial crisis which has adversely affected the trade volumes of the South Asian countries. As demand in the developed market economies has contracted, the exports of the South Asian economies have also witnessed a decline mainly because the developed economies remain the major markets for South Asian exports. In this scenario, regional economic integration in South Asia can provide important benefits in terms of provision of market access to the regional countries. This will help diversify export markets and enhance regional exports.

Table 2

Tariff Rate Reduction under SAFTA

	Bangladesh, Bhutan, Maldives, Nepal		India, Pakistan, Sri Lanka	
Existing Tariff Rate	Proposed Reduction under SAFTA	Timeline	Proposed Reduction under SAFTA	Timeline
First Phase				
>20%	–		Reduce to 20%	2 Year
<20%				
>30%	Reduce to 30%	2 Year	Annual Reduction	2 Year
<30%	Annual Reduction	2 Year		
Second Phase				
≤20%			Reduce to 0-5%	2 Year
≤30%	Reduce 0-5%	3 to 5 Year		

Source: http://www.commerce.gov.pk/SAFTA.asp.

4. METHODOLOGY AND DATA

4.1. Gravity Model

The gravity model is a widely used tool to estimate the bilateral flows between member countries. Its concept is based on Newton's law of gravity and was firstly used by Tinbergen (1962). It relates the bilateral trade flows to GDP, distance, border and other factors that affect the trade patterns. The standard gravity model postulates that the trade between member countries is proportional to the national income and inversely related to the distance which is a proxy for transportation cost and information cost because these costs are reduced as geographical distances decrease. Other variables such as country size, common border, common language, population size, infrastructure etc. are also included in the gravity model. The standard gravity model does not provide the theoretical foundations, however it has improved over the time.

The studies of Bergstrand (1990), Frankel (1999), Anderson and Wincoop (2003) and Helpman (2006) provide theoretical foundation for this model. Our study uses the extended form of the gravity model that includes some important variables such as trade cost which is represented by bilateral tariffs. The inclusion of the trade cost variable explains the bilateral trade flows more accurately.

In empirical literature, studies have added dummy variables for participation in various preferential arrangements. A positive coefficient of dummy variable for preferential arrangement indicates that both participants of the preferential arrangement would trade more with each other. This is called trade creation effect of regional arrangement. On the other hand, a negative coefficient shows that the members have loss in their trade because they are moving from low cost sources to the high cost sources. This is due to trade diversion effect. Some member countries are found to have trade creation within the preferential arrangement region but divert their trade with the non member countries.

The gravity model of trade equation in this study is given below, it is in log form. The log transformation adds the extra benefit that the resulting coefficient can be interpreted as elasticities

$$Log(Trade_{ijt}) = \alpha_0 + \alpha_1 Log(GDP_{it} * GDP_{jt}) + \alpha_2 Log(PCGNP_{it} * PCGNP_{jt}) + \alpha_3 Log(Dis\tan ce_{ij})$$
$$\alpha_4(Border_{ij}) + \alpha_5(tariffij) + \alpha 6(SAFTA) + \alpha 7(non - SAFTA)$$

From the estimated equation, Trade*ijt* is bilateral trade between countries *i* and *j* at the time *t* (measured in million U.S. dollars), GDP is real gross domestic product of country *i* and *j*), PCGNP is per capita income, Distance is the land distance in kilometers between two countries, and border is dummy variable that takes a value of 1 if two countries have common border and 0 otherwise. Tariff is trade cost borne by the partner *i* and *j*. Hence the coefficient a1, a2, a4 will be positive and a3 and a5 will be negative.

The expected sign of the GDP is positive. It shows that the bigger economies would trade more as compared to poor and less developed countries. It is also expected that trade would decrease with the increase in distance between partners. The increase in distance will raise the transport and information cost that would cause a reduction in trade among the partner countries. The expected sign of the border and per capita income is also positive but the expected sign of trade cost (tariff) will be negative. The higher trade cost would make the goods expensive and ultimately reduce the trade level.

4.1.1. *Econometric Approach*

Since the study applies the cross section and pooled estimation approaches, therefore, the occurrence of heteroscadicity, multicollinearity and autocorrelation is possible. Problem of multicollinearity is possible if the correlation between two variables is very high. High multicollinearity increases variances of OLS estimator and lowers the significance levels of estimates. This can increase the chance of type II error. In our dataset, the pairwise correlation between two variables varies from −0.007 to 0.60 which is not very high. Gujrati (1988) and Judge, *et al.* (1988) consider 0.8 to be the critical threshold for serious problem of multicollinearity. According to Blanchard (1967) multicollinearity is essentially a data deficiency problem and sometimes we have no choice over the data that are available for empirical analysis.[3]

In OLS results, we found that the Durbin-Watson statistics are less than 2, indicating existence of autocorrelated errors in the sample. Most of our estimations are cross sectional therefore the low value of Durbin-Watson is natural and will not bias the results. The heteroscadicity is the problem of cross sectional data and it will weaken the reliability of the results therefore we have used the Generalised Least Sqaure (GLS) method, also known as FGLS in the literature, to estimate the gravity model for the South Asian countries. This technique is preferred over other techniques because of its superiority in dealing with the problems of heteroscadicity and autocorrelation. In our estimations we have used White Heteroscedasticity Test to minimise heteroscedasticity.

4.1.2. *Data*

The study makes use of the world development indicators for data on GDP, and per capita income for the specified countries. The data on Distance and border are collected from the website of CEPII and the data on bilateral trade flows have been collected from the IMF direction of trade. The bilateral tariff rates are collected from TRAINS (UNCTAD database) by using the WITS software which is developed by the UNCTAD and WTO. One limitation of the bilateral trade flows data is that it has zero trade values for some countries. The study has overcome this problem by including trade value between 1 and 2 in cases of zero trade. This technique removes the gap in the data and makes it estimable.

5. RESULTS

The gravity model equation is estimated by using cross sectional and pooled data. The use of cross section data gives us empirical evidence of the regional bilateral trade flows over the time. It uses yearly data from 2003 to 2008. The estimation with pooled data would measure the yearly effect of all variables on bilateral flows. The generalised least square technique is used to estimate the model. The advantage of generalised least square is that it is corrected for heteroscedasticity and autocorrelation.

The study has included twenty eight countries which are regular and significant trade partners of the South Asian countries. In this sample, most of the countries are member of regional trade agreements. For example, the regional agreements of ASEAN, European Union and NAFTA. Therefore, we have included four regional blocks to

[3]Blanchard, O. J., Comment, *Journal of Business and Economic Statistics*, Vol. 5, 1967, pp. 449–451.

determine the effect of regional integration on trade. The composition of blocks is as follow; SAFTA1, it includes only Pakistan, India and Sri Lanka, SAFTA consists of all countries excluding Bhutan. ASEAN1 consists of Indonesia, Malaysia, Philippines, Singapore, Korea, Hong Kong, Thailand, except China whereas ASEAN2 has included regional members of the ASEAN countries. The NAFTA consists of US, Canada and Mexico. The EU includes Germany, Italy, UK, Netherlands, Spain, Belgium, France and Denmark.

The estimation of the gravity model with cross section data will provide us the variation in the trade potential over the year. We can compare the results of recent year with the previous years. GLS cross section results for the year 2007 and 2008 are presented in the Table 3.[4]

The study has made two types of estimation for the cross sectional analysis of the period 2003 to 2008. The first estimation includes all regional trading blocks and the second estimation includes only the SAFTA (see Table 3). The rationale behind these estimations is that it could differentiate the ultimate impact of SAFTA in the presence of other regional agreements and in the absence of the other regional block. This exercise can also shed light on the robustness of the analysis in terms of whether or not the impact of SAFTA remains the same or changes when other important regional agreements are include.[5]

The empirical results for the year 2008 show that the standard gravity model variables are statistically significant and have the expected signs. The estimated coefficient of the log of the product of two countries GDPs and GDP per capita are 0.721 and 0.198 respectively. These results suggest that the trade will increase with the increase in the country size but less than proportionately. It provides evidence that the increase in population of a country has positive impact on the trade flows. Economy size which is represented by GDP would increase the trade flows by 19 percent between members. The distance holds negative sign and statistically significant. It shows that the increase in transportation and information cost will decrease the trade between partners. The one percent increase in distance would decrease the trade by 26 percent, and if the member countries share a common border, trade roughly would increase to 3.22 time [exp (1.178) = 3.22] as much as from the existing level. Trade cost is another important determinant of bilateral trade flows. It is negatively associated with bilateral trade volume. It would decrease trade by 38 percent on the level.

The assessment of trade potential, trade creation and trade diversion is also provided in Table 3. It shows that the dummy variable of the regional trade agreement SAFTA has negative sign. The negative sign of the coefficient indicates that the member countries of SAFTA would divert their trade. They would make trade 89 percent [exp(–2.32) =0.10] less the level at which they are trading.

The SAFTA would also divert trade with the non members because SAFTA has negative coefficient for the non-member countries. It is noted that Hassan (2001) has given similar results for the year 1996.

[4]The cross sectional results for the year 2003 to 2006 are reported in Appendix 2.

[5]See Frankel, *et al.* (1993) and Helpman, *et al.* (2006).

Table 3

Estimates of Gravity Model with GLS
(Cross Sectional Results for the Year 2007 and 2008)

	2008				2007			
Variables	Coefficient	T-statistics	Coefficient	T-statistic	Coefficient	T-statistics	Coefficient	T-statistic
Constant	3.083	1.407	3.459	1.645	2.685	1.501	4.826**	1.957
LOGGDP	0.721*	11.778	0.729*	12.790	0.701*	12.198	0.711*	13.218
LOGPCI	0.198*	3.447	0.233*	4.170	0.178*	3.664	0.214*	4.169
LOGDIST	–0.261**	–1.967	–0.379*	–3.497	–0.313***	–2.521	–0.464*	–4.524
LOGTARIFF	–0.385	1.40	–0.413	1.444	–0.411	1.501	–0.262	1.541
BORDER	1.178*	3.461	0.667*	3.376	1.517**	2.645	0.769*	3.345
SAFTA1	3.428*	2.947	3.354*	2.803	2.825*	3.190	2.159*	2.998
SAFTA1N	1.636*	4.590	1.598*	4.548	1.432*	4.547	1.552*	4.194
SAFTA	–2.326**	–2.363	–2.307*	–2.382	–2.924*	–2.975	–2.221*	–2.414
SAFTAN	–1.243*	–3.982	–1.188*	–3.909	–1.472*	–4.251	–1.183*	–3.689
ASEAN1	1.194*	2.708	–	–	1.011*	2.019	–	–
ASEAN2	0.995	1.584	–	–	0.968*	1.908	–	–
ECO	–0.285	–0.766	–	–	–0.249	–0.978	–	–
NAFTA	0.717	1.699	–	–	0.731	1.081	–	–
EC	0.449	1.664	–	–	0.502	1.197	–	–
R^2	0.806	–	0.798	–	0.79	–	–0.79	–
D.W	1.81	–	1.792	–	1.79	–	–1.8	–

*, **, and *** Indicate statistical significance at the 1 percent, 5 percent and 10 percent levels, respectively.

In contrast, the SAFTA1 is a hypothetical bloc which include Pakistan, India and Sri Lanka. The results indicate that if Pakistan, India, and Sri Lanka jointly sign an agreement, the trade level would be about 30 times[6] higher than the existing level of trade between these three partners. The SAFTA1 has not only potential for trade with member countries but also for the non member countries. The better economic conditions and infrastructure in Pakistan, India, and Sri Lanka as compared to the rest of SAARC countries could be reason of positive trade between these countries.

Although the overall findings suggest that regional arrangement is less effective but the trade creation potential between SAFTA1 countries provides a justification that SAARC countries could increase trade if they improve their economic conditions and develop better infrastructure. The results in Table 3 also suggest that even when SAFTA is considered as a regional block the trade of the South Asian countries could not be diverting with the other regions like ASEAN1 and ASEAN2. The coefficients of ASEAN1 and ASEAN2 show that the trade of South Asian countries and South East Asian countries would be positive and significant in the future.

The regional integration of South Asian countries would divert their trade. It would increase trade flows only if some countries (Pakistan, India and Sri Lanka) sign agreements. Similar results prevail for SAFTA and SAFTA1 when other regional blocs are excluded. The results from the second regression by including only SAFTA and SAFTA1 are consistent with the first regression results. Therefore, SAARC members not only reduce trade among them but also reduce trade with non-member countries and trade creation emerges only if Pakistan, India and Sri Lanka sign an agreement.

[6][i.e., exp (3.42)≈30.57].

Table 4

Estimates of Gravity Model with Pooled Estimation

Variables	Coefficient	T-statistics	Coefficient	T-statistics
Constant	2.315*	2.675	5.897*	3.453
LOGGDP	0.692*	13.875	0.689*	14.649
LOGPCI	0.294*	3.116	0.385**	2.924
LOGDIST	–1.035*	–4.728	–1.134*	–4.932
LOG(Tariff)	–0.299	1.323	–0.314	1.412
BORDER	0.634*	3.995	0.654*	3.859
SAFTA1	2.919*	4.541	2.898*	3.687
SAFTA1N	1.236*	6.332	1.215*	6.618
SAFTA	–2.346*	–4.441	–2.856*	–5.232
SAFTAN	–1.794*	–8.569	–1.829*	–7.867
ASEAN1	1.231*	4.483	–	–
ASEAN2	0.889**	2.204	–	–
ECO	–0.398	–0.694	–	–
NAFTA	0.277	0.769	–	–
EC	0.376	1.434	–	–
R^2	0.801	–	0.79	–
D.W	2.110	–	2.01	–

*, **, and *** Indicate statistical significance at the 1 percent, 5 percent and 10 percent levels, respectively.

We have also estimated the gravity model with the pooled data. This step measures the multiyear effect of change in trade flows and provides the robustness of the analysis. It provides evidence that GDP, per capita income, distance, boarder and tariff have similar affect as in cross sectional analysis.

6. CONCLUSION

The study has used gravity model to assess the trade potential and trade benefits for the South Asian countries. The analysis indicates the potential for trade creation exists provided that Pakistan, India, and Sri Lanka sign regional trade agreement. The cross sectional analysis for each year gives almost similar results. The empirical results show that the integration of the South Asian countries has little potential for trade creation if all the countries of the region are included. Also the signing of Free Trade Agreement of the South Asian countries would divert their trade with the non member countries. These results are based on the data that cover the period of SAPTA, so we can infer from these results that the evidence of trade creation under SAPTA promises well for SAFTA for India, Pakistan and Sri Lanka but it provides evidence of trade diversion for all members of SAFTA.

We conclude that SAFTA may not be beneficial in the short run but it would be beneficial in the long run. Further trade liberalisation process and movement toward industrialisation of region would minimise the trade diversion effect under SAFTA. Most important, the effective implementation of SAFTA is needed; SAFTA would require an encouraging economic and political environment and a strong willingness for integration

and liberalisation of the SAARC member countries. South Asian countries should simplify and improve the tariff structure and procedure, easing foreign exchange controls, transit facilities for the landlocked countries, simplification of banking facilities for import financing. Also, transparent antidumping and countervailing duties in the region will be necessary for the confidence building between the SAARC members.

APPENDIX 1

Table 1

Macroeconomic Overview of the SAARC Countries

Countries	GDP	GDP Growth	PCI	Trade % GDP	HDI
Bangladesh	78992	6	520	84	146
Bhutan	1359	14	1900	39	132
India	1217490	7	1070	137	134
Maldives	1260	6	3630	37	95
Nepal	12615	5	400	37	144
Pakistan	168276	6	980	55	141
Sri Lanka	40714	6	1780	84	102

Source: World Development Indicators 2009.
UNDP Human Development Report 2009.

