Volume 7
Number 2
Year 2005
ISSN 1529-0905

Journal of BANGLADESH STUDIES

BDI
Bangladesh Development Initiative

TABLE OF CONTENTS

FROM THE EDITOR

I would like to begin by noting that BDI, the initiator of this journal, is beginning to break new ground and forge new partnerships, encouraged by the role of the Journal of Bangladesh Studies in bringing together scholars, researchers, policy makers, retired government servants, and many ardent readers over the past seven years. Thus, the executive committee of BDI and the editorial board of JBS have begun to expand their scope of activities. Among these activities are the following: 1) In its book publication program, the third volume of "Development Issues of Bangladesh – III" is ready to be published and should be available in print by April 2006. With its focus on human development and quality of life, the book is comprised of sixteen chapters that span political, economic, education, health, population, environmental, gender, and related topics. 2) A second book focusing on Bangladesh's political agenda is also nearing completion. Entitled "Selected Writings on Bangladesh's Political Prerogatives: Editor's Choice," the book is a selection of articles that have been published in JBS over the years. The book is intended not only as a scholarly compilation of the ideas of leading thinkers; it is also intended to be widely read in the growing number of public and private universities in Bangladesh to enable the next generation to be well-versed in the political controversies and challenges facing the nation. 3) Plans are underway to organize a conference of national and international scholars to meet in Dhaka and deliberate on policy and programmatic issues facing the country. Based on this experience, BDI is likely to continue supporting and building this forum for exchange in partnership with local educational institutions and think tanks in Bangladesh. 4) A web site has been developed to feature BDI activities, as well as related developmental issues having a bearing on Bangladesh. This information is provided in www.bdiusa.org. Readers of JBS are encouraged to contact the editor and other BDI executive body members to partake in its activities.

In this issue, we present four research articles and a note. The first article by Syed S. Andaleeb and Zachary T. Irwin, *Political Leadership and Legitimacy among the Urban Elite in Bangladesh*, addresses two fundamental questions: How national political leaders are seen by the urban elite and what characteristics in them explain their acceptability, and hence, legitimacy, expressed in the satisfaction perceived by the elites. Historically, legitimacy in Bangladesh has depended on the role of individual personalities, whereas alternative sources of legitimate rule, such as institutions, nationalism, or foundational myths have been less important or absent. The authors surveyed upper- and middle-class Dhaka City respondents' characterization of "politicians" as a group through a ten-point scale measuring 17 attributes such as 'fair', 'trustworthy' or 'competent'. Based on the statistical technique of factor analysis, these attributes fell into three major groups to suggest that the responsiveness, public style, and character of politicians are weighed by the urban elite to formulate their assessment of politicians' legitimacy. Seven attributes of 'responsiveness' overwhelmingly explained respondents' low overall satisfaction with politicians and their lack of political legitimacy. In other words, the low esteem in which politicians are held is mostly explained by their lack of responsiveness, while character had a marginally significant effect. The findings also express the qualities of 'responsiveness' in classic work in comparative politics and confirm the 'secular/rational-survival' orientation of Bangladesh in the World Values Survey.

Mohammad S. Hassan's article, *An Empirical Investigation to Determine the Long-run Relationship between Population Growth and Per Capita Income in Bangladesh*, examines whether population growth has an enhancing or dampening effect on economic growth in the context of Bangladesh. Past research on this issue has been controversial at best, suggesting positive, negative, and null effects. The author examines empirical data to test time-series relationships between population growth and per capita income growth using annual data from Bangladesh and cointegration methodology. The study finds evidence of a long-run stationary relationship between population and per capita income and indicates a bi-directional or feedback relationship between population and per capita income. The results of a negative causality flowing from per capita income to population growth appear to indicate that per capita income tends to lower the population growth, and that population growth positively contributes to the growth of per capita income. The dire consequences of population growth predicted by many would appear to need revision by these findings. Also if this causal relationship holds, policy prerogatives would lie in harnessing this natural wealth and upgrading it (via health, education, and other social support programs) to accelerate economic growth.

Muhammad Masum's article, *Technology Transfer as an Instrument to Promote Growth and Development: The Bangladesh Experience*, reflects on the country's experience in transferring technology to various sectors of the economy. While, technology transfer took place through various mechanisms, import of machinery seems to have played a dominant role. Due to poor technology assessment capability and distortions in factor prices, however, a number of technologies transferred to Bangladesh were inappropriate. In addition, inadequate emphasis on science and technical education contributed to poor skill composition of the industrial labor force that constrained assimilation of imported technology. An underdeveloped and poorly funded national research infrastructure appears to have compounded the problem of adaptation of imported technology to suit local factor endowment, as well as the environment. As a result, technology transfer in Bangladesh was never able to attain a dynamic character and the country has remained a market for technologies developed in other countries. The author emphatically suggests the need for a comprehensive pro-poor technology development policy for the country with a well-defined role for technology transfer to strengthen the technological base of the country.

In the article, *Contract Farming and Small Farmers: A Case Study of the Bangladesh Poultry Sector*, Ismat Ara Begum and Mohammad Jahangir Alam assess the benefits of a vertically integrated contractual arrangement for rearing poultry via a team effort between small farmers and a lead firm. The study argues for strengthening the vertically integrated contract farming system to expand income generation and employment opportunities. While contract farming promises significant benefits for farmers, recent studies indicate the possibility that small farmers could be excluded from this system or that they may not get much of the benefits from this contractual arrangement. Primary data collected from 50 sample farmers of ABFL (Aftab Bahumukhi Farm Ltd) in Kishorganj, revealed that the vertically integrated farming system is profitable for all categories of farmers who are able to obtain significant benefits in terms of income, employment and access to capital. The efficiencies garnered by this system portend the possibility of meeting the protein needs of Bangladesh's undernourished and malnourished population. Possibilities of expanding exports are also not insignificant.

Farida Khan's note on *Non-Government Organizations: Public or Private Sector?* assesses the role of the NGO sector within the economic domain of Bangladesh. The presence of NGOs is large and ubiquitous in Bangladesh, providing 65% of the rural credit and 97% of secondary level rural education. Other areas in which individual and community services are provided by the NGOs are health and family planning, water supply, skills training, tree plantation, etc. In their role, they have become key players in the economy and have also begun to serve as a counterforce to the travails experienced from the public sector. Consequently, their presence and growth raises the question of efficacy of the public sector as a service provider.

As in the past, I continue to be grateful for the assistance I receive from the editorial board and the select group of reviewers who have given unreservedly of their time to help maintain the quality of the journal. Without this team effort, it would not have been possible to present the incisive, insightful and relevant articles that we endeavor to present to our readers on important issues that pertain to Bangladesh. I am also very appreciative of the diligent efforts of Sue Pennington of the Sam and Irene Black School of Business, Penn State Erie, for patiently attending to the typing and incorporating all the materials in the desired format that enables us to present the journal in a desirable form.

Syed Saad Andaleeb, Ph.D.
Editor, JBS
President, Bangladesh Development Initiative
Professor and Program Chair, Marketing
Sam and Irene Black School of Business
Penn State Erie
Erie, PA 16563-1400 - USA

POLITICAL LEADERSHIP AND LEGITIMACY AMONG THE URBAN ELITE IN BANGLADESH

Syed Saad Andaleeb
and
Zachary T. Irwin

ABSTRACT

This paper examines the concept of legitimacy expressed through public opinion about politicians in Bangladesh. Historically legitimacy in Bangladesh has depended on the role of individual personalities since the country's independence. Alternative sources of legitimate rule, such as institutions, nationalism, or foundational myths have been less important or absent. We surveyed upper- and middle- class Dhaka City respondents' characterization of "politicians" as a group through a ten-point scale measuring 17 attributes such as 'fair', 'trustworthy' or 'competent'. The statistical technique of factor analysis was applied to derive three factors (responsiveness, public style, and character) from the seventeen attributes. Seven attributes of 'responsiveness' overwhelmingly explained the respondents' low overall satisfaction with politicians and best explained the lack of political legitimacy. The findings also express the quality of 'responsiveness' in classic work in comparative politics and confirm the 'secular/rational-survival' orientation of Bangladesh in the World Values Survey.

Introduction

In his essay "The Rise of Illiberal Democracy," Fareed Zakaria identifies a core dilemma of recent democratization. Liberal values of tolerance and pluralism represent distinct political traditions that may or may not accompany electoral democracy. Separating the two strands has done much to clarify what is implied in identifying a state as democratic. The distinction has also refined continuing debate about universal and parochial values in a continuing "clash of civilizations" and the relevance of democratic government to "Asian values" and economic development[1]. Removing the mantle of liberalism, unfortunately, leaves democratic proponents shorn of democracy's more cherished values, such as its legal defense of opposition and civil liberties. Without a culture of individual rights, we return to Schumpeter's classic and minimalist definition of two parties competing for a majority of votes. At a time when democratic derelictions were considered chiefly matters of procedural violation, a minimalist democracy might remain democratically legitimate, but not necessarily so. South Asian political systems, and Bangladesh in particular, indicate that legitimacy demands more than elections. In a comment about a recent referendum supporting the Pakistani President, Pervez Musharraf, *New York Times*_columnist Nicholas Kristof describes South Asia's democratic record as "impressive" yet immediately qualifies this praise by remarking: "how poorly the democracies have served their citizens." [2]

Zakaria and others have assumed that political legitimacy is nonetheless an outcome of fair elections, regardless of their cultural context or performance. Yet what can be said of states that observe reasonably open procedures without realizing either effective government or political legitimacy? Reports on countries from organizations such as Transparency International and Freedom House imply an international standard for honest government and civil liberty less narrow than certain "liberal" concepts of civil society. However, their meaning for a specific context remains uncertain without accounts of how societies perceive their governments' character. Plainly, some countries are less free or more corrupt than others, but neither description clearly relates to other political variables. The conceptual strength of legitimacy lies in combining what is universal and specific in a way that bridges universal and national values.

All regimes claim to be legitimate and, like Tolstoy's notion of happy families, may be so in a variety of ways. But how can thisclaim be tested? On way is to assess public opinion about their performance and democratic behavior. We maintain that accurate measures of public opinion permit an examination of legitimacy that expresses the essence of democratic governance better than electoral outcomes, and avoids the allegation of cultural bias. To demonstrate this argument, we have chosen to examine the case of Bangladesh. We believe the analysis that follows will demonstrate that measures of public opinion may be refined sufficiently to avoid objections of cultural bias or the limitations of

electoral outcomes.

In the October 2001 Bangladesh elections, a four-party coalition led by the Bangladesh National Party swept to victory winning 201 of 300 seats. Despite claims of the opposition Awami League of "massive rigging" in favor of the Alliance, there is little doubt that the election represented a repudiation of the former Prime Minister, Sheikh Hasina. By most accounts the elections were considered "free and fair" in a procedural sense, despite the level of violence during the campaign.[3] Yet, Sheikh Hasina responded by vowing that her party would "neither…take the oath as members of Parliament nor join the Parliament," thereby maintaining the tradition of political "hartal"(strike) that has been a distinguishing feature of political life in Bangladesh.[4]

Observers cite abundant reasons to explain the defeat of the Awami League, including persistent lawlessness and corruption. But if reasons for the Awami League's defeat seem over-determined, the new government has been accused of introducing a "creeping communalism" by opening the government to two Islamic opposition parties. In this view, the Jamaat-e-Islami, winning 16 seats, and the Islami Oikkya Jote, follow a direction associated with the 1988 declaration of Islam as the state religion.[5] The leftist newspaper *Sangbad* insisted that Prime Minister Khaleda Zia would confront "mounting pressure from the Islamicist allies and Islamic militants within her own party to make the changes for setting up an Islamic state using the unprecedented constitutional powers [of so large a parliamentary majority]." Quite apart from the accuracy of such statements, the dilemma of both the Awami League opposition and the governing coalition is similar. After thirty years of independence, Bangladesh's attempt to attain a stable and legitimate government has not materialized.

Our data from a Democracy Watch survey indicate that upper and middle class residents of Dhaka City hold the political leadership in astonishingly low regard.[6] This is in itself of considerable interest. Moreover, we believe that the experience of Bangladesh opinion polling confirms that perceptions regarding "politicians" have a greater impact on political legitimacy than factors beyond the state's control such as enduring poverty, natural disaster, and ethnic identity. Because Bangladesh lacks long established political institutions, a consensual foundation myth, or abundant natural resources, perceptions of "politicians" do not compete with alternate sources of state legitimacy. Our findings substantiate a recent United Nations report about political obstacles to development that identified poor governance as a primary source of poverty.[7] Finally, close identification of legitimacy with "politicians" indicates the importance of electoral accountability for economic development. A poor climate for investment has been one outcome of inter-party conflict unresolved by electoral choice. Instead the political process has been marked by political violence.

The months preceding the October 2001 elections were marred by violence. A bomb disrupted celebrations of the Bangla New Year, as well as other public functions. The opposition alliance called a six-day general strike intended to force the government's resignation before the October elections, an event that left ten dead and cost the economy approximately $60 million a day.[8] The government blamed Islamic extremists, and Prime Minister Sheikh Hasina Wajed warned of the "designs of evil forces to torpedo democracy and derail the economy." Political meetings and public cultural events, such as the musical Udichi function, were also marked by violence having no clear political purpose.[9] Finally, an exchange of fire on the border with India left an uncertain number of casualties, resulting in a sudden crisis in relations with India, and renewed efforts by both governments to implement the 1974 Indira-Mujib Accord.[10]

This history of violence underscores the decay of political capacity in Bangladesh. The political life of the country has dissolved into a polarized confrontation between government and opposition, which reinforces a deeply held popular disapproval of the country's political elite. We believe that legitimacy cannot be attained through economic development without corresponding outcomes of electoral choice and governmental accountability. Bangladeshi intellectuals have been especially critical of the notion that human rights and economic development can be separate goals.[11] This paper examines the concept of legitimacy as it pertains to the political leadership prevailing in Bangladesh since its inception in 1971. Specifically it examines the character and attributes of political leaders in a bid to understand the legitimacy of different governments.

The Legitimacy Question

Legitimacy easily remains one of the most important and controversial concepts in the study of

government.[12] Persistent discussion centers on how governments win and lose their claims of rectitude and moral authority. A part of the legitimacy problem arises from the fact that measuring or clearly defining the concept as a property of regimes requires consideration of multiple and often complementary sources. For example, governments may become legitimate through procedural means such as fair and free elections, but they might maintain legitimacy through avoiding certain substantive acts, e.g., corrupt practices or human rights abuses. "Popular" outputs such as ethnocentric appeals, on the other hand, may fail to establish the legitimate rule of a government and weaken the state.

The problem of Bangladesh's lack of political legitimacy involves a host of variables: excessive corruption; political infighting; military intervention; and response to natural disasters. In a sense the legitimacy of any government in the country's history has been eroded by the multiple challenges mentioned earlier, but at a deeper level, the country suffers from what Partha S.Ghosh describes as a case of "confused identity".[13] The great majority of Bangladesh people are both Muslim and Bengali. The issue of identity is relevant in that a dual identity limits the power of any particular government to manipulate symbols of identity for legitimizing purposes.

The confusion of identity was especially evident in the immediate post-independence era, as is shown by the debate surrounding recognition by Pakistan in 1974. Opinion in the press was divided about the consequences of entering into diplomatic relations, some journals holding that recognition would "unquestionably consolidate the status of Bangladesh as an independent sovereign Bengali state," others maintaining that it might "open the floodgates of religio-communal revivalism."[14] But it remains a problem. Further emphasis on Islamic exclusivity could undermine the cultural foundation of the country's independence—its Bengali-ness. Equally, though, too much stress on the "Bengali homeland" aspect could have sectarian complications. For a start, it would beg the question of a Hindu Bengali *irredenta* in India. The way out of this conundrum is that Bangladesh must be both Islamic and Bengali—assume a unique identity. Yet none of the major political parties have been able to express this identity without ambiguity. For example, suspicions remain that the Awami League is "pro-Indian" with a Bengali bent and that the opposition Bangladesh National Party (BNP), if not "pro-Pakistani," is receptive to Islamic tendencies because of its alliance with the Islamic parties Jamaat-e-Islami and Islami Oikya Jote.[15] Thus, what passes for legitimacy is a consequence of the policies of specific governments and how they shape public opinion on state identity. This makes the subject of our study—the perceived attributes of political leaders— of particular importance.

A Brief Historical Overview

Bangladesh's struggle for independence helped to establish a pattern of legitimate leadership independently of a legitimate constitutional order. Misrule by Pakistan overcame reservations about the desirability of independence.[16] Despite its clarity, however, the Bangladesh proclamation of independence did not result from a coordinated political strategy. It was drafted by the Provisional National Assembly, while Sheikh Mujib, "the symbol of Bengali aspirations," remained in a Pakistani prison. Mujib's incarceration not only delayed the formation of a provisional government, but in A.M.A. Muhit's view, "very adversely" affected the morale of the resistance. In fact Major Ziaur Rahman had started the revolt without contacting any leading members of the Awami League.[17]

Years after independence, institutional cohesion remained an unfulfilled aspiration. The Awami League did not express a clear vision of post-revolutionary future. There was no founding myth similar to those generated by Kamal Ataturk's Republican Peoples Party or the Egyptian Free Officers Movement. Prior to independence the Awami League's six-point program envisioned a confederation of East and West Pakistan, rather than outright independence. The absence of a founding post-independence program insured a struggle about the meaning of broad national goals proclaimed by the new government: nationalism, socialism, secularism, and democracy. By opting for the post of Prime minister rather than that of President, Sheikh Mujib also became personally responsible for a situation that had the potential to be politically destructive.

Yet, perhaps the most difficult challenge that confronted the new political order in Bangladesh arose from the country's general economic devastation and the consequent 1974 famine. The Government's resources for dealing with the situation proved wholly insufficient. American policy aggravated the famine by withholding food

assistance. (At the time, the Americans judged Bangladesh to be excessively dependent on India and likely to follow a pro-Soviet, non-aligned foreign policy).[18] Some observers have criticized Sheikh Mujib's personality and choices, such as the advancement of personnel from the Awami League and the Mukhti Bahini (liberation fighters) over members of the professional armed forces and the bureaucracy stranded in Pakistan during the war.[19] Without disputing the desirability or necessity of such a choice, the divisive issue of the "repatriates" became another source of dissatisfaction within an already politically-troublesome constituency. In the face of massive demonstrations and the threat of anarchy, Sheikh Mujib suspended the constitution. Accusations mounted that he was responsible for corruption, nepotism, and general misgovernment. His assassination by a group of disgruntled army officers left a deeply divided oppositon incapable of effectively exercising power.

The importance of Mujib's legacy for our study lies in the creation of a persistent pattern of elite rule that diminished alternate sources of legitimacy. For example, an effective party system was undermined by Mujib's decision to replace the Awami League by an authoritarian left grouping, the Bangladesh Peasants, Workers, and Peoples Party (BAKSAL) which citizens, and especially civil servants, were encouraged to join. Mujib ran the country for the rest of his term through centrally- appointed district governors and BAKSAL-dominated "self-governing" rural cooperatives.[20] But the efforts of subsequent military regimes to introduce personalist parties were no more successful. Both the regimes of General Ziaur Rahman (1977-82) and Major General Hussein Muhammed Ershad (1982-90) introduced changes that, while promoting development, neither reduced corruption nor left durable institutions. In the absence of alternate centers of power, elections did not have the capacity to change what remained, according to one critic, a "personalist" style of rule in which democracy was a mere "façade."[21]

Substantive output represents another source of legitimate rule. Peter Stillman defines legitimacy as "the complementarity of the results of government output with the value patterns of the relevant systems."[22] "Relevant systems" include all that may be the objects of government policy: the international system, society as a whole, groups within the society, and individuals within groups. "Complementarity" of output does not mean that all values are identical with the "relevant systems", but it does mean that outputs positively affect perceptions of the political elite. Were complementarity a consequence of government output in Bangladesh, the politicians would be perceived more positively, quite apart from the output of particular governments. More problematic is whether negatively perceived behaviors can be altered in the absence of institutional resources such as effective parties, founding myths, or an unambiguous identity. In a legitimate regime, complementarity creates a positive dynamic between institutions and policy outputs in which politicians benefit from an ongoing system. The example is not wholly absent in Bangladesh's political history, but it has not become established.

The regime of Lt. General Ziaur Rahman (also known as Zia) offers an example of the complementarity of policies. The nineteen-point program that General Zia introduced sought to make Bangladesh agriculturally self-sufficient through investment in rural infrastructure. A revised Investment Policy won support from the World Bank, whose loans to private agriculture and manufacturing rose from 2% of the GNP to 13%, and from 13% to 53% of the development budget.[23] Nevertheless, the emphasis on policy outputs left unresolved the dilemmas of identity, the party system and the armed forces. By altering the constitution's frame of reference from one of "secularism" to one of "trust in Allah" and "Islamic solidarity", the BNP became associated with political Islam (although General Zia stopped short of introducing *Shariat* law). Nevertheless, his Islamizing efforts failed to reform the system of corrupt patronage. A group of senior army officers met with General Zia to complain about allegations of BNP corruption. The meeting not only indicated that the military were opposed to the return of civilian rule, but that they believed the armed forces should be the ultiamte judge of the quality of that rule.[24] Although General Zia had been a distinguished officer in the liberation war, he had never won complete control of the army. He had also alienated the *Mukhti Bahini* and within a few years he, too, was assassinated.

The assassination continued the trajectory of Bangladesh politics that had started with Sheikh Mujib's death in 1975. In some developing countries the armed forces claim a mantle of "national identity," but in Bangladesh the military has been bitterly divided between those recruited from the ranks of the former "freedom fighters"(Mukhti

Bahini) in the war of liberation, and those who had started out as regulars and had defected during the war, only to be detained in Pakistan. The latter were particularly resentful of Mujib's decision to create a separate praetorian force (Jatiyo Rakkhi Bahini) intended to protect his regime from internal challenges. Additionally, the army is divided into pro-Islamic and Leftist factions. General Zia had emerged as Chief of Staff after his first coup against Mujib; was arrested during the second; and staged a third coup[25] amidst a general collapse of army order.

Yet while Zia failed to create a professional army, his murder rallied a majority of officers to support his constitutional successor, Supreme Court Justice Abdus Sattar. Army Chief of Staff Hussain Muhammed Ershad now emerged as chief spokesman of the armed forces. Despite Sattar's, and the Bangladesh National Party's, electoral victory in November 1981, Lt. General Ershad increasingly challenged the government's authority and successfully led a coup in March 1982, which he justified with reference to the failure of the BNP to act effectively in the face of an increasingly chaotic economic situation.

