বাংলাদেশ অর্থনীতি সমিতি
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Qazi Kholiquzzaman Ahmad
Editor

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Editor's Note

It is very satisfying that it has been possible to maintain the publication schedule of Bangladesh Journal of Political Economy (BJPE). This volume (Vol 21. No.2) contains selected papers out of those presented at the 14th BEA Biennial conference held in September 2002 and various seminars/ conferences organized since then up to the present as well as out of those submitted specifically for publication in the BJPE. The articles have gone through the usual review and modification processes before finally accepted by the Editorial Board for publication. Given the contexts in which these articles have been written, the subjects covered are quite diverse, which in fact makes the volume very interesting.

Let me record my sincere thanks to the authors of the articles, the reviewers, and the members of the Editorial Board of the Journal. Their efforts and cooperation are deeply appreciated.

Qazi Kholiquzzaman Ahmad
President, Bangladesh Economic Association
Editor, Bangladesh Journal of Political Economy

বাংলাদেশ অর্থনীতি সমিতির ষান্মাসিক জার্নাল Bangladesh Journal of Political Economy প্রকাশনার নীতিমালা

১। অর্থনীতির বিভিন্ন শাখায় তাত্ত্বিক এবং প্রায়োগিক বিষয়ে প্রবন্ধ প্রণয়ন করার জন্য প্রবন্ধকারদেরকে অনুরোধ জানানো হবে। ইংরেজী এবং বাংলা উভয় ভাষায় রচিত প্রবন্ধ জার্নালের জন্য গ্রহণ করা হবে।

২। Initial screening নির্বাহী সম্পাদকের এখতিয়ারভুক্ত থাকবে, তবে প্রয়োজনবোধে সম্পাদনা পরিষদের অন্য সদস্যদের সহায়তা তিনি নেবেন। নির্ধারিত format মোতাবেক সংশোধনের জন্য এই পর্যায়ে প্রাথমিক ভাবে short-listed প্রবন্ধসমূহ প্রবন্ধকারের কাছে প্রেরণ করা হবে।

৩। অভ্যন্তরীণ reviewer সাধারণতঃ সম্পাদনা পরিষদের সদস্যদের মধ্য থেকেই মনোনীত হবেন। বহিঃস্থ reviewer সম্পাদনা পরিষদের সিদ্ধান্তক্রমে প্রবন্ধের বিষয়ের ভিত্তিতে সম্পাদনা পরিষদের বাইরে থেকে মনোনীত হবেন, তবে তিনি দেশের অভ্যন্তরে বা বিদেশে অবস্থান করতে পারেন। সম্পাদনা উপদেষ্টা কমিটির সকল সদস্য reviewer হতে পারবেন। তৃতীয় reviewer প্রয়োজন হলে সম্পাদনা পরিষদের বাইরে থেকে তাঁকে মনোনীত করা হবে।

৪। ক) সমিতির দ্বিবার্ষিক কনফারেন্সে উপস্থাপিত প্রবন্ধগুলো referral প্রক্রিয়ার মাধ্যমে জার্নালের জন্য বিবেচিত হবে।

     খ) বিভিন্ন সময়ে সমিতি কর্তৃক আয়োজিত সেমিনারে পঠিত আমন্ত্রিত প্রবন্ধসমূহ জার্নালের সম্পাদনা পরিষদের অনুমোদনক্রমে জার্নালে প্রকাশ করা যেতে পারে।

৫। অর্থনীতি সমিতির সদস্য এবং সদস্য-বহির্ভূত যে কোন আগ্রহী প্রার্থী জার্নালের গ্রাহক হতে পারবেন। তবে সদস্যদের ক্ষেত্রে গ্রাহক ফি (subscription fee) পঞ্চাশ শতাংশ রেয়াত দেয়া হবে।

৬। জার্নালের footnoting এবং writing style এতদসঙ্গে সংযোজিত হলো (অপর পৃষ্ঠায় দ্রষ্টব্য)

৭। ক) Reviewer হিসেবে সম্পাদনা উপদেষ্টা কমিটির সদস্যদেরকে involve করা হবে।

     খ) দেশের অভ্যন্তরে অবস্থানকারী উপদেষ্টা কমিটির সদস্যদেরকে বছরে দু'বার সম্পাদনা পরিষদের সাথে মিলিত সভায় আমন্ত্রণ জানানো হবে।