APPENDIX 2

Estimates of Gravity Model with GLS

Cross-sectional Results for the Year 2006

Variables	2006			
	Coefficient	T-statistics	Coefficient	T-statistic
Constant	2.935**	2.151	4.826*	6.457
LOGGDP	0.529*	19.958	0.534*	20.381
LOGPCI	0.128*	3.724	0.145*	4.169
LOGDIST	–0.413*	–5.126	–0.664*	–8.213
LOGTARIFF	–0.041*	4.433	–0.026*	3.54
BORDER	0.7**	2.853	0.769*	3.345
SAFTA1	3.821*	3.190	2.159*	2.998
SAFTA1N	1.02*	4.547	1.052*	5.694
SAFTA	–3.224*	–3.175	–2.522*	–9.194
SAFTAN	–1.642*	–7.51	–1.803*	–10.935
ECO	–0.344	–0.678	–	–
ASEAN1	0.511*	1.912	–	–
ASEAN2	0.929*	1.998	–	–
NAFTA	0.738	0.812	–	–
EC	0.528	1.097	–	–
R^2	0.889	–	–	–
D.W	2.247	–	–	–

Estimates of Gravity Model with GLS
Cross-sectional Results for the Year 2005

	2005			
Variables	Coefficient	T-statistics	Coefficient	T-statistic
Constant	2.014***	2.501	5.746*	5.758
LOGGDP	0.610*	17.396	0.654*	19.580
LOGPCI	0.109*	2.712	0.037**	0.947
LOGDIST	–0.329*	–3.967	–0.712*	–8.233
LOGTARIFF	–0.031*	4.698	–0.027*	3.67
BORDER	0..881**	2.853	0.667*	2.289
SAFTA1	2.181*	3.127	1.817*	2.279
SAFTA1N	1.331*	4.547	1.292*	5.925
SAFTA	–1.926**	–3.075	–2.778*	–5.219
SAFTAN	–1.877*	–6.289	–2.166*	–9.684
ECO	–0.356	–0.525	–	–
ASEAN1	1.194*	2.708	–	–
ASEAN2	0.995	1.584	–	–
NAFTA	0.192	0.183	–	–
EC	0.303	0.927	–	–
R^2	0.853	–	–	–
D.W	2.139	–	–	–

Estimates of Gravity Model with GLS
Cross-sectional Results for the Year 2004

Variables	Coefficient	T-statistics	Coefficient	T-statistic
Constant	2.008***	1.661	5.746*	5.758
LOGGDP	0.640*	18.272	0.654*	19.580
LOGPCI	0.113*	2.774	0.037**	0.947
LOGDIST	–0.437*	–4.046	–0.712*	–8.233
BORDER	0.832**	2.853	0.667*	2.289
SAFTA1	2.954*	3.127	1.817*	2.279
SAFTA1N	1.371*	4.547	1.292*	5.925
SAFTA2	–1.926*	–3.075	–2.778*	–5.219
SAFTA2N	–1.877*	–6.289	–2.166*	–9.684
ASEAN1	1.194*	2.708		
ASEAN2	0.995	1.584		
ECO	–0.356	–0.525		
NAFTA	0.192	0.183		
EC	0.303	0.927		
R^2	0.853			
D.W	2.139			

Estimates of Gravity Model with GLS

Cross-sectional Results for the Year 2003

Variables	Coefficient	T-statistics	Coefficient	T-statistics
Constant	2.317*	2.161	5.439	5.991
LOGGDP	0.603*	18.834	0.614*	19.847
LOGPCI	0.118*	3.261	0.073**	2.021
LOGDIST	–0.429*	–4.406	–0.696*	–8.777
BORDER	0.788*	2.985	0.701*	2.641
SAFTA1	3.243*	3.837	1.931*	2.710
SAFTA1N	1.254*	4.624	1.212*	6.163
SAFTA2	–2.575*	–4.742	–3.026*	–6.544
SAFTA2N	–1.798*	–6.696	–2.045*	–10.101
ASEAN1	0.966*	2.276		
ASEAN2	0.973*	1.722		
ECO	–0.352	–0.576		
NAFTA	0.374	0.395		
EC	0.378	1.317		
R^2	0.868			
D.W	2.175			

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FDI, Unemployment, and Welfare in the Presence of Agricultural Dualism: A Three-Sector General Equilibrium Model

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The present paper uses a three-sector general equilibrium framework to examine the effect of Foreign Direct Investment (FDI) on unemployment and welfare in labour-surplus economies in the post-globalisation era. We show that the expansion of land-hungry export-oriented agricultural sector through FDI accentuates the problem of urban unemployment in the presence of sticky urban wage and agricultural dualism. We also note that multiple cross-effects and factor specificity play an important role in determining change in output composition and welfare in the wake of the inflow of foreign capital.

JEL classification: F16, F21
Keywords: Agricultural Dualism, FDI, Unemployment, Welfare

1. INTRODUCTION

The process of economic reform has led to significant change in the organisation and trade orientation of the agricultural sector in many emerging market economies. A major reflection of such change is the emergence of agricultural dualism. Agricultural sector is no longer a monolithic entity. It is divided into two sub sectors, namely traditional agriculture and modern agriculture. The difference between the two sub sectors can be assessed in terms of nature and intensity of inputs used and elasticity of substitution between inputs. World Development Report (WDR), 2008 reveal that high value agro food commodities are the fastest growing products in most developing countries. These products require land, labour and capital. However, the traditional agricultural products do hardly require capital. Moreover, the emerging pattern of trade is suggestive of the fact that emerging market economies have lost their comparative advantage in traditional agricultural products.

In the face of inadequacy of domestic resources to finance long term development, the issue of attracting foreign direct investment (FDI) is currently a source of major

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concern for policy makers. Substantial investments are required to support expansion of export-oriented agricultural sector. Casual empiricism also suggests that huge amount of FDI in the post WTO regime has been flowing into the non-traditional agricultural sector.[1] The earlier works have examined the effect of FDI on welfare, wage gap and unemployment. [See for example, Beladi and Marjit (1992, 1996); Marjit (1996); Beladi, Marjit and Ralph (1998); Chaudhuri (2007**)** among others]. However, there is not much theoretical work on the effect of FDI on unemployment and welfare in presence of agricultural dualism. Given the obvious relevance of such issues to transitional economies, it is of some interest to examine implications of FDI in presence of

(1) urban unemployment,
(2) agricultural dualism,
(3) three factors of production namely, labour, land and capital.

To do so is the objective of this paper.

The paper is organised as follows. In Section 2, we setup a three-sector general equilibrium model in which unemployment of Harris Todaro type is incorporated. We carry out a comparative static exercise pertaining to increase in FDI such that capital base of the economy is augmented. In Section 2 we concentrate on the effect of an exogenous increase in capital stock on urban unemployment of the economy. In Section 3 we explore the welfare implications of an exogenous increase in capital stock. Section 4 contains certain concluding observations.

2. A THREE-SECTOR GENERAL EQUILIBRIUM MODEL

We have a three-sector, small open, economy. One of the sectors is the industrial, protected, import-competing sector, (X). The other two sectors belong to the broad category of agricultural sector. One is the traditional, import competing agricultural sector producing wage goods (Y) and the other one is the export-oriented, modern agricultural sector (Z). The production structure assumed in this paper is quite consistent with a typical emerging market economy.

Next, we consider input use in different sectors. X is produced with labour and capital. Y is produced with the help of labour and land, while land, labour and capital are used in the production of Z. Labour is mobile between all the sectors while capital is also mobile between the sectors X and Z. Labour and capital are substitutes; however, land is not substitutable and is required in fixed proportion. We also take domestic capital and foreign capital to be perfect substitutes. Urban wage is sticky and there is a wage gap between the industrial and the agricultural sector. This wage differential will induce migration of Harris-Todaro type.

The following symbols are used for the formal representation of the model:

α_{lx} = labour output ratio in the X sector
α_{ly} = labour output ratio in the Y sector
α_{lz} = labour output ratio in the Z sector
α_{kx} = capital output ratio in the X sector

[1]FDI into the non traditional agricultural sector in the post WTO regime has flowed into Morocco, Spain, Italy, Chile, and India among others [WDR (2008)].

α_{kz} = capital output ratio in the *Z* sector
α_{ty} = land output ratio in the *Y* sector
α_{tz} = land output ratio in the *Z* sector
w = non-unionised wage rate in the agricultural sector
w^* = unionised wage rate in the industrial sector
R = rate of return on land
r = rate of return on capital
L = labour endowment in physical units
K = capital endowment in physical units
T = land endowment in physical units
P^*_x, P^*_Y = prices of *X*, *Y* respectively
L_u = urban Unemployment
T_x = tariff in sector *X*
t_y = tariff in sector *Y*
$\lambda_{i,j}$ = share of factor i in the production of output of sector *j*, *i* =*L*,*K*,*T*, *j*=*X*,*Y*,*Z*
U = Welfare of the economy
dU = change in welfare
$\hat{a}$ = proportionate change in a, where a represents any variable
D_j = Demand for commodity *j* where *j*=*X*,*Y*,*Z*

The general equilibrium structure of the model is as follows.

The price of the modern agricultural sector is taken to be unity and hence, the output of the modern agricultural sector is chosen as the numairare.

Since, markets are competitive, equality between unit cost and price holds. Equations (1)–(3) represent the price system:

$$a_{lx}.w^* + a_{kx}.r = P^*_x(1+t_x) \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (1)$$

$$a_{ly}.w + a_{ty}.R = P^*_y(1+t_y) \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (2)$$

$$a_{lz}.w + a_{kz}.r + a_{tz}.R = 1 \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (3)$$

The physical system is represented by Equations (4)–(6):

$$a_{lx}.X + a_{ly}.Y + a_{lz}.Z + L_u = L \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (4)$$

$$a_{kx}.X + a_{kz}.Z = K \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (5)$$

$$a_{ty}Y + a_{tz}.Z = T \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (6)$$

The rural-urban migration stops when expected urban wage equals the rural wage and thus, Equation (7) represents the Harris-Todaro migration equilibrium.

$$\frac{w^*}{w}a_{lx}X + (a_{ly}Y + a_{lz}Z) = L \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (7)$$

The working of the model is as follows: *w*, *r*, *R*, are determined from Equations (1-3). *X*, *Y*, *Z* are determined from the Equations (5-7). The level of urban unemployment is determined from Equation (4).

Since the model has the standard decomposition property, any change in factor endowment, say due to inflow of foreign capital has no effect on factor prices. However, change in output composition leads to change in the level of unemployment and welfare.

Next, we consider comparative static effects of increase in capital flow.

Differentiating Equations (5) to (7) we have:[2]

$$\hat{Z} = \hat{K}[-\frac{w^*}{w}\frac{1}{A}\lambda_{lx}\frac{1}{\lambda_{kx}}] \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (8)$$

Where,

$$A = \frac{1}{w\lambda_{kx}\lambda_{ty}}[-w^*\lambda_{lx}\lambda_{kz}\lambda_{ty} + w\lambda_{kx}(\lambda_{lz}\lambda_{ty} - \lambda_{tz}\lambda_{ly})]$$

$$\hat{Y} = \hat{K}[\frac{1}{A}\frac{w^*}{w}\lambda_{lx}\lambda_{tz}\frac{1}{\lambda_{ty}\lambda_{kx}}] \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (9)$$

$$\hat{X} = \frac{1}{A}\frac{1}{\lambda_{kx}\lambda_{ty}}\hat{K}[\lambda_{lz}\lambda_{ty} - \lambda_{ly}\lambda_{tz}] \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (10)$$

$$\hat{L}_U = -\hat{K}L_u\frac{\lambda_{lx}}{AL_u\lambda_{kx}\lambda_{ty}}[(\lambda_{lz}\lambda_{ty} - \lambda_{ly}\lambda_{tz})(1-\frac{w^*}{w})] \quad \ldots \quad \ldots \quad \ldots \quad (11)$$

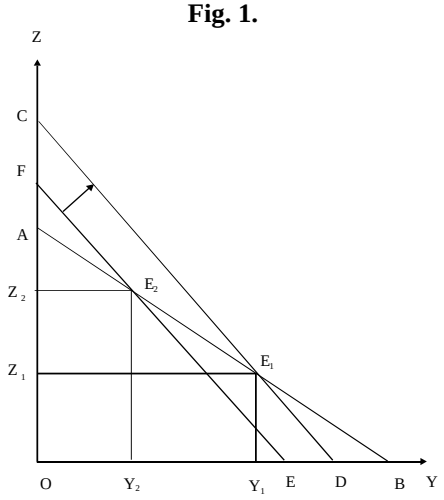
The model leads to the following propositions.

Proposition 1: Inflow of FDI can lead to expansion of both import-competing industrial sector and export-oriented agricultural sector and contraction of the traditional agricultural sector if either modern agricultural sector is land intensive relative to the traditional agricultural sector or modern agricultural sector is capital intensive compared to the traditional manufacturing sector.

Comment: Let us explain the role of factor intensities and factor specificities in determining effects of change in capital flow on output composition. First, we explain the role of land intensity of *Z vis-à-vis Y*. Increase in capital stock will lead to either increase in *X* or *Z*. Suppose, that *X* increases. If *X* increases, it reduces availability of labour to both *Y* and *Z*. If *Y* is labour intensive compared to *Z*, we have the standard Rybzynscki theorem to explain expansion of *Z* and contraction of *Y*. Consider Figure (1). In Figure (1) the lines *AB* and *CD* represent the initial land constraint and labour constraint respectively. Hence, the initial equilibrium point is E_1, where Y_1 amount of *Y* and Z_1 amount of *Z* is produced. Increase in capital stock, reduces the amount of labour available to both *Y* and *Z* sector. Thus, the labour constraint shifts leftwards to *EF*. The new equilibrium point is now E_2 where Z_2 amount of *Z* and Y_2 amount of *Y* is produced.

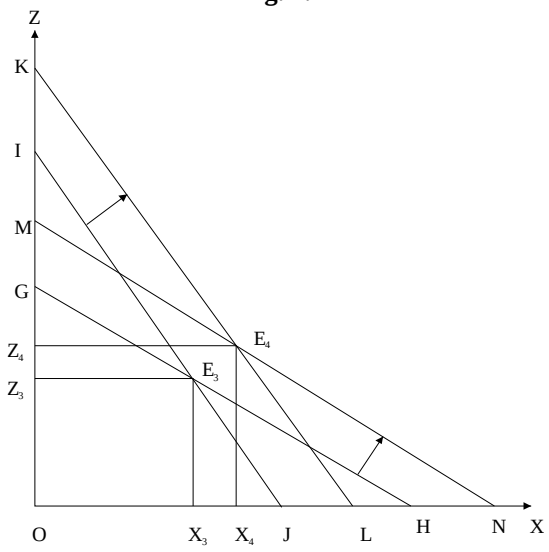
[2]See Appendix for detailed derivation.

Fig. 1.



Next, we consider the role of capital intensity of *Z vis-á-vis X*. Since capital stock of the economy increases, *Z* increases. As land constraint of the economy is given, *Y* contracts. Hence, labour is released from the *Y* sector. As *X* is labour intensive this leads to the expansion of the *X* sector. Thus, we have expansion of *X* and *Z*. Now consider Figure (2). In Figure (2) the lines GH and *IJ* represent the initial capital constraint and labour constraint respectively. Hence, the initial equilibrium point is E_3, where X_3 is the amount of *X* and Z_3 is the amount of *Z* produced. As capital stock of the economy increases, the capital constraint shifts rightwards to *MN* leading to an expansion of the *Z* sector. However, as *Y* contracts, labour available for sectors *X* and *Z* also increases. Thus, the labour constraint shifts rightwards to *KL*. The new equilibrium point is now E_4, where X_4 amount of *X* and Z_4 amount of *Z* is produced.

Fig. 2.



This result can only be obtained in a three sector General-Equilibrium framework that involves cross effects of different types.

Proposition 2: If an economy receives additional foreign capital, urban unemployment in the economy would increase if the modern agricultural sector is land-intensive as compared to the traditional agricultural sector.

Comment: The effect on unemployment depends on both factor intensity ranking and difference between unionised urban wage and flexible rural wage.

Since, industrial wage is unionised and greater than the flexible rural wage, it's ability to absorb labour is limited. Moreover, it is well known that majority of the labour force in a developing country is absorbed in the agricultural sector. Again, modern agricultural sector is land intensive compared to traditional agricultural sector and it's employment intensity is low compared to the traditional agricultural sector. Since, inflow of foreign capital leads to an expansion in the output levels of modern agriculture and traditional, import-competing manufacturing sector at the cost of traditional agricultural product, urban unemployment increases.