Ershad suspended the Constitution, banned political parties, and divided the country into five martial law zones. He, nevertheless, promised to return the country to civilian rule and generally sought to emulate many of Zia's reforms. Although he succeeded in disciplining the army, he failed to reconcile the opposition. Ershad's Jatiyo Party subsequently won the elections, which had been boycotted by the opposition and in which less than 10% of the electorate took part. Ershad was eventually toppled by the BNP in 1991 and then jailed for corruption and abuse of power.

After Ershad's forcible ouster of President Abdus Sattar in 1982, Khaleda Zia—wife of the assassinated General Ziaur Rahman—took over the reigns of the BNP as Vice-Chair in March 1983 and subsequently as Chairperson in August 1984. Meanwhile, Sheikh Hasina Wazed, daughter of the assassinated Sheikh Mujibur Rahman, was elected President of the Awami League in 1981 while she was still in exile. She returned home in May 1981. For several years, the two leaders—Khaleda Zia and her seven-party alliance and Sheikh Hasina and her eight-party alliance—launched a relentless and uncompromising movement to restore democracy that led, ultimately, to the downfall of Ershad's regime. In the general elections that followed, held on February 27, 1991 under a neutral caretaker government, Khaleda Zia's alliance won and she was sworn in as the first female Prime Minister of Bangladesh in March 1991.

Confrontation continued between the BNP government and the opposition Awami League. The opposition demanded Khaleda Zia's resignation and new elections supervised by another caretaker government. She refused, remaining in office until the end of the BNP's mandate. A February 1996 election, held while the prime minister remained in office, intensified the protest and although the BNP won easily, Khaleda Zia resigned in June 1996.

Some 170 strikes and similar protests had taken place between 1995 and1996. Rashiduzzaman observes that Kaleda Zia's ouster confirmed a long tradition in which "instability, lawlessness, personal vengeance, and varying degrees of victimization followed every major instance of civil unrest in the former East Pakistan as well as independent Bangladesh."[26] In accordance with established traditions, Khaleda Zia's attempts to hold elections while in office prompted the Awami League and other opposition parties to threaten a blockade of train lines, roads and communications. [27] A poll by the *Bangladesh Observer* in March 1996 reported that 63% of respondents believed that Khaleda Zia's resignation had averted civil war.[28]

The Awami League and its allies won the June 1996 elections, and went on to perform quite creditably. Among the new minisries, important achievements were the Ganges water-sharing agreement with India, the election of a nonpartisan President, and repeal of the Indemnity Ordinance protecting Sheikh Mujib's assassins. In July 1997, however, the BNP, pro-Islamic parties and labor unions staged a series of hartals that signaled a return to confrontation. Stanley Kochanek considers that the BNP undertook "to follow the example set by the AL during the period of BNP rule."[29] A coherent pattern of government and opposition proved impossible to attain.

Initially, General Ershad had supported the Awami League Government of Sheikh Hasina Wazed, an important consideration owing to the parliamentary strength of his Jatya Party (JP). (Ershad had been released on bail from prison in early 1997.) However, the General subsequently had withdrawn his backing in an attempt to turn the JP into the primary party of oppostion. But this strategy had only succeeded in alienating the party from the

BNP as well as support from the Awami League. Ershad, in fact, had replicated the pattern of political polarization.

The price of political conflict was exacted not only in greater civil discord, but in consequences that threatened Bangladesh's economic growth and foreign investment. In the early 1990's Bangladesh had developed a thriving garment industry supporting annual increases in exports reaching 20%. But by 1995 the situation had changed. As a *New York Times* editorial noted, investors "who had been rushing to take advantage of low wages and windfall profits…[had] started to look elsewhere", while inflation ws being fuelled by wasteful government spending on "pork-barrel projects" designed to win votes.[30] A businessman in Bogra north of Dhaka opined: "We are just a poor country, but we are starting to rise up and now the politicians are fighting again."[31]

Bitter rivalries for power between political parties and their cadres have continued to escalate. Pervasive conflict is not only about resolving who shall govern; it is also about establishing legitimacy. Our summary has sought to establish the background that influences public opinion about "politicians". In this regard, several classical theories of comparative politics express the importance of public opinion in institutional concepts. Leonard Binder's model of political development envisions five "crises" that unfold in approximate sequence: identity; legitimacy; participation; penetration; and distribution (the last focusing on questions of administration and policy).[32] Variations in the resolution and sequence of these crises express differences in individual political development. Bangladesh confronts a situation in which unresolved problems of identity and participation from the time of the state's creation have undermined political legitimacy without which there can be no consensus about the proper governmental use of material and human resources. G. Bingham Powell's structural functional model identifies the critical role of regime "supports" for effective policy outputs. These include attention paid to "governmental communication and manifestation of deference or respect to public authority, symbols, and ceremonials."[33] Legitimate governments are effective when types of support interact in ways that make possible effective action. Our task is to discover which personal judgments of the political class explain overall opinion and confidence in the character and perceived legitimacy of the country's leadership.

Methodology

Research Design: A survey was designed to obtain the
opinions of a particular political class toward various professional groups including politicians, doctors, police, journalists, lawyers, teachers, government employees, and industrialists in Bangladesh. In this paper we only examine the data pertaining to politicians. To conduct our survey it was important, first, to establish the domain of attributes that reflected the public's image about and satisfaction with the professional groups. Qualitative research was used initially. People from reasonably educated and higher socio-economic backgrounds (this choice is explained subsequently) were asked to identify the attributes they would typically use to assess their satisfaction with various professional groups. The initial domain included a variety of attributes with related and often overlapping meanings. This domain was eventually reduced to seventeen key attributes: sincere, fair, competent, hard-working, selfish, dependable, arrogant, knowledgeable, dedicated, influential, patriotic, courteous, honest, irresponsible, friendly, trustworthy, and service-oriented. We believe this domain represents key attributes that characterize politicians in their quest for legitimacy.

A preliminary questionnaire was then field-tested on a small but representative sample. At this stage, the final seventeen attributes deemed most important were selected. These attributes were then translated into Bangla and retranslated into English. The back translation procedure was used to ensure that the attribute set was comparable in both languages to assure consistency in interpretation and dissemination of the findings. Respondents assessed the politicians as a class on each attribute using a ten-point rating scale in which 10 was the highest rating and 1 was the lowest. Thus, on the attribute "sincere," respondents selected a number from 1-10 to indicate their opinion of politicians' sincerity. A final item based on the same scale values was overall satisfaction with politicians. Demographic information about the respondents was also obtained.

For our sampling strategy it was decided that data would be collected from the upper- and middle-income segments of the population in Dhaka City (the chosen political class). Selection of these two groups as our population was predicated on a

number of considerations. While no systematic study of public opinion about political processes and issues has been conducted in Bangladesh before, evidence from other countries suggests the existence of three groups as being particularly relevant: those with little or no political interest; the educated and politically alert; and elected and appointed public officials.[34]

The first group is generally least committed to, or concerned about, the government or bureaucracy. Their opinions on political affairs have, however, been a matter of controversy. In Western countries, George Gallup, for example, was one who believed in the collective wisdom of everyday citizens. He "saw the modern opinion poll as the high-tech equivalent of the New England town meeting—an opportunity for all citizens to voice their opinion." [35] Lindsay Rogers, however, was convinced that the public was not intellectually or emotionally fit to play the role Gallup's opinion-poll democracy required of it.[36] Lucien Pye suggests that developing or non-western countries are divided into two distinct groups: the urban elite and the masses.[37] (We chose the word "masses" to depict those citizens—urban or rural—whose education and life experiences make it unlikely they would express opinions comparable to the other group.) The urban elite, however, is also closer to the communication media that reflect the dominant political concerns and issues, while the masses by and large remain excluded from this exposure. The barrier of illiteracy makes questionable the inclusion of the masses, especially because the "frame of reference employed by [mass media] in communicating to an urbanized audience is often one that is not meaningful to [the masses]."[38] In view of the level of development in Bangladesh we consider that the type of opinion we seek to measure is both urban and relatively literate— hence, the rural population is not part of our defined population.

Our focus was thus on the class comprising the upper- and middle-income segments that have instrumental reasons for being politically aware. Most are influenced in some way or another by the country's politics. They are also mostly attentive to and influenced by the activities and behaviors of "politicians", being involved in technical, business, legal, administrative, and educational professions. "Politicians" seek to sustain the influence of this class as a core constituency of their power base, yet it also includes those whose opinion has consistently denied a legitimate role for the political leadership. Urban educated citizens understood the purpose of the survey and seldom hesitated to express opinion that reflected the legitimacy of "politicians as a class" distinct from their view of an incumbent government.

Our data comes from Dhaka City. The middle- and upper-classes in Bangladesh are concentrated in the major cities, among which Dhaka has by far the largest concentration. Engaged in various professions, they reflect a representative cross-section of people most likely to be directly affected by the behaviors of politicians; hence their opinions about politicians should be fairly stable. Operating on a limited budget, we decided to focus on the city with arguably the greatest level of political activity. Finally, we felt that the people whose opinions count most in Bangladeshi political circles were to be found in Dhaka City.

In the absence of lists for drawing a random sample of households, a modified area sampling approach was adopted. First, a list of the Thanas (the lowest unit of government administration) in Dhaka City was drawn up. Based on expert opinion, the middle and upper class areas in each Thana were identified next, and a random sample of areas was selected from this group. From each of the selected areas, households were identified using a modified random sampling procedure. First, streets in each area were listed and a random sample of streets selected. Residential homes were selected next using a systematic sampling procedure. Interviewers were given a letter of introduction and an identification card from Democracy Watch, the co-sponsor of the study. Telephone numbers were provided in case respondents had questions or concerns.

When a selected household was not cooperative, an adjacent household was selected. This procedure was at times cumbersome, slowing the completion of the survey. Each respondent was told the nature and purpose of the study and guaranteed complete anonymity. Interviewers were specifically instructed not to solicit or record names and addresses so as to protect respondents' identities. A personal interview was conducted with those who agreed to participate. A total of 434 respondents evaluated the politicians. A structured questionnaire was used in which the 17 attributes were placed in one column and respondents selected a number from 1-10 to rate each attribute.[39]

Analyses

We used several data analysis techniques. Frequency distributions were obtained to check for

Table 1. Ratings of Politicians

ATTRIBUTES	FREQUENCY DISTRIBUTION (%) 1	2	3	4	5	6	7	8	9	10	*99	MEAN	STD. DEV.
Trustworthy	34	20	14	12	10	4	2	1	2	1	1	2.91	2.096
Honest	43	21	10	9	8	3	1	2	1	1	1	2.60	2.058
Competent	26	16	15	12	13	6	4	4	1	2	1	3.44	2.287
Service-Oriented	26	21	14	12	12	5	3	3	2	2	1	3.26	2.232
Patriotic	29	16	11	9	12	7	4	5	2	4	1	3.61	2.605
Dependable	30	18	15	12	12	5	2	4	1	1	1	3.12	2.116
Dedicated	27	18	12	14	11	6	4	4	2	3	1	3.47	2.389
Fair	45	24	10	8	5	4	1	2	0	1	1	2.36	1.874
Knowledgeable	13	13	14	14	18	8	7	9	2	3	1	4.38	2.389
Sincere	30	15	13	11	15	6	3	2	2	3	0	3.36	2.354
Courteous	16	11	15	13	14	9	7	7	3	4	1	4.35	2.546
Friendly	14	8	11	15	15	10	9	9	3	6	1	4.81	2.591
Selfish	11	4	5	3	7	4	7	15	13	31	0	7.03	3.151
Arrogant	12	8	8	8	15	7	9	14	7	11	1	5.56	2.897
Irresponsible	11	9	8	9	14	8	8	13	9	13	1	5.69	2.928
Influential	4	4	2	4	7	7	11	21	18	22	1	7.43	2.473
Hard-Working	15	11	9	12	14	11	10	8	4	6	1	4.76	2.700
Overall Satisfaction	22	18	15	15	16	7	3	2	1	1	1	3.37	2.018

*99= Don’t know
n = 434

Table 2. Factor Analysis of Politician Attributes With Varimax Rotation

ITEMS	FACTOR 1 Responsiveness	FACTOR 2 Public Style	FACTOR 3 Character
Trustworthy	**.771**	.255	-.171
Honest	**.752**	.184	-.125
Competent	**.740**	.007	-.097
Service-Oriented	**.735**	.374	-.156
Patriotic	**.733**	.291	-.098
Dependable	**.700**	.073	-.054
Dedicated	**.686**	.306	-.081
Fair	**.680**	-.146	-.059
Knowledgeable	**.640**	.209	.076
Sincere	**.608**	.075	-.086
Courteous	.289	**.770**	-.113
Friendly	.284	**.726**	.030
Selfish	-.151	.120	**.739**
Arrogant	.051	-.264	**.722**
Irresponsible	-.163	-.096	**.640**
Influential	-.052	.423	**.548**
Eigenvalues	6.048	1.777	1.196
Variation	37.80 %	11.11 %	7.484 %
Cumulative		48.91%	56.38 %

Table 3. Regression Analysis: Three Factor Model Dependent Variable "Satisfaction"

INDEPENDENT VARIABLE	b	β	s.e.	p	$\overline{x}$	s
Responsiveness.	.88	.721	.046	.000	3.24	1.65
Public Style	.041	.047	.033	.207	4.56	2.23
Character	-.079	-.077	.033	.018	6.43	1.94

$F_{3,423} = 186.41$; $p < .001$
Adjusted $R^2 = .58$

data entry errors (e.g., unrecognized or missing codes) and to obtain descriptive statistics (see Table 1).

The seventeen measures of politician attributes were factor analyzed next. This procedure permitted us to reduce the seventeen attributes to a few underlying relevant dimensions to better explain "legitimacy". While no firm initial structure was assumed, the initial factor structure derived from varimax rotation resulted in three clear factors that explained 56% of the cumulative variation. Close scrutiny revealed that one item was difficult to interpret, because of significant cross loadings. This item (hard-working) was removed, making the final rotated solution with

sixteen items easier to interpret (see Table 2).

The first factor revealed strong and relatively uniform loadings of ten attributes that describe what we will term "responsiveness." The second loading consists of only two attributes, "courtesy" and "friendly." We have chosen to name this factor "public style." Finally a third loading includes the attributes "selfish," "arrogant," "irresponsible," and influential." We have chosen to describe this factor as "character."

Each factor was assessed for reliability, i.e., internal consistency of the data, using Cronbach's Alpha. The reliability coefficients always exceeded the value of .7 and conform to the recommendations by Nunnally.[40] To assess the validity of the measures, the multiple-items measuring each construct were further factor analyzed. In each case, the items always loaded on one factor only, suggesting convergent validity. We also ran correlation of the three factors and compared them with the reliability coefficients. These results provided support for discriminant validity since the correlation between one scale and another was not as high as each scale's reliability coefficient.[41] The direction and strength of the correlations provided support for nomological validity since the signs were in the right direction and the significant relationships are theoretically justifiable.

Results

Multiple regression was used to explain satisfaction with politicians in terms of the three dimensions: responsiveness, public style, and character. The results are presented in Table 3.

The full model was significant with an overall F value of 194.14 ($p<.001$). It explained 58% of the variation in the dependent variable as indicated by the adjusted R^2 value. For an exploratory study of this nature, especially considering that the scales were previously untested in the country of study, the results are very reassuring.

Two of the three factors (responsiveness and character) were significant in explaining respondents' overall satisfaction with politicians. The directions of the relationships were as expected. Factor 1 (responsiveness) had the greatest impact on satisfaction as indicated by the standardized beta values. Factor 2 (public style) was not significant, while factor 3 (character) was significant but had a low impact on overall satisfaction.

The results suggest that "responsiveness" is the most influential factor in explaining satisfaction with politicians and is perhaps the most important source of legitimacy for politicians in Bangladesh. In other words, what is important is not who they are but what they do for their constituencies. Because this factor is a composite of ten attributes, we decided to examine the independent effects of each of the ten attributes on satisfaction via multiple regression (see Table 4). Again, the model was significant ($F_{10, 423} = 58.99$, $p < .001$) and explained 57% of the variation in satisfaction with politicians. What is interesting

Table 4. Regression Analysis With Items of Factor 1

INDEPENDENT VARIABLE	b	β	s.e.	p-value	
Fair	.164	.154	.041	.001	
Service-Oriented	.138	.153	.047	.004	
Trustworthy	.138	.144	.053	.009	
Sincere	.110	.129	.033	.001	
Dedicated	.103	.122	.038	.008	
Dependable	.080	.084	.038	.038	
Competent	.071	.081	.037	.058	
Honest	.076	.078	.047	.108	ns
Patriotic	.054	.070	.038	.151	ns
Knowledgeable	.010	.012	.033	.754	ns

$F_{10,423} = 58.99$; $p < .001$
(a) $R^2 = .573$ %
n = 434

about this model is that it explained approximately the same amount of variation as the original model, suggesting that the effects of "public style" and "character" are relatively unimportant in explaining satisfaction.

Additional investigation of the second model (Table 4) indicated that of the ten explanatory variables comprising the first factor, seven of them were statistically significant. In order of magnitude and with positive coefficients, they were: fairness, service-orientation, trustworthiness, sincerity, dedication, dependability, and competence. Honesty was marginally significant ($p < .1$), while patriotism and knowledge were not significant in explaining satisfaction.

The importance of the seven significant attributes is in their apparent coherence. They describe a dimension of systemic capability also identified by Almond and Powell as "responsiveness." In their classic study, these authors identified a group of capabilities common to all political systems, i.e. extractive, distributive, symbolic, regulative and responsive. Although our survey was not intended to measure systemic capabilities, it clearly identifies systemic "responsiveness," a dimension that expresses "the relationship between [systemic] inputs and outputs,"[42] and, along with "symbolic" capability, creates the basis for legitimacy.

Second, the seven attributes sharpen our understanding of Bangladeshi public values and confirm the findings of recent work completed by Inglehart and Baker. The "World Values Survey" examined some sixty-five countries through a series of questions related to two value dimensions: A "traditional/secular-rational" dimension and a "survival-self expression" dimension.[40] Typically, the former included attitudes concerning religion and moral questions and the latter attitudes towards financial security, work, leisure and family. The study revealed predicted changes towards "secularism/rationality" and "self expression" as aresult of modernization, but more interestingly, revealed that such changes were "path dependent." Groups of countries showed distinct locations along the two sets of dimensions. The South Asian countries (Bangladesh, India and Pakistan) created a pattern located within the "traditional" and "survival" quadrant, yet the value of "tradition" for Bangladesh fell between Pakistan (most) and India (least). However, "survival" values were higher for Bangladesh than for India or Pakistan. The opinion attributes are broadly similar to "survival" rather than "self expression" variables.

This result indicates that Bangladeshi respondents, compared with those elsewhere in South Asia, were more likely to value instrumental attributes of political legitimacy identified in our survey. The pattern of "patron-client" relations associated generally with developing countries implies a strong relationship between "responsiveness" and "survival." To be "responsive" may imply a broad range of activities from subsidies through public employment, yet values associated with "survival" link political legitimacy with the de-legitimizing experience of administrative corruption. For example, a recent study of corruption in Bangladesh undertaken by Almas Zakiuddin for Transparency International revealed a pervasive experience of bribery in dealings with the judiciary, police, and the educational systems, and some 62% of the respondents blamed elected officials for such practices.[44] Zakiuddin identifies the sources of corruption in a variety of regimes and its "negative effects on the morale of the nation."[45]

Arguably the gap between the behavior of Bangladesh politicians and the opinions of its elite citizens is a conflict of values aggravated by low levels of systemic responsiveness; but the gap is also the consequence of a poorly institutionalized regime. Work by Huntington explains the lack of political stability in developing countries as a consequence of participation exceeding institutional capacity.[46] The history of military intervention, the lack of responsible parties, and a lack of accountability suggest regimes unable to form institutions that effectively process demands.

Perhaps the concept of party linkage best explains the lack of institutionalization in Bangladesh. Kay Lawson distinguishes types of linkage common to most parties, e.g. participatory and policy linkages.[47] Neither has been well developed by the Awami league or the BNP, yet the creation of participatory linkages within and across the parties offers a possible resolution to the chronic lack of legitimate politics. India's Congress Party, in its heyday, created an effective linkage system based on both forms of linkage. A.H. Somjee had described this—accurateley—as a mechanism for "strife accommodation." Government and opposition need not alternate control or share power in a coalition:

Rather, they can "operate by conversing with sections of the ruling party."[48] Recently a group of Bangladeshi intellectuals proposed a specific suggestion that could form the basis of such an institutionalized "conversation" of neutral benefit. They called for the parties to sponsor a constitutional amendment that would "reduce the government-term to four years, abolish by-elections to the parliament (by empowering respective political parties to nominate persons to fill the vacant seats for the remainder of the term) and bunch national and local elections as much as possible."[49] Such a proposal could begin to fill the void of trust between opposing Bangladeshi party leaderships, promote a more responsible parliament, and reduce occasions for civil violence. The potential benefits of such an outcome hardly require comment.

Discussion

The model of legitimacy of politicians as reflected in the satisfaction of their influential constituencies provides several insights. Theoretically, the model identifies two significant factors—responsiveness and character—important to our understanding of the basis for legitimacy of political leaders in Bangladesh. However, responsiveness was much more important in explaining satisfaction, a surrogate measure of legitimacy, reflecting the collective opinion of the upper- and middle-class segments of Bangladeshi society.

Politicians ought to view the results of this study as an overall evaluation of their image and performance and as a reminder that the impression they have among their influential constituencies is dismally unfavorable. We draw attention particularly to the descriptive scores in Table 1. When people look up to and rely upon their leaders, these scores reflect a deep lack of confidence. On a scale of 10, not a single positive attribute rated a 5. The measures of character, however, always exceeded a score of five, reflecting how politicians are generally viewed—namely as selfish, arrogant, irresponsible, and influential. These images can distance people from the political leadership, making it difficult to involve the electorate in social or economic programs designed for their benefit. These images, unfortunately, may also steer competent persons—those who can make a real difference—away from politics because of the tainted images they are likely to inherit as aspirants to political positions.

To gain legitimacy, our study suggests that politicians must be much more responsive. In the parlance of distributive justice, they must demonstrate an ability to produce and distribute benefits to all the people they represent instead of only to family members, party cadres, or other interest groups with whom they often have reciprocal arrangements. In this regard, fairness, service-orientation, trustworthiness, sincerity, and dedication are vital signs of legitimacy that politicians must demonstrate on a sustained basis to gain the confidence of the people. These attributes are also closely intertwined with those of dependability, competence and honesty. When politicians are able to assimilate these traits, people will ascribe greater legitimacy to their leaders.