৮। ক) তিনটি কোটেশন সংগ্রহ করে সম্পাদনা পরিষদের সিদ্ধান্তক্রমে মুদ্রক প্রতিষ্ঠান নির্বাচন করা হবে।

     খ) প্রথম proof প্রেস দেখবে, পরবর্তীতে floppy তে প্রবন্ধকার ফাইনাল proof দেখে দেবেন।

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Contents

Peasant Psychology and Experimental Economics: Analyzing Trust and Reciprocity in Bangladesh

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Abstract

The purpose of this study is to comprehend the impact that gender and culture engender on peasant psychology and economic behavior. An analysis of data from an experiment conducted by the authors in rural Bangladesh brings about several significant findings. The basics of the Trust Game theory in experimental economics was followed. The trust game experiment, which was aimed at measuring the levels of trust and reciprocity among the subjects was conducted in the village of Shastipur (Kushtia district, Bangladesh) among illiterate peasants. Results of four similar studies using Trust Games conducted in different countries are used for the purpose of comparing the results of the Bangladesh study. Two of the different country studies measure differences in trust and reciprocity based on the cultural variable, and the other two measure differences with respect to gender effects.

Findings consistently deviate from the expected outcome of standard socioeconomic science model (SSSM), which assumes unbounded rationality and selfishness to predict economic outcomes. Peasants in Bangladesh are found to have comparable trust and higher reciprocity than

those in the other studies, the respondents of all of which were educated undergraduate students. The influence of interdependent peasant culture, patriarchal mentality, and female household management among peasants seem to affect the results to a large extent, contrary to predictions from the SSSM. This is a significant finding, for high trust and reciprocity reflect high potential for successful businesses. Further research in this field should be of high utility in designing innovative ways to foster economic development among peasants.

1.   INTRODUCTION

This study attempts to understand the psychology behind common economic decisions made by the peasant class in developing countries. It investigates the effect of culture and gender on the particular group in question: 32 villagers from Shastipur of Kushtia district, Bangladesh. The experimental economic technique of the Trust Game is used to understand the economic behavior and related tendencies within this group. By comprehending the motivation behind economic decisions and recognizing the potential for successful business among the peasants, relevant strategies can be designed and implemented towards improving the welfare of the peasantry who are located in the lower echelon of the class ridden society throughout the world.

In order to understand the basis behind the "games" used in this study, one must first understand the foundations of economics as a social science. These foundations include the concepts of game theory, the Trust game, and behavioral and experimental economics.

The principles of game theory are derived from the standard socioeconomic science model (SSSM). This SSM model claims that all humans are *rational* and make every decision based on *self interest;* this is also an widely accepted view about human instinct and behavior in economic sciences. Thus the SSSM, assuming rationality in all humans requires, justifies and promotes selfish behavior (Smith 2003).

In order to solve a game based on the assumptions of the SSSM, the dominant strategy, or the most preferable, rational strategy of a player, must be identified. From this, the Nash Equilibrium, or the best response to the other players' choice(s) can be obtained.

This study deals with an experimental economic game known as the Trust Game. This anonymous, non-repeated, cooperative game is useful to experimental economists and psychologists because it, unlike many other similar games, provides direct feedback on relative degrees of trust and reciprocity among

participants and also offers the greatest scope for "…exploring the human instinct for social exchange, and how it is affected by contextual, reward, and procedural conditions" (Smith, *Neuroeconomics*).

Since *experimental economics* is a new horizon in Bangladesh, it would be appropriate to delineate some of the pertinent foundational issues and principles which were followed in the study. First of all, simply speaking, in trust and reciprocity, trust shows a proposer's behavior about his/her extent of investment intention, and reciprocity depicts the responder's behavior about his/her extent of acceptance or response, which might be of either positive or negative nature. This field of experimental economics attempts to assess human capacity to communicate intentions through actions. Trust may be defined as the amount of faith the first mover in a game has in a second mover to recognize his/her intentions and reciprocate correspondingly. The fundamental aspects of reciprocity are elegantly addressed by McCabe *et. al* (2002) as follows: "Reciprocity is defined as the costly behavior of the second mover that rewards the first based on both the gains from exchange to the second mover as well as the second mover's beliefs about the intentions in motivating the action of the first mover". The most pertinent question in this field of experimental economics is to find out what motivates the choice of the proposer's trust and responder's reciprocity?