3. WELFARE ANALYSIS

In this section of the paper, we would explore the impact of an exogenous increase in capital stock on welfare of the economy. In presence of tariff, total expenditure on *X,Y,Z* equals the value of production at domestic prices plus tariff revenue.

$$E[q_1, q_2, U\{q_1, q_2, K\}] = P_X X + P_Y Y + Z + t_x P_x^* M_x + t_y P_y^* M_y \quad \ldots \quad \ldots \quad (12)^3$$

Where,

$E\ [q_1, q_2, U\{q_1, q_2, K\}]$= Expenditure Function
P_i = Domestic price of commodity j, $j=X,Y,Z$
M_x =Import of commodity X
M_y = Import of commodity Y
q_1 = relative price of commodity X
q_2 = relative price of commodity Y

Manipulating Equation (12) we have:

$$E\ [q_1, q_2, U\{q_1, q_2, K\}] = P_x^* X + P_y^* Y + Z + t_x P_x^* D_x + t_y P_y^* D_y \quad \ldots \quad \ldots \quad (13)$$

Where,

Differentiating Equation (13) we have:

$$\frac{\delta E}{\delta U}\frac{dU}{dK} = P_x^* \frac{dX}{dK} + P_y^* \frac{dY}{dK} + \frac{dZ}{dK} + t_x P_x^* \frac{\delta D_x}{\delta E}\frac{\delta E}{\delta U}\frac{dU}{dK} + t_y P_y^* \frac{\delta D_y}{\delta E}\frac{\delta E}{\delta U}\frac{dU}{dK} \quad \ldots (14)^4$$

[3]Utility of a consumer depends on the level of *X, Y, Z* consumed. However, it should be noted that production of these commodities depends on parameters of the system and in particular, capital stock of the economy. Hence, maximised value of utility depends on capital stock.

[4]We derive Equation (14) with the help of the fact that

$D_x = D_x\ (q_1, q_2, E[q_1, q_2, U(q_1, q_2, K)])$ and $D_y = D_y\ (q_1, q_2, E[q_1, q_2, U(q_1, q_2, K)])$.

Manipulating Equation (14) we have:

$$dU = \frac{1}{S\tau}[P_x^* X\hat{X} + P_y^* Y\hat{Y} + Z\hat{Z}] \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (15)$$

where,

$$S = \frac{dE}{dU} > 0$$

$$\tau = [1 - t_x P_x^* \frac{\delta D_x}{\delta E} - t_y P_y^* \frac{\delta D_y}{\delta E}] > 0$$ [5]

This follows from the assumption that all commodities are normal goods.
Substituting (8)-(10) in (15) we have:

$$dU = \frac{1}{S\tau}\hat{K}\{\ XP_x^* \frac{1}{A}\frac{1}{\lambda_{kx}\lambda_{ty}}[\lambda_{lz}\lambda_{ty} - \lambda_{ly}\lambda_{tz}] + Z[-\frac{w^*}{w}\frac{1}{A}\lambda_{lx}\frac{1}{\lambda_{kx}}]$$

$$+YP_y^*[\frac{1}{A}\frac{w^*}{w}\lambda_{lx}\lambda_{tz}\frac{1}{\lambda_{ty}\lambda_{kx}}]\} \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (16)$$

Proposition 3: If modern agricultural sector is land intensive compared to the traditional agricultural sector, inflow of FDI into an economy characterised by agricultural dualism and open urban unemployment may lead to immeserisation if :

$$XP_x^* \frac{1}{A}\frac{1}{\lambda_{kx}\lambda_{ty}}[\lambda_{lz}\lambda_{ty} - \lambda_{ly}\lambda_{tz}] + Z[-\frac{w^*}{w}\frac{1}{A}\lambda_{lx}\frac{1}{\lambda_{kx}}] + YP_y^*[\frac{1}{A}\frac{w^*}{w}\lambda_{lx}\lambda_{tz}\frac{1}{\lambda_{ty}\lambda_{kx}}] < 0$$

Comment: Change in the stock of capital influences the level of welfare in two ways. On the one hand, change in capital availability alters the output composition of the economy and on the other hand, the change in import volume affects the tariff revenue of the economy. If modern agricultural sector is capital intensive compared to the traditional manufacturing sector or the modern agricultural sector is land intensive compared to the traditional manufacturing sector then A<0. Since, $[\lambda_{lz}\lambda_{ty} - \lambda_{ly}\lambda_{tz}] < 0$, the first two terms in expression (16) is positive. Thus, increase in production of *X* and *Z* consequent upon increase in foreign capital is welfare improving. The last term in Equation (16) is negative which in turn is a source of fall in welfare. The contraction of the labour intensive traditional agricultural sector tends to reduce welfare and if this dominates the welfare enhancing effect of increase in foreign capital, immeserisation follows. Injection of foreign capital into the economy characterised by open urban unemployment would be immeserising in nature if

$$XP_x^* \frac{1}{A}\frac{1}{\lambda_{kx}\lambda_{ty}}[\lambda_{lz}\lambda_{ty} - \lambda_{ly}\lambda_{tz}] + Z[-\frac{w^*}{w}\frac{1}{A}\lambda_{lx}\frac{1}{\lambda_{kx}}] + YP_y^*[\frac{1}{A}\frac{w^*}{w}\lambda_{lx}\lambda_{tz}\frac{1}{\lambda_{ty}\lambda_{kx}}] < 0 \quad (17)$$

[5] See Appendix for derivation.

4. CONCLUSION

The purpose of the paper has been to provide a theoretical discussion on the possible impact of exogenous increase in capital stock on unemployment and welfare in a transitional economy. The paper shows that if modern agricultural sector is land-intensive compared to the traditional agricultural sector, the flow of FDI aggravate the problem of urban unemployment. There also exists a possibility of immeserisation in the sense that welfare may decline in the wake of foreign capital inflow. The results in this paper are sensitive to the assumptions of factor intensity ranking and complementarity that is embedded in a three-sector general equilibrium model. Since unemployment and immeserisation are disturbing phenomena, they can be potential sources of discontent against capital market liberalisation. A broad policy message of the paper is that capital flow in general and it's destination in particular should be judiously managed.

APPENDIX

Section 1: DERIVATION OF EFFECT ON OUTPUT AND EMPLOYMENT

Equations (1)–(3) represent the price system:

$$a_{lx}.w^{*} + a_{kx}.r = P^{*}_{x}(1+t_x) \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (1)$$

$$a_{ly}.w + a_{ty}.R = P^{*}_{y}(1+t_y) \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (2)$$

$$a_{lz}.w + a_{kz}.r + a_{tz}.R = 1 \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (3)$$

The physical system is represented by Equations (4)-(6):

$$a_{lx}.X + a_{ly}.Y + a_{lz}.Z + L_u = L \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (4)$$

$$a_{kx}.X + a_{kz}.Z = K \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (5)$$

$$a_{ty}Y + a_{tz}.Z = T \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (6)$$

The rural-urban migration stops when expected urban wage equals the rural wage and thus, Equation (7) represents the Harris-Todaro migration equilibrium.

$$\frac{w^{*}}{w} a_{lx}X + (a_{ly}Y + a_{lz}Z) = L \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (7)$$

Differentiating Equations (5)-(7) we have:

$$\lambda_{kx}\hat{X} + \lambda_{kz}\hat{Z} = \hat{K} \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (a)$$

$$\lambda_{ty}\hat{Y} + \lambda_{tz}\hat{Z} = 0 \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (b)$$

$$\frac{w^{*}}{w}\lambda_{lx}\hat{X} + \lambda_{ly}\hat{Y} + \lambda_{lz}\hat{Z} = 0 \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (c)$$

From (a)-(c) we have:

$$\hat{X} = \frac{1}{\lambda_{kx}}[\hat{K} - \lambda_{kz}\hat{Z}] \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \text{(d)}$$

$$\hat{Y} = -\frac{\lambda_{tz}}{\lambda_{ty}}\hat{Z} \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \text{(e)}$$

Replacing (d)-(e) into Equation (c) we have:

$$\hat{Z} = \hat{K}[-\frac{w^*}{w}\frac{1}{A}\lambda_{lx}\frac{1}{\lambda_{kx}}] \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (8)$$

Where,

$$A = \frac{1}{w\lambda_{kx}\lambda_{ty}}[-w^*\lambda_{lx}\lambda_{kz}\lambda_{ty} + w\lambda_{kx}(\lambda_{lz}\lambda_{ty} - \lambda_{tz}\lambda_{ly})]$$

Replacing (12) in Equation (e) we have:

$$\hat{Y} = \hat{K}[\frac{1}{A}\frac{w^*}{w}\lambda_{lx}\lambda_{tz}\frac{1}{\lambda_{ty}\lambda_{kx}}] \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (9)$$

Replacing (12) in Equation (d) we have:

$$\hat{X} = \frac{1}{A}\frac{1}{\lambda_{kx}\lambda_{ty}}\hat{K}[\lambda_{lz}\lambda_{ty} - \lambda_{ly}\lambda_{tz}] \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (10)$$

From Equation (4) we have:

$$\lambda_{lx}\hat{X} + \lambda_{ly}\hat{Y} + \lambda_{lz}\hat{Z} + \frac{L_u}{L}\hat{L}_u = 0 \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \text{(f)}$$

Replacing Equation (12)-(14) into Equation (f) we have:

$$\hat{L}_U = -\hat{K}L\frac{\lambda_{lx}}{AL_u\lambda_{kx}\lambda_{ty}}[(\lambda_{lz}\lambda_{ty} - \lambda_{ly}\lambda_{tz})(1 - \frac{w^*}{w})] \quad \ldots \quad \ldots \quad \ldots \quad (11)$$

Section 2: WELFARE ANALYSIS

$$E = P_x^*(1+t_x)D_x + P_y^*(1+t_y)D_y + D_z \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \text{(i)}$$

Differentiating with respect to E we have:

$$1 = P_x^*(1+t_x)\frac{\delta D_x}{\delta E} + P_y^*(1+t_y)\frac{\delta D_y}{\delta E} + \frac{\delta D_z}{\delta E} \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \text{(ii)}$$

Manipulating (ii) we have:

$$[1-t_x P_x^* \frac{\delta D_x}{\delta E} - t_y P_y^* \frac{\delta D_y}{\delta E}] = P_x^* \frac{\delta D_x}{\delta E} + P_y^* \frac{\delta D_y}{\delta E} + \frac{\delta D_z}{\delta E} \quad \ldots \quad \ldots \quad \ldots \quad \text{(iii)}$$

Since *X,Y,Z* are all normal goods

$$P_x^* \frac{\delta D_x}{\delta E} + P_y^* \frac{\delta D_y}{\delta E} + \frac{\delta D_z}{\delta E} > 0$$

Hence,

$$[1-t_x P_x^* \frac{\delta D_x}{\delta E} - t_y P_y^* \frac{\delta D_y}{\delta E}] > 0$$

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Devolution, Accountability, and Service Delivery in Pakistan

ZAHID HASNAIN

This paper examines into the relationship between devolution, accountability, and service delivery in Pakistan by examining the degree of accessibility of local policy-makers and the level of competition in local elections, the expenditure patterns of local governments to gauge their sectoral priorities, and the extent to which local governments are focused on patronage, or providing targeted benefits to a few as opposed to providing public goods. The main findings of the paper are threefold. First, the accessibility of policy-makers to citizens in Pakistan is unequivocally greater after devolution, and local government elections are, with some notable exceptions, as competitive as national and provincial elections. Second, local government sectoral priorities are heavily tilted towards the provision of physical infrastructure—specifically, roads, water and sanitation, and rural electrification—at the expense of education and health. Third, this sectoral prioritisation is in part a dutiful response to the relatively greater citizen demands for physical infrastructure; in part a reflection of the local government electoral structure that gives primacy to village and neighbourhood-specific issues; and in part a reaction to provincial initiatives in education and health that have taken the political space away from local governments in the social sectors, thereby encouraging them to focus more towards physical infrastructure.

JEL classification: H7, D72, H4
Keywords: State and Local Government, Inter-government Relations, Political Processes, Rent-seeking, Lobbying, Elections, Legislatures, and Voting Behaviour, Publically Provided Goods

I. INTRODUCTION

Improving service delivery through increased accountability has been a significant implicit motivation behind the trend towards decentralisation in developing countries. The standard theoretical argument for the transfer of responsibilities to lower tiers of government is that the closer proximity of local policy-makers to citizens increases the flow of information and better enables the public to monitor, and to hold to account, government officials. Conversely, elected local policy-makers, responding to this greater citizen vigilance, focus on improving service delivery in order to get re-elected.

Ambitious devolution reforms were introduced by the military government in Pakistan in 2001. While decentralisation had a variety of motivations, the most important of which arguably was to create political allies of the regime at the local level to counter opponents at the national and provincial levels, the service delivery imperative cannot be ignored. This paper seeks some insights into this relationship between devolution, accountability, and service delivery in Pakistan by examining first the degree of

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accessibility of local policy-makers and level of competition in local elections, and second the expenditure patterns of local governments to gauge their sectoral priorities, and the extent to which they are focused on patronage, or providing targeted benefits to a few, as opposed to providing public goods.

Local governments in Pakistan do not exist in isolation, and any discussion of local government accountability must take into consideration the inter-governmental framework and the actions by higher tiers of government, particularly the provincial government, in sectors that are formally devolved. As a large literature shows, given that local governments generally have limited tax bases and must rely on inter-governmental transfers for most of their resources, this framework has important bearing on local incentives. Therefore, the relationship between devolution, accountability, and service delivery in Pakistan can only be analysed in the context of a given inter-governmental framework and a given set of provincial interventions.

Three conclusions are drawn from the analysis. First, the accessibility of policy-makers to citizens in Pakistan is unequivocally greater after devolution, and local government elections are, with some notable exceptions, as competitive as national and provincial elections. Second, local government sectoral priorities are heavily tilted towards the provision of physical infrastructure—specifically, roads, water and sanitation, and rural electrification—at the expense of education and health. Within these sectors, particularly in water and sanitation and rural electrification, the focus is on small, neighbourhood and even household specific schemes, which can be characterised as the provision of targeted, private goods. Third, this sectoral prioritisation is in part a dutiful response to the relatively greater citizen demands for physical infrastructure; in part a reflection of the local government structure whereby the district political leadership is accountable to an electoral college of directly elected union councillors whose constituency is the village and neighbourhood; and in part, as elaborated in detail, a reaction to provincial initiatives in education and health that have taken the political space away from local governments in the social sectors thereby encouraging them to focus more towards physical infrastructure.

An important caveat is that this paper does not go beyond an expenditure analysis in gauging the impact of decentralisation on service delivery. Sector governance, specifically managerial capacity, merit-based recruitment of service providers, and the ability hold staff to account, is perhaps even more important in improving outcomes. The reason these issues are not taken up, and as will be elaborated later, is that local governments in Pakistan have very limited authority over these staff. The paper also does not discuss social outcomes as these are very difficult to attribute solely to the actions of any one particular tier of government.

The paper is structured as follows: The next section provides the theoretical framework for the link between decentralisation and service delivery. Section III briefly describes Pakistan's local government system, focusing on the political, fiscal, and administrative aspects of decentralisation. Section IV examines the question of political accountability of local governments in Pakistan, looking at both direct citizen contacting as well as electoral accountability. Section V, which is the core of the paper, addresses the issue of service delivery by analysing the sectoral composition of development expenditures, the average size and type of typical local development schemes, and trends

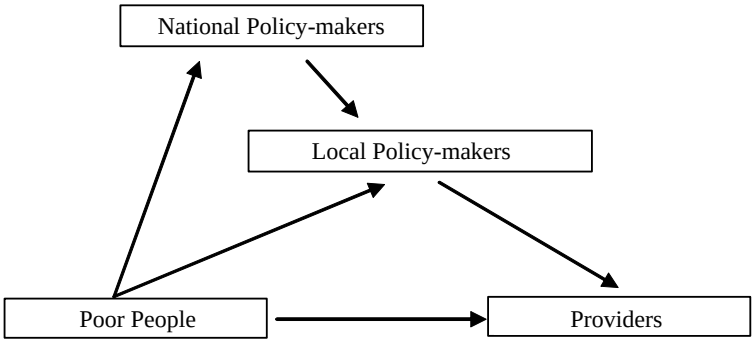
in non-salary recurrent expenditure to estimate the emphasis on operations and maintenance as opposed to new investments. This expenditure analysis is limited to the province of Punjab, as this is the only province where local governments exercise a significant degree of discretion over the resources at their disposal. Section VI concludes with some policy implications.