Additional research is needed to replicate and refine our model, but with further validation, politicians and political parties should be able to draw upon the lessons implicit in our research and introduce people-centered strategies that espouse responsiveness and character.

Acknowledgement

This article first appeared in South Asia: Journal of South Asian Studies, Vol 27, No 1, April 2004: 65-85. The authors gratefully acknowledge the permission given by the journal to republish the article in the Journal of Bangladesh Studies. To retain the original article's form and substance, its format was retained as a digression from JBS's prescribed format.

Endnotes

1. Fareed Zakaria, 'The Rise of Illiberal Democracy', *Foreign Affairs, Vol.*76, No. 6, Nov./Dec. 1997, pp.22-43. For a rejoinder to Zakaria, see Marc F. Plattner, 'Liberalism and Democracy: Can't Have One Without the Other', *Foreign Affairs*, Vol.77, No. 2, Mar./Apr. 1998, pp. 171-180.

2. Nicholas D. Kristof, 'Whose Democracy Is It Anyway', *The New York Times*, 3 May, 2002, p. A27

3. 'Bangladesh prepares for New Government after Massive BNP Victory', *Agence France Presse*, 3 October 2001, (Lexis-Nexis Academic Universe).[www.lexisnexis.com/eispubs/1un]

4. 'Bangladesh Set for Political Instability as

Opposition Calls Boycott', *Agence France Presse*, 3 October 2001, (Lexis-Nexis Academic Universe).

5. The phrase "Creeping Communalism" refers not only to the inclusion of Islamic parties in the present coalition, but the opinion that Bangladesh had too often "sidelined" the "guiding principle of secularism" during the country's thirty year history. Syed Badrul Ahsan, 'To Be Democratic Is To Be Secular, Naturally', *The Independent*, 30 October 2001, (Lexis-Nexis Academic Universe).[www.lexisnexis.com/eispubs/1un]

6. Syed Saad Andaleeb, 'A Benchmark Study on Public Opinions Regarding Various Professions in Bangladesh,' Democracy Watch (Dhaka) (January 1996).

7. "Overcoming Human Poverty: UNDP Poverty Report 2000," cited in *The New York Times*, 4 April 2000, p. 11.

8. Kunal Bose, 'Bomb Deaths Cast Shadow over Bangladesh Campaign', *Financial Times*, (18 April 2001).

9. Others for the month of April included a meeting of the Bangladesh Communist Party and the Chhayanaut function. Mahbub Husein Khan, 'The Manipulation of Violence: Yet Another Vicious Cycle' *The Independent*, 23 April 2001(Lexis-Nexis: Academic Universe). [www.lexisnexis.com/eispubs/1un]

10. 'Hasina Tells Vajpajee on the Phone', *The Independent*, 24 April 2001(Lexis-Nexis: Academic Universe). [www.lexisnexis.com/eispubs/1un]

11. According to Nurul Islam, "The history of political experience in Bangladesh indicates that Bangladeshis want democracy, political freedom and rights, as well as development". The argument is placed in the context of the larger debate about development and consensus of critical opinion. Nurul Islam, 'Reflections on Development and Democracy in Bangladesh', *Journal of Bangladesh Studies, Vol.*1, No.1, (1999), p. 2.
12. A vast Literature exists on legitimacy and the state. Some work relevant to developing countries includes, *Legitimation of Regimes: A n International Framework for Analysis*, edited by Bogdan Denich Beverly Hills CA: Sage Publications 1979 and Tri Q Ngyuyen, *Third World Development: Aspects of Political Legitimacy*, (Cranbury NJ: Associated University Press, 1989).

13. Partha S. Ghosh, 'Bangladesh at the Crossroads: Religion and Politics', *Asian Survey*, Vol. 33, No. 10, (October 1993), p. 699.

14. J.N. Dixit, *Liberation and Beyond:Indo-Bangladesh Relations*, (Dhaka: University Press Limited, 1999), pp. 184-185.

15. 'Dhaka Blast: Ominous Portent for Bangladesh', *The Statesman* (India), (22 April 2001) (Lexis-Nexis:Academic Universe).[www.lexisnexis.com/eispubs/1un]

16. A.M.A. Muhith, *Bangladesh-Emergence of a Nation*, (Dhaka: Bangladesh Books, 1978), p. 245.

17. Ibid, p. 242.

18. For example Dhaka's decision to establish diplomatic and commercial relations with Cuba; yet as Dixit points out Egypt, both enjoyed American aid and maintained such support. See Dixit, Liberation and Beyond: Indo-Bangladesh Relations, p. 143.

19. Lawrence Ziring, *Bangladesh, from Mujib to Ershad: An Intrepretative Study*, (Karachi: Oxford University Press, 1992), p. 92.

20. Dixit, Liberation and Beyond: Indo-Bangladesh Relations, p. 197.

21. Rounaq Jahan, *Bangladesh Politics: Problems and Issues*, (Dhaka: Dhaka University Press, 1980), p.197.

22. Peter Stillman, 'The Concept of Legitimacy', *Polity, Vol.* 7, No. 1, (Fall 1974), p. 42.

23. Lawrence B. Lesser, 'The Economy' in *Bangladesh: A Country Study*", edited by James Heizman, Washington DC: Government Printing Office, 1989, p. 110.
24. Kirsten Westergaarn, *State and Rural Society in Bangladesh*, Scandinavian Institute of Asian Affairs Monograph No. 49, (London: Curzon

Press, 1985), p. 93.

25. 'Bangladesh: Counter Coup Countered,' The Economist (5 Nov. 1975), p. 68 (Lexis-Nexis Academic Universe). [www.lexisnexis.com/eispubs/1un]

26. M. Rashiduzzaman, 'Political Unrest and Democracy in Bangladesh', Asian *Survey*, Vol.37, No. 3, 1997, p. 26.

27. Foreign Broadcast Information Service, (5 December 1995), p.75, in 'World News Connection. [http://wnc.dialog.com]

28. *The Bangladesh Observer* (3 March 1996), cited in Rashiduzzaman, *'Polotical Unrest and Democracy in Bangladesh,'* p. 260.

29. Stanley Kochanek, 'Bangladesh in 1997,The Honeymoon is Over', in *Asian Survey*, Vol.38, No.2, (1998), pp. 138-139.

30. *The New York Times*, (27 February 1996) p. 6.

31. Quoted in ibid.

32. Leonard Binder, 'The Crisis of Political Development' in Leonard Binder et. al., (eds) *Crises and Sequences in Political Development*, (Princeton NJ: Princeton University Press, 1971), pp. 55-67.

33. Gabriel A. Almond and G. Bingham Powell, *Comparative Politics: A Developmental Approach*, (Boston: Little Brown), 1996, p. 26.

34. Robert S. Erickson and Kent L. Tedin, *American Public Opinion*, Boston: (Allyn & Bacon, 1995), p. 155.

35. Ibid p.3.

36. Ibid p. 4.

37. Lucian W. Pye, 'Communication Operation in Non-Western Societies', in Bernard Berelson and Morris Janowitz (eds), *Public Opinion and Communication*, (New York: The Free Press, 2nd ed., 1966), pp. 612-614.

38. Ibid.

39. The data were collected during the period of December 8-12, 1996.

40. J.C. Nunnally, *Psychometric Theory*, 2nd ed., (New York: McGraw-Hill, 1978).

41. J.F. Gaski and J.R. Nevin, 'The Differential Effects of Exercised and Unexercised Power Sources in a Marketing Channel,' *Journal of Marketing Research*, Vol.22, No.2, (1985), pp. 130-142.

42. Almond and Powell, *Comparative Politics: A Developmental Approach*, p. 201.

43. Ronald Inglehart and Wayne E. Baker, 'Modernization, Cultural Change and The Persistence of Traditional Values', *American Sociological Review*, Vol.65.No.1, (2000), pp. 26-28.

44. Almas Zakiuddin, 'Corruption in Bangladesh: An Analytical and Sociological Study' [http://www.ti-bangladesh.org/docs/research/ CorBang1.htm], p. 1.

45. Ibid, p. 25.

46. Samuel P. Huntington, *Political Order in Changing Societies*, (New Haven: Yale University Press, 1968). pp. 22-27.

47. Kay Lawson, 'Political Parties and Linkage', in Kay Lawson (ed.), *Political Parties and Linkage: A Comparative Perspective*, (New Haven: Yale University Press, 1980), pp. 14-16.

48. A.H. Somjee, 'Party Linkages and Strife Accommodation in Democratic India,' in Kay Lawson (ed.), p. 209. *Political Parties and Linkage: A Comparative Perspective*, (New Haven: Yale University Press, 1980), pp. 14-16.

49. Bangladesh Studies Scanner 2000, No. 9, (24 March 2000). [http://www.columbia.edu~tab3/scanner.htm]

Syed Saad Andaleeb
Professor of Marketing
Penn State Erie
The Behrend College
5091 Station Road
Erie, PA. 16563
(814)-898-6431
ssa4@psu.edu

Zachary T. Irwin
Associate Professor of Political Science
Penn State Erie
The Behrend College
5091 Station Road
Erie, PA. 16563
(814)-898-6290
zti1@psu.edu

AN EMPIRICAL INVESTIGATION TO DETERMINE THE LONG-RUN RELATIONSHIP BETWEEN POPULATION GROWTH AND PER CAPITA INCOME IN BANGLADESH

Mohammad S. Hasan

ABSTRACT

This paper empirically examines the nature of the time-series relationship between population growth and per capita income growth using the annual data of Bangladesh within the framework of cointegration methodology. This study finds evidence of a long-run stationary relationship between population and per capita income. Our results also indicate a bi-directional or feedback relationship between population and per capita income. The results of a negative causality flowing from per capita income to population growth appear to indicate that per capita income tends to lower the population growth. Likewise, population growth positively contributes to the growth of per capita income.

Introduction

This paper empirically examines whether there is a long-run and short-run relationship between per capita income and population growth `in Bangladesh. The paper also examines the nature and direction of any causal relationship between population growth and per capita income growth by applying a standard econometric technique (For interested readers, the technical discussion has been provided in the appendix). Central to the issue of short-run and long-run relationships between these two variables is the question of whether population growth stimulates and/or dampens economic growth and the standard of living in Bangladesh. This issue has important implications for academics, researchers, policy-makers, civil society, and international institutions for a country which, with approximately 133 million people in a land area of 55,598 square miles and with the highest population density of 2,401 persons per square mile, is striving to enhance its rate of growth of measures of well-being, such as real per capita income. Bangladesh being the 8th most populous country is struggling to strengthen its economy, eradicate poverty, save its environment, and raise literacy and education levels in a desperate situation where 35.6% of the population live below the poverty line and where 35.2% are unemployed.

The paper is organized as follows. The next section presents a review of the population-per capita income debate between population 'revisionist' and traditional economists. The empirical results and their interpretations are presented next, followed by the concluding remarks.

Literature Review

The nature, direction and pattern of the causal relationship between population and per capita income has been the subject of long-standing debate among economists, demographers, policy-makers and researchers. Consequently, there is an abundance of empirical research on population and per capita income growth. Previous research documented an inverse relationship between population growth and per capita income, a positive beneficial relationship between population growth and per capita income, and, finally, a statistically insignificant relationship between population growth and per capita income.

Population 'revisionist' economists view population growth as an essential ingredient for stimulating economic development. According to them, larger populations provide the required consumer demand to generate favorable economies of scale in production, lower production costs, and provide a sufficient and low-cost labor supply to achieve higher output levels (Todaro 1995, p. 303).[1] Johnson (1999) indicated two distinct sources of increasing returns to scale associated with the positive beneficial effects of population growth. One results from the agglomeration of related economic activities with the development and expansion of community and city. As the city develops, there are advantages to be obtained from the agglomeration of bringing related activities together and making possible the specialization of activities. The second source of scale economies is related to the size of enterprises, which was pointed out by Adam Smith with the advent of capitalism and industrialization in Europe. Smith (1976) argued that the division of labor or specialization is a function of the size of the market. Population size is one of the important factors determining the size of the market and the size of enterprises engaged in productive activities. Positive beneficial effects of population growth also stem from the human contribution to scientific and humanitarian discoveries and technological change

(Johnson 1999). Kremer (1993) in a highly original analysis contends that technological change has been a function of population size. Simon (1989) contends that the most important positive effects of additional people are the improvement of productivity through contribution of new ideas and learning-by-doing resulting from increased production.

Johnson (1999), in a recent paper, furnished a retrospective view of world history. He noted that a high rate of economic growth is associated with high population growth and low economic growth is associated with low population growth. Furthermore, Johnson (2000), in a seminal paper, discussed why and how human civilization had escaped the Malthusian trap in the nineteenth century: three major factors contributed to the growth of human civilization during the nineteenth century and averted the Malthusian trap. They are (a) the significant advances in agricultural productivity in the eighteenth and nineteenth centuries, (b) the enormous increase in knowledge over the past two centuries, and (c) the response of families to the removal of restraints on their well-being imposed by limited food supplies.

In contrast, the population 'hawk' argument holds that rapid population growth tends to slow down economic growth and yield serious economic consequences in low-income countries.[2] Rapid population growth and the resultant population explosion in countries like India and Bangladesh is considered to be one of the principal causes of poverty, low standards of living, malnutrition, ill health and environmental degradation. The adverse consequences of rapid population growth can be demonstrated in the framework of a neo-classical production function and growth model.[3] Suppose that, we let

$$Y = A(t)\, f(C, L) \qquad (1)$$

be the basic production function where output *(Y)* is a function of capital *(C)*, labor *(L)*, and technology *(A)*. Presumably, *A*, *C* and *L* are functions of time and $dA/dt > 0$. Following Todaro (1995), we can derive the following result in growth rates form as:

$$g_y - g_L = g_A + e_{y,c}(g_c - g_L) \qquad (2)$$

where g_y, g_c, g_L and g_A signify growth rates of output, capital stock, labor and technological progress, respectively; $e_{y,c}$ denotes elasticity of output with respect to capital input. The growth model states that per capita output growth is directly proportional to the rates of growth of the capital labor ratio (g_c-g_L) and technological progress (g_A). Todaro (1995) offered three explanations regarding the negative effects of population growth on the standard of living in the low-income countries. Firstly, if an increase in population coincides with low rates of saving and technological progress and a low degree of entrepreneurial ability, then the rate of development slows down and per capita income tends to fall as population growth occurs. The rapid population growth rate necessitates a higher rate of capital stock growth (g_c) and thus a larger concomitant savings and investment rate just to maintain a constant level of per capita income.[4] Secondly, the problem is exacerbated if g_c is inversely related to g_L induced by reduced savings due to the higher dependency burden effects of rapid population growth. Thirdly, if poor families have a preference for more children and large families as a source of cheap labor and old age security, then a population-poverty cycle will propagate and perpetuate; larger families mean greater population growth, a higher dependency burden, lower savings, less investment, slower economic growth, and ultimately greater poverty.

Economic development is largely concerned with human resource development attainable through investments in education, health, and physical capital. Now investment in education, health and physical capital are encouraged when lower birth rates make labor scarcer relative to capital. Enke (1971) pointed out that one of the distinguishing characteristics of low income countries is their high fertility rates and the proportion of unproductive children. Reduction in fertility rates enables a higher rate of private saving from output. There is also more public saving as governments do not have large education and welfare expenditures. Consequently, this contributes domestic capital to be accumulated more rapidly. Using panel data, Ahituv (2001) found that a one-percent decrease in population growth increase GDP per capita growth by more than three percent. Furthermore, Ahituv (2001) argued that income per capita grows faster in developed countries than in developing countries as families with low levels of human capital choose to have more children in low income countries.

Becker *et al.* (1999, p. 146) attempted to reconcile opposing views of population 'revisionist' and population 'hawk' arguments by noting, "Under conditions that tend to prevail in poorer, mainly agricultural, economies with limited human capital and rudimentary technology, higher population tends

to lower per capita incomes, mainly along Malthusian lines. However, this Malthusian effect would be much weaker in modern urban economies with small agricultural and natural-resource sectors. In these economies, the increased density that comes with higher population and greater urbanization promotes specialization and greater investment in human capital, and also more rapid accumulation new capital. These increasing returns from specialization and accumulation of knowledge would raise per capita incomes as population grew and are likely to be far more important than diminishing returns in resourced constrained sectors."

Empirical evidence based on cross sectional data documents a statistically insignificant relationship between population and per capita income growth. Todaro (1995) reported that there appears to be no clear correlation between population growth and per capita income levels of third world countries.[5] Birdsall (1982) found no definable relationship between fertility rate and per capita income levels valued at 1980-dollar prices. Birdsall also reported that fertility rates vary widely for countries with the same per capita income below the income range of $1000. Hayami (1997) found no systematic relationship between population per square kilometer of surface area and per capita GNP across countries. The correlation coefficient between these two variables was calculated to be .008.[6]

The relationship between population and per capita income growth also varies across time periods. Johnson (1999), after reviewing a plethora of statistical analyses based on the data of 1960s and 1970s, noted that nearly all studies found no statistically significant relationship between population and economic growth. In contrast, Kelly and Schmidt (1996) found that there was a negative association between growth of per capita income and population growth based on the data of the 1980s for the developing countries. Kelly and Schmidt (1996) attributed these differences on results for the 1980s from those of the previous decades to the fact that the rate of per capita income growth in the developing countries was very low during earlier decades.

The population-economic growth debate also centered on an equally interesting issue: whether the acceleration in population growth is exogenously determined by improved health and medical technology or whether population growth is an endogenous response induced by increased per capita income and sustained economic development. Hayami (1997), Birdsall (1988), Wrigley (1969) argued that acceleration in population growth in the industrially advanced economies during their early phase of development was essentially an endogenous phenomenon induced by accelerated economic growth compared to that of developing countries today which has largely been exogenous in nature.

Much of the empirical evidence about the relationship between population growth and economic growth are based on static cross-section analysis (see Dawson and Tiffin 1998 and the list of references therein). Although researchers have strongly recommended investigating this issue in a dynamic framework, unfortunately little work to date has been done based on a parsimonious time-series model. For example, Darrat and Al-Yousif (1999), Dawson and Tiffin (1998), Hasan (April/June 2000-2001), Hasan (2002), and Thornton (2001) investigated the long run cointegrating relationship across countries.[7] Studies of Dawson and Tiffin (1998) and Thornton (2001) found that population and per capita income do not share any common trend and do not exhibit a long-run linear relationship. They interpreted these results to indicate that population and per capita income are causally independent which appears to support the hypothesis that neither of these two variables stimulate nor stifle each other. In contrast, Hasan (April-June 2000-2001) and Darrat and Al-Yousif (1999) found evidence of a common stochastic trend between population and per capita income. This result tends to suggest that population and per capita income are correlated in the long run.

The relationship between population growth and per capita income growth may also depend on the stage of economic development and demographic transition of a country. In a recent paper Galor and Weil (2000) developed a unified growth model that characterizes the historical evolution of population, technology and output. Galor and Weil (2000) argued that the endogenous transition of population evolves over three distinct regimes, namely, Malthusian regime, post-Malthusian regime and Modern Growth regime. Each regime corresponds to a particular stage of economic growth on a one-to-one basis. In a Malthusian regime, technological progress is slow and population growth prevents any sustained rise in income per capita. In a Post-Malthusian regime, technological progress rises and population growth absorbs only part of output growth. In a modern growth regime, reduced population growth and sustained income growth characterizes the demographic transition and evolutionary path of the economy.

Given the conflicting evidences of the empirical relationship between population growth and per capita income, this paper investigates the nature of the time series relationship between these two variables in the context of a dynamic model in Bangladesh. Furthermore, despite the practical importance of this issue, most previous studies have focused on other countries. To my knowledge very few similar investigations have been carried out using the data of Bangladesh. In an attempt to fill this gap, this paper examines the relationship between population and per capita income for Bangladesh over the period 1973-2002. Bangladesh, being one of the most densely populated and resource-poor countries in the world, provides an illuminating opportunity to investigate this topical issue as a case study. This result has important implications for both policy-makers and researchers.

Empirical Results

In this section, the empirical relationship between population and per capita income is analyzed using annual data spanning the period 1973-2002. The theoretical underpinning of this relationship is the Malthusian population trap epitomized by Nelson (1956) in his explanation of the low-level equilibrium trap model which suggests a simple and appealing relationship between population growth and economic development. Nelson (1956) argued that a stable population will exist at a very low level of per capita income. As per capita income rises marginally above subsistence level from a lower level to another lower equilibrium level, the rate of population increase will exceed the rate of aggregate income growth and will propel the economy to be 'trapped' at a low level of income. Only a sustained and concomitant increase in the rate of growth of income levels higher than the rate of increase in population, supported by a 'big push' of investment and industrialization programs, would get the economy out of this trap. Several empirical analyses have underscored the role of per capita income for population growth (see, Dawson and Tiffin, 1998 and the list of references therein, Hasan, April-June 2000-2001, and Hasan, 2002). Furthermore, the Granger causality methodology has been popularly applied in situations where theory suggests reasons for causality in both directions between two variables. Therefore, this study performed a bivarite analysis of population and per capita income due to the availability of annual data.[8] All data series are compiled and constructed from DATASTREAM International. Gross Domestic Product (GDP) at 1995 prices was divided by the total population to obtain a proxy of per capita income measure

Figure 1

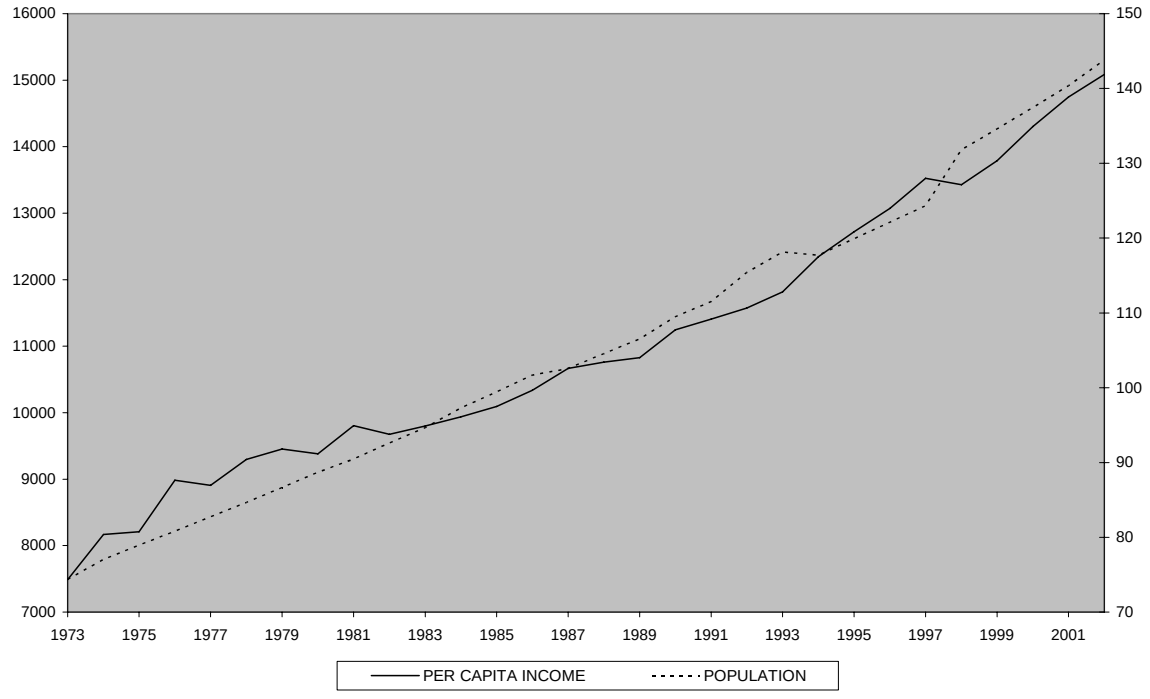


Figure 1 plots the variables, per capita income (y) and population (p). A casual glance at the graph clearly indicates that both variables are trending together in the long run. Although a deterministic component may dominate the population series, it does not rule out the presence of a drift and stochastic component in the data series. Formal statistical tests show that the long-run co-movement properties of the data series relating to the variables, population and per capita income are tied together to form a cointegration relationship. In other words, the cointegration relationship between population and per capita income variables is identified by a single stochastic shared trend. The finding of cointregration has several implications. First, consistent with the theory this finding indicates that per capita income and population have a long-run equilibrium relationship. Second, the evidence of cointegration also rules out the possibility of spurious correlation and noncausality between the per capita income and population.