II. THEORETICAL FRAMEWORK

The evidence on the impact of decentralisation on service delivery is mixed. Some studies, such as Faguet (2001) on Bolivia, demonstrate that decentralisation resulted in a huge shift in public spending in favour of smaller and poorer municipalities. Bardhan and Mookherjee (2004), show that inter-village allocations of credit, resources for local infrastructure and employment for the poor, and development grants from upper levels of government in the Indian state of West Bengal exhibited poorer targeting than allocations of these resources within villages by local governments. Other studies argue that decentralisation increased elite capture and corruption. A World Bank study of village governments established in Indonesia in 1979 showed that accountability of village heads to the villagers was very weak, with a negligible number of village proposals included in district budgets [World Bank (2001)]. A cross-country investigation by Triesman (2002) found that decentralisation was significantly associated with measures of corruption.

The reason for this mixed record is, as argued in Ahmad, *et al.* (2004), that improvements in public service delivery require three strong relationships of accountability between the different actors in the service delivery chain. These actors are illustrated in Figure 1. First, poor people must be able to hold policy-makers accountable; second policy-makers must be able to hold service providers accountable; and third the inter-governmental framework between national and local policy-makers must be conducive to improving service delivery. The authors refer to these relationships as the 'long-route of accountability' as opposed to the short route under which in a private, competitive market poor people, as customers, could hold providers directly accountable. Weaknesses in public service-delivery can be attributed to breakdowns in any one or all of these links.

Fig. 1. A Framework for Decentralised Service Delivery



Source: Ahmad, *et al.* (2004).

Holding Policy-makers Accountable

On the first part of the accountability relationship, the conventional wisdom, as mentioned, is that decentralisation improves accountability as voters are better able to monitor the actions of policy-makers given their relative proximity, and policy-makers in turn, seeking re-election, are responsive to voter demands. Since the median voter in a developing country is poor, and improvements in basic education, health and physical infrastructure services help the poor, this responsiveness results in better service delivery.

To evaluate this claim one must first understand why any democracy could produce outcomes that hurt the median voter. A large and growing literature on the subject has shown that political market failures, arising primarily out of information asymmetries, are the main reason for the non-accountability of elected officials to the public.[1] The key question therefore, is whether local governments are less prone to these political market failures.

Politicians care about getting elected, and they will focus on policies and will emphasise expenditure in areas that will maximise their electoral fortunes. Importantly, getting elected is also crucially contingent on information—specifically, it requires that voters are able to connect improvements or deteriorations in their welfare to the actions of a particular politician. In other words, politicians must be able to credibly take credit for these improvements. This importance of information implies that politicians are likely to be more responsive to the better informed group of citizens, and as a result focus more on private goods, or targeted benefits, as opposed to public goods that benefit the majority.

Some public goods, such as the provision of roads, are much quicker to implement and easier to verify and credit to the efforts of a particular politician, than others, such as better quality healthcare or education. As World Bank (2003) points out, education and health place very high informational demands on voters as these are transaction-intensive services with outcomes that are crucially dependent on the behaviour of providers that are very difficult to monitor. Therefore, given a menu of demands, one would expect politicians to focus more on roads and other physical infrastructure, and less on education and health.

While some public goods like roads will get more attention than others, individual-specific favours will in general receive even greater priority. The reason is that demands for public goods and for individual-specific favours differ in the relative ease with which preferences are transmitted to policy-makers. Individual contacting for particularised benefits places the least organisational demands on citizens, and presents the clearest relationship between action and result. Demands for public goods entail free-rider problems and are therefore much more difficult to organise. Since individuals are much more likely to lobby for private goods, they are also likely to be much more informed about whether or not this demand was satisfied, and whether or not this fulfilment was due to the efforts of their elected representative. For example, people will observe how helpful the local representative's office was, how much attention was paid to them, and what were the impressions of others waiting in line, and obviously whether they received the benefits. By contrast, improvements in service delivery will be much harder to measure.

[1]Important recent works in this literature include Persson and Tabellini (2000), Keefer (2002), Keefer and Khemani (2003), Besley, *et al*. (2004).

The key question is whether local governments are better able to resolve these political market failures than provincial or national governments. On the one hand closer proximity might ameliorate some of these information problems that lead to political market failure. On the other hand, and as per the classic argument against decentralisation, articulated first by James Madison in the Federalist Papers, local governments may be more prone to élite capture as there will be fewer distinct political groupings in smaller jurisdictions, less media coverage compared to national elections, and less costly for élites to purchase the votes of less-informed voters.

Holding Providers Accountable

In order to be able to act on the demands imposed on them by citizens, policy-makers must be able to hold the bureaucracy accountable for actually delivering these services. In general, mechanisms for monitoring and disciplining front-line providers such as teachers are weak in developing countries. Decentralisation can further exacerbate these problems, as administrative devolution usually lags behind political and fiscal decentralisation, and local policy-makers have limited authority over the staff assigned to them.

The Inter-governmental Framework

Local governments' incentives for improving service delivery are significantly influenced by the allocation of expenditure responsibilities between the local and higher tiers of government; the assignment of taxes across these levels; the design of the inter-governmental grant system; and the budgeting and monitoring of fiscal flows between different tiers of government.[2] The literature posits that expenditure and tax assignments should be based on considerations of economies of scale, spillover benefits, tax efficiency and equity issues. In general these considerations imply that local governments are unable to meet most of their resources through taxes, and must rely on inter-governmental grants, which creates problems of soft-budget constraints and may weaken service delivery incentives. An effective fiscal transfer system should be predictable and formula-driven, consisting of a good balance between unconditional grants, to provide local governments' expenditure discretion, and conditional grants, to enable the centre to directly specify some accountability for service delivery.

Effective expenditure assignments are also important from the perspective of political market failures. As noted earlier, to be motivated to deliver public goods, politicians must be able to effectively claim credit from voters for providing such goods to them. With multiple tiers of government, voters might have little knowledge about which tier of local government is responsible for which functions. Even though the responsibilities of the different tiers of government are clearly defined, it is likely that opportunistic politicians will exploit voters' relative lack of knowledge by avoiding responsibility for their own lack of efforts or claiming credit for others' actions in providing public goods. If voters are likely to be grateful to all the tiers of government when public goods increase, even if only one government contributed, then the incentive to provide that public good is diminished.

[2]Ahmad, *et al.* (2004).

There is some cross-national evidence to support this argument. A recent econometric study found that the number of tiers of government was positively associated with corruption, and negatively with the number of paved roads or infants inoculated.[3]

After briefly describing Pakistan's local government system in the next section, the paper examines two of these three relationships of accountability: the ability of the public to hold local policy-makers accountable, and the expenditure priorities of local governments in the context of the inter-governmental expenditure and fiscal framework. The third link, the ability of local policy-makers to hold the bureaucracy accountable for service delivery improvement, is not looked at in detail as this authority is very limited in Pakistan.

III. PAKISTAN'S LOCAL GOVERNMENT SYSTEM

Devolution in Pakistan has significantly changed the provincial and sub-provincial government structure, with the main responsibility for the delivery of education, health, water and sanitation, roads and transport, and agriculture services devolved to local governments. New political structures for local governments have been created, new arrangements for inter-governmental sharing of resources have been established, large numbers of staff have been transferred from provincial to local governments, and an entire new administrative system has been set up at the local level.

Politically, the formerly deconcentrated provincial bureaucracy in the above-mentioned sectors has been placed under the authority of elected local governments. Specifically, the devolution reforms created a three-tier local government structure at the union, tehsil, and district levels, with each government headed by a *nazim* to whom the local bureaucracy is formally answerable. The electoral system is mixture of direct and indirect elections. Members and nazims of the union council are directly elected, with one-third of the seats in these councils reserved for women, peasants and minorities; two-thirds of the members of district and tehsil councils are the union council nazims of that particular district and tehsil respectively and hence are directly elected as well, and the remaining seats are reserved for women, peasants and minorities, who are elected indirectly by an electoral college consisting of all union councillors. Importantly, district and tehsil nazims are also indirectly elected by the elected union councillors, and therefore need not command a majority of the public vote to hold office.

Fiscally, a fairly elaborate 'rule-based' resource transfer system between the province and local governments has been created in the shape of the Provincial Finance Commission Awards. These awards divide provincial resources, consisting of both federal transfers and provincial taxes (and in some cases non-tax revenues), into provincial retained and allocable amounts, the latter of which is transferred to local governments. While the horizontal distribution of these funds across local governments is formula-based (based on population and an index for backwardness), the vertical distribution that determines the retained and allocable amounts is largely at the discretion of the province. Moreover, while the allocable amount is in theory at the discretion of local governments, and is non-lapsable, most of these resources are spent on personnel costs, with wages de facto set by the federal government. The level of local government autonomy over spending will be discussed in more detail in Section V.

[3]Triesman (2002).

Administratively, as discussed, the formerly deconcentrated bureaucracy is now on paper answerable to the locally elected leadership. The pre-devolution head of the district administration, the Deputy Commissioner, who used to report to the provincial bureaucracy, has now been replaced by the District Coordination Officer (DCO), who reports to the district nazim. The DCO in turn supervises a team of Executive District Officers (EDOs) who head each of the devolved departments at the district level. In all but one of the provinces (Balochistan), administrative authority—i.e., authority over appointment, promotion, transfer, and disciplinary proceedings—over non-officer staff in the devolved departments has been transferred to the DCOs, EDOs and in some cases junior officers in the districts.

Crucially however, these devolved staff remain provincial employees and therefore, despite these formal changes the nazim has limited administrative control over the local bureaucracy. The officers in the local government—the DCOs, EDOs, and junior officers—continue to be formally posted and managed by the province, and this administrative control permeates downwards to the frontline service providers.

IV. POLITICAL ACCOUNTABILITY

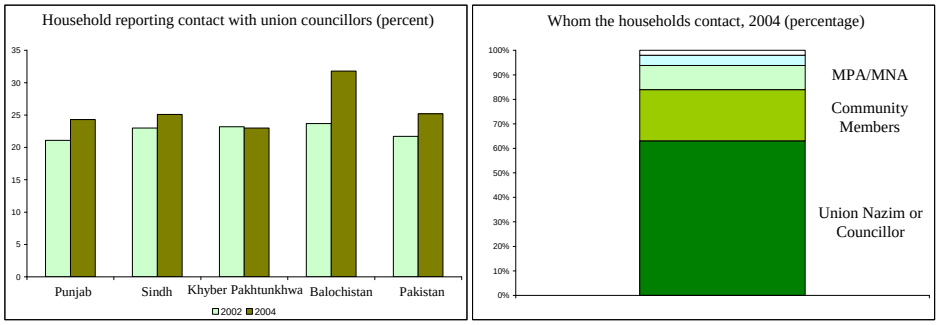
Citizens can hold policy-makers accountable through two channels: first, through actively contacting policy-makers, either individually or collectively in the form of interest groups, with specific demands, sometimes backed up with financial contributions; and second, through the ballot box by voting out officials who were unable to satisfy these demands. How has devolution impacted these two channels of enforcing accountability in Pakistan?

Citizen Contacting

Any visit to a local government office will reveal that the degree of access of citizens to their representatives has increased considerably after devolution. This increase was in many ways inevitable—with hundreds of union councillors in all parts of a district, citizens now have multiple channels for conveying their problems to the government. Anecdotal evidence suggests that on average 50-60 people meet with councillors on a daily basis, and if one multiplies this by the number of councillors it is clear that the quantum of information flowing upwards from citizens to elected representatives has increased by several orders of magnitude as compared to the pre-devolution set-up [World Bank (2004)].

Figure 2 provides some survey-based confirmation of this perception. In 2005, approximately 25 percent of households reported having some contact with their union councillors over the preceding twelve months (left panel), up from 22 percent in 2001. Over 60 percent of the households stated that they would approach a union councillor or nazim for their problems, as compared to only 10 percent who said that they would approach members of the provincial or national assembly (MPA or MNA), again reflective of the increase in accessibility of policy-makers after devolution.

Fig. 2. Citizen Contacting of Union Councillors



Source: DTCE (2005).

The survey also revealed that most of the reasons for contact with union councillors cited by male and female respondents alike, related to personal issues, such as financial support, the issuance of identity cards, a police problem, or some form of dispute. Those who contacted for reasons of service delivery did so regarding mainly about water, roads, and electricity. Less than 2 percent of the respondents approached local officials for education and health matters. Clearly, this suggests that increased proximity and greater accessibility of policy-makers does not necessarily imply that pressures for improving social service delivery increase; it may imply that while elected officials may be less able to shirk their responsibilities to their respective constituencies, they may also be consumed by satisfying the personal demands of voters, or demands for improving physical infrastructure.

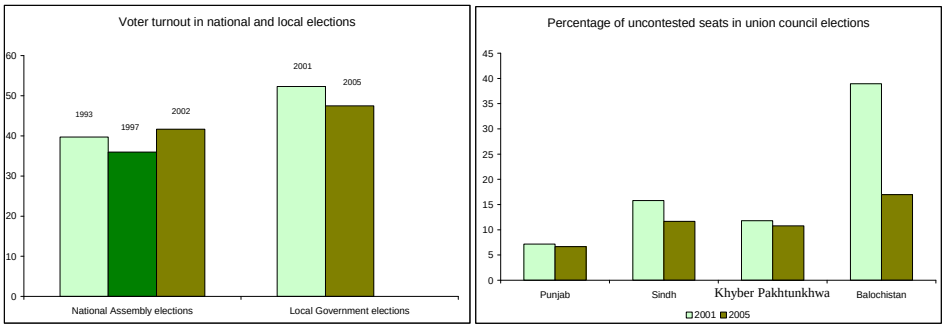
Electoral Accountability

As discussed, an argument against local government accountability is that local government elections may not be as competitive as national elections, due either to relatively lower citizen interest and media coverage, or élite capture. The competitiveness of local government elections can be examined along three dimensions: (a) voter turnout; (b) the level of contestation (percent of seats filled by contest between 2 or more candidates); and (c) level of partisan politics, or the number of independent candidates who win relative to candidates who are affiliated with political parties. The first two indicators are almost self-evident—the higher the voter turnout and the greater the level of contest for individual seats, the more 'representative' a candidate. With regards to the third indicator—partisan affiliation—it can be argued that intensity of election campaigns is likely to be higher when political parties are involved as opposed to when independent candidates are contesting, primarily because candidates affiliated with political parties have greater resources at their disposal for their campaign. Partisan politics is also likely to impact the first two indicators and lead to a higher voter turnout and greater contestation.

As Figure 3, left panel shows, voter turnout in union council elections in Pakistan has been higher than national elections—for example, their was a 48 percent turnout in the 2005 local government elections, as compared to a 42 percent turnout in the 2002 national assembly elections—indicating that citizens are if anything more interested in

local issues than national ones. Turnout varied considerably across the provinces, from a high of 54 percent in Punjab to a low of 31 percent in Balochistan, but was in all provinces higher than the turnout in the national elections.

Fig. 3. The Competitiveness of Local Government Elections



Source: DTCE (2005).

The level of contestation, with one notable exception, has also been considerable. In Punjab, Sindh, and Khyber Pakhtunkhwa in only 6 percent, 12 percent, and 11 percent respectively of the seats in the 2005 elections were candidates returned unopposed (Figure 3, right panel). By contrast, in the Balochistan local government elections of 2001 almost 40 percent of the union council seats were uncontested, a number far higher than in any election at the national or provincial level, and reflected the fact that in many cases the elections were managed up front by tribal elders with the aim of ensuring adequate representation of most of the sub-tribes and clans that were politically important in the district. The 2005 elections appear to have been more competitive, with the number of uncontested seats in the province declining to 17 percent.

Political parties are by law not allowed to participate in local government elections, and candidates have to compete on an individual capacity. However, in reality the vast majority of candidates in the local elections belonged to one or another of the established political parties, and the resources of these parties were, again with the notable exception of some districts in Balochistan, utilised in the campaigns [World Bank (2004)]. The nature of local partisan politics appears to be quite similar to that at the provincial level—in the districts of Punjab for example, traditional patron-client or factional politics based on *biraderis* (patrilineal networks) were the main basis for political mobilisation [Cheema and Mohmand (2005)].

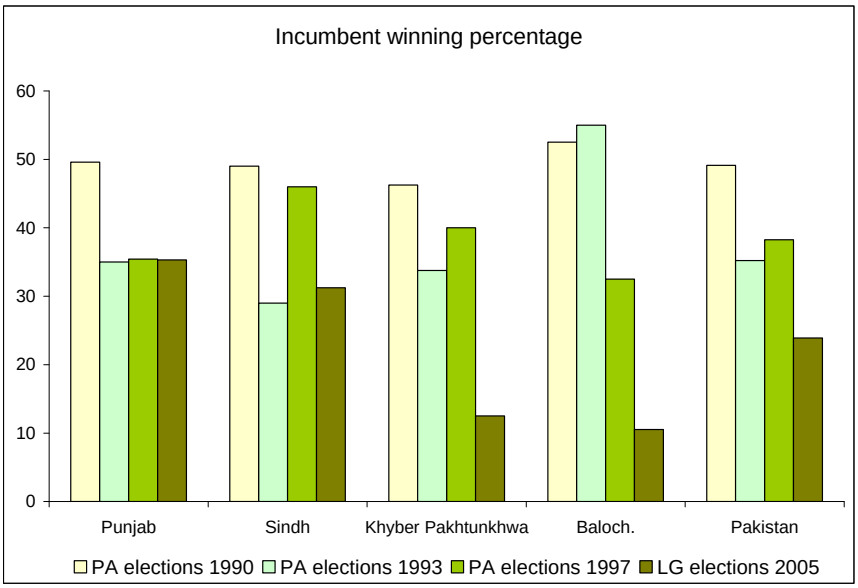
The indirect election of the district and tehsil nazim implies that the relative competitiveness of union council elections does not automatically translate into the electoral accountability of these key local policy-makers. The re-election of an incumbent district or tehsil nazim is dependent not on voters but on a few hundred union councilors and therefore, downward accountability is dependent on the degree to which union councillors act as agents of the public, and the extent to which nazims have an incentive to listen to councillors.

One uniform way that district nazims have responded across districts to this dependence on union councillors is by allocating some portion of the district development

budget to each individual union nazim to be used at his or her discretion. This is the equivalent of the MPA and MNA funds that have been constituted at the provincial and national levels respectively. However, the district nazim's relatively greater independent political standing—they are usually from established political families—also implies that the future electoral fortunes of union councilors are as much linked to their endorsement by the nazim. There are many examples of district nazims campaigning on behalf of union councilors in order to secure his own future re-election from a pliant electoral college [World Bank (2004)].

An interesting feature of local government elections is the relatively high degree of incumbency disadvantage of district nazims. As Figure 4 shows, only 24 percent of the incumbent district nazims were re-elected in the 2005 across Pakistan, as compared to 38 percent of members of provincial assemblies in 1997.[4] Across the provinces, only in Punjab were district nazims and MPAs equally disadvantaged, with 35 percent getting re-elected. The incumbency disadvantage of nazims was particularly acute in Khyber Pakhtunkhwa and Balochistan, with only 13 percent and 11 percent of nazims getting re-elected respectively.

Fig. 4. Incumbency Disadvantage in Local Elections



Source: Punjab (2007).

A district nazim's chances of getting re-elected also appears to be unrelated to citizens' satisfaction with basic services, or views about whether or not these services had improved, as indicated in the household survey data. As Table 1 shows, there is no association between citizen satisfaction with education, health, roads, and water supply services in a particular district, or whether the service had improved over the past year (as expressed in the PSLM survey of 2004-05), and the re-election of the district nazim.

[4]The 2002 provincial assemblies were not considered due to the complications caused by the intervening period of military rule.

Table 1

Correlates with the Election of a District Nazim

	Prob. of Nazim Getting Re-elected	Prob. of Nazim Getting Re-elected
Citizen Satisfaction with:		
Basic Health Facilities	–0.13	
	(1.88)	
Schools	–6.70	
	(4.59)	
Roads	3.29	
	(2.58)	
Drinking Water Supply	2.67	
	(2.79)	
Perceived Improvement (Over Past 12 Months) in:		
Basic Health Facilities		–1.01
		(0.62)
Schools		–0.01
		(0.97)
Roads		0.54
		(1.08)
Drinking Water Supply		0.702
		(1.78)

Sources: PSLM 2004/05 and data from the Election Commission of Pakistan.
Note: Logit regression; standard errors in parenthesis.

What does this data on re-election imply? First, incumbency disadvantage reinforces the fact that district nazim elections are indeed competitive and therefore political capture in its crudest form—that is, local monopoly control—is limited. Second, given the indirect election system this result may not be surprising since re-election depends on the support of a few hundred union councilors and may have nothing to do with citizens' perceptions of service delivery. Third, electoral accountability may exist but voters credit service delivery improvements not to the district nazim but to the provincial government, the prime minister, or other actors, or take other factors into account during elections.[5]

To conclude, while proximity of local policy-makers is unequivocally greater than that of provincial or national policy-makers, and local government elections appear to be reasonably competitive, the impact of this greater accountability on service delivery is unclear. The next section delves into incentives for service delivery by examining what district governments actually spend on.

[5]Electoral manipulation is also a factor that cannot be ruled out. The provinces with high incumbency disadvantage—Sindh, Khyber Pakhtunkhwa, and Balochistan—also had a majority of incumbent district nazims that were in political opposition to the ruling provincial coalition, and anecdotal evidence does suggest that in part their failure to get re-elected was due to the provincial manipulation of the votes of their electoral colleges.

V. LOCAL GOVERNMENT SECTORAL PRIORITIES

This section attempts to uncover the political preferences of local policy-makers by analysing the expenditure priorities of district governments. For such an exercise to make sense it is crucial that local policy-makers have significant discretion over the funds at their disposal. The analysis therefore focuses on Punjab as local governments are the least fiscally constrained in this province. The focus is also primarily on development expenditures as these are both politically the most visible of government activities and where preferences are most revealed, and also the budgetary area where the greatest element of discretion can be exercised by local policy-makers.

We will attempt to gauge political preferences by (a) examining the sectoral composition of development expenditures as outlined in the Annual Development Plan (ADP), the budgetary document that provides this information; (b) the average size and type of typical local development schemes; (c) trends in non-salary recurrent expenditure to estimate the emphasis on operations and maintenance as opposed to new investments; and (d) the relative size of provincial spending in the devolved sectors in a district. A main finding from this analysis is that provincial priorities in the devolved sectors have had a significant impact on local preferences, and appear to have encouraged districts to focus more on the physical infrastructure sectors.

A major caveat before proceeding is the limitation of fiscal data on local governments. Consolidated ADPs of local governments are not being compiled; each district prepares its ADP as per its own format, and these to date have not been consolidated by the provincial planning or local government departments. The analysis for this paper is based on ADP data for 2006-07 received from 33 of the 35 districts of Punjab. This is the first time to our knowledge that a consolidated profile of the district development portfolio has been prepared.

Inter-governmental Fiscal Relations in Punjab

Given their limited revenue base, local governments in Punjab are heavily dependent on inter-governmental transfers for their resources. The structure of inter-governmental fiscal relations is complex, with local governments receiving funds from a variety of sources over which they have varying degrees of discretion. These sources, as elaborated below, include transfers from the provincial and federal governments, as well as funds that are administered by local governments on behalf of the province and the federal government, in particular under the provincial Annual Development Programme and federal and provincial vertical programmes.

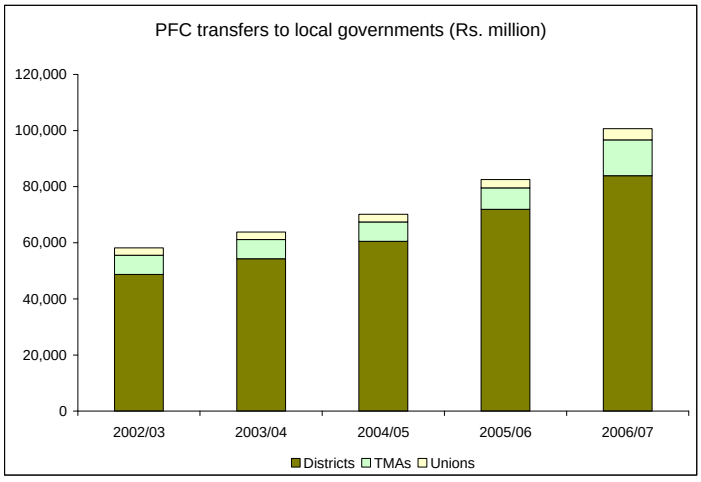
The Provincial Allocable Amount: The formula-based transfers in Punjab, as in the rest of Pakistan, are *de jure* determined by the Provincial Finance Commission Award. Until 2006-07, these were annual, interim awards; the Punjab Specification and Distribution of Provincial Finances Order, 2006 provided the first three-year award covering the financial years 2006-07 to 2008-09. The Provincial Consolidated Fund (PCF) determines the resources to be divided up between the provincial and local governments, and consists of federal transfers and provincial revenues, with deductions made on account of pensions, debt servicing, and other liabilities of the local government. The Award divides the PCF into the Provincial Retained and the Provincial Allocable

amount in the ratio of 58:42, the latter of which is transferred to the local governments into their account (Account 4). This ratio is determined on the basis of expenditure baselines of the province and local governments, taking into account the obligatory expenditures of the province.

The provincial allocable amount is transferred to the local government broadly under two separate block grants, one for recurrent expenditures, which constitutes approximately 88 percent of the allocable amount, and the remainder for development expenditures, with no *de jure* discretion to local governments to re-allocate across these two windows.[6] The development grant—Rs 12 billion in 2006-07—is distributed horizontally across the districts on the basis of a formula that gives equal weights to population and backwardness.

As Figure 5 shows, due to overall improved resource availability, transfers to local governments in Punjab have been increasing steadily at an annual rate of approximately 15 percent over the past five years, with growth rising to 18 percent and 22 percent in 2005-06 and 2006-07. In 2006-07, approximately Rs 100 billion was transferred to local governments, with districts receiving Rs 84 billion, TMAs Rs 12.7 billion, and Unions Rs 4 billion. Given that salary expenditures have increased at a lower rate, districts have been able to utilise some of the savings from the recurrent grants to fund development activities, despite the official earmarking of these transfers.

Fig. 5. PFC Transfers in Punjab



Source: Punjab (2007).

This fiscal space is unique to the districts of Punjab; however even here it is overshadowed by the provincial presence in the districts, particularly in the social sectors.

Transfers from the Provincial Retained Amount: The province makes a number of additional transfers to local governments from the provincial retained amount and outside

[6]To be precise, the 2.5 percent of the General Sales Tax is added to the Provincial Allocable and the total amount is transferred under four grants: a General Purpose Grant to meet current expenditures; an Equalisation Grant to meet any shortfalls from the baseline expenditures after distribution of the General Purpose Grant; a Development Grant to meet development needs; and a Tied Grant to meet the social sector priorities of the provincial government.

the framework of the PFC. The most significant at the district level are the tied or conditional grants for education and health under the provincial Education Sector Reform Programme (ESRP) and Health Sector Reform Programme (HSRP) respectively, which are earmarked for the improvement of school and health facility infrastructure. These tied grants are distributed among the districts on a formula based on both need and performance. Additional funds for the social infrastructure improvement are also transferred to local accounts on a more ad hoc basis under the Chief Ministers Accelerated Programme for Social Development (CMAPSD). The allocations in the provincial public sector development programme for ESRP, HSRP, and CMAPSD (education and health components) in 2006-07 were Rs 5 billion, Rs 1.3 billion, and Rs 5.5 billion respectively.

An additional significant source of local development work is through federal vertical programmes such as the Khushal Pakistan Programme, the federal Education Sector Reforms (ESR), and the President's Programme for the Improvement of Watercourses. These funds are usually tied to certain pre-defined interventions, and are administered by the concerned DCO or EDO, usually through Personal Ledger Accounts held outside the provincial treasury, again with little or no involvement of the local political leadership.

In 2006-07, these and other non-PFC development transfers amounted to Rs 14.5 billion or larger than the local government's allocation under the block development grant.[7] The analysis of district expenditure priorities has to take into consideration this large provincial presence, particularly in the sectors that have been *de jure* devolved to local governments.

Local governments are also involved in executing provincial development schemes through the provincial Account 1. Specifically, the concerned department will, through the respective EDOs, implement these projects. There is no involvement of the district political leadership in the execution of these schemes.

On the recurrent side, the province also transfers resources for the recruitment of government employees against vacant posts, and to fund salary increases mandated by the federal government that cannot be financed under the provincial allocable amount.

District Development Priorities in Punjab

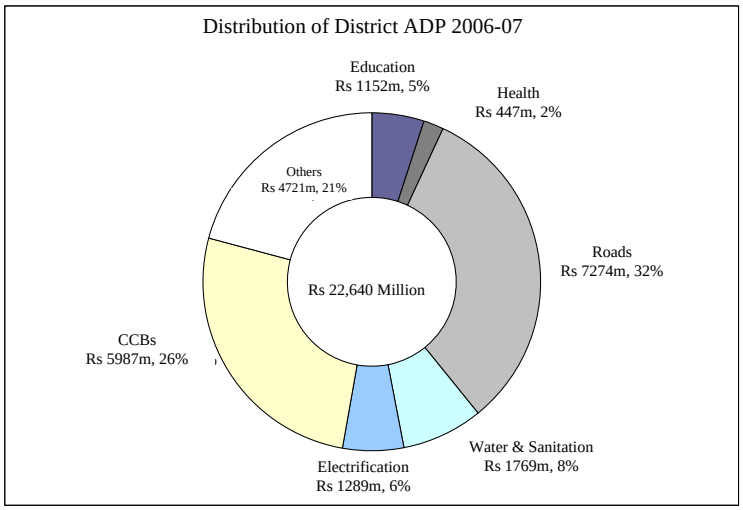
Four stylised facts emerge from an analysis of provincial and district development expenditures in Punjab. First, physical infrastructure, in particular roads, is by far the highest priority of the district governments; second, these infrastructure schemes are small and largely neighbourhood-specific; third, district policy-makers appear to attach a lower priority to operations and maintenance than their provincial counterparts; and finally provincial interventions in education and health appear to have provided additional incentives for districts to prioritise the physical infrastructure sectors.[8]

[7]Punjab (2007).

[8]This paper focuses on budget allocations as opposed to actual expenditures. The reason is that only the budget data allows for a separation of what development schemes in the district ADB are being financed by the district (i.e., from the block development grant, own source revenues, and any savings from the recurrent grant) and what are being financed by the province.

As Figure 6 shows, roughly 32 percent of the Rs 22.6 billion allocated collectively by the districts in their ADPs for 2006-07 was devoted to the roads sector.[9] Citizen Community Boards were the second biggest component, but this was not by choice due to the stipulation of the Local Government Ordinance that 25 percent of the ADP annually be reserved for CCBs.[10] Other major allocations included water and sanitation, Rs 1.8 billion (8 percent of the ADP), rural electrification Rs 1.3 billion (6 percent), education Rs 1.15 billion (5 percent), and health Rs 0.4 billion (2 percent).[11] In total, the three infrastructure sectors of roads, water, and electrification received 46 percent of the total ADP, and 64 percent of the ADP under the discretion of district governments (i.e., excluding CCBs). This relatively high allocation for water and sanitation is particularly surprising given that legally this sector is a responsibility of the tehsils and not the districts. That districts have intruded into this area is also indicative of the priority attached to it.

Fig. 6. Consolidated Punjab District ADP 2006-07



Source: Concerned district governments.
Note: District ADPs are based on data received from 33 out of the 35 districts of Punjab.

The other defining feature of the district ADP is the small size of the typical scheme. As Figure 7 left panel shows, there were, excluding block allocations, over 17,000 schemes in the development portfolio of these districts in Punjab. Of these

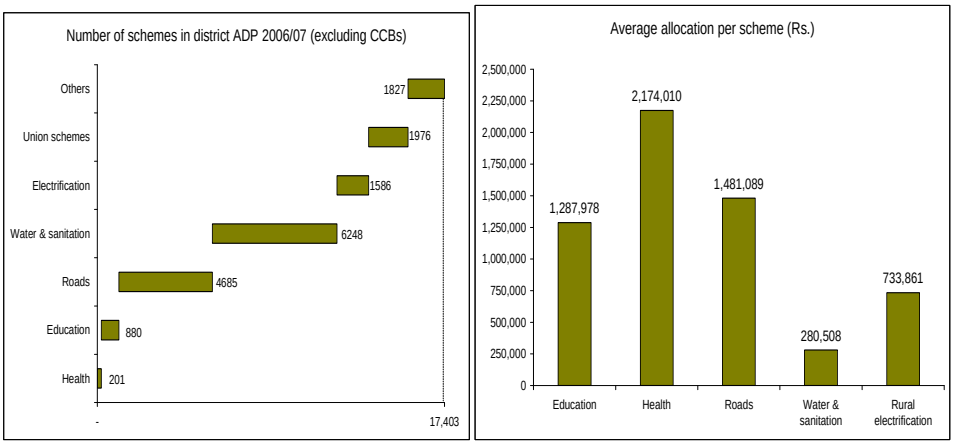
[9]Given that only Rs 12 billion was transferred by the province under the Development Grant in the PFC, it is likely that actual utilisation of the district ADPs would be much less.