In the next step, we specified bivariate equations of per capita income growth and population growth to examine the nature of time series relationship between these two variables using a standard econometric criterion. A technical discussion in the appendix has delineated the detailed modeling strategy. The equations are specified as follows:

$$\Delta y_t = d_1 + \tau T_1 + \sum_{i=1}^{3} \beta \Delta y_{t-i} + \sum_{j=1}^{2} \delta \Delta p_{t-j} + \varphi_1 \xi_{t-1} + \upsilon_{1t} \quad (3)$$

$$\Delta p_t = d_2 + \tau T_2 + \sum_{i=1}^{1} \gamma_1 \Delta y_{t-i} + \sum_{j=1}^{1} \lambda_j \Delta p_{t-j} + \varphi_2 \xi_{pt-1} + \upsilon_{2t} \quad (4)$$

The term Δp_{t-j} represents the *j-th* lag on variable p; Δ is the first difference operator that induces stationarity; d_i is a constant; ξ_{it-1} and υ_{it} refer to the lagged error-correction term and a white noise term in the i-th equation, respectively. The adequacy of the stationarity transformation was further checked by the inclusion of a time trend, T_i in the i-th equation.

The equations are estimated using the Cochrane-Orcutt procedure. The results of estimation of the bivariate VEC model are reported in Table 1. The positive and significant coefficients related to the population variable in the per capita income equation suggest that population is positively and significantly correlated with the per capita income. In the population growth equation, the per capita income growth variable is insignificant but negative. The coefficients of the error-correction term both in population and per capita income equations have the correct signs and the terms are statistically significant The error correction term shows that once the relationship between these theoretically inferred variables diverge from their long-run equilibrium value, how long and to what extent does it take the disequilibrium error to bring the relationship back to a long-run steady state equilibrium. The error-correction term opens up an additional channel of long-run causality from the right hand variable to the

Table 1: AR1 estimates of the bivariate VECM model

	Dependent variable	
Coefficient on lag of	Δy	Δp
Constant	-.0942 (-2.182)	.0467 (1.6858)
Time	.00006 (2.039)	-.00003 (.1711)
ξ_{t-1}	-.2694 (-2.187)**	-.1768 (-2.4172)**
Δy_{t-1}	.0183 (.0664)	-.1043 (-.9147)
Δy_{t-2}	.3229 (1.849)*	
Δy_{t-3}	.3590 (2.158)**	
Δp_{t-1}	-.3716 (1.0657)	.1291(.6302)
Δp_{t-2}	.5060 (1.7211)*	
R^2	.253	.032
DW	2.08	2.06
SE	.0136	.0096

Notes: Figures in the parentheses next to the coefficients are the *t*-ratios; R^2 is the coefficient of determination adjusted for the degrees of freedom; *DW* and *SE* are the Durbin-Watson statistic and standard error of the regression, respectively. *, ** denote significance level of the variable at 10% and 5%, respectively.

dependent variable. The sizes of the coefficients indicate that the speed of adjustments are 26% and 17% per period in the per capita income growth and population growth equations, respectively for those equations to return to their equilibrium level once they have been shocked. These results indicate a bidirectional relationship between per capita income and population. The finding of a bi-directional relationship between per capita income and population is consistent with the view that per capita income growth lowers population growth while population growth positively contributes to the per capita income. The evidence of a bi-directional relationship between per capita income growth and population growth is well in accord with Hasan (2002). The evidence of a negative causality flowing from per capita income to population growth accords with Hasan (April/June 2002-2001) and Darrat and Al-Yousif (1999) which appears to indicate that per capita income growth tends to lower the population growth. This negative relationship is also consistent with Becker's view that as income grows, families tend to prefer quality rather than quantity of children (Becker, Glaeser and Murphy 1999). These findings of a stable long-run relationship and bi-directional causality contrast with the finding of a causal independence as documented in Thornton (2001) for Latin American countries and Dowson and Tiffin (1998) for India which suggest that population and per capita income neither stimulate nor stifle each other.

Conclusion

This paper empirically examines the nature of the time-series relationship between population growth and per capita income growth using the annual data of Bangladesh within the framework of cointegration and vector error correction modeling techniques. The most striking result here is that population and per capita income are cointegrated and thus exhibit a reliable long-run relationship. Our results also indicate a bi-directional or feedback relationship between population and per capita income. The results of a negative causality flowing from per capita income to population growth appear to indicate that per capita income tends to lower the population growth. Likewise, population growth positively contributes to the growth of per capita income.

The results have important implications for the conduct of economic policy. Economic policies based on sound macro- and micro-economic management, coupled with good governance aimed at ameliorating poverty and promoting sustained economic growth have perceptible and permanent effects in lowering population growth. Concurrently, population can be a stimulus for economic growth through the realization of favorable economies of scale induced by low labor cost, enhancing aggregate demand, and promoting human capital, improved efficiency, and technological progress.

Endnotes

1. See, for example Eberstadt (1986), Simon (1981), Simon (1992). For a summery and synthesis see, Todaro, M. P. (1995), "Population Growth and Economic Development: Causes, Consequences, and Controversies", in M. P. Todaro (1995). The Keynesian and post-Keynesian models emphasised the positive beneficial effects of population growth on the full employment growth rates and per capita income in the rich, industrial countries (see Hansen 1939). Hansen (1939) pointed out that population growth stimulates investment by increasing demand for capital-intensive items such as housing and public utilities. It also increases the short-run consumption function and employment.

2. See, for example, Ehrlich and Ehrlich (1990). The population 'hawk' argument is deep-rooted in the Malthusian theory of population which inexorably forced the people of low income countries to live at a subsistence level of income.

3. The depressive effect of population growth on per capita income is more popular in many predominantly agricultural economies, which seek to analyse population growth based on classical and neo-classical theories.

4. A simple Harrod-Domar model also reaches a similar result. For example, the Harrod-Domar model contends that a rise in output from period t to period $(t+1)$ is determined by the amount of net capital formation and its 'productivity' as measured by the inverse of 'capital/output' ratio: $\Delta y/y = s/k$, where y, s, and k denote output, marginal propensity to save and incremental capital/output ratio, respectively. Let us suppose that in a typical LDC, with a given parameter values of $s = .09$ and $k = 3$, then the maximum attainable rate of output growth would be 3 percent. If the population is growing at an

average rate of 3 percent per year, then the per capita income will remain constant.

5. See, Todaro op. cit. in note 1. Also see, Dawson and Tiffin (1998, p. 149) and the list of references therein.

6. Hayami (1997) argued that Japan with relatively poor resource endowments compared to the U. S. A. has been able to achieve about the same per capita income level as the U. S. A., while resource-poor Korea has been able to surpass the income levels of resource-rich economies in Latin America. Hayami (1997) however has noted that for the low-income economies, the growing relative scarcity of natural resources coupled with an explosive population growth represents a very serious problem since these economies rely heavily on natural resource-based activities such as agricultural and mining for both production and export.

7. Dawson and Tiffin, and Hasan (April/June 2000-2001) investigated the case of India, Darrat and Al-Yusif examined a sample of twenty developing countries, and Thornton (2001) studied a sample of seven Latin American (Argentina, Brazil, Chile, Columbia, Mexico, Peru and Venezuela) countries using cointegration and causality analysis.

8. The novelty of using a time series model in the present context suggests that the stochastic and deterministic trends already incorporate the permanent and transitory effects of exogenous factors on income and population. For a good discussion, see Nelson and Plosser (1982). Cointegration methodology seeks to identify whether per capita income and population growth share a common trend as hypothesised by various economic theories.

9. For a detailed methodological exposition, readers are referred to Engle and Granger (1991), and Hargreaves (1994).

10. Cheung and Lai (1993) have argued that Johansen's likelihood ratio (LR) tests are derived from asymptotic results and standard inferences in finite samples may not be appropriate. Johansen's LR tests are biased toward finding cointegration frequently in finite samples when asymptotic critical values are used. The finite sample bias of Johansen's test is a positive function of $T/(T-nk)$ where T, n and k signify the sample size, the number of variables in the estimated system and the lag length, respectively. Reimers (1992), and Reinsel and Ahn (1992) have suggested adjusting Johansen's test statistics by a scaling factor of $(T-nk)/T$ and comparing them with their asymptotic critical values. Following Reinsel and Ahn (1992), the computed test statistics were adjusted using the scaling factor.

11. For a discussion of lag length selection criteria in an autoregressive model see, Akaike (1969). For a discussion of Granger notion of causality see, Granger (1969). The maximum lag length was set at 4. Econometrically, the choice of maximum lag is designed to avoid a possible bias due to the exclusion of important lags, as well as the fragility of inefficient parameter estimates induced by an over-specified lag order. For a discussion on the consequences of under-specification and over-specification of lag length, see Hsiao (1981).

References

Ahituv, A. (2001), "Be Fruitful or Multiply: On the Interplay between Fertility and Economic Development," *Journal of Population Economics*, Vol. 14, No. 1, pp. 1.

Akaike, H. (1969), "Fitting Autoregression for Prediction," *Annals of the Institute of Statistical Mathematics*, Vol. 21, No. 2, 243-247.

Becker, G. S., Glaeser, E. L. and K. M. Murphy (1999), "Population and Economic Growth", *American Economic Review*, Vol. 89, No. 2, pp.145-149.

Birdsall, N. (1982) "Population and Development Modeling-Proceedings of the United Nations UNFPA Groups Meeting," Switzerland, 24-28, September 1979, *Journal of Policy Modeling*, Vol. 4, 457-462.

Birdsall, N. (1988), "Economic Approaches to Population Growth," in *Handbook of Development Economics*, Hollis B. Chenery and T. N. Srinivashan, eds. Vol. 1, Amsterdam: North Holland, p.482.

Cheung, Y. W. and K. S. Lai (1993), "Finite Sample Sizes of Johansen's Likelihood Ratio Tests for Cointegration," *Oxford Bulletin of Economics and Statistics*, Vo. 55, No. 3, 313-328.

Darrat, A. F. and Y. K. Al-Yousif (1999), “On the Long-Run Relationship between Population and Economic Growth: Some Time Series Evidence for Developing Countries”, *Eastern Economic Journal*, Vol. 25, No. 3, 301-313.

Dawson, P. J. and R. Tiffin (1998), "Is There a Long-Run Relationship between Population Growth and Living Standards? The Case of India," *The Journal of Development Studies*, Vol. 34, No. 5, pp. 149-156.

Eberstadt, N. (1986), "Population and Economic Growth," *Wilson Quarterly*, Winter 1986, pp. 95-129.

Ehrlich, P. R. and A. H. Ehrlich (1990), *The Population Explosion*, New York: Simon & Schuster.

Engle, R. F. and C. W. J. Granger (1987), "Co-Integration and Error Correction: Representation, Estimation, and Testing," *Econometrica*, Vol. 55, No. 2, 251-276.

Engle, R. F. and C. W. J. Granger (1991), *Long-Run Economic Relationships: Readings in Cointegration*, Oxford: Oxford University Press.

Enke, S. (1971), “Economic Consequences of Rapid Population Growth”, *Economic Journal*, Vol. 81, No. 324, 800-811.

Galor, O. and D. N. Weil (2000),"Population, Technology, and Growth: From Malthusian Stagnation to the Demographic Transition and Beyond," *American Economic Review*, Vol. 90, No. 4, 806-826.

Granger, C. W. J. (1969), "Investigating Causal Relations by Econometric Models and Cross-Spectral Methods," *Econometrica*, Vol. 37, No. 3, 424-438.

Granger, C. W. J. (1986), “Developments in the Study of Cointegrated Economic Variables”, *Oxford Bulletin of Economics and Statistics*, Vol. 48, 213-228

Granger, C. W. J. (1988), “Some Recent Developments in the Concept of Causality”, *Journal of Econometrics*, Vol. 39, Annals 1988-3, No. 1-2, 199-211.

Hansen, A. H., 1939, "Economic Progress and Declining Population Growth," *American Economic Review*, Vol. 29, No. 1, 1-15.

Hargreaves, C. (1994), *Nonstationary Time Series Analysis and Cointegration*, New York: Oxford University Press.

Hasan, M. S. (April-June 2000-2001), “Is There a Long Run Relationship between Population Growth and Living Standards? The Case of India-a Re-examination”, *Indian Economic Journal*, Vol. 48, No. 4, 27-34.

Hasan, M. S. (2002), “The Long Run Relationship between Population Growth and Per Capita Income in Bangladesh”, *Bangladesh Development Studies*, Vol. 28, No. 3, 65-84

Hayami, Y. (1997), *Development Economics: From the Poverty to the Wealth of Nations*, Oxford: Clarendon Press.

Hisao, C. (1981), "Autoregressive Modelling and Money-Income Causality Detection," *Journal of Monetary Economics*, Vol. 7, No.1, 85-106.

Johansen, S. and K. Juselius (1990), “Maximum Likelihood Estimation and Inference on Cointegration with Applications to Money Demand”, *Oxford Bulletin of Economics and Statistics*, Vol. 52, No. 2, 169-210.

Johnson, D. G. (1999), “Population and Economic Development”, *China Economic Review*, Vol. 10, No. 1, 1-16.

Johnson, D. G. (2000), “Population, Food, and Knowledge”, *American Economic Review*, Vol. 90, No. 1, 1-14.

Kelly, A. C. and R. M. Schmidt (1996), “Toward a Cure for the Myopia and Tunnel Vision of the Population Debate: A Dose of Historical Perspective”, in *The Impact of Population Growth in Well-being in Developing Countries*, D. A. Ahlburg, A. C. Kelly and K. O. Mason, eds. Berlin: Springer-Verlag.

Kremer, M. (1993), “Population Growth and Technological Change: One Million B. C. to 1990”, *Quarterly Journal of Economics*, Vol. 108, No. 30, pp. 681-716

Nelson, R. R. (1956), “A Theory of the Low-Level Equilibrium Trap in Underdeveloped Economies”, *American Economic Review*, Vol. 46, 894-908.

Nelson, C.R. and C.I. Plosser (1982) “Trends and Random Walks in the Macroeconomic Time Series:

Some Evidence and Implications", *Journal of Monetary Economics*, Vol.10 No. 2, 139-162.

Reimers, H. (1992), "Comparisons of Tests for Multivariate Cointegration," *Statist. Papers* (*Statist Hefte*), Vol. 33, 335-359.

Reinsel, G. C. and S. K. Ahn (1992), "Vector Autoregressive Models with Unit Roots and Reduced Rank Structure: Estimation, Likelihood Ratio Test, and Forecasting," *Journal of Time Series Analysis*, Vol. 13, No. 4, 353-374.

Simon, J. L. (1981), *The Ultimate Resources*, Princeton, N. J.: Princeton University Press.

Simon, J. L. (1989), "On Aggregate Empirical Studies Relating Population Variables to Economic Development", *Population and Development Review*, Vol. 15, 323-332.

Simon, J. L. (1992), *Population and Development in Poor Countries*, Princeton, NJ: Princeton University Press.

Smith, A. (1976) *An Inquiry into the Nature and Causes of the Wealth of Nations*, in Edwin Cannan (ed.), Chicago: University of Chicago Press.

Thornton, J. (2001), "Population Growth and Economic Growth: Long-Run Evidence from Latin America", *Southern Economic Journal*, Vol. 68, No. 2, 464-468.

Todaro, M. P. (1995), "Population Growth and Economic Development: Causes, Consequences, and Controversies," in *Reflections on Economic Development: The Selected Essays of Michael P. Todaro*, M. P. Todaro, ed. Aldershot: Edward Elgar.

Wrigley, E. A., (1969), *Population History*, New York: McGraw Hill.

Appendix: Technical Discussion on Methodology and Further Empirical Results

The empirical relationship between population and per capita income is examined by evaluating cointegration, and Granger causality in a vector error correction model (VEC). The cointegration and vector error-correction modeling techniques are now well known and widely used in applied econometrics.[9]

The cointegration technique pioneered by Granger (1986), and Engle and Granger (1987) allow long-run components of variables to obey long-run equilibrium relationships with the short-run components having a flexible dynamic specification. This technique seeks to explore whether a set of interrelated variables share a common trend such that the stochastic trend in one variable is related to the stochastic trend in some other variable(s). Granger (1988) has shown that the existence of cointegration also implies the presence of Granger causality between cointegrated variables, at least in one direction. Although the evidence of cointegration indicates the presence of Granger-causality, it does not indicate the direction of causality between variables. The direction of causality can be detected through the vector error correction (VEC) model.

The idea of error correction implies that a proportion of disequilibrium from one period in a cointegrated system is corrected in the next period. The Granger representation theorem states that once a set of variables are found to be cointegrated, there should exist a corresponding error correction model which relates the change in a dependent variable to past equilibrium errors as well as past changes in other explanatory variable(s) (see, Engle and Granger 1987). More specifically, let $z(t) = \{y(t), p(t)\}$ represent the discrete time series on per capita income and population generated by a linear and covariance stationary bivariate vector autoregressive process of order k; then one may posit the following testing relationships which constitutes the vector error-correction model (VECM):

$$\begin{bmatrix}\Delta y_t \\ \Delta p_t\end{bmatrix}=\begin{bmatrix}b_{11}^k(L) & b_{12}^k(L) \\ b_{21}^k(L) & b_{22}^k(L)\end{bmatrix}\begin{bmatrix}\Delta y_t \\ \Delta p_t\end{bmatrix}+\begin{bmatrix}\delta\xi_{t-1} \\ \delta\xi_{t-1}\end{bmatrix}+\begin{bmatrix}\upsilon_{1t} \\ \upsilon_{2t}\end{bmatrix} \quad (5)$$

where Δ is the difference operator that induces stationarity; the lag polynomial b_{ij}^k represents the k lag coefficients on variable j in equation i; $\delta\xi_{it-1}$ refers to the lagged error-correction term in equation i derived from the long-run cointegration relationship; v_{it} is the serially-uncorrelated random error term in equation i with zero mean. In the model (5), the null hypothesis of non-causality from population to per capita income is rejected if either the group of coefficients on the population variable, p, in the per capita income equation, $b_{12}^k(L)$ is statistically significant or the coefficient of lagged error-correction term, δ is negative and statistically significant. The statistical significances of $b_{12}^k(L)$ and δ are exposed through joint F and t-tests, respectively.

In the specification of the VEC model, we have utilized the concepts of unit root, cointegration and lag lengths with suitable diagnostics to test forcointegration and Granger causality among theoretically inferred variables. That is, we pretest the variables for their order of integration in the first step, since the Granger causality test requires covariance stationary time series and cointegration necessitates that the variables be integrated of the same order. In the second step, a test of cointegration is performed using the Johansen and Juselius (1990) maximum likelihood procedure to see whether stochastic trends of these theoretically inferred variables move together in the long-run. In the third step, we estimate the error-correction model to identify the nature and direction of Granger causality among those theoretically inferred variables given our objective of testing economic theories and plausible hypotheses with their testable implications.

Therefore, as a first step, the data have been checked for stationarity using the Augmented Dickey Fuller (ADF) unit test in each of the variables, per capita income (*y*), population (*p*). The number of augmentation terms in the ADF regression was determined by examining the Akiake's information criterion (AIC), up to three, and the serial correlation of residuals. The results of the ADF tests, as reported in Appendix Table 1, indicate that each of the variables is non-stationary in level but not in first difference form.

In the next step, the data series are further checked for the presence of cointegration using using the Johansen and Juselius (JJ) maximum likelihood procedure. For further details of the JJ method, see Johansen and Juselius (1990). The main advantage of the Johansen and Juselius method is that it indicates the presence of the number of cointegrating vectors and provides a more reliable estimate of the long-run parameters. The results of Johansen's eigenvalue and trace tests are presented in Appendix Table 2.[10] The results of Johansen's eigenvalue and trace tests indicate that there exists at least one cointegrating relationship between per capita income and population since the calculated test statistics exceed the 5% critical values which hypothesized the existence of a zero cointegrating vector. A unique cointegrating vector between per capita income and population variables suggests a single stochastic shared trend. Given that there are (n-r) common trends within the system, we can conclude that there exists one common trend within the vector. The estimated cointegrating vector is reported beneath the tests for cointegration after normalizing on variable *(y)*. The identified cointegrating vector could be interpreted as a typical long-run economic relationship.

Following the Granger representation theorem, the above unit root and cointegration test results also imply that the dynamic modeling of per capita income and population variables has a valid error-correction representation with a cointegrating constraint embedded in them. The vector error-correction model estimates provide important nformation about the short-run relationship between per capita income and population. The optimal error-correction model is specified using a hybrid of Granger-Akaike synthesis (see, Hsiao 1981) and Engle-Granger's (1987) vector error correction (VEC) modeling strategy. That is, we specify variables and lag lengths in each equation in the VEC model through a stepwise regression procedure combining Akaike's (1969) final prediction error and Granger's (1969) notion of incremental predictability augmented with the error correction term implied by our cointegrating restriction.[11] To economize space, the detailed estimation procedure is not discussed here. Interested readers are referred to Engle and Granger (1987), and Hsiao (1981).

Careful examination of various FPEs leads to the following tentative specification of the VEC model:

$$\begin{bmatrix}\Delta y_t\\ \Delta p_t\end{bmatrix}=\begin{bmatrix}\delta_1\\ \delta_2\end{bmatrix}+\begin{bmatrix}\pi_1\\ \pi_2\end{bmatrix}+\begin{bmatrix}\delta_{11}^{3}(L) & \delta_{12}^{2}(L)\\ \delta_{21}^{1}(L) & \delta_{22}^{1}(L)\end{bmatrix}\begin{bmatrix}\Delta y_t\\ \Delta p_t\end{bmatrix}+\begin{bmatrix}\alpha_1\\ \alpha_2\end{bmatrix}\tilde{z}_{t-1}+\begin{bmatrix}\upsilon_{1t}\\ \upsilon_{2t}\end{bmatrix} \quad (6)$$

The variables and notations are defined in the preceding discussion.

Appendix Table 1: Unit root test

A. Stationarity test

	L		Δ	
Variable	t_μ	t_τ	t_μ	t_τ
y	1.559 (*k*=1)	-.894 (*k*=1)	-4.126 (*k*=1)	-5.414 (*k*=1)
p	.215 (*k*=1)	-2.498 (*k*=1)	-3.728 (*k*=1)	-3.977 (*k*=3)

Notes: t_μ and t_τ are the *t*-statistics based on augmented Dickey-Fuller(ADF) regression with allowance for a constant and trend, respectively. 5% critical values for constant and trend terms in the ADF regression are -2.99 and -3.61, respectively. Figures in the parentheses are the lag length of the ADF regression. L and Δ signify the level and first difference of a variable respectively.

Appendix Table 2: Johansen test for cointegrating relationship between per capita income and population

		Test statistics		5% critical value	
H_0:	H_1:	Max Eigenvalue	Trace	Max Eigenvalue	Trace
$r = 0$	$r > 0$	24.50*	29.03*	15.87	20.18
$r \leq 1$	$r = 2$	4.50	4.50	9.16	9.16

Estimated Cointegrating Vector (Normalised on *y*); y, *p*, *trend*:- [1.000, -.92783 (.11054), -4.6014 (.60667)]
Notes: r indicates the number of cointegrating relationships. * indicates the rejection at the 5% critical values. Standard errors are in the brackets.

Mohammad S. Hasan
Faculty of Organisation and Management,
Sheffield Hallam University,
Sheffield, S1 1WB.
United Kingdom
m.s.hasan@shu.ac.uk
Tel: +(44) 114- 2255046
Fax: +(44) 114- 2255265

TECHNOLOGY TRANSFER AS AN INSTRUMENT TO PROMOTE GROWTH AND DEVELOPMENT: THE BANGLADESH EXPERIENCE

Muhammad Masum

ABSTRACT

This paper reflects Bangladesh's experience in transferring technology to various sectors of the economy. The paper presents an overview of technological developments in Bangladesh, and examines the role, mechanisms and agents of technology transfer in selected sectors. Although, technology transfer took place through various mechanisms, import of machinery played a dominant role. Due to poor technology assessment capability and distortions in factor prices, however, a number of technologies transferred to Bangladesh turned out to be rather inappropriate. Inadequate emphasis on science and technical education contributed to poor skill composition of the industrial labor force that constrained assimilation of imported technology. Underdeveloped and poorly funded national research infrastructure, and absence of any in-house research facilities seriously constrained adaptation of imported technology to suit local factor endowment, as well as the environment. As a result, technology transfer in Bangladesh never attained a dynamic character and the country continued to remain a market for technologies developed in other countries, with a shift to new sources such as the Republic of Korea, China, Thailand and India that have made significant progress on the technological front. Moreover, as the small and cottage sector, that employed most of the poor, benefited little from technology transfer, its contribution to promoting development was marginal indeed. There is thus a need for formulating a comprehensive technology development policy for the country that spells out a well-defined role for technology transfer that strengthens the technological base of the country. For the poor to benefit from transfer of technology, i.e., for enhancing its role in promoting development, concerted efforts are needed to upgrade the technology used by the poor through transfer of appropriate technology to the small and cottage sector. There is also a need for implementing land and tenancy reforms for improving access of the landless agricultural wage labor to land and, thereby, benefit from technology transfer in the agricultural sector.

Introduction

Technological gaps primarily account for the prevailing divergence in development between countries, and sectors within a country. In promoting growth and development of a country attained through enhanced productivity in all sectors of the economy, the role of technology transfer can hardly be overemphasized as it helps to bridge the prevailing technological gaps. Using a conceptual framework, an attempt has been made in this paper to document Bangladesh's experience in respect of technology transfer to various sectors of its economy, highlighting its role as an instrument to promote growth and development of the country. The main sections of this paper are organized as follows: the conceptual framework; the role, mechanisms and agents of technology transfer in selected sectors of the Bangladesh economy; case studies that clearly articulate the process of technology transfer at the sector and enterprise level; the role of technology transfer as an instrument to promote growth and development in the country; and concluding observations.

Technology Transfer as an Instrument to Promote Growth and Development: A Conceptual Framework

Concepts and Definitions

Technology is the means for transforming inputs (naturally available resources and/ or intermediate goods) into outputs (consumer goods, intermediate or capital goods). Consumer goods need no further transformation.

Technology is a combination of four basic components, all acting together accomplish a transformation process. The components are:- facilities (technoware); abilities (humanware); facts (inforware); and frameworks (orgaware).

Technoware is the object-embodied form of technology encompassing plant and machinery.

Humanware is the person-embodied form of technology encompassing all acquired abilities such as expertise, proficiency; creativity, ingenuity, etc.

Inforware is the document-embodied form of technology that includes all relevant facts and figures such as designs, specifications, theories, equations, charts, accounts etc.

Orgaware is the institution-embodied form of technology that includes the frameworks such as groupings, allocations, systematizations, networks, management and marketing.

Technoware is also known as the hardware of a technology while the other three components together are known as the software of the same. The presence of all four components of technology at a certain minimum level is a pre-requisite for any resource transformation.

Each of the four basic components of technology has several degrees of sophistication, increasing step-wise. Technoware or physical facilities develop by the following stages: manual facilities, powered facilities, general purpose facilities, special purpose facilities, automatic facilities, computerized facilities and integrated facilities. In case of humanware, the following stages of development may be observed: operating abilities, setting-up abilities, repairing abilities, reproducing abilities, adapting abilities, improving abilities and innovating abilities (ESCAP, 1989). For the other technology components as well, similar stages of development can be perceived. When all the basic components of a technology reach optimum levels of development, its efficiency level is also maximized.

Technology sources and technology users may be located in different countries or within the same country. Transfer of technology usually connotes transfer across national boundaries while transfer of technology within the country is usually referred to as diffusion of technology.

Technology transfer may be static or dynamic. When a technology developed in one country is transplanted into another in the form of setting up of a project with necessary supplies of technoware and technical services, along with transfer of relevant skills and know-how required for day to day operation and maintenance of the project, such technology transfer is static. With experience and development of skills and knowledge, when the technology recipients acquire an autonomous capability to effect technical changes to make it more efficient, i.e., succeed in assimilation, adaptation and generation of new technologies, technology transfer becomes dynamic. Technology assimilation connotes success in fully utilizing the imported technology, i.e., the recipient has been able to completely absorb and digest the technology so as to reach the highest level of efficiency. Technology adaptation means the modification of imported technology to suit local conditions. When technology recipients attain capabilities to generate new technologies based upon imported ones, technology transfer becomes complete.

Mechanisms and Agents of Technology Transfer

Prior to the industrial revolution when technology was rather simple and primarily based on ingenuity of artisans, technology transfer required nothing more than apprenticeship. The mechanism works even today, particularly in the cottage sector where technology is essentially skill based. In Bangladesh, under various technical assistance projects, services of master craftsmen from abroad were utilized in the past to achieve technology transfer in various fields.

Innovative ideas may still come from individuals, but transforming those into technological realities now requires a lot of investment and risk-taking, usually beyond the capacity of an individual. Industrial

Figure 1: Technology Transfer

Technology Producing Country → Technology Recipient Country	
Technology Transfer	
Static Technology Transfer Project set up with supplies of necessary technoware and technical services, along with transfer of relevant skills for day- to- day operation, and maintenance.	**Dynamic Technology Transfer** Technology recipients acquire autonomous capability to effect technical changes to make it more efficient i.e. succeed in assimilation, adaptation and generation of new technologies.

Industrial research and development, therefore, has now become a corporate activity usually carried out by multinational corporations (MNCs), which not only command necessary financial resources but are also able to utilize the services of top professionals in the relevant fields. Technology thus generated is used for maximizing profit, and when it reaches a stage of maturity, is released to the market for a price. The ownership of technology is protected by patents, copyrights, and trade marks. Technology generated by institutions other than MNCs are also often sold to the market at least for cost recovery.

Object-embodied technologies such as machinery, tools and equipment are generally available in the international market for a price determined by demand and supply. The sellers usually provide users' manuals, and in some cases, their agents impart requisite training to the users and provide them with necessary spare parts and after sales services. Process technologies are generally transferred under various licensing arrangements. Document-embodied technologies of non-proprietary type may be obtained from the academic community of the developed world at a nominal cost. Human-embodied technologies can be procured by hiring expatriates, bringing back the nationals working abroad, and through foreign consultancy and engineering services. Through foreign training and visits, it is possible to acquire institution-embodied technologies, but total transplantation of a foreign system without adequate preparation and proper adjustments to suit local conditions may turn out to be rather ineffective.

When MNCs set up their subsidiaries, or foreign investment materializes in the form of joint ventures in the host country, transfer of technology automatically takes place. Moreover, in order to remain globally competitive, as such enterprises always try to keep pace with technological developments taking place around the world, facilitated by institutional access to technological developments in the mother company, technology in such enterprises continually gets upgraded through transfer of technology. Although MNCs /Joint Ventures are generally large scale enterprises, quite often through subcontracting arrangements, small and cottage industries can also benefit from the above transfer of technology.

In developing countries, technology transfer primarily takes place through import of machineries. When technology transfer takes place under licensing arrangement, a close partnership with the foreign collaborators and local R&D efforts help to accelerate the technology assimilation, adaptation and generation (TAA&G) process. In the process of static technology transfer, the entrepreneur plays the pivotal role; his/her efforts may, however, be greatly facilitated by concerned specialized agencies both in public and private sectors in not only assessing the technologies to decide on the most appropriate one, but also in accessing the same from the global technology shelf, under the best possible arrangements. In converting static technology transfer into a dynamic one, (i.e., in the actual TAA&G process) however, the role of all concerned, from entrepreneurs and professional managers down to the mechanics endowed with high technical acumen, and the local R&D efforts, can hardly be over emphasized.

Technology Transfer as an Instrument to Promote Growth and Development

By bridging the technology gaps prevailing between more and less developed countries/ sectors, technology transfer contributes to promoting growth in sectors adopting the more advanced technology by raising productivity of the workers employed in these sectors. Whether such transfer contributes to development depends on the extent of diffusion of these technologies, and the extent to which the poor benefit from growth in terms of higher levels of productive employment and real wages for them, and reduced prices for the commodities they consume, both of which contribute to improving their quality of life. For technology transfer to promote development, therefore, it must encompass sectors that employ the poor in general, and the products they consume.

Technology Transfer in Bangladesh: An Overview

Technological Developments in Selected Sectors of Bangladesh Economy

There exist three stages of technological development**.** First, a country with no industrial base imports the commodities it needs. Second, import of commodities is substituted by import of technology, particularly, machinery. Third, when technology is assimilated and widely diffused, with or without adaptation, the above machineries are produced within the country for domestic and /or export market.

When, after about two centuries of British colonial

rule, Bangladesh emerged, in 1947, as the eastern wing of independent Pakistan, agriculture accounted for nearly two thirds of her GDP. In 1949-50, agriculture's share in Bangladesh's GDP was 65.2%. The shares of large scale and small scale industries were 0.6%, and 3.3% respectively. The country experienced structural transformation over the following two decades. In 1969-70, i.e. just before the country's independence in 1971, the corresponding shares became 55.3%, 6.0% and 2.9% respectively (Khan, 1972). By 2003-4, further structural transformation took place. The share of agriculture in GDP came down sharply, to 22.8%, and the shares of large scale and small-scale industries increased to 11.5% and 4.8% respectively (Bangladesh Bank, 2004). Compared to 1947, when Bangladesh definitely belonged to the first stage of technological development importing most of the commodities she needed, it has definitely moved to stage two of technological development producing many products with imported machinery to meet the needs of domestic and export markets, and stage three in a few sectors by producing machineries primarily used for meeting the needs of the domestic market.

For centuries, technology in Bangladesh agriculture had remained virtually stagnant, characterized by a predominance of bullock ploughs, i.e., near absence of modern 'mechanical engineering technology', and lack of advancement in the adoption of 'bio-chemical' technology and irrigation. In 1969/70, irrigation covered only 4% of the cultivated acreage. Improved seeds constituted a mere 0.5% of total paddy seeds used. Fertilizer use was no more than one-thirtieth of the desired dose. Output per acre was not only low but also reflected a high standard deviation caused by plant disease and epidemics, and occasional floods that deterred farmers from adopting modern technology (Khan, 1972). Total rice production in 1971 was 10 million tons only. By 2001-2002, however, it increased to 26 million tons. In other words, rice production increased by more than 2.5 times over the last three decades. The major explanatory factor has been the increase in yield rate stimulated by High Yielding Varieties (HYV), fertilizer and irrigation technology. Rice yield increased from 1.22 metric tons per hectare in 1975-1976 to 2.28 metric tons per hectare in 2001-2002. HYV coverage increased to 60% of total acreage under rice by late 1990s compared to 13% in mid 1970s. According to the 1996 Agricultural Census, 83% of farm holdings applied chemical fertilizers, involving 71% of gross cropped area. Irrigation development was the major factor promoting spread of HYV. With the spread of shallow tube-wells, (STW) promoted by market liberalization, the irrigated area increased by 5.5% per annum over 1975-1976 to 1996-1997. Other concurrent technological developments include increasing mechanization of agricultural operations including use of power tillers for cultivation; pumps for irrigation; and threshers and rice mills for converting paddy into rice (Ministry of Agriculture, GOB, 2004).

In 1947, Bangladesh had, virtually, no industrial base. Most of her requirements for industrial products were met by imports. During the period of her being part of Pakistan, little industrialization took place except in sectors like jute and cotton textiles, tea, sugar, paper, cement, steel, pharmaceuticals, cigarettes and matches, that too behind a high tariff wall and in a policy regime that distorted the factor markets by providing highly subsidized credit and foreign exchange, resulting in inappropriate technological choices characterized by high levels of capital intensity in a capital scarce and labor abundant country, and poor capacity utilization in the above enterprises. Independence in 1971 opened up new possibilities for industrialization, but due to a poor investment climate prevailing in the wake of nationalization of large-scale enterprises, and imposition of a ceiling on private investment, little response came from the private sector, and the public sector suffered from severe resource constraints. Changes in the policy regime after 1975, that recognized private sector as the engine of growth, encouraged rapid industrialization in the country, facilitated by liberal provision of industrial credit at a highly subsidized rate. Industrialization in certain sectors flourished because of specific policy support; e.g., the pharmaceutical industry grew rapidly after the introduction of a new drug policy in 1982 that imposed restrictions on production of certain drugs by MNCs. The leather industry got a boost when, in 1990, a ban was imposed on export of wet-blue leather (undergoing an initial stage of processing). The readymade garments industry got a boost after the implementation of Multi-Fiber Arrangement (MFA) in 1991 that provided an assured export market for garments manufactured in Bangladesh.

Technological developments in enterprises set up during her early phase of industrialization in Bangladesh had, however, been rather depressing. An analysis of relevant data for the period 1974-75 through 1983-84 of about 2500 firms covered by

CMI (Census of Manufacturing Industries) revealed that approximately 61% of the 4-digit industries in Bangladesh experienced a decline in total factor productivity (Sahota, 1989). Failure to upgrade technology in the above enterprises might have been due to acquisition of wrong technologies in the first place because of poor technology assessment capability of the sponsors, and subsequently due to lack of necessary R&D efforts, both in-house, and in appropriate institutions, which are absolutely necessary for proper assimilation and adaptation of acquired technologies.

The small and cottage industries, compared to large scale manufacturing sector, employ a larger number of manufacturing labor force in Bangladesh, but their productivity, particularly in the cottage sector is extremely poor, as the technology they use is almost entirely traditional. Like agriculture, cottage industry appears to be a residual employment category.

Mechanisms of Technology Transfer in Bangladesh

Technology Transfer through Foreign Investment-MNCs and Joint Ventures

In addition to bridging the twin resource gaps (savings-investment and foreign exchange gaps), foreign direct investment plays a key role in bridging the technology gap, not only through transfer of technology at the time the project is set up, but also throughout its life span by means of a built- in mechanism that allows access to new technologies developed in the mother firm (in case of subsidiary of an MNC) and in the foreign firm (in case of joint ventures).

By international standards, inflow of foreign direct investment into Bangladesh has been rather meager. Foreign investment constituted only 1 per cent of industrial fixed assets during the pre-liberation period; in the first decade after independence, on average, it accounted for 0.78 per cent of total investment (Reza, Rashid and Alam, 1987). Table 1 presents FDI flows into Bangladesh over the recent past.

Bangladesh Bank figures, shown in the last column in Table 1, took into account reinvested earnings and intra-company loans in addition to equity capital. In FY 2004, the inflow was $390 million. It seems, FDI flows into Bangladesh, as in the past, continues to remain meager. This picture, however, fails to truly reflect FDI's contribution in the area of technology transfer to Bangladesh as, in many sectors, the MNCs played the pioneering role of setting up industries, and it was through people trained by MNCs that technology diffusion occurred. The following examples will clarify the point.

When Bangladesh Tobacco Co. Ltd. (BTC), then Pakistan Tobacco Co. Ltd., a subsidiary of British American Tobacco, set up its first cigarette manufacturing plant in Chittagong, there existed no such enterprise in Bangladesh (then East Pakistan). The local staff had no previous background in cigarette manufacturing. They were trained in other plants of the company, and the local workers were trained on the job. Subsequently, a number of local

Table 1: FDI Flows into Bangladesh, 1996/97-2002/03

(Million US$)

Year	FDI			Bangladesh Bank (2004) FDI inflow estimates
	Inflow	Outflow	Net Inflow	
1996/97	17.00	1.00	16.00	
1997/98	273.00	24.00	249.00	
1998/99	200.00	2.00	198.00	
1999/00	194.40	0.80	193.60	383
2000/01	166.10	0.10	166.00	564
2001/02	65.24	0.56	64.68	394
2002/03	94.90	3.00	91.90	379

Source: CPD (2004)

cigarette manufacturing companies cropped up, which were run by people previously trained by BTC. When after the Indo-Pakistan war in 1965, the import of *tendu* leaf, the traditional wrapping material for *bidi*, was suspended, the *bidi* industry in its bid to survive adopted cigarette paper in place of *tendu* leaf, and with customer approval, was able not only to survive but also to expand its market share. Thus, BTC not only pioneered cigarette manufacturing in Bangladesh, but also helped diffusion of the technology by the manpower it trained, and the innovation in *bidi* industry would not have been possible without the diffusion of cigarette manufacturing technology. The greatest contribution of BTC, has, however, been in the field of tobacco cultivation, particularly in introducing Virginia tobacco, a high valued cash crop, in different parts of the country, with necessary technology and financial support.

Although since 1953 Glaxo, Burroughs Welcome and other MNCs had been operating in West Pakistan, it was not until the 1960s that MNCs came to Bangladesh (then East Pakistan). Set up in 1961, Pakistan Pharmaceutical Industries (later, Bangladesh Pharmaceutical Industries, Rhone Poulenc, now Aventis), a joint venture between EPIDC and May & Baker of England, was the first MNC in Bangladesh (then East Pakistan) in the pharmaceuticals sector. During the sixties, 6 more MNCs set up their plants in Bangladesh. Although local enterprises were producing a number of drugs, it was not until the establishment of plants by MNCs that drugs requiring sterile processing were manufactured in Bangladesh. After 1971 when trade links with Pakistan were cut off, a big vacuum arose due to the disruption in supplies from plants of MNCs operating in Pakistan, that gave a boost to local production. Many new firms cropped up. Availability of necessary manpower posed no problem, as since 1965, Dhaka University had been producing pharmacy graduates, and many of them by then had acquired relevant expertise by way of working in the MNCs. Pharmaceutical industries got a further boost in 1982 when a new drug policy was introduced, that suspended several existing product lines of the MNCs.

Prior to 1962 when Bata Shoe Co. Ltd., an MNC with Canadian investment, set up a factory at Tongi in Dhaka, there existed no mechanized plant in Bangladesh producing leather footwear. This plant did not produce enough pairs of shoes to meet the local demand. Therefore, in addition to marketing shoes produced in Bata's other plants located in West Pakistan, it developed a sub-contracting arrangement with selected cottage enterprises producing leather shoes by providing them with designs/styles, inputs and necessary training, and supervision during the production process, and the products were marketed as Bata products. After the liberation war, when supplies from Pakistan were disrupted, Bata, besides conducting balancing, modernization, restructuring, and expansion (BMRE) of its existing plant, went for a bigger sub-contracting arrangement with the cottage sector. Thus Bata contributed to transfer of technology to the cottage sector.

The electronics industry started from scratch in 1962 when Bangladesh Electrical Industries Ltd., better known as Philips, an MNC with Dutch investment, set up a plant in Dhaka to produce radio sets. Its range of production expanded with the introduction of black and white TV in 1967, radio cassette recorders in 1982 and color TV in 1986-for the first time in Bangladesh. Philips sent all its engineers and technicians abroad for training who in turn trained the workers. Expatriate technical personnel also paid regular visits to the plant to upgrade knowledge and skills of the engineers and technicians working for Philips. Growth of the electronics industry in Bangladesh benefited immensely from Philips, as many of the above trained personnel, and dealers of Philips products who had become familiar with electronics technology, subsequently set up new industries in this sector.

From the above discussion, it is evident that, although the flow of FDI into Bangladesh had never been significantly large, its contribution in terms of technology transfer had definitely been disproportionately greater, emphasizing the need for higher levels of FDI flows into the country.