[10]As per the LGO, a CCB is to be a non-elected voluntary organisation, consisting of at least 25 members, which can be established for a variety of purposes, including initiating and improving development projects, establishing cooperatives, forming monitoring bodies over police and other service providers and reinforcing the capacity of monitoring committees at the behest of the concerned council. At least 25 percent of the total development budget of each tier of local government (district, tehsil, and union) must be earmarked for projects identified by CCBs, and each CCB has to make a cash contribution of 20 percent in order to tap into these funds for a specific project.

[11]As per the LGO, water and sanitation is the responsibility of tehsils; however district governments' are also spending in the sector.

4685 were roads schemes, 6248 water and sanitation schemes, 1586 electrification schemes, 880 education, and 201 health schemes. The size of a typical road scheme was roughly Rs 1.5 million, and of a water and sanitation scheme only Rs 0.3 million (Figure 7, right panel). These were typically neighbourhood-specific schemes—construction or rehabilitation of a small road or drains (what is referred to as 'soling').

Fig. 7. District ADPs in Punjab, 2006-07: Number and Average Size of Schemes



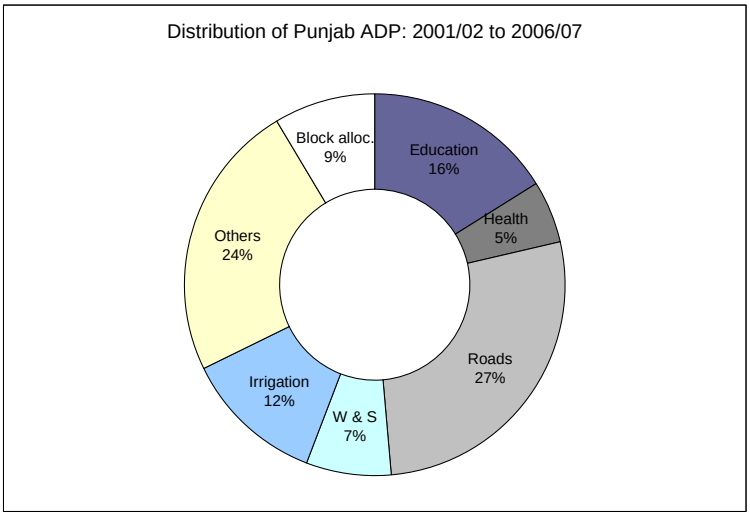
Source: District governments.

It should be noted that due to a number of block allocations the above is not a complete picture of sectoral district development spending. For example, most districts provide a block allocation for schemes to be identified by the union councils, and anecdotal evidence suggests that these are also mostly small infrastructure projects the details of which are unknown. Similarly, the details of CCB schemes, where formed, are also not available. Therefore the total number of schemes is likely to be larger, and the focus on physical infrastructure greater, than what is portrayed in these figures.

How do these allocations compare to that of the provincial government in the post-devolution period? Figure 8, provides the average sectoral composition of the provincial ADP for 2001-02 to 2006-07. Roads and large-scale infrastructure projects are also a priority for provincial policy-makers, but education also features as a priority sector. Specifically on average 27 percent of the ADB was allocated to roads, 16 percent to education, 12 percent to irrigation, and 5 percent to health. The provincial government has therefore prioritised social sectors much more than the district government.

The average provincial schemes were considerably larger than their district counterparts. In total, there were about 2400 schemes in the provincial ADP of 2006-07, with 623 roads, 286 water and sanitation, 174 health, and 149 education schemes. These translated into average scheme sizes of for example Rs 22 million for roads and Rs 13 million for water and sanitation.

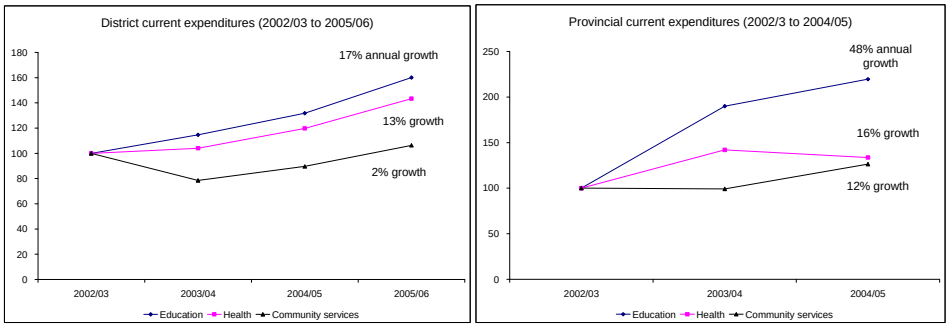
Fig. 8. Composition of the Punjab Provincial ADP, 2001-02 to 2006-07



Source: Punjab P&D Department.

What are the trends in recurrent expenditure, particularly operations and maintenance expenditure? Unfortunately district expenditure data by object classification are unavailable, and therefore non-salary expenditure patterns need to be estimated from total recurrent expenditures taking into account the annual stipulated salary increases. As Figure 9, left panel shows education, health, and 'community services' (primarily roads) nominal recurrent expenditures have increased on average annually by 17 percent, 13 percent, and 2 percent respectively from 2002-03 to 2005-06. Given that salary increases have on average been in the range of 10 percent to 15 percent annually in these years, suggests that non-salary expenditures have been broadly stagnant in nominal terms in education and health, and have declined in the roads sector. By contrast, provincial recurrent expenditures in these sectors have increased more sharply, growing annually by 48 percent, 16 percent, and 12 percent in education, health, and community services respectively (Figure 9, right panel).

Fig. 9. Trends in Setoral District and Provincial Current Expenditures (2002-03 to 2005-06)



Source: Accountant General of Punjab, monthly civil accounts.

This relative neglect of non-salary expenditures, combined with the large size of the consolidated district ADPs relative to the block development grant transfer in the PFC, suggests that districts have reallocated funds from the non-salary PFC grant to fund development expenditures.

The greater focus on physical infrastructure investments, the emphasis on small, localised schemes, and the relative lack of prioritisation of operations and maintenance suggests that incentives for providing visible, targeted benefits are even higher for local policy-makers as compared to their provincial counterparts. Water and sanitation and village electrification in particular exemplify this targeting. As Cheema and Mohmand (2006) found in villages they surveyed in Punjab, sanitation and drain provision was being targeted to specific households even within a lane in a given village. Similarly, village electrification in many cases is actually the provision of electricity connections to particular households in a village.

Given the considerable direct contact between citizens and their local political representatives elaborated on in Section IV, and the relatively greater demands of citizens for improvements in roads, water, and electricity as compared to education and health, this emphasis on physical infrastructure could simply be reflective of the relatively greater responsiveness of local governments. It could also be an outcome of the local government political structure. As also discussed in Section IV, district nazims have responded to their electoral dependency on union councillors by allocating some portion of their development funds to each union nazim. This parcelling of the development budget into small portions would automatically result in a bias towards small-scale infrastructure schemes targeted to the village and neighbourhood that are the constituencies of these councillors.

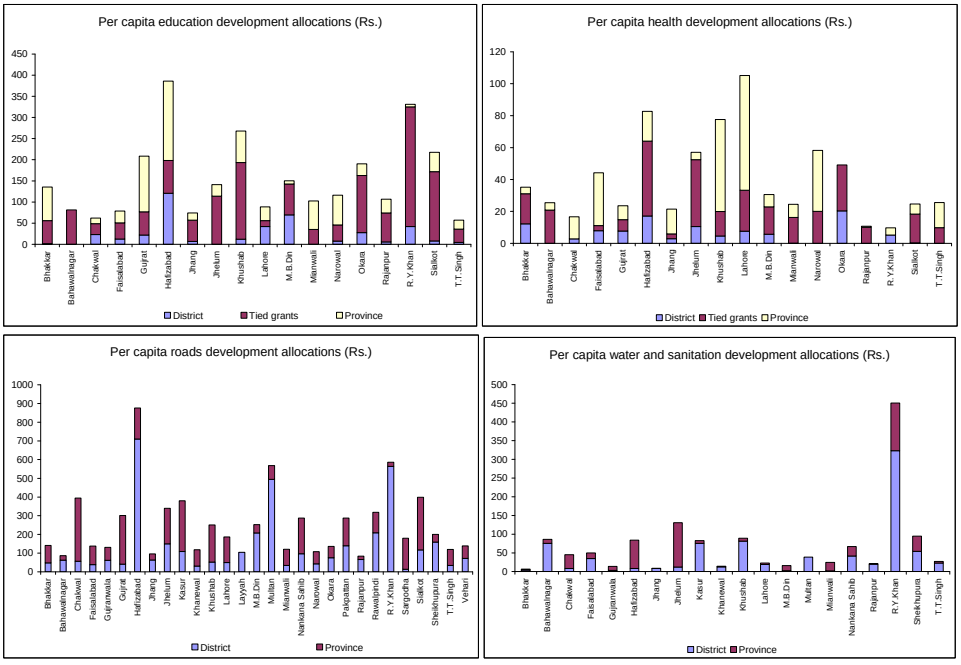
These local priorities are also significantly influenced by the actions of the province, particularly in the sectors that are, as per the LGO, local responsibilities. As discussed, over the past four years, the Punjab government has launched large-scale reform programmes in the education and health sectors. The Punjab Education Sector Reform Programme is a high-profile programme of the government, with a number of interventions, including the provision of missing facilities for primary schools, provision of free textbooks to public primary and middle schools, and the provision of stipends to female middle and secondary students in 15 low literacy districts. The funding for the provision of missing facilities is transferred to local governments as tied grants. A total of Rs 5 billion were allocated for this component in 2006-07, and distributed across districts on the basis of need and performance. The mechanics for scheme identification and execution are as follows: the districts provide the provincial government with the total number of missing facilities, and the prioritisation within this list is done by the concerned MPAs of the particular district. Therefore, while there is some role for district governments in identifying the schools that will be provided these facilities, the decision about which schools will be targeted in a given year primarily rests with the provincial political leadership. In the initial years of the programme, these schemes were implemented by the works and services departments of the concerned district. Starting in 2006-07, implementation has been contracted out to the National Logistics Corporation (NLC), an agency outside of the Punjab public administration. The districts therefore no longer have any role in the execution of these schemes, and serve mainly as a conduit for funds.

The Health Sector Reform Programme similarly provides tied grants for missing facilities, albeit on a smaller scale, with the schemes again identified by the concerned MPAs. As in education, the implementation of these schemes as also been contracted out to the NLC. A total of Rs 1.3 billion was allocated for this programme in 2006-07 in the provincial PSDP, of which Rs 0.9 billion was for the provision of missing facilities in BHUs and RHCs.

In addition to these tied grants, the CMAPSD is another major intervention in the provincial PSDP in the devolved education and health sectors. Of the total allocation of approximately Rs 5.5 billion for the education and health components of this programme, Rs 2.6 billion is for investments in schools, and Rs 0.8 million for infrastructure improvements in local hospitals, BHUs, and dispensaries, with the remainder targeted at the higher education sector (a provincial responsibility). While these are not referred to as tied grants, as in the ESRP and HSRP individual schemes in this programme are identified by the provincial political leadership, but with the districts involved in the execution of these schemes through their works and services departments. The only substantive difference between these programmes is that CMAPSD does not have a formula-based allocation mechanism to the districts and is instead distributed in a more ad hoc manner.

In total therefore, the provincial ADP allocated Rs 7.6 billion and Rs 1.7 billion for primary and secondary school and health infrastructure, far greater than the Rs 1.1 and Rs 0.4 billion that the districts are spending in these devolved sectors. This predominance of provincial priorities at the local level is evident in Fig. 10, which displays per capita

Fig. 10. Per Capita Allocations in the Districts (2006-07)



Source: Punjab P&D Department and district governments.

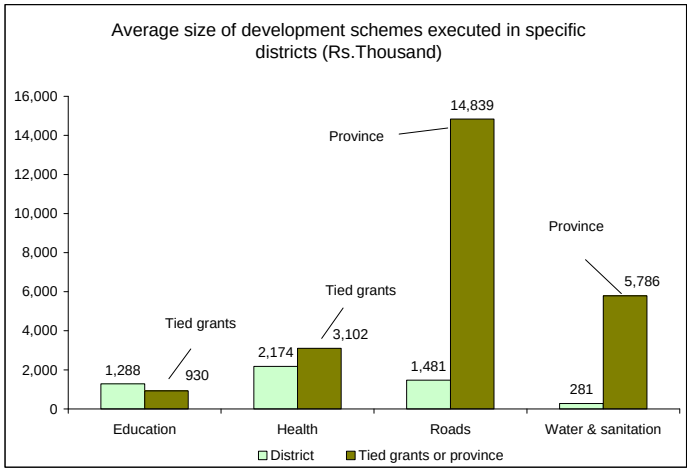
allocations in education, health, roads, and water and sanitation by the district and provincial governments in districts on which data was available. Tied grants, the CMAPSD, and provincial schemes executed from Account 1 form by far the largest source of development expenditures in education and health in the districts for which data was available (Figure 10, top panels). On average these are five to six times the district allocations.

The provincial presence in the districts in the infrastructure sectors is also large, but not as predominant (Figure 10, bottom panels). In roads the province and districts are allocating on average roughly equivalent amounts, while in water and sanitation district allocations form a larger proportion.

It is not unreasonable to presume that these provincial interventions have an impact on the decision-making of local policy-makers. Credit claiming for a particular service becomes difficult if multiple tiers of government are providing the same service. This distortion can then create incentives for politicians to focus on targeted benefits or on more visible interventions.

Figure 11 provides some clues as to why districts are focusing on small-scale infrastructure. Since both the education and health tied grants are for the provision of missing facilities, there is very little distinction between these and district schemes, as indicated by the similar average size of these schemes. By contrast, the district is able to distinguish itself much more from the province in roads and water and sanitation by focusing on smaller schemes. The average district road scheme is one-tenth the size of a provincial scheme, and the average water and sanitation scheme one-twentieth the size. The reason it can do so is that physical infrastructure is intrinsically more 'heterogeneous' than social infrastructure— roads and drains come in all sizes whereas primary schools and basic health units are all quite similar. This heterogeneity allows for 'specialisation', enabling district policy-makers to focus on and to take credit for the small, neighbourhood schemes and provincial policy-makers to take credit for the larger ones.

Fig. 11. Average Size of District and Provincial Schemes

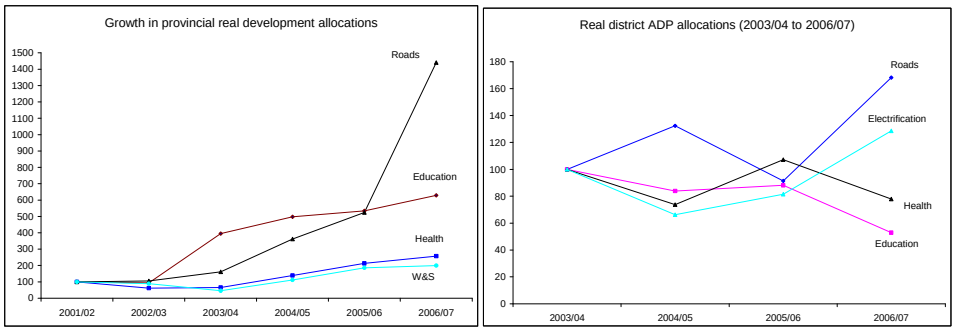


Source: P&D Department and district governments.

The above data also suggests that many districts have responded to the provincial initiatives in education and health by essentially ceding all responsibility for these sectors to the province. For example, districts, such as Bhawalnagar, Mianwali, Narowal, Rajanpur, and Toba Tek Singh allocated either zero or negligible development funds to health in their ADPs in 2006-07. Similarly, Bhakkar, Bhawalnagar, Jhelum, and Mianwali had no education schemes in their ADPs.