FDI flows into Bangladesh over the recent past (2001-03) have been mainly in the following sectors: power, mostly from Netherlands, Denmark and UK; cement, mostly from France, Emirates and Singapore; telecom, mostly from Norway, Japan, USA and Malaysia; food, mostly from UK and Switzerland; banking and finance, mostly from USA, France, Hong Kong and India; fertilizer, mostly from Japan and UK; and textiles, mostly from China and the Rep. of Korea.

Technology Transfer through Technical Collaboration

Under various technical collaboration arrangements

between a foreign and a local firm, technology often gets transferred in exchange of royalties and technical/know-how fees, paid in lump sum or as a percentage of the value of output. The above arrangement helps the MNCs, the traditional producers of technology, to meet their profit goals in addition to recovering the R&D costs, without exposing their capital to risks. Technical collaboration between a foreign and Bangladeshi firm took place mainly for introducing new products and processes. The amount of payments made by Bangladesh on account of royalties and license fees over the recent past has been presented in Table 2

Technology Transfer through Import of Machinery

Once a technology reaches the stage of maturity, its embodied form, i.e., the machinery, normally enters the market for sale, and anyone can acquire the technology by importing the machinery. Technologies were first developed in the advanced countries. Importing these technologies in the form of machineries, the developing countries began their journey towards industrialization. Through reverse engineering, some of these countries succeeded in fully assimilating the imported technologies, adapted them to suit their local factor endowments/environment, and were even able to produce a more efficient technology to enter the technology market as a seller, and sell the same to those countries wherefrom it once imported technologies. Japan is a classic example in this regard. Other success stories were the Republic of Korea, China and India, countries which through their sustained R&D efforts, and emphasis on science and technology education, were able not only to adapt imported technologies quicker, but also to generate less expensive new technologies, more appropriate to developing countries with similar factor endowments.

In 1989/90, Payments for import of machineries into Bangladesh amounted to Tk. 9,351 million. Japan was the single largest import source, closely followed by Singapore and China. By 2003/04, import payments for machineries increased to Tk. 75,657 million. China emerged as the single largest import source, followed way behind by India, Singapore, Japan, Germany, Italy, the Republic of Korea, USA and UK. Thirty years ago, the picture was very different. In 1973/74, Germany (FDR) was the single largest import source of machineries for Bangladesh, followed by Japan and UK.

The above change in the direction of import of technology in embodied form was very much in line with the previous discussion The latecomers soon caught up, and within this group, countries with cheaper labor marched forward because of their price advantage. For high quality precision instruments and specialized machinery, however, the western world and Japan continued to remain as the major sources of technology for Bangladesh.

Technology Transfer through Import of Humanware

Technology transfer takes place through use of expatriate consultants, technicians and skilled artisans,. In Bangladesh, the services of foreign nationals may be utilized, with work permits issued by the Board of Investment. They enjoy income tax exemption for 3 years, and are allowed to remit 50% of their salaries. As data on foreign nationals are poorly maintained, it is difficult to know their exact number and the sectors in which they are engaged. Besides, a large number of foreign nationals are believed to be working informally, without valid work permits, in various sectors of the economy. One may however form some idea on the

Table 2: Payments by Bangladesh on account of Royalties and License Fees, 1997/98-2003/04

(Million Taka)

Years	Royalties and License Fees
1997/98	290
1998/99	330
1999/00	181
2000/01	321
2001/02	212
2002/03	182
2003/04	253

Source**:** Bangladesh Bank: **Balance of Payments, 2003-04**

Table 3: Payments for Import of Machineries into Bangladesh, 1989/90 and 2003/04

(Million Taka)

	1989/90			2003/04		
Countries	Machineries other than electric	Electric machineries	Total	Machineries other than electric	Electric Machineries	Total
China	1373	181	1554	12077	3580	15657
Germany	386	93	479	4640	849	5489
India	408	69	477	6097	2061	8158
Japan	911	848	1759	4911	902	5813
Singapore	466	1162	1628	5490	2105	7595
U.K.	501	107	608	1219	1068	2287
U.S.A.	302	185	487	1519	1516	3035
Italy	291	81	372	3479	651	4130
Rep of. Korea	139	185	324	3024	859	3883
Hong Kong	189	104	293	644	400	1044
Total	5882	3469	9351	55988	19669	75657

Source: Bangladesh Bank**: Import Payments, 1989-90 & 2003-04**

Table 4: Remittances from Bangladesh by Foreign Workers

Year	Remittances in Million Taka
1998-99	76
1999-00	116
2000-01	126
2001-02	96
2002-03	238
2003-04	229

Source: Bangladesh Bank: **Balance of Payments**, Various Issues

use of foreign workers in Bangladesh from Table 4 presenting the quantum of remittances made by them.

Foreign nationals working in Bangladesh came mainly from countries such as China, India, Japan and the Republic of Korea, wherefrom most of the machineries were imported. Some foreign nationals, mainly from Sri Lanka, Pakistan and India, were, however, engaged primarily for their specialized skills.

Ready Made Garments sector accounted for the lion's share of foreign workers in Bangladesh. Other important sectors employing foreign workers were marine fishing and fish processing, dominated almost entirely by the Japanese; steel, dominated by the Indians; and textiles, engaging mostly Indians, Pakistanis and South Koreans. In ceramics, the Japanese absolutely dominated. Leather goods sector engaged a number of Italians and Indians. The Indians were observed to be working virtually in all sectors of the economy ranging from carpets to chemicals to agricultural machinery. The Europeans worked mostly in their joint-venture projects.

Technology Transfer through Institutions

Technology transfers, through foreign direct investment, technical collaboration and use of foreign nationals, benefit primarily those enterprises that belong to the large-scale manufacturing sector. Even through machinery imports, they benefit more because of their better access to development financial institutions (DFI) and consultancy houses, which command most of the country's limited technology assessment capabilities. The vast majority of enterprises belonging to the small-scale manufacturing sector, and virtually the entire cottage

industries sector hardly benefit from the above technology transfer mechanisms. For the above enterprises, to promote better access to superior technology from the global technology shelf, to provide necessary technology assessment services that would facilitate choice of appropriate technology so as to make technology transfer to such enterprises effective and meaningful, there is a need for specialized institutions. Bangladesh Small and Cottage Industries Corporation (BSCIC), Intermediate Technology Development Group (ITDG), Micro Industries Development Assistance & Services (MIDAS) and a few NGOs have been playing the above role in Bangladesh. Besides, under Transfer of Knowledge through Expatriate Nationals (TOKTEN), a program administered by UNDP, and through JOCV (Japan Overseas Cooperation Volunteers (JOCV), attempts were made to promote technology transfer in Bangladesh.

BSCIC, a specialized agency to promote small and cottage industries in Bangladesh has been in operation in Bangladesh since 1957. Its Technology Section, upgraded to a Division in 1990, having links with institutions like Technonet Asia, Asian Productivity Organization, ITDG etc., has been disseminating technological information to potential entrepreneurs through its publication called Technology Bulletin, besides providing assistance to them in technology assessment. In addition, through a number of technical assistance projects such as ILO-BSCIC project, BSCIC mobilized the services of expatiate consultants and Master Craftsmen to promote technology transfer in various sectors. BSCIC also promoted technology transfer by another mechanism: A number of BSCIC officials were sent abroad to attend international trade fairs that offered them exposure to new technological developments world wide and for training to acquire new skill/expertise which were later disseminated back home. Beekeeping and Batik printing technologies were thus acquired by BSCIC officials from India and Malaysia respectively, and later disseminated in Bangladesh.

MIDAS' goal being, to promote innovative projects, the projects it financed were mostly pioneering ventures in their respective fields. MIDAS thus played a crucial role promoting technology transfer to small industries in Bangladesh. ITDG, another specialized agency promoting technology transfer to the small scale producers, has been in operation in Bangladesh since the early 1980s, initially through other national NGOs. Since 1997, it has, however, been directly implementing programs in five districts of Greater Faridpur, but it continues to work through other NGOs in the rest of the country. Programs have been implemented in five major technology areas: food production, agro-processing, manufacturing, small enterprise development, and disaster management. Besides, ITDG disseminates relevant technological information to potential users through illustrated technical leaflets, booklets, posters, videos and technical articles in its quarterly newsletter *Folok.* Food Chain, ITDG's international journal on small-scale food processing, and its technical enquiry service are other sources of technological information for small producers of Bangladesh.

A review of transfer of technology related activities of the above institutions in the past indicate that although they played an important role, the coverage being rather small, their impact can at best be called marginal.

The research institutions of Bangladesh having linkages with international research institutions in their respective fields contributed to technology transfer in the agricultural sector. The role of Bangladesh Rice Research Institute (BRRI) in effecting transfer of HYV technology developed by IRRI has been commendable. The same may be stated about Bangladesh Agricultural Research Institute's (BARI) role in promoting transfer of technology to the production of wheat and potato. Vegetable production, poultry and pisciculture are a few other agricultural sectors benefiting from technology transfer, but mainly through private sector initiatives.

Technology Transfer to a Selected Sector and a Selected Enterprise: Two Case Studies

Technology Transfer to Readymade Garments Industries in Bangladesh

Readymade garments existed in Bangladesh even before the country's liberation, but only as a small sector, exclusively for domestic use. As an export sector it flourished only over the last quarter of a century. RMG exports from Bangladesh increased from US$ .64 million in 1979 to US$ 5686.1 million in 2003-04, exports of woven garments accounting for US$ 3538.1 million, and exports of knitwear for US$ 2148.0 million (Bangladesh Bank, 2004). What follows is a brief account of how technology transfer took place in this sector in Bangladesh.

In 1978, Mr. Nurul Quader Khan, a former civil servant of Bangladesh, set up Desh Garments, the country's first large scale RMG factory in Chittagong, with technical collaboration from Dawee Corporation of the Republic of Korea under an agreement that provided for payment of a technical know-how fee at 2.5% and a technical assistance fee of 1% for 2 years and 1year respectively. A batch of workers were recruited, sent to the Rep. of Korea for training, and on their return, production at Desh Garments began. In order to promote sales of Zuki Machines, of which he was the local agent, Mr. Zakaria of Zakaria Enterprise encouraged others to set up RMG factories in Bangladesh. With workers trained by Desh Garments, many of whom did not fulfill their contractual obligations with the company, a number of smaller garment-producing units cropped up. As countries that faced quota restrictions, putting a brake on expansion of this sector on their own soil, were looking for new locations to set up garments industries, many foreign firms with 100% equity participation and joint ventures were established in Bangladesh. Meeting manpower needs for this fast growing sector posed no significant problem, as besides Bangladeshis acquiring necessary skills through foreign training, another mechanism for skill-transfer was adopted. During the early eighties, the usual practice was a foreign buyer, who had lined up purchase agreements with several garments industries in Bangladesh, brought with him teams of Hong Kong-Chinese skilled male and female workers, who, by rotation, imparted training to the local workers in different enterprises. The training covered stitching, packing etc. Such practices ceased soon indicating successful skill transfer in the above areas. Foreign nationals still work in the garments sector of Bangladesh, but they are primarily responsible, as buyers' representatives, to ensure quality production and strict adherence to specification of foreign orders. Sometimes, specialized services of foreign nationals are requisitioned for opening a new production line when an enterprise wishes to widen its production range.

Starting with only a few items like shirts and shorts, the RMG sector in Bangladesh now produces almost all categories of garments. Transfer of manufacturing technology has been more or less complete. Marketing technology to the extent of organizing shipment on time has also been widely diffused. In case of procuring orders from abroad, however, although a number of large enterprises have been fairly successful, (some even maintain liaison offices abroad), the smaller ones have to depend primarily on foreign buyers for orders, and quite often, they have no alternative but to work as sub-contractors to the large enterprises, and therefore have to remain satisfied with stitching charges only, the lion's share of benefits accruing to the marketing intermediaries.

Transfer of Technology at Enterprise Level: Fortune Zipper Ltd.-A Case Study

The spectacular growth of the RMG sector in Bangladesh created opportunities for local production of zippers, widely used in trousers and jackets. Mr. Kezriwal, a businessman of Indian origin, used to import rolls of nylon/polyester zippers, cut them into pieces, and sell the same to garments manufacturers. One yard of zipper imported at a cost of Tk. 6 was readily sold at Tk. 15. Encouraged by this high profit margin, Mr. Kezriwal decided to set up a zipper factory in the early nineties. That is how Bangladesh Zipper, the first zipper factory in Bangladesh came into being. Around the same time, Mr. Tazul Islam, a former Customs Official, set up another zipper factory, the biggest in the sector, called Fabian Zipper. Next in line was a Korean firm called Pacific Zipper producing zipper with the brand name 'HHH'. The first of the above factories was located in Dhaka, the remaining two in Chittagong. A few more zipper factories were subsequently set up in Bangladesh, crowned by YKK Zipper of Japan, producing the world's most renowned brand, in Dhaka EPZ, in 2003. Despite the increases in production capacity, there still exist considerable excess demand for zippers in Bangladesh, met by imports, particularly from Hong Kong. It should be mentioned, however, that the top garments factories of Bangladesh, around 25% of all plants, owned by about 20 Groups, who maintain liaison offices abroad and directly collect orders and supply high valued products to the US market, do not use Bangladeshi zippers at all.

Fortune Zipper Ltd., the enterprise we studied to gain knowledge about technology transfer at the enterprise level, was established at Savar, Dhaka in 1995. Starting with production of nylon /polyester zipper, it added vislon /plastic zipper and metal zipper to its production line in 1999, and 2003 respectively. Fortune Zipper Ltd. had, by 2004, attained a daily production capacity of 45,000 pieces in each of the above categories, and is capable of producing all types of zippers: close-end, open-end and two-way zippers of different sizes. It is a composite plant producing all the necessary components of zipper, i.e., slider, zip fastener, and fabric tape of all the three types of zipper mentioned above.

The plant and machineries were imported from Taiwan and the Republic of Korea. Initially, fully automatic-computer controlled machineries were used for the purpose of production. As even for minor repairs, technicians had to be brought from abroad at great cost, and there were occasional disruptions in production; subsequently, semi-automatic imported machineries with some locally fabricated parts were used in the production process. Finally, for dyeing and slider assembly of nylon zippers, locally manufactured copies of the above semi-automatic imported machineries were used. There were thus some adaptations of technology taking place. Fully automatic computer controlled machineries now account for 60%, with the remaining two categories accounting for 25% and 15% of all machineries of the enterprise.

With a fixed capital of Tk. 20 million, and working capital of Tk. 2 million, Fortune Zippers Ltd. began its journey in 1995. By 2004, the value of its fixed capital increased to Tk. 70-80 million, primarily through re-investment of retained earnings and working capital to Tk.30 million. In 1999, it employed 85 persons, and earned US$ 70,500 through exports. By 2003-04, its annual exports rose to US$ 712,000 and the employment figure to 350 where 5% were highly skilled, 10% skilled, 30%, semi-skilled and the remaining 55% unskilled. Among the workers, 60% were females. Progress made by the enterprise since its inception in 1995 looks quite impressive, made possible by reasonably successful technology transfer.

Transfer of Technology, Growth and Development in Bangladesh

To what extent did the technology transfers in various sectors of the economy, discussed above ,contribute to the growth and development in Bangladesh?

Regarding promotion of growth, the answer is loud and clear, " To a great extent." Regarding the second aspect, i.e., development, the answer is " Not much".

That the economy registered a rate of growth of around 5% per annum since the early nineties would not have been possible without significant improvement in productivity. That the economy did not spend much on R&D is also well known. Obviously, the key to the above increases in productivity has been technology transfer that not only contributed to upgradation of some of the existing technologies but also introduced new products and processes in the economy. Unfortunately, however, the above processes generally bypassed the poor and the activities they were engaged in. As a result, the registered growth could hardly contribute to development, i.e., improvement in the quality of life of a majority of the people, especially the underprivileged.

GDP per capita in Bangladesh was Rupees 316 in 1969/70 at 1959/60 prices (Khan, 1972). Even at a highly over valued official exchange rate prevailing at that time, it works out to around US$ 70. Compared to that, GDP per capita in Bangladesh stood at US$ 421 in 2003/04 (GOB, 2004). GDP per capita in Bangladesh, thus, since her independence, increased by 500% in nominal terms, and by at least 250% in real terms, thanks partly to transfer of technology. The benefits of the above growth, however, have been very inequitably distributed, particularly during the recent past. The Household Income and Expenditure Survey 2000 (HIES) reveals that between 1995/96 and 2000, national income attributable to the poorest 10% of the population declined from 2.24% to 1.84% whereas the income share of the richest 10% increased from 34.68% to 40.72% (BBS, 2003). Clearly, poverty continues to remain pervasive: Based on direct calorie intake figures, head-count poverty in Bangladesh was estimated at 40.9% in 2004 (ADB, 2004).

The benefits of productivity gains attained through technology transfer are usually transmitted to the working poor through increases in their real wages. With 1960/70 serving as the base year, in 2002/03, the indices of real wages in manufacturing, construction, and agriculture sectors stood at 169, 127 and 118 respectively. The poorest in Bangladesh work as wage labor primarily in agriculture and construction. They are also engaged in various informal sector activities in both rural and urban areas. Those engaged in the cottage industries also earn pitiable incomes, and the entire family needs to work to barely survive. As discussed earlier, technology transfer almost totally bypassed the small and cottage sector in Bangladesh, and the productivity gains attained through technology transfer in the agriculture sector benefited only those who owned/had access to land. The peasants benefited from higher levels of employment, but not enough employment opportunities were created for the landless wage labor except during peak seasons, to significantly push up the real wage rate. The poor, thus, hardly benefited from the technology transfer

that had taken place in Bangladesh. In other words, the contribution of technology transfer to the promotion of development in Bangladesh has been minimal. It is worth mentioning that the minimum wage for workers in the RMG sector has never been revised since it was set more than a decade ago despite significant increases in productivity attained through technology transfer. RMG being an export sector and earning foreign exchange, if we take into account the depreciation of the Taka, minimum wages paid to workers belonging to this sector have, in fact, been significantly eroded over time.

Concluding Observations

It is evident when comparing the range of goods and services produced in the country before, and now, that significant technology transfer has taken place in Bangladesh over the last five decades. The pace of technology transfer has, however, gained momentum over the recent past, thanks to spectacular developments in the field of communication and the advent of globalization. In Bangladesh, although, technology transfers took place through all possible mechanisms, import of machinery played the dominant role. Due to poor technology assessment capability of the entrepreneurs who had no knowledge about technology and had little access to relevant technological information and professional help/ institutional support in assessing technology, most of the technologies transferred to Bangladesh turned out to be rather inappropriate. An underdeveloped education system with inadequate emphasis on science and technical education, and lack of an institutional mechanism favoring technically trained people at the time of recruitment, contributed to poor skill composition of the industrial labor force that constrained assimilation of imported technology. An underdeveloped and poorly funded national research infrastructure and absence of any in-house research facilities seriously constrained adaptation of imported technology to suit local factor endowment and environment. As a result, technology transfer in Bangladesh never attained a dynamic character. As technology in Bangladesh stagnated while other developing countries like the Republic of Korea, China, Thailand and India progressed on the technological front, Bangladesh emerged as a market for technologies developed in these countries. Moreover, as the small and cottage sector, that employed most of the poor, benefited little from technology transfer, its contribution to promoting development was marginal indeed. For effective technology transfer, therefore, there is a need for developing necessary technology assessment capability, in both private and public sectors, accessible to entrepreneurs. Institutional arrangements also need be developed for generating and disseminating adequate information on technologies currently available and those in the pipeline, the world over, to foster proper technology assessment. Since human resources develop, adopt, assimilate and adapt technologies to suit local needs, the need for human resource development can hardly be overemphasized. Entrepreneurs play a key role in technology transfer. In order to provide them with greater exposure to new products/ technologies/methods, international trade fairs need to be held more frequently. To promote technology transfer through import of humanware, restrictions on use of expatriate experts/skilled persons in areas/sectors lacking in such expertise and skills, need to be relaxed. As FDI leads to crowding-in of private investment in the concerned sectors, contributing to wider diffusion of the technology transferred, it should be invited with open arms by creating a congenial environment in the country. Finally, there is a need for formulating a comprehensive technology development policy for the country spelling out within it a well-defined role for technology transfer such that it strengthens the technological base of the country rather than perpetuating technological dependence. For the poor to benefit more from transfer of technology i.e., for enhancing its role in promoting development, concerted efforts are needed to upgrade the technology used by the poor through transfer of appropriate technology to the small and cottage sector. The landless agricultural labor being the poorest of the poor, it is also extremely important to improve their access to land by appropriate land and tenancy reforms so as to enable them to benefit from technology transfer to the agricultural sector.

References

ADB (2004). *Quarterly Economic Update Bangladesh*, Asian Development Bank, Bangladesh Resident Mission, December, 2004.

Bangladesh Bank (2004): *Annual Report*, 2003-04.

Bangladesh Bank (2003-04). *Balance of Payments*, Bangladesh Bank (2004a). *Import Payments*, 2003-2004.

BBS (2003): Bangladesh Bureau of Statistics: *Report of the Household Income and Expenditure Survey*,

2000, Government of Bangladesh.

CPD (2004). Center for Policy Dialogue: Revisiting Foreign Aid: A Review of Bangladesh's Development, 2003, The University Press Limited.

ESCAP ((1989): *An Overview of the Framework for Technology Based Development*, Technology Atlas Project, Vol. I.

GOB (2004): *Bangladesh Economic Review*, 2004, Ministry of Finance, Government of Bangladesh.

Khan Azizur Rahman (1972). *The Economy of Bangladesh*, Macmillan Press Ltd., London.

Masum, Muhammad (1992). "Transfer of Technology to Small and Cottage Industries: The Bangladesh Experience" in Rizwanul Islam (ed): *Transfer, Adoption and Diffusion of Technology for Small and Cottage Industries*, ARTEP, ILO, Geneva.

Ministry of Agriculture, GOB (2004). *Actionable Policy Briefs and Resource Implications* (Draft), Agriculture Sector Review, Ministry of Agriculture, Government of Bangladesh.

Reza, Sadrel A., Ali Rashid and A.H.M. Mahbubul Alam (1987). *Private Foreign Investment in Bangladesh*, The University Press Limited.

Sahota, G.S. (1989). *Technology-based Development Planning*, HIID Project, Planning Commission, Government of Bangladesh.

Dr. Muhammad Masum
Professor of Economics
Jahangirnagar University
Savar, Dhaka Bangladesh
sicilyma@dhaka.net

CONTRACT FARMING AND SMALL FARMERS: A CASE STUDY OF THE BANGLADESH POULTRY SECTOR

Ismat Ara Begum
and
Mohammad Jahangir Alam

ABSTRACT

This paper attempts to assess the benefit that small farmers derive from contract poultry farming in Bangladesh. The poultry sector in Bangladesh, like in other developing countries, depends on the small farmers. To date, scavenging poultry farming system dominates total production and only 14% of poultry meat comes from commercial farming. Vertically integrated contract farming systems that generate income and create employment opportunities could be one possible way to expand commercial poultry farms. While contract farming promises significant benefits for farmers, recent studies also indicate the possibility of excluding small farmers from this system. As this system only recently started in Bangladesh, there are concerns that small farmers may not get much of the benefit from this contractual agreement. The primary data were collected from 50 farmers of ABFL (Aftab Bahumukhi (multipurpose) Farm Ltd), the pioneer of the vertically integrated system in Kishorganj of Bangladesh. The study suggests that the poultry farming system is profitable for all farmers who could benefit significantly in terms of income, employment and access to capital.

Introduction

Bangladesh has very little scope for increasing agricultural production by expanding the supply of land. It is important, therefore, to emphasize other sectors in agriculture like the poultry sector. Moreover, the per capita consumption of animal protein in Bangladesh is only 14.5 grams (BBS, 2002) per day, whereas the standard requirement recommended by the UN (Ahmed and Islam 1985) is 36 grams. In this regard, the poultry sub-sector could be an important avenue for reducing malnutrition, unemployment, and poverty in Bangladesh. Poultry farming also has considerable potential for providing income, especially for those who have limited land, as it does not require much space, has a short life cycle and needs little capital investment.

Although commercial poultry farming began in 1980, only 14% of poultry meat comes from this system. The rest comes from the scavenging system, which causes a meat deficiency of 89.5% (Alam, 1995). This has happened because, as in other developing countries, the input markets of commercial poultry are often poorly serviced in Bangladesh. Farmers often lack access to credit and information on market opportunities or new technologies. When markets are accessible, farmers face price fluctuations or inequitable prices. Such difficulties represent barriers to development of the commercial poultry sector.

Contract farming in developing countries has experienced mixed outcomes, yielding some successes and some failures. In many developed countries, agricultural production is changing from an industry dominated by family-based, small-scale farms to one of large firms that are more tightly aligned across the production and distribution value chain (Boehlje, 2000). Contract farming has, over the years, been considered as one system that has considerable potential for providing a way to integrate small-scale farmers into the modern economy. Small farmers are those who have very small holdings or no land at all and have low access to resources and services such as credit, inputs and marketing channels, etc. It has been argued that, via contracts, agro-industrial firms can provide the credit, inputs, and information and subsequently market the product (Morrissy, 1974; Glover, 1984; Goldsmith, 1985; Williams and Karen, 1985). In addition contract farming can also reduce public expenditures for credit programs, as well as government research and extension programs (Driven, 1996; Schejtman, 1996).

In some developing countries, contract farming system involves small farmers for several reasons. One of the main reasons is that the integrated firm faces difficulties finding enough small farmers to produce the amount they need. Another reason is that they fear that large farmers might collectively bargain to bid up prices paid to them for their product. Moreover, large farmers sometimes try to break the contract. As scale economies are associated with specialized technology adoption, a vertically integrated firm tries to involve few large farmers into

their production and distribution system. Contract farming has also been one of the most successful income generating projects for small farmers in developing countries. Some studies indicate that there has been widespread use of contracts involving small farmers in Latin American countries. In Guatemala, smallholders are contracted to produce broccoli and snow peas for export to the United States. In Ecuador, the multinational company, Frito Lay, contracts small farmers to produce a particular variety of potato for processing into chips for the domestic market. There are other case studies involving frozen vegetables in Mexico (Runsten and Key, 1996; Key and Runsten, 1999), processing tomatoes in Mexico (Runsten and Key, 1996), confectionery peanuts in Senegal (Warning and Key, 2002), and various agricultural commodities in Indonesia (Patrick, 2004) that follow the examples of contract farming programs and that have successfully incorporated small farmers in their operations.

Evidence from other countries, however, suggests that the vast majority of contract farming schemes exclude small farmers (Singh, 2000). Generally, capital intensive large firms try to exclude small farmers from the contracting system due to high transaction cost and poor economies of scale. The total number of poultry farms has decreased in developed countries like Japan, USA and Canada after the introduction of vertically integrated contract faming systems. In the mid-1990s for example, eighty percent of the poultry production in Thailand came from only ten large companies.

Recently, a new FAO guide argues that well-managed contract farming has proven to be effective in linking the small sector to sources of extensive advice, mechanization, inputs and credit, and to guaranteed and profitable markets for the products. “It is an approach that can contribute to both increased income for farmers and higher profitability for sponsors. When efficiently organized and managed, contract farming reduces risk and uncertainty for both parties, and the approach would appear to have considerable potential in countries where small scale agriculture continues to be widespread. In many cases small farmers can no longer be competitive without access to the services provided by contract farming companies” (FAO 2001).

Contract farming has recently been introduced in Bangladesh in 1994 by a big company, named ABFL (Aftab Bahumukhi Farm Ltd). Although there are a limited number of studies (Karim and Mainuddin, 1983; Ahmed, 1985; Haque, 1985; Islam and Shahidullah, 1989; Yasmin *et. al*. 1989; Ukil and Paul, 1992; Bhuiyan, 1999; Uddin, 1999) on production and economic aspects of commercial poultry farms, research on contract farming is not plentiful. So far only a few studies (Chowdhury, 2001; Karim, 2000) have performed benefit-cost analysis of the contract farming system, but little attention has been given to whether contract farming will even reach the small farmers in Bangladesh. The objective of this paper is to determine whether small farmers in Bangladesh are included in the contracting system. In fact, it is very common for small farmers to be left out of the main stream development process. Hence, it is also important to find out whether the benefits from contract farming will reach the small farmers. Another objective of the paper is to evaluate the profitability of contract poultry farms.

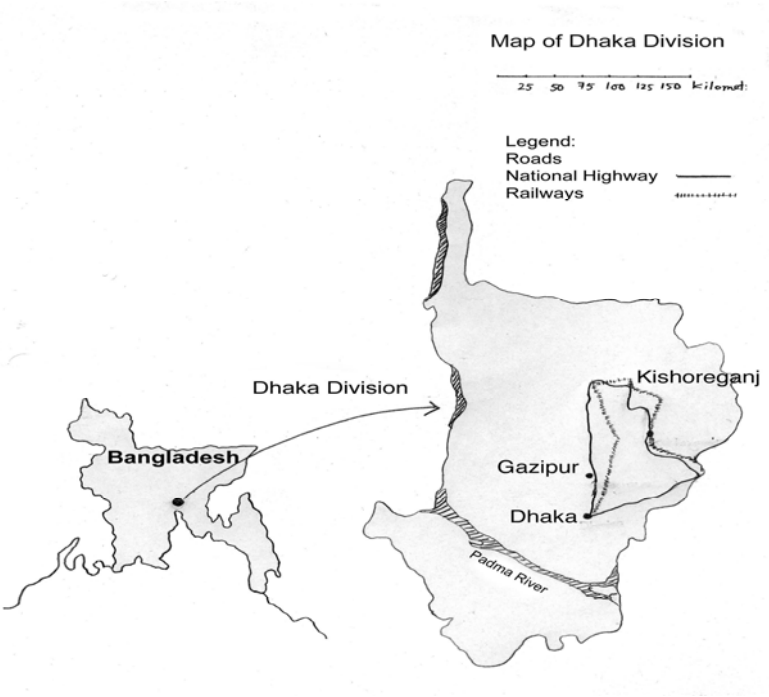
Methodology

Bajitpur and Kuliarchar thana under Kishorganj district were purposively selected for the study. One significant advantage of selecting this area was that the pioneer vertically integrated contract farm ABFL is located in the area. First, the entire population containing a list of 560 contract farmers was prepared with help from the officials of ABFL to obtain a representative sample. Next, a sample size of 50 broiler farms under contract farming system was selected randomly. Figure 1 indicates the map and the study area. The investigation period of this study covered one year of operation of farms beginning from December 2001 to November 2002. Data were collected from December 2002 to January 2003.

Nature of Poultry Vertically Integrated Contract Farming System in Bangladesh

ABFL is one of the leading poultry farms in Bangladesh under the Islam Group Ltd., Dhaka, Bangladesh. It was established at Bhagalpur village in the district of Kishoregonj about 110 km northeast of Dhaka city. The ABFL farm started as an agro-based farm and it tends to include small farmers in its activities unlike integrated farms in developed countries that begin as big trading companies, interested in large-scale farms and farmers. Its activities are associated with poultry, dairy and agro services. ABFL first introduced the contract system of commercial broiler production as an experimental extension program for a selected group of 20 farmers in 1991 who had to enter into an agreement (contract)

Figure 1. Map of the Study Area



with ABFL on production and marketing of broiler products. Although ABFL started the contract system on an experimental basis, by 1994 it commenced full-scale operations. The main objective of the firm is to generate income for farmers; hence ABFL includes all categories of farms (small, medium and large) according to land size in their contractual agreements. These agreements are very simple. The responsibilities of contract farmers and ABFL are shown in figure 2.

Figure 2. General breakdown of grower's responsibility of independent and contract farm

Particulars	Contract farmer	
	Contractor	Farmer
Land, buildings and equipment		X
Manure handling, storage and disposal capacity		X
Day old chick	X	
Feed ingredients, processing and delivery	X	
Fuel, electricity and telephone		X
Facility Repairs		X
Veterinary services and medicine	X	
Transportation cost of all input and output		X
Labor: Production and maintenance		X
Labor: Supervisory and specialists	X	

Source: Field survey (2003)

According to the agreement, ABFL provides the day-old-chicks, feed and veterinary supplies on credit, and markets the output. ABFL also provides day-to-day technical assistance about chick rearing, feed rationing and disease control through their supervisory service. The contract farmer typically provides the space and facilities (land and housing), equipment, labor (family and/or hired), and daily farm management. Any farmer in the company-located area is eligible to enter in ABFL contract system if they provide housing, equipment and labor. Also, decisions on the number of birds per batch to be reared and related managerial decisions are made by the farmers. The average duration of the grow-out cycle is roughly 5 to 7 weeks for an average sized (1.5kg) bird. ABFL buys the mature broiler from the contract farmers by paying a predetermined price per kilogram (Kg) of live broiler and then markets these broilers through ABFL sales centers in Dhaka. All the credit liability of the contract farmer is adjusted against the price of their products. Since contract farmers are compelled to buy ABFL's day-old-chick and feed, ABFL assures a part of its product-market by the contract farming system.

Contract Farming System and Small Farmers

Small farmers hold a strategic position in the economy of Bangladesh. They have limited working capital but they can provide abundant disguised family labor in the farming system. Moreover, according to the poultry development policy of Bangladesh, the establishment of large-scale poultry farms has been restricted to protect small farmers. Considering this factor and the well-being of the small farmers, ABFL modified the conventional contract farming system broiler production.

In order to identify and remove the constraints on small farmers, this entity must be defined. The main criterion usually used to classify small farmers is farm size. But this definition varies from one country to another because of wide variations in both agro-ecological and socio-economic conditions. For example, in Bangladesh the farm size of a small farmer is less than 1 hectare, while in India the farm size of small farmers is less than 2 hectares.

In Bangladesh, generally farm households are distributed into three categories: small, medium and large. A small household has an operating area between 0.05 and 2.49 acres, a medium household between 2.50 and 4.99 acres, and a large farm household with 5 acres or more. Table 1 represents the different categories of farm sizes in Bangladesh. It also indicates farm size distribution in Bangladesh on the basis of the Agricultural Census of 1996. Clearly Bangladesh agriculture is overwhelmingly characterized by the operation of small farms.

Table 1. Size distribution of farm households in Bangladesh

Item	Small farm (less than 2.5 acre)	Medium farm (2.5 to 5.0 acre)	Large farm (above 5.0 acre)	Total
Percentage of total farm holdings	86.7	8.8	4.5	100.0
Percentage of area of farm holdings	42.7	26.1	31.2	100.0
Average size of farm holdings(acres)	0.6	3.4	8.0	1.2

Source: The Bangladesh Census of Agriculture (1996)
http://www.fao.org/es/ess/census/wcares/bangla_2000.pdf.

Table 2. Size distribution of farm households of ABFL's contract farmer

Land holdings	Contract farm (Number of farm)	% of total contract farm
Small farm (less than 2.5 acre)	521	93.0
Medium farm (2.5 to 5.0 acre)	24	4.3
Large farm (above 5 acre)	15	2.7
Total	560	100.0

Source: Field survey (2005)
Note: Population size of contract farms was 560

Table 3. Size distribution of farm households of sample contract farmers

Land holdings	Contract farm (Number of farm)	% of total contract farm
Small farm (less than 2.5 acre)	38	76.0
Medium farm (2.5 to 5.0 acre)	7	14.0
Large farm (above 5 acre)	5	10.0

Source: Field survey (2003)
Note: Sample size of independent and contract farms were 25 and 50 respectively

In the present study, farm size has been defined as cultivated area owned, plus homestead area, plus acres rented in, minus acres rented out during the year of investigation. By 2002, ABFL established contract farming involving 560 broiler farmers. Table 2 represents the farm sizes of the population being studied. Farms were classified into three size groups, as defined earlier. It was found that ABFL's contract farming system focused on economic development of the small farmer. Most of the farms (93 per cent) were under small farm category, while another 4.29 per cent were medium farms. The remainder 2.68 per cent fell under the large farm category. The contract farm size population is, thus, overwhelmingly represented by small farms. Table 3 represents the farm size of the sample farmers. Sample farms were classified into the same three size groups, i.e. small, medium and large farms. A considerably large number of farms (76 per cent) were under small farm category, 16 per cent were medium farms, and the remaining 8 per cent fell under the large farm category.

However, in Bangladesh, a large scale farm means one having a total population of more than 50,000 to100,000 birds with 5,000 to 10,000 birds in each flock or batch. From this perspective, and the population of all 560 farmers, it was observed that only three farmers had capacity to rear more than 5000 birds per flock or batch. By this definition, all of ABFL's farmers were in the small poultry farm category.

Why Small Farmers Enter into Contract Farming

As a developing country, where the majority of people survive below the poverty level, the decision of a farmer to enter into contract farming is generally motivated by some preconceived benefits of contracting. Risk and uncertainty are quite common facts of the poultry business. Sometimes broiler prices fall so much (even lower than the production cost) in the wholesale market that many small and medium farms have no other alternative but to halt operations temporarily. The different constraints they face include lack of capital, inadequate knowledge of poultry rearing, uncontrolled outbreak of diseases, inadequate availability of inputs, inadequate institutional credit, guaranteed and profitable markets for output, etc.

Table 4 reflects the main motivating factors for entering into the contract farming system. The primary reason is lack of capital. Risk reduction is next, followed by the need for more income and lack of marketing facilities. A small proportion of respondents also mentioned the lack of technical

Table 4. Causes behind entry of farmers into contract farming system

Reasons	Number of respondents	% of total respondents
Lack of capital	25	50.0
Risk reduction	13	26.0
Additional income	5	10.0
Lack of marketing facility	5	10.0
Lack of technical knowledge	2	4.0

Source: Field survey (2003)
Note: Sample size was 50 and results mentioned only the main motivating factor from 50 sample farmers

know-how as an important motivating factor. The main motivating factors are discussed below.

Credit

Lack of capital is the most frequently cited reason for entering contract system. Farmers require initial capital to establish a poultry farm and they also need cash to meet day-to-day expenses. Most farmers mentioned having a lack of access to capital. It is difficult for a small farmer to manage such a large investment from their accumulated savings. As a result, although the broiler business is profitable, most of the farmers claim that due to high input prices and capital constraints, there are variations in the total number of birds per batch farmers can rear. The Government of Bangladesh also recognizes the credit needs of these farmers. After 1990, the supply of institutional credit increased significantly due to improved poultry development policy. Although bank loans are available for broiler farming from different sources, and farmers are willing to get bank loans, credit has remained concentrated in the hands of few wealthy farmers due to the weakness of the credit institutions. Complicated loan-sanctioning procedures have led to untimely disbursement which, together with the spread of corruption among bank officials, has promoted lax credit discipline and poor recovery.

In the case of contract farming, the contractor provides feed, day old chicks, veterinary care, technical assistance and marketing services which represents over 90 % of the total cost of production. That means farmers only pay 10% of the annual average costs. Thus, farmers can get financial support without paying interest to run the business smoothly. Moreover, the credit provider is assured that the credit will be spent on production because the loans are usually distributed in kind and the supervisor often monitors the use of the inputs.

Insurance

Risk reduction is the next cited reason for entering contractual agreements as it can reduce the farmer's price and production risk. Broiler contracts have lower price risk for farmers because contract prices do not depend on market price fluctuation. The contract farming system offers a minimum price guarantee to the farmers who do not have to bear the price risk. Moreover, in the contractual agreement the integrator offers an internal insurance scheme to cover the risk of loss in the case of immature death of chicks by disease and other valid reasons. For commercial farmers there is no poultry insurance system in Bangladesh. Contract arrangements thus reduce risk by offering a pre-determined price and an insurance scheme, resulting in a more stable price over time. Farmers enjoy a steady cash flow from contract fees and obtain inputs on credit, giving them a safety net to conduct business.

Marketing facility

Lack of proper marketing facilities is another reason for entering the contract system. Markets for inputs for production of poultry, such as day-old chicks, feed, vaccine and medicine may not be readily accessible in the market and small farmers may have difficulty securing these inputs. Through contracting, firms can provide smallholders with access to necessary inputs. Moreover, undeveloped output markets may make it difficult for small farmers to supply the appropriate quantity and timely delivery of mature poultry. Through contracting, reliable delivery can be better ensured.

Technical knowledge

Broiler farmers should have technical knowledge to run a poultry farm but most of them lack this training. Facilities to train poultry farmers on various aspects of poultry farming are inadequate in the country. They are, in many cases, not in touch with modern technology to augment production. Inadequate knowledge about poultry diets is a major problem as most of the independent broiler farm owners reported that they do not have sufficient knowledge about this aspect. Some farmers enter contract farming to get the technical know-how. By entering the contract, farm productivity increases to the extent that management decisions are transferred to the contractor, while producers can benefit from the contractor's technical advice and market knowledge, which is not otherwise available.

Benefits and Risks of Contracting to Small Farmers

Income generation

Positive evaluations of contract farming generally indicate that small farmers benefit from contracts in terms of enhanced profits and other benefits such as improved access to markets, credit and technology, better management of risk, improved family

employment and, indirectly, development of a successful commercial farming experience. Here, an attempt is made to determine the per farm profits gained from the contract system. Cost items consist of feed, hired labor, vaccines and medicines, transportation, litter, equipment and machinery, housing, land use costs, interest on operating capital and miscellaneous. On the revenue side, gross return, net return and rate of return were determined and analyzed.

Table 5. Annual average cost, return and profit of different sizes of contract poultry farms

Particulars	Small farm (Taka/farm)	Medium farm (Taka/farm)	Large farm (Taka/farm)
Total variable cost			
Day-old chicks	136,190	158,088	127,950
Feed	264,543	314,894	257,788
Vaccine & medicine	21,402	25,008	19,762
Electricity	13,388	21,506	9,713
Polythyne	1,061	1,681	888
Transport cost	11,168	14,775	13,000
Litter cost	4,416	4,309	3,831
Miscellaneous	703	632	1,120
Hired Labor	5,274	6,163	6,000
Family labor	11,221	14,188	10,775
Interest on op. capital	1,801	2,453	1,728
Sub total	471,167	563,696	452,553
Total fixed cost			
Depreciation on equipment	1,674	2,142	1,973
Depreciation on housing	5,190	4,919	3,893
Land rent	2,525	2,616	1,744
Sub total	9,389	9,677	7,611
Total cost	480,556	573,373	460,164
Total cash returns			
Broiler sold	606,513	722,980	596,921
Faeces sold	2,184	2,906	2,263
Feed bag sold	2,743	3,266	2,673
Insurance	16,209	19,827	8,404
Total returns	627,650	748,979	610,260
Gross margin	156,483	185,282	157,707
Net return	147,094	175,605	150,096
Rate of return	0.3	0.3	0.3

Source: Field survey (2003)

Notes: 1) Sample size of contract farms was 50.

2) 1US$ = 63.34 taka (July, 2005).

3) Gross margin and net return are calculated by deducting total variable cost and total cost from total return, respectively. Rate of return is calculated by dividing net return to total cost.

Broiler production input costs are high and the small farmers receive advances from the firm for feed, day old chicks, and vaccine and medicine in kind to overcome potential credit constraints. The integrator provides major share of the total cost which was also classified into variable and fixed categories. Under variable costs, feed, day old chicks, and medicine/vaccines were the major expenditures, accounting for 56%, 28%, and 4% of the costs, respectively (Table 5). This indicates the high operating capital investment required in the broiler business. It is also evident from the Table that 100 percent of the average total returns were contributed by the total cash income. This was attributed to their contract with the integrators, under which the latter was to take all the broilers produced. ABFL fixes prices before the contract and farmers get the price on the basis of that contract. In the survey period, average price was Taka 54 per kg. It is evident from table 5 that net return and gross margin of a small farm was Taka 147093.76 and 156482.57, respectively. Net returns and gross margins of medium and large farms amounted to Tk. 175605.50, 150096.48, 185282.13 and 157707.09, respectively. A comparison of net return per taka invested suggests that all size categories of farms were profitable.

Particularly aided by the fact that the major cash inputs were provided by the integrators and a guaranteed market, the net return from all sizes of contract farms is highly positive. The rate of return ranging from 0.31 to 0.33 also indicates that contract farming is a profitable business.

The number of contract broiler farms and the number of birds raised per month from 1994 to 2002 is shown in Figure 3. The figure suggests that the people of the locality began taking interest in contract poultry farming by estimating its profitability. Small farmers (since 93% contract farmers were under small farm category) clearly favor the vertically integrated contract system as it has the highly positive gross margins and net return. The summary results indicate that vertically integrated contract farm is a profitable business for all farmers in general and small farmers in particular.

Employment opportunities

The poultry sector can generate employment by using family labor as well as hired labor. The survey also collected information on labor use for poultry production activities. Table 6 presents information on labor utilization of different categories of contract poultry farms. It appears from the table that total labor man-days for the three categories of farms were 492, 572, and 497, respectively of which 38, 40, and 37 per cent man-days were family labor and 62, 61, and 63 per cent man-days were hired labor, respectively.