This replacement of district social sector funding by the province is also evident in the sectoral trends in the provincial and district ADPs (Figure 12). Provincial real development allocations for roads and education have increased significantly in the post-devolution period. Road allocations have risen fourteen-fold in real terms between 2001-02 and 2006-07, and education allocations six-fold (Figure 12, left panel). By contrast, consolidated district education ADP allocations (based on available data from 13 Punjab districts) have declined by approximately 50 percent in real terms from 2003-04 to 2006-07. District health allocations have also declined in real terms over this period, while provincial health allocations have roughly doubled from 2001-02. Districts' prioritisation of physical infrastructure is again evident, with roads allocations increasing by 70 percent and rural electrification by 30 percent.

Fig. 12. Trends in Punjab—Real Setoral, District, and Provincial ADP Allocations



Source: P&D Department, and district governments.
Note: Trends in district ADP is based on data for 13 districts of Punjab.

The fact that district allocations in education and heath have declined over time suggests that relative lack of emphasis on social infrastructure is not simply due to lower citizen demand (one would not expect these to change in the short run), or the structural constraints imposed by the local government electoral system (which are constant). It reinforces the finding that the general unforeseen impact of the provincial tied grants is an even greater incentive for local politicians to emphasise physical infrastructure, a prioritisation that is understandable given the problems of credit-claiming in social infrastructure.

VI. CONCLUSION

This paper explored the linkage between devolution, accountability, and service delivery in Pakistan by first examining the degree of accessibility of local policy-makers and level of competition in local elections, and second the expenditure priorities of local

governments, and the extent to which they were focused on patronage as opposed to the provision of public goods.

The available evidence suggests that the direct accessibility of local policy-makers to citizens is considerably greater than that of provincial and national policy-makers, allowing the public many more channels to communicate their demands to the government. It is also the case that union council elections in general, barring some notable regional variations, are as competitive as provincial and national elections. The high incumbency disadvantage of district nazims also suggests that élite capture is not a significant problem at the district level. However, the indirect elections of the district and tehsil leadership imply that there are some question marks around the electoral accountability of these key policy-makers.

This greater accessibility has not translated into incentives for improved social service delivery. Local government priorities are heavily tilted towards the physical infrastructure sectors, and within physical infrastructure to small schemes that can be targeted to specific localities and even households. The fact that roads and water and sanitation schemes are small and neighbourhood specific indicates that local policy-makers are focusing on areas of spending for which they can get maximum visibility. This conclusion is also evident in the emphasis on development expenditures at the expense of operations and maintenance expenditure. This in part may be an outcome of their relatively greater accountability—as discussed, most citizens contact councillors for personal favours or for physical infrastructure. It may also be a product of the indirect election system, as district nazims are dependent on the support of union councillors, and the latter's constituency is the village and neighbourhood. It is also, as elaborated at length, a response to the province's focus on the social sectors.

If the provincial government has taken on the agenda for education and health, and the district is focusing on physical infrastructure, then is that necessarily an inefficient outcome? As discussed in Section III, administrative devolution remains incomplete in Pakistan, and local governments have little effective authority over the provincial staff assigned to them. Therefore, given that personnel management is such an important feature of effective delivery of education and health service, this de facto re-centralisation may indeed produce beneficial outcomes.

The counterargument to this concerns sustainability. Given that it will be the district's responsibility to maintain these social infrastructure schemes, what incentives would they have to keep them going if they have had little say in their identification and construction? One of the major criticisms of the Social Action Programme of the 1990s, under which the government and donors invested approximately $9 billion in the social sectors with very little to show in the way of outcomes, was precisely that the programme was too centralised and that the infrastructure investments did not take into account local conditions. So there is a risk that the same mistake is being repeated.

The main policy implication of these findings is the need for coherence in the key accountability relationships delineated in Figure 1. If administrative devolution is unlikely to take place, and this appears to be the case in Pakistan, then recentralisation of education and health may indeed be a sensible strategy, but then this should be complete recentralisation, and the province should also be responsible for the recurrent budget in these sectors. Given the citizen pressures for provision of physical infrastructure, this

recentralisation could be part of a bargain and agreement between the province and local governments that (intra-district) roads and water and sanitation services would then be an area the province would not interfere in and where local governments would have considerable expenditure autonomy.

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Book Reviews

Shankar Acharya and Rakesh Mohan (eds.) *India's Economy—Performance and Challenges: Essays in Honour of Montek Singh Ahluwalia*. New Delhi: Oxford University Press, 2010. xv+465 pages.

This volume comprises a compilation of essays written by distinguished Indian economists, and international economists and observers on India, in honour of Montek Singh Ahluwalia, an eminent economist and currently Deputy Chairman, Planning Commission, widely recognised as one of the main architects and drivers of the economic reform process.

In a very well-written Introduction to this festschrift, capturing the essence of the contributions to the volume and weaving them into an excellent overview, Shankar Acharya and Rakesh Mohan state, "Indeed the story of India's economic policies over the past three decades could easily be woven around Montek's career as the pre-eminent government economist through most of this time". This role is earlier acknowledged in the foreword to the volume by the current Indian Prime Minister, Manmohan Singh, the initiator of the overall reform process as Finance Minister from 1991-96, when Montek (as he is popularly known) worked under him in important positions. This recognition also finds strong support amongst the authors, who were close associates of Montek in policy-making, as they recount the role he played in both shaping and driving the economic policy reform agenda. How a small but well-knit team of economists, most of whom had earlier worked in the World Bank or the IMF, could actually achieve this in a country as large and complex as India would baffle any observer. While the book provides no explicit answer, the reform process appears to have initially found favour in response to the economic crisis in 1991. The process then gained momentum as the reforms showed measurable success, and this helped win over the trust and confidence of the political ruling élite.

If there is one clear message from this book, it is that macroeconomic and financial stability which India was able to achieve provided a firm foundation and played a pivotal role in propelling the Indian economy from its earlier anaemic performance (or "hindu growth rate" of 3 percent, as popularly dubbed) to one which was able to generate very high levels of economic growth with low inflation. A major part of this volume (and one from which economists can learn the most) is how the reform process was put in place to bring about this economic and financial stability in a challenging and changing domestic and global economic environment.

To quote Acharya and Mohan from their Introduction, "The Indian economy is now very different from what it was at the turn of the 1990s, as are its banks, financial markets, and the capital market. The economy as a whole is much more integrated with

the rest of the world: the current account is fully open while the capital account is substantially so. The tax regime has undergone substantial reform: direct taxes now form the bulk of tax receipts, customs duties are approaching [the] ASEAN level, and domestic indirect taxes have been substantially reformed towards a value-added regime. Interest rates have been deregulated to a large extent towards market determination, and the banking system now exhibits a much greater degree of competition after the introduction of new private sector banks and the listing of all public sector banks".

The essays in this volume are divided into four parts. The first addresses broad issues related to overall growth, inequality and reform; the next focuses on the evolution of macroeconomic and financial policies; the third discusses sectoral issues; and the fourth examines issues relating to India's place in the world.

In Part, I Surjit Bhalla (described in the introductory overview as "a provocative analyst of development policy", a description to which, having known Surjit, this reviewer fully subscribes), provides a detailed critique of the monetary policy stance taken by the Reserve Bank of India (RBI), which in his view was primarily responsible for the break in the economic growth momentum generated in the late 1990s and post-2008. While later authors contest somewhat convincingly this view, there is no denying Bhalla's central point—that exchange rate and interest rate are key determinants in driving India's economic growth (as indeed that of most developing countries including Pakistan). Bhalla argues that the RBI, with its emphasis on monetary aggregates, unnecessarily slowed down the economy when they resorted to monetary tightening as money supply grew faster than what they considered prudent. Much in line with the current debate in Pakistan over the influence of interest rates in controlling inflation, Bhalla argues that money supply has little bearing on inflation, which in India is primarily determined by international developments.

The second essay in Part I, by Suresh Tendulkar, analyses the distinction between inequity and inequality in the context of the larger debate in the development literature on this issue. This essay is more academic in nature as compared to the rest in this volume, but the author's in-depth analysis of key issues in this debate shows his grasp over this contentious issue. It is by now well-established that periods of high economic growth have historically been associated with an increases in inequality. Tendulkar makes the important point that the perception that this is also inequitable, and in this sense undesirable for it generates social tensions, depends very much on what happens to the incomes and standards of living of the lower income groups and the economic and upward mobility opportunities this growth provides for them. Since the rest of the volume is somewhat silent on the issues of poverty and inequality during the period of high growth, can one infer that this viewpoint is the one to which the authors associated with the reform process sympathise?

At the core of this volume are the essays in Part II, by Shankar Acharya and Rakesh Mohan—to which also should be added the essay by C. Rangarajan in Part I—which analyse in careful detail how India went about achieving sustainable macroeconomic stability through far-reaching economic reforms after the financial crisis in 1991 (which included the heart-wrenching sight for most Indians of seeing their gold reserves taken by creditors as collateral in chartered flights bound for Zurich and London to avoid complete financial collapse).

The high period of success of the economic reform undertaken was between 2003-08, which, as Acharya documents, saw the Indian economy achieve on average a remarkable economic growth of 8.8 percent, with low inflation (4.5 percent), relatively low fiscal deficit (6.6 percent), a comfortable current account trade deficit (0.4 percent), and high levels of foreign exchange reserves. This growth was driven by an almost fifty percent increase in gross domestic investment, which rose to 37.5 percent in 2007-08 from 25.2 percent in 2002-03, financed by a domestic savings rate that soared to 34.8 percent in 2006-07 from 23.6 percent in 2000-02. This meant that growth was financed through domestic resources with little recourse to foreign savings, i.e., foreign borrowings. This was indeed a "golden age", and India's best economic performance since Independence over fifty-five years ago.

What were the principal causes behind this remarkable turn-around?

Perhaps the most important in terms of ensuring macroeconomic stability was fiscal consolidation. As Acharya points out: "Large fiscal deficits tend to pre-empt loanable funds, foster high real interest rates and crowd out productive investment. In 2001-02 the combined fiscal deficit of Central and State governments had attained a record level of 9.9 percent. "Fortunately", as Acharya explains, "both central and state governments grasped the gravity of the fiscal imbalance and began to take decisive action". Indeed it was a combined effort. The major rise in central government revenues came from increases in direct taxes, notably corporate and income taxes, with which they bolstered state revenues by giving them an increasing share of the central pool as recommended by the Twelfth Finance Commission. The state governments also achieved the impossible feat of reaching an agreement on a uniform value-added tax and shifted from the earlier system of divergent rates of sales taxes. The result was that the combined fiscal deficit of the central and state governments fell to much more manageable levels than in the earlier years.

Clearly, fiscal consolidation and reduction in the fiscal deficit, and the resulting easing of monetary pressures as government borrowings declined, played an important part in paving the way for the economy to move to a higher growth plane. There were, however, two other factors which played an important role in achieving this turn-around which the authors identify but do not give sufficient credit to (perhaps because they were driven more by external forces on which their influence was accordingly limited).

The first was the large increases in export earnings, mainly driven by a gigantic leap in software exports, from $5.7 billion in 2000-01 to $ 37 billion in 2007-08. This was indeed a "manna from heaven" in that it resulted from technological advancements in ICT outside India. It was India's good fortune that it had the trained human resources to take advantage of this opening through their earlier large investments in setting up state-of-the-art institutes of technology, which now paid rich dividends.

The second was the large increase in foreign capital inflows, which rose from $10 billion in 2002-03 to $106 billion a year in 2007-08. Foreign reserves, therefore, correspondingly increased from $76 billion in March 2003 to $310 billion in March 2008. These were driven in part by foreign investors' confidence in the Indian economy and the relatively higher returns (including interest rates) as compared to the developed economies. Yet, they were in part a mixed blessing as they exerted pressure on the exchange rate to appreciate and to erode export competitiveness. But what should not be

denied is that these very large foreign exchange reserves provided a comfort zone to the policy-makers in pursuing the reforms they had initiated.

It may be important to point out here that the set of economic reforms undertaken by the Indian policy-makers in themselves were not ingenious; they are fairly standard recommendations of the IFIs (International Financial Institutions, mainly the IMF and the World Bank). These basically aim for key economic variables to be determined by market realities, rather than suppressing these forces through government interventions, which not only distort the incentive structure but also leave policies open to government whims, vested interests, and the resulting corrupt practices.

In this context, what really strikes one as one follows the reform process is the skills (and confidence?) of the Indian policy-makers in taking pragmatic decisions and not be tied down by the prevailing orthodoxy ("Washington Consensus") which gave them the room to manoeuvre to adapt and gear the reforms to the needs of the economy. There is much here that policy-makers in the developing countries could learn from (including those in Pakistan—and one may add, those who work for the IMF and the World Bank.)

A very good example of this is not fully opening-up of the capital account or making the Indian currency fully convertible, as was being recommended at the time by the IFIs, and forcefully so by the Indian large business interests. Here the measured approach adopted by Indian policy-makers stands in sharp contrast to that adopted by Pakistan's policy-makers, who opened up to a much larger extent the capital account and, for all practical purposes, made the Pak rupee convertible at the very start of the reform process in the early 1990s. A result of this was that the foreign exchange accounts of overseas Pakistanis and other among Pakistan's nationals had to be frozen to prevent their large-scale exodus after the nuclear bomb blast in 1998, with considerable loss of business confidence. This measure is also partly responsible for Pakistan's roller-coaster ride in maintaining adequate foreign exchange reserves, and its frequent recourse to the IMF to bail it out, with resulting stabilisation and periods of low economic growth.

The same pragmatism could be seen in the Indian policy-makers' approach in not allowing the exchange rate to appreciate as their foreign exchange reserves increased manifold due to foreign inflows. By intervening in the foreign exchange markets, the RBI deliberately ensured that the exchange rate remained in a band which did not erode India's export competitiveness, instead of its being driven by purely market forces.

Shankar's overview and analysis of macroeconomic developments in the Indian economy is built upon further by an equally absorbing analysis by Rakesh Mohan on the monetary policy pursued and the financial reforms undertaken during this period. Rakesh demonstrates how these resulted in following a monetary policy, especially in the determination of interest rates by market forces and limits over government borrowing from the RBI and commercial banks, that contributed in a major way to ensuring macro stability and low rates of inflation. The considerable improvements in the performance of the Indian banking sector in this period is attributed to both the induction of new private sector banks and disinvesting public sector banks—and to listing them and "gradually introducing international best practices, the phased tightening of prudential norms, enhanced supervision and the like."

The other essays in this volume cover sectoral perspectives (agriculture, infrastructure, social sectors, and services sector), as well as a global perspective by eminent international economists and prominent commentators on the Indian as well as global economy. There is also a chapter by Nicolas Stern, *et al.*, on the role India could play in achieving a global deal on climate change.

It is not possible to cover all the essays in this rich volume in this review and do justice to them. For those wanting excellent summaries of all the contributions included in this volume there is no better place to find them than in the succinct and very readable introduction by Acharya and Mohan.

But perhaps a few remarks on some of the contributions may be in order. Isher Ahluwalia's review of social sector development, though based on the Indian Punjab but applicable to much of India (and indeed Pakistan), is a solemn reminder that despite impressive growth, India has still a long way to go in the delivery of good quality social services, especially in education and health. Isher presents a number of indicators to show the dismal performance of the government in service delivery. The expanding role of the private sector in service delivery may improve results in terms of the numbers covered, but it is at a cost in excluding those who cannot afford them, and also the quality delivered in most cases is still very poor despite the higher prices charged. Without real improvements in the HRD indicators, both qualitative and in coverage, India's future growth prospects remain seriously threatened.

The well-known international trade economist and former Chief Economist at the World Bank, Anne Krueger, makes the important observation that despite impressive growth in exports, the trade reforms undertaken have not led to the growth of labour-intensive exports, which are vitally needed to absorb the large surplus labour in India's agriculture sector and low-productivity informal economy in the urban areas. Krueger argues that the growth of software exports does not directly create jobs for the unskilled or even semi-skilled labour, and though it does generate jobs in supporting industries, the numbers are still small in the context of the Indian economy. Krueger makes a strong case for encouraging the growth of labour-intensive manufacturing which she argues is essential to create productive and remunerative jobs in sufficient numbers and thus reduce poverty.