Figure 3. Performance of Contract farming system (ABFL) from 1994 to 2000

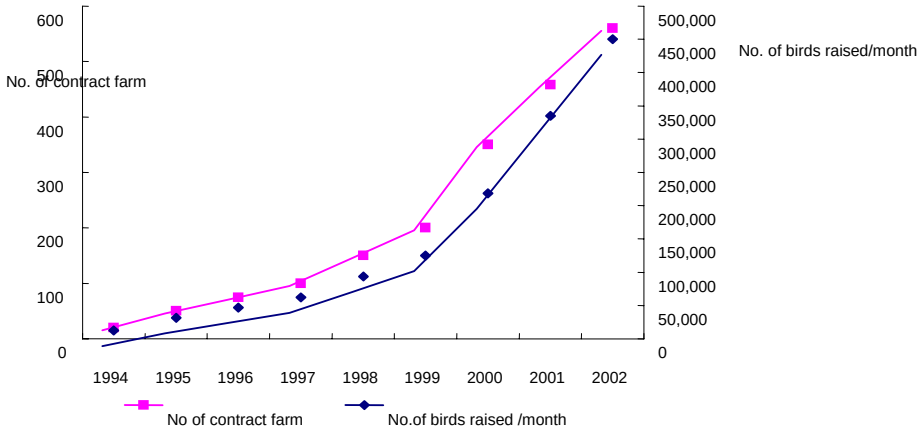


Table 6. Utilization of labor in contract farming system

Types of Labor	Small farm (m-day/ farm/year)	% of total labor	Medium farm (m-day/ farm/year)	% of total labor	Large farm (m-day/ farm/year)	% of total labor
Family labor	188.8	38.0	225.8	40.0	185.8	37.0
Hired labor	302.8	62.0	345.8	60.0	311.0	63.0
Total labor	491.7	100.0	571.5	100.0	496.8	100.0

Source: Field survey (2003)

Notes: 1) Sample size of small, medium and large contract farms was 38, 8 and 7 respectively
2) 1 Man-day=8 hours

Furthermore, the broiler industry generated jobs within the industry in terms of production (i.e., hatcheries, breeder farms, broiler farms, corn, soybean farms), processing (i.e., feed mills, dressing, processing, cold storage), marketing (including veterinary and extension services), and consumption (e.g. fast-food outlets, restaurants). In 1994 ABFL started broiler contract system with 20 staff members, and by 2002 the number increased to 200, which signals a positive impact on the country's unemployment problem. Jobs were also created at the farm level by using family labor.

Risk

Risk is an important feature of the poultry farming. There are two types of risk in poultry production. One is production risk and the other is price risk. Risk sharing is one of the most widely cited reasons for contracting.

Price risk is one important contributor to revenue variability. Broilers are a perishable product. If the farmers fail to sell the product at the proper time, they will incur great loss. So, the perishable nature of the broiler is a cause of price instability. Being a sensitive agricultural product, it cannot be stored for a long time without proper storage facilities. For this reason, the farmers want to sell their products immediately. Contract farmers were not much affected by fluctuating prices since the contract price agreed upon was fixed regardless of market price changes. As a result, growers' incomes depend upon production outcomes and not price outcomes and they do not bear any price risk.

Production risk is another variable explaining income variability. Production risk in broiler farming mainly occurs due to loss of bird. Outbreak of disease causes considerable economic loss and erosion of confidence in poultry farming. The major poultry diseases that the farmers face in the study area are (a) *Fowl cholera*, (b) *Gumboro* disease, (c) *Fowl pox*, (d) *New Castle diseases*, etc. *Gumboro* and *New Castle* disease can be epidemic and lead to large losses. Contract growers are freed from the dreaded pests and diseases or epidemics since the integrator provides technical assistance and insurance. Developing countries have established agricultural insurance programs not only to provide farmers with a risk management tool but also to promote other goals, such as improving farmer's access to credit, and promoting production in sectors that present higher risks. There have, however, been varying degrees of success over the years across countries and across several types of insurance programs (Hazell *et. al*., 1986; Hueth and Furtan, 1994; Mishra, 1996).

ABFL is the only farm in Bangladesh which introduced an internal insurance scheme to cover the risk of loss and safeguard the interest of the contract farmers in the case of immature death of chicks by disease and other related reasons. According to this scheme, ABFL operates a contributory security fund. Farmers contribute Tk. 1.50 per chick to the fund. If the mortality is less than 3 percent, 4-6 percent, 7-10 percent and 11-15 percent then 80, 40, 20, 10 percent of the contribution made by farmer is refunded, respectively. If the mortality rate is above 15 percent, the farmers can claim insurance money at Tk. 20 per bird after deducting 15 percent of the total mortality figure within the period up to 20 days. After 20 days, Tk. 30 per bird is given to the farmer after calculating the benefits of 20 day-old birds as stated earlier. Because of this measure, farmers feel secure and are encouraged to take up this venture. Average returns received from the insurance for small, medium and large farms were Tk. 16208.79, 19827.19 and 8402.75 per farm, respectively (Table 5).

The vast majority of the farmers are risk averse. The vertically integrated contract firm can protect growers against price risk via a forward contract, and against production risk via an insurance claim contract. Thus contract arrangements reduce risk and, consequently, the income of the farmers is likely to remain relatively stable over time.

Conclusion

The results of the study reveal that in ABFL's contracting system, most of the farms (above 93 percent of total 560 farms) were small farms. If the farm size is categorized in terms of rearing capacity rather than land holdings size then only 3 farms out of the 560 farms were able to grow more than 5000 birds per flock or batch.

The results also reveal that farmers enter into contract farming system for a number of reasons. The primary reason is lack of capital followed by risk reduction, income generation, lack of marketing facility and technical knowledge. Further, contract farming system is a highly profitable system. A comparison of the returns per taka invested suggests that all categories of farms were highly profitable. Furthermore, the contract farming system can generate employment opportunity for a farmer's family and also create job opportunities within the integrated firm through the process of production, processing, marketing and consumption. A farmer's decision to enter into a contract and his/her successful participation in it also leads to an increase in profit and a reduction in risk exposure.

Clearly, contract farming plays a significant role in small farmer development because, through production credit, it augments the demand for necessary inputs to increase a poultry farm's productivity. Existing rural credit institutions, such as Krishi Bank, do not have many of the features which ABFL`s contract farming system possesses, such as collateral-free input loans, assistance with access to input and product markets, opportunity to get technical know-how and supervised credit. Hence the vertically integrated contract farming system seems to be a new key to unlocking and expanding the productive potential of poultry farms and to overcome poverty. Contract farming is also one of the most effective ways of producing quality poultry. This system is well established in developed countries and must be adopted all over Bangladesh if the country has to meet the domestic and export requirements. This system does not only have the potential to increase incomes of contracting farmers, it also has multiplicative effects on the broader economy.

To expand the contract farming system all over Bangladesh is a long term goal. It is not immediately possible to set up a nationwide vertically integrated system in the short run because on the one hand, establishment of such vertical integration requires huge credit support from the banking system for various players and for ensuring quality output. In addition, banks have to adopt a proactive and liberal approach when financing the poultry sector to take advantage of the opportunities that we have shown. On the other hand, the Government has to monitor whether or not integrated firms are looking after the benefits of all categories of farmers. Combined with favorable government policies like extension of subsidies to poultry farmers and exporters, and protection from imports, these measures will help Bangladesh play a significant role in global poultry production and trade besides meeting the increasing domestic demand. It may be suggested that to develop the poultry industry and increase poultry production, the government, as well as other private investigators, ought to be more proactive in establishing an effective and well-organized and vertically integrated contract farming system in Bangladesh.

References

Agricultural Census 1996. The Bangladesh Census of Agriculture, (1996).

Ahmed, R. (1985). "Prospect and Problems of Broiler Production in Bangladesh," *Proceeding of the First National Conference of Bangladesh Animal Husbandry Association,* BRAC, Dhaka, February 23-24.

Ahmed, S and Islam, N. (1985). "Backyard Poultry Development Project in 100 Villages". Sponsored by Bangladesh Agricultural University and assisted by UNICEF, Bangladesh. *Proceedings of the 1st Conference of Bangladesh Animal Husbandry Association,* BARC, Dhaka, Bangladesh, February 23-24.

Alam, J. (1995). "Livestock Resource in Bangladesh –Present Status and Future Potential," University Press Limited, Dhaka, Bangladesh.

BBS (2001). "Statistical Year Book of Bangladesh," Bangladesh Bureau of Statistics, Ministry of

Planning, Dhaka.

BBS (2002). "Statistical Year Book of Bangladesh," Bangladesh Bureau of Statistics, Ministry of Planning, Dhaka.

Bhuiyan, A. U. (1999). "An Economic Analysis of Small Scale Poultry Farming of Kotwali Thana in Mymensingh District." M.Sc. thesis, submitted to the Department of Agricultural Economics, Bangladesh Agricultural University, Mymensingh.

Boehlje, M. and Doering, O. (2000). "Farm Policy in an Idustrialized Agriculture." *Journal of Agribusiness* (Special Issue), 18(1): 53-60, March.

Chowdhury, S, J. (2001). "An Economic Analysis of Broiler Rearing Farms Under Aftab Bohumukhi Farm Limited in Bajitpur Upozila of Kishorganj District." M.S. thesis, 2001, Submitted to the Department of Agricultural Economics, Bangladesh Agricultural University, Mymensingh.

Dirven, M. (1996). "Agro-industry and Small-scale Agriculture: A Comparative Synthesis of Different Experiences." Report LC/R. 1663. *Economic Commission for Latin America and the Caribbean*, Santiago, Chile.

FAO (2001). "Contract Farming: Partnerships for Growth" by Eaton, C. and Shepherd, A. FAO, Vol. 145, Rome, Italy, http://www.fao.org/icatalog/inter-e.htm.

Glover, D. (1984). "Contract Farming and Smallholder Outgrower Schemes in Less-developed Countries." *World Development* 12 (11/12), 1143-1157.

Goldsmith, A. (1985). "The Private Sector and Rural Development: Contract Farming and Rural Development." St. Martin's Press. New York.

Haque, Q. M. E. (1985). "Commercial Poultry Farming in Bangladesh." *Proceeding of the First National Conference of Bangladesh Animal Husbandry Association*, BRAC, Dhaka, February 23-24.

Hazell, P., Pomerada, C., and Valdes, A. (1986). *Crop Insurance for agricultural Development: Issues and Experience*. Johns Hopkins University Press, Baltimore.

Hueth, D., and Furtan, W. (1994). *Economics of Agricultural Crop Insurance: Theory and Evidence*. Kluwer Academic publishers, Boston.

Islam, M. M. and Shahidullah, M. (1989). "Poultry Knowledge of the Farmers of a Union in Mymensingh District." *Bangladesh Journal of Training and Development*, 2(1):12-18.

Karim A. M. A. and Mainuddin, G. (1983). "Evaluation on the Field Activities of Backyard Poultry Raiser in Bangladesh." UNICEF, 1983, Dhaka, Bangladesh.

Karim, R. (2000). "An Economic Analysis of Broiler Enterprise under Contract Farming System in an Area of Bangladesh." M.S. thesis, 2000, Submitted to the Department of Agricultural Economics, Bangladesh Agricultural University, Mymensingh.

Key, N. and Runsten, D. (1999). "Contract Farming, Smallholders, and Rural Development in Latin America: The Organization of Agroprocessing Firms and the Scale of Outgrower Production," *World Developmen*, 27(2):381-401.

Mishra, P. (1996). *Agricultural Risk, Insurance and Income: A study of the Impact and Design of India's Comprehensive Crop Insurance Scheme*. Avebury Publishing, Aldershot, Uk.

Morrissy, J. D. (1974). *Agricultural Modernization through Production Contracting*, Praeger, New York.

Patrick, I. (2004). "Contract Farming in Indonesia: Smallholders and Agribusiness Working Together," ACIAR (Ausralian Centre for International Agricultural Research) Technical Report No. 54, University of New England (UNE).

Runsten, D. and Key, N. (1996). "Contract Farming in Developing Countries: Theoretical Issues and Analysis of Some Mexican Cases," Report LC/L. 989, United Nations Economic Commission for Latin America and the Caribbean, Santiago, Chile, September.

Schejtman, A. (1996). "Agro-industry and Small-Scale Agriculture: Conceptual Guidelines for a Policy to Encourage Linkage between Them." Report LC/R. 1660, Economic Commission for Latin America and the Caribbean, Santiago, Chile.

Singh, Sukhpal, (2000). "Theory and Practice of Contract Farming, A Review." *Journal of Social and Economic Development* 3 (2): 228-46.

Uddin, H. (1999) "A Comparative Economic Analysis of Broiler and Layer Production in Some Selected Areas of Sadar Thana in Mymensingh District." M.Sc. thesis, Submitted to the Department of Agricultural Economics, Bangladesh Agricultural University, Mymensingh.

Ukil M.A. and Paul, D.C. (1992). "Problems and Prospects of Broiler Industry." *Proceedings of the Conference of Bangladesh Animal Husbandry Association,* Dhaka, Bangladesh.

Warning, M. and Key, N. (2002). "The Social Performance and Distributional Consequences of Contract Faming: An Equilibrium Analysis of the *Arachide de Bouche* Program in Senegal. *World Development*, 30(2):255-263.

Williams, S. and Karen, R. (1985). "Agribusiness and the Small-Scale farmer: A Dynamic Partnership for Development." Westview Press, Boulder, Co.

Yasmin, L., Hossain, M.A., Miah, M.A.M. and Rahman, M.M. (1989). "Characteristics of Backyard Poultry Farmers Affecting Their Knowledge on Poultry Production in Bangladesh." *Bangladesh Journal of Training and Development* 2 (1):22-30.

Ismat Ara Begum
Assistant Professor
Department of Agricultural Economics
Bangladesh Agricultural University
Mymensingh-2202, Bangladesh
ishameen@yahoo.com

Mohammad Jahangir Alam
Assistant Professor
Department of Cooperatives and Marketing
Bangladesh Agricultural University
Mymensingh-2202, Bangladesh

NON-GOVERNMENT ORGANIZATIONS: PUBLIC OR PRIVATE SECTOR?

Farida Chowdhury Khan

ABSTRACT

Motivated by recent writings on the NGO sector by others, this note seeks to make some observations about how to categorize the role of NGOs within the economic domain of Bangladesh. The presence of NGOs is large and ubiquitous in Bangladesh. They provide 65% of the rural credit and 97% of secondary level rural education. Other areas in which individual and community services are provided are health and family planning, water supply, skills training, and tree plantation (Gauri and Fruttero, 2003). They represent one of the three key players in the economy – the public sector, the private sector, and NGOs.

Introduction

How do NGOs differ from the public and private sector? What do they have in common and what is their *raison d'etre*?

Economics would have us know that there are two basic kinds of goods and services – private goods that lend themselves to production and consumption by private agents, the analysis of which constitutes most economic theory, and public goods, which differ from private goods in that they are non-excludable and non-rivalrous. When they are provided, everyone has the right to consume them and can do so without competing with each other. A "pure" public good has this distinction. The reason why public goods cannot be provided solely through the market and on the basis of profit maximization is because the demand curve for a public good is not available as a signaling mechanism for sellers (Buchanan, 51-55). This is because when public goods are available to one, they are available to all. For example, in the case of a highway when it is made available to the general public, it cannot exclude anyone (even if we include a nominal toll paying mechanism which does not reflect the marginal cost of providing the highway). Therefore, no single consumer has the incentive to reveal his or her marginal utility from such consumption and contributes to the free rider problem, an associated distinctive feature of public goods.

Education and health are not pure public goods in the above sense but are goods with substantial positive externalities for society and have often been publicly provided in liberal, modern, and affluent societies, and their colonies, and now in post-colonial societies in developing nations. In most economies, K-12 education is considered a public good and, therefore, can be non-excludable to a degree and non-rivalrous to the extent that enough buildings, supplies, and teachers are available.

Are there any goods that we could call pure public goods? Defense or police protection is often cited as examples but if a country attacks another country without general consensus on the basis of a decision by the "leader", whom is defense serving? If it serves the will of a selected group, then the utility from the offensive attack for some can conflict with the utility from averting the attack that others would have had, and hence consumers can compete for "defense" in the sense that one group may want the funds to be spent on keeping soldiers within national borders and another may want such funds to be spent on sending soldiers out for an offensive attack. It is well known that police protection is available in certain neighborhoods more reliably than others – as is police harassment! In that case, who consumes the good and who does not?

So if there are no pure public goods, which goods can we call public goods? Perhaps those we also call "social services" – defense, police protection, legal systems, basic education, basic health services, roads and highways, street lights, bridges, and the like – what we might call the fundamental physical and social infrastructure of a democratic society that has the resources to provide such goods.

If these social services and public goods are therefore the same, the key point being that market provision of these goods is never adequate and the marginal social benefit exceeds the marginal private benefit, then it is the goods themselves and the nature of their utility to society that makes them public goods and certainly not who provides them. The free rider problem exists if the market tries to provide some of them (roads, defense) and the market under-provides those that can be individually consumed – schooling or health services. In either case, there is market failure in the general provisioning of social services/ public goods.

In most industrial market economies these goods are provided by the state or by a combination of state and private production. It should be noted that often private production of these goods occurs because public provision is not deemed adequate by those who can afford to pay for better quality and larger quantity of these goods – private schools and colleges (the price of higher education in most countries is higher than K-12 and/or college is rationed through entrance requirements). Health on the other hand is paid for privately through the purchase of health insurance in the United States by those who can afford this, and not really paid for per unit consumed but rather per unit of expected consumption for the entire group of people purchasing a particular health insurance.

In Bangladesh, basic health and education as well as other social services (legal services, finance at market rates) are underprovided through the state as well as the market. The inadequacy in such provision is complemented by private production for those who can afford to pay – upper classes and middle classes have always paid for better schooling where admission criteria included having a certain cultural trait: carrying the markers of belonging to the middle class. However, another new group has come about since the mid-twentieth century, particularly in the last quarter, and mostly in the last decade of the twentieth century. They are the non-governmental organizations (NGOs) or non-profit organization that are not part of the state or international governance bodies. They are private groups with the agenda of providing social services – essentially public goods that are underprovided – but not operating with a profit motive. Some of their common features are that they are established with specialized public grants, often international, and that they strive to be financially sustainable in their operations by emulating the efficiency of the private sector, for instance, by taking on the organizational structures and culture of private institutions.

NGOs have been largely in the business of social infrastructure provision, trying to create literate, healthy, civil societies through the provision of what we could call public goods that are routinely provided by the state in affluent liberal democracies, primarily because the state does not have the resources to provide education and health in a widespread manner to a large and poor population. In Bangladesh, Bangladesh Rural Advancement Committee (BRAC), the largest NGO, provides 31,000 schools. While NGOs provided health services alongside the state since the 1950s, their activities were primarily limited to awareness raising and facilitating linkages with rural health centers and it is only recently that NGOs have started to establish their own hospitals and have attempted to subsidize health care for the poor. NGOs also run nutrition and water and sanitation projects, as well as projects for emergency health relief or those countering the spread and effects of cholera or AIDS. NGOs have also started to provide childcare centers and schools in garments factories, thereby producing services not available from the market and subsidizing garment factories by making productive women workers available for work on a regular and non-distracted manner.

Together with the state, NGOs provide the same safety nets in Bangladesh and, increasingly, in many Third World countries, that the state provides in developed nations. An observation by Zohir (2004) is that these NGOs have been able to tap into existing community networks and, therefore, have been more efficient in the distribution of services than the state has. Thus the private NGO is contrasted to the inefficient public sector. However, the NGO is also seen to undertake "socially conscious investment" that is too risky and has too low a return for the private sector but also has substantial employment generating and community building effects. In this manner, the NGO serves the public good in a way that the private sector does not. Clearly, NGOs exist on the scale that they do because there is market failure and state failure in the supply of public goods/social services. The state fails because the poor who are not served cannot represent themselves to stake out their rightful share of resources as citizens. NGOs therefore come to the rescue. They create civil societies of a new kind – a population that knows it has rights to social services but that the representation of those rights is enabled through the NGO.

NGOs also serve another subtle purpose; they are a constant reminder of the inability of the state to perform its economic functions and the need to privatize these functions. It is little wonder then that multilateral financial institutions and donor groups both fund and encourage the presence of NGOs. If anything, such a presence reduces the bargaining power of the state to negotiate borrowing conditions with donors and renders the state a superfluous body with an insignificant role and little credibility. That a democratic government is ultimately accountable to its people to provide public services in an adequate manner continues to remain an impossible idea. The corruption problem and public governance problem are both bred against the backdrop of the socially efficient NGO.

While the contribution of NGOs to the economy of Bangladesh is substantial and cannot go unrecognized, it should be noted that a social cost of NGOs is a building of civil society founded on the notion of the "failed" state. Certainly, patriotism in the United States could not have flourished if the United States government had not been the overwhelming producer of social services, in spite of its inability to provide adequate health services to its citizens. Although there has been a rise in the presence of church groups and a general social entrenchment of neo-liberal rhetoric against big government, the public sector keeps growing in size. Perhaps both developed countries and NGOs can impart to us the important lesson that there are such things as public goods and it is ultimately the responsibility of our government to provide these to the general public in an inclusive and accountable manner.

References

Buchanan, J. 1999. *The Collected Works of James Buchanan. Vol 5. The Demand and Supply of Public Goods*.. Indianapolis: The Liberty Fund.

Gauri, V. and Fruttero, A., 2003, *Location Decisions and Nongovernmental Organization Motivation: Evidence from Rural Bangladesh*, World Bank Policy Research Working paper 3176, December 2003.

Farida Chowdhury Khan
Professor and Chair of Economics
University of Wisconsin-Parkside
900 Wood Road
Kenosha WI 53142
Khan@uwp.edu

World Bank. Washington D.C.

Perotti, E. and Bortolotti, Bernardo, 2005. *From Government to Regulatory Governance: Privatization and the Residual Role of the State*. Fondazione Eni Enrico Mattei, Working Papers: 2005.151.

Pfaller, A. and Lerch, M, eds. 2005. *Challenges of Globalization: New Trends in International Politics and Society*. New Brunswick, N.J. and London: Transaction Press.

Samuelson, P.A. 1954. "The Pure Theory of Public Expenditure", *The Review of Economics and Statistics*, Volume 36, Issue 4, 387-9.

Sangeeta, K. 2004. "The Privatization on Public Interest: Theorizing NGO Discourse in a Neoliberal Era", *Review of International Political Economy*, Vol.11, No.1. 155-76.

White, S.C. 1999. "NGOs, Civil Society, and the State in Bangladesh: The Politics of Representing the Poor", *Development and Change*, Vol. 30, 307-326.

Zohir, S., 2004, *Participation of Non-Government/Private Sectors in the Delivery of Social Services; Reconciling Experiences with Common-sense Economics*. Draft. Dhaka, Bangladesh.