Ashok Gulati, in his essay on accelerating agricultural growth ("moving from farming to value-chains"), deals with the sector on which India's future prospects and reducing poverty so critically hinge, with more than half of the workforce (52 percent) still employed there even though its share in GDP has been reduced over time to only 18.5 percent in 2007-08. While subject to wide fluctuations, the trend growth rate of India's agriculture was 3 percent between 1985-86 and 2008-09, which is respectable though below the set target (4 percent). Gulati examines the future sources of growth in agriculture and how India needs to maintain a reasonable degree of food security. The most important part of his essay is on the needed reforms in the agriculture sector, which he rightly headlines "Reforming the Three 'I's: Investments, Incentives and Institutions". There is much to learn from his insightful analysis of needed reforms, which may be implemented if India (and indeed most developing countries) are to galvanise this critical sector to higher value-added production and sustainable higher agricultural growth.

Gajendra Haldeas in his essay presents an overview of key infrastructure sectors, the role played by the public sector, and India's experience with developing the public-private partnership in building the badly needed infrastructure to sustain high economic growth. Haldeas makes the important point that with deregulation and privatisation in sectors like industry, the infrastructure sector is now prey to more corruption in the award of contracts. Turning to the failures of regulation, Haldeas states: "The regulators in India have been created by statutes, and are supposedly independent of government control. However, the near-complete absence of accountability, compounded by the lack of any overarching philosophy of regulation, does not bode well for the orderly growth of infrastructure in India". Further, the well-known and widely read journalist Martin Wolf, in reviewing what he sees as India's role in the world, states that, first and foremost, it must raise the standards of living of its still widespread poor population.

However, one major drawback is that the volume is silent on the issue of poverty and the standard of living of most Indians and one is left guessing as to how much of the gains of economic growth have indeed been passed on to the ordinary Indian people. Also, the volume only cursorily touches upon how policy-makers dealt with the financial crisis, but this may well be because the essays were written as the crisis was still unfolding.

But for now his friends and acquaintances have honoured Montek Singh Ahluwalia's with a volume that certainly comes up to the stature and expectations of the economist they honour.

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Ejaz Ghani (ed.). *The Poor Half Billion in South Asia: What is Holding Back Lagging Regions*? New Delhi: Oxford University Press. 2010. Hardbound. 339 pages. Rs 795.00.

South Asia portrays an interesting paradox; it is the second fastest growing region in the world, yet the region has high concentration of poverty and is home to dismal social outcomes, conflicts and gender disparities. South Asia in fact is a land of two highly diverse regions; 'Asia Shinning' and 'Asia Suffering'. The disparity between the two areas as lagging and leading regions is so sharp that these seem to be anchored in two different centuries. The richer region has experienced stupendous growth, due to its economic geography, globalisation and growth-promoting institutions while the limited growth potential of the poorer region has been further compounded by the weak capacity of the state to deliver social services. The question then is what should be done to address the gigantic task of poverty alleviation and take up the challenges posed by the concentration of poverty. What should be done and what the public policy can do? With a focus on this contrast as seen in Bangladesh, India, Pakistan, and Sri Lanka, the essays in this volume put into perspective the colossal task of poverty eradication and inclusive growth. The research studies included in this book not only provide fresh perspective on spatial disparities but also offer innovative, short-term as well as long-term, policy solutions to escape the poverty trap.

The book has two major sections; the first part, comprising six chapters, is about the challenges of growth in the lagging regions while the second part, having three chapters, suggests some new approaches for policy interventions to alleviate poverty. The nexus between growth and poverty has been investigated empirically at the intra-country and inter-country level. The authors have examined the well-being of the poor half billion in South Asia in four different perspectives, namely growth, poverty, human development and gender disparities. The first chapter demonstrates that growth has remained low in the lagging regions due to variety of conflicts in the society, limited mobility of the people and the weaker transmission of the price signals through trade. The development strategy in the leading region has, however, worked well. The policy-makers, in the lagging regions, should therefore focus in the short run on direct policy interventions to reduce poverty. In chapter 2, the trends regarding convergence and divergence across the regions of South Asia have been examined. On the positive side, greater absolute reductions in poverty and infant mortality is observable while on the negative side, no evidence of convergence in per capita incomes could be traced across the leading and lagging regions of the South Asia. The chapter 3 examines the economic geography of both the lagging and the leading regions. The findings suggest that though trade globalisation has contributed to accelerated growth but its benefits are spread unevenly across the lagging and the leading regions. The disparity has arisen because the scale economies and market forces have caused the production to agglomerate in the leading regions. The lagging regions do not enjoy sufficient access to international trade, because the poor infrastructure and weaker institutions in the region, have respectively contributed to higher transportation costs and a greater cost of doing business.

In the following chapters, the author shows that trade liberalisation has generated a positive but unequal impact in the leading regions and the lagging regions. The author

suggests that better infrastructure, including a network of roads and ports should be built to bridge the gap between the two regions. He recognises the positive role of institutional performance, especially the institutions of property rights and contracting towards economic growth. The author suggests various institutional reforms, both at the micro and the macro level, to improve the overall business atmosphere in the lagging regions. He emphasises that governments can play a vital role in the ensuring security of property rights, functioning of both the financial markets and the labour markets and most importantly in controlling corruption.

In the context of education, the author explains that educational indicators are much worse in lagging regions particularly in India and Pakistan. The author shows that Sri Lanka and Bangladesh fare better than India and Pakistan with respect to up-gradation and development of infrastructure in schools, hiring of teachers, provision of schooling inputs and running promotion campaigns, within households to encourage schooling. Private schools have flourished in India and Pakistan, primarily due to the shortcomings of the public school systems. The implications are that the policy-makers should focus on public schooling to; enroll children who are currently out of schools, retain students, guarantee minimal educational attainment and raise the terminal level of education attained. Moreover, the author sheds light upon the relationship between federal government and sub-national governments in South Asia. Analysing the relationship closely, the author suggests that inter-state fiscal transfers have contributed a great deal to the developmental initiatives in the lagging regions. In contrast, the fiscal transfers, from the central government to sub-national governments, have shown a tendency to be directed towards the richer states, perhaps due the greater influence with the Centre. Regarding the efficacy of the direct fiscal transfers to the lagging regions, the author suggests that the resource transfers should be accompanied by thorough accountability and increase in authority as well as responsibility at the local level.

Investigating issues regarding mobility labour and migration, the author has emphasised the importance of these two features and shows how the two are an integral part of the overall development process. The author demonstrates that the migration in South Asia is hampered due to language diversity, low level of education and some policy-induced constraints. Moreover mobility costs, including landownership laws and high priced urban housing, further diminish the inter-state migrations. In the final chapter of the book, the need for revolutionising agriculture has been given special treatment in view of the larger concentration of rural poor in the lagging regions. Small local markets in the lagging areas need to be globalised and the existing resources should to be directed towards improving the productivity of land and labour, suggests the author.

The suggestions put forth by the author do raise some questions. Firstly, in terms of the vital need to protect environmental interests, the question is will the lagging areas enjoy growth options similar to the leading areas? Secondly, though it is recognised that certain strategies, if adopted, are expected to generate a spectrum of skills that will contribute to environmentally less debasing growth. However one is left wondering how South Asia in general and the lagging areas in particular may devise strategies to benefit from established conventional activities in agriculture, forestry, and handicrafts.

To conclude I would say that this, topical and hard-hitting book highlights key issues facing the South Asia. The book provides useful insight into research on different

aspects of development in the two diverse regions, segregating a single nation. Not only this, it also offers possible solutions which can be of great use to the policy-makers in designing development strategies aimed at bring prosperity with equity in the region. Overall, the book provides useful information on South Asia's growth process drawing comparisons at the international, national, and sub-national levels. The book is highly recommended for the students, researchers, policy-makers and persons connected to media, NGOs, and the development agencies.

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Shorter Notices

Fred Gault. *Innovation Strategies for Global Economy: Development, Implementation, Measurement and Management*. Edward Elgar Publishing Limited, 2010, International Development Research Centre, Canada.

Fred Gault has made an impressive effort to direct attention towards the importance of innovation to the growth of the economies. The discussion centres around the need for pursuing the kind of innovation strategies that are likely to succeed and the measurement of the degree of innovation in a country. The indicators of innovation used by the different surveys to measure the degree of innovation across countries have been discussed. The formulation of such indicators has been explained at length. The author also emphasises upon the need to bring the subject of innovation into research and development. He conducts thorough analysis of impediments in this regard.

The author makes some very useful suggestion aimed at encouraging innovation. He highlights the innovation strategies pursued successfully by the developed world including the OECD countries and the European Union. Next the author ventures into a discourse on the different components of an innovation strategy that would stand a reasonable chance of success. The discussion emphasises upon the need of coordination amongst different organisation as a key element of a successful innovation strategy. The author suggests that organisation structures conducive to engaging the different stakeholders involved innovation should be promoted.

In the final part of the book the author has discussed different avenues where innovation strategies could be employed to enhance the capacity of the systems. One such candidate, picked for innovation by the author is the policy formulation itself. The book concludes with an assessment of the role played by the key players in supporting innovation in the private sector as well as the public sector across the globe. (*Ajaz*)

Thomas L. Friedman. *Hot, Flat, and Crowded.* London: Penguin Books Ltd. 2009. 516 pages. UK £ 10.99.

Thomas Friedman thoroughly reviews the energy and pollution issues that the world is faced with in the 'Hot, Flat and Crowded'. He argues that now we must accept that the conventional energy resources like oil, gas and coal will never be cheap again. That the wasteful and polluting technologies have in many ways adversely affected the earth and therefore these technologies should not be tolerated any more.

Friedman contends that the global warming, the population bulge and the expanded middle class which is fond of consumerism, has turned our green globe into a "hot, flat, and crowded" place. The fact that global demand for energy has scaled new heights is dangerous not only because of greater emission of carbon dioxide but also due the harm being caused to biodiversity.

The author feels that the current efforts to tackle environmental issues are inadequate and more coordinated and systematic work is required on this front. He suggests that the United States being the world leading consumer of energy should take the lead in making the world cleaner. Adoption of clean energy should not only be taken as a challenge but also as a great opportunity to heal the earth, renew America and bring about a green revolution around the globe. Friedman believes that proposed green revolution would be the biggest one the world has ever seen and this will change the vista of the globe altogether. The new Clean Energy System—solar, wind and nuclear energy, would generate a positive impact of immense magnitude on the environment, contends the author.

The final chapter of the book, perhaps the most interesting one, is focused on the technologies that world will be using after that green revolution. The author believes that in a post green revolution era the world will be flooded with smaller power generating vehicles and its accessories and the power companies will buy energy only from cleaner and cheaper sources. Friedman says that this will result in an entirely new regime of price signals, taxes and incentives. The new regime will also help keep fossil fuels cheap and the renewables expensive and hence elusive. (*Haider Ali*).

John Perkins. *Hoodwinked.* Broadway Books. 2010. 256 pages. Hardcover. US$ 23.99.

'Hoodwinked, tells why the world financial markets imploded and what we need to do to remake them. John Perkins, the author of the book, covers the current debate on the causes of global financial crisis. The author pin points the causes of the global financial meltdown and suggests various measures to avert the crises of the sort in future. He argues that the global financial meltdown that we are facing today is neither a fluke nor is it a short term phenomenon. In fact the crisis is the result of the policies that began to be adopted almost four decades ago, mostly by the multinational firms, including the financial firms. John Perkins argues that 'responsible capitalism' if adopted would prevent the recurrence of the kind of financial crisis that the world is struggling with today. He contends that through 'responsible capitalism' we can create a healthy economy which will encourage businesses to act, not only in the interests of their shareholders and corporate partners, but also in the interests of their employees, their customers, the environment, and society at large.

The author argues that the economic collapse that we are facing today is the result of self-seeking policies of the multinationals which control vast amount of land, capital and other resources across the world. These multinational have managed to cheat the countries around the globe out of trillions of dollars. The author's reference to the CEOs of the multinational as the 'Economic Hit Man' conveys how he feels about adverse role played by multinationals in economic and financial matters.

After discussing the views of the Keynesian and Monetarist schools of thought regarding the manner in which the economy should be run, the author states that the free market philosophy came to a head as the financial markets collapsed in the recent years. Next the author describes his personal experience as the CEO of a multinational—the Economic Hit Man. He states that while working for a multinational firm he was bought into the deception that massive loans invested into heavily capitalised infrastructure

projects, combined with the privatisation being pursued vigorously, would alleviate poverty. He laments that unfortunately this has not happened and the world, in fact has been hoodwinked by the deceptive policies of the multinationals.

The author believes that the unsustainable public and private debt provided by the multinationals has contributed significantly to poverty and income disparity in developing countries. In fact the debt supported exploitation has almost led the individuals into sort of slavery and has not only undermined the economic stability but the very sovereignty of the countries. The author argues that only a handful people control the resources of the world including technology, energy, the media, the banks and even the governments and it is this small coterie that has driven us into the terrible economic recession. The author states that the deceptive accounting framework, for which the multinationals had managed to secure legality, had enabled these firms to pocket short term profits which, as a matter of fact, had never been earned.

The conclude, the author describes the 'Triple Bottom Line' concept, where along with the financial bottom line the positive social and environmental role played by a firm is also be accounted for. He cites the examples of China and the David versus Goliath to encourage countries to pursue a reform agenda. He also lays stress on regulating and reigning in the firms that control businesses around the world. Moreover forcing the firms to accept greater social responsibility and creation of green market are the other key elements of the reform agenda put forth by the author. (Nasir Iqbal)

Robert Tripp. Biotechnology and Agricultural Development: *Transgenic Cotton, Rural Institutions and Resource Poor Farmers*. Routledge, London and New York: Taylor and Francis Group. 274 pages.

This nicely edited book provides insights into the discipline of genetically modified crops, particularly the Bt cotton. The volume is a nice collection of research / case-studies on production of transgenic varieties of cotton in China, South Africa, Columbia and India. The studies included in the volume discuss the agronomic performance of the genetically modified crops and the environmental issues which the GM crops have given birth to. The book begins with recounting the advances in genetic engineering and concludes with the discussion of the emerging paradigm shift *vis-à-vis* Bt cotton.

Two major benefits of the Bt cotton; the increase in yield and the reduction in the use of insecticides have been discussed in one of the study included in the book. The study cites examples from the Indian states of Maharashtra where the use of Bt cotton has led to 32 percent increase in yield and 46 decrease in the use of insecticides. Karnataka, another Indian state, also boasts of similar numbers. These are significant achievements not only in terms of quantities and revenues but also in terms of intrinsic benefits to the environment, which come about due to lesser use of insecticides. The potential benefits of the Bt cotton notwithstanding, the higher and rising prices of the cotton seed restrains the farmers from making a decisive shift towards transgenic varieties of cotton.

Reading through the book one develops the impression that the findings of extensive research on Bt cotton has led the farmers to adopt the transgenic varieties, however their hopes are still mired in the murky debates, which seems to have lasted a bit longer. What has reduced the intensity of the heated debate is the fact that genetic

engineering, rather than being a phenomenon opposed to nature, only seeks to extend the natural varieties.

After reading the book it becomes clear that research on GM crops has yet to answer a number of environmental concerns. The main concern is the likely impact of the transgenic varieties of cotton upon biodiversity. Moreover we are still not completely certain whether the transgenic varieties are fit for human consumption. Scientists have expressed the fear that 'marker genes' in transgenic crops may curtail efficacy of certain class of antibiotics. The resultant consumption of such a crop may endanger the well being of humans and animals alike. Ecologists were already concerned that the biotic homogenisation has led to the extinction of native plant species and urbanisation was believed to be the major factor behind the loss of biodiversity in this manner. Apprehensions now prevail that the introduction of transgenic cotton may lead to even further reduction in diversity of crop varieties grown indigenously. Environmental issues aside, fears have also been expressed that genetic production of Bt cotton will be taken over by corporate sector thereby causing harm to the traditional farmers. The book has taken up all these issues.

The studies included in the volume attempt to dispel the seemingly pervasive negative impression about the effects of genetic engineering. However, the public at large still seem to believe that the negative externalities of the genetic engineering are too large to be ignored. Perhaps the Jacardian Index analysis has the potential to help settle the debate one way or the other. The concluding chapter nicely sums up the findings of the studies included in the book and points out the limitations in favour of a tactical shift towards transgenic varieties of cotton.

To conclude, the book is a good contribution to the raging debate on pros and cons of biotechnology. The book is highly recommended for all those interested in environmental economics and agricultural economics. (*Abdul Wali*)