During the past two decades quite a lot of work has been conducted on "trust", and recently philosophical interest in it seems to have gained momentum. One major dimension that becomes obvious in the relevant literature is that the word, "trust", means many different things to many researchers. Depending on who one follows or whom one reads, trust is an emotion, an environment, a set of beliefs, an encapsulation of self-interest or a counterweight to self-interest. It is obvious that, the operation of the trust mechanism requires and contributes to an environment of trust, and it affects people's emotions, beliefs, and mind-set. It is also widely believed that a society in which the trust mechanism is strong is one in which individuals are trusting and trustworthy. Such a society has great normative attractions. We want to feel that "our security is guaranteed by the benevolence, conscientiousness or reciprocity of others, not merely by their fear of legal sanctions" (Becker 1996), and given the cost of legal sanctions, it will be easier to achieve cooperation if we are confident of each other's trustworthiness and good will.

The contemporary literature on *economics of reciprocity* concludes that deviations from the predictions of the self-regarding preferences model are explained by positive or negative reciprocity or related motivations such as trust in positive reciprocity or fear of negative reciprocity (Fehr and Gächter 2000). Fehr and

Gächter defined reciprocity as follows: "Reciprocity means that in response to friendly actions, people are frequently much nicer and much more cooperative than predicted by the self-interest model; conversely, in response to hostile actions they are frequently much more nasty and even brutal" (2000). They draw a clear distinction between reciprocity and *altruism:* "Reciprocity is also fundamentally different from altruism. Altruism is a form of *unconditional kindness;* that is, altruism given does not emerge as a response to altruism received" (Fehr and Gächter 2000).

In order to better comprehend the essence of the game, it would also be useful to note at this point that Fehr and Gächter, in criticizing the applicability of the trust (or investment) game to a variety of environments, have forwarded the following useful interpretations: "Positive reciprocity has been documented in many trust or gift exchange games (for example, Fehr, Kirchsteiger, and Riedl 1993; Berg, Dickhaut, and McCabe 1995; McCabe, Rassenti, and Smith 1996). In a trust game, for example, a Proposer receives an amount of money x from the experimenter, and then can send between zero and x to the Responder. The experimenter then *triples* the amount sent, which we term y, so the Responder has $3y$. The Responder is then free to return anything between zero and $3y$ to the Proposer. It turns out that many Proposers send money and many Responders give back some money" (Fehr and Gächter 2000). The key problem with the predictive ability of the empirically substantiated conclusion of positive reciprocity showing that many proposers send, and responders give back money in trust game is that the data generated using single-game experimental design *do not* discriminate between the actions motivated by reciprocity and actions motivated by altruism. Proposing more money and/or returning more money may well be because of altruism rather than trust or reciprocity in sharing benefits (profit). But what will happen when altruism is a part of community norms and values? Therefore, the results of trust-reciprocity experiment may not be perfectly dichotomous by nature – across culture (i.e, *ecological rationality* works).

In the trust and reciprocity experiment, participants are separated into two groups, one to be used to measure trust and the other to be used to measure reciprocity, while experimenters facilitate a monetary exchange between anonymous partners from each group. Every participant begins the game with a set amount of money. The exchange involves a player from one group deciding to give none, some, or all of his/her money to his/her anonymous partner; however, before the given amount reaches the partner, the amount is tripled by the experimenter. The anonymous receiver then decides to return none, some, or all of the [tripled] money back to his/her partner. The amount of money given is used to measure trust, and the amount of money received is used to measure reciprocity. Based on the canonical model in which self-interest is the guiding motivation behind

economic decisions, backward induction leads to the subgame perfect Nash Equilibrium being that the receiver returns no money, and thus the sender sends no money (*i.e.* no transaction in the game).

In behavioral game theory, bargaining games such as the trust game can be analyzed in one of the two ways: an *outcome-based approach* or an *intention-based approach* (McCabe *et. al* 2002). The outcome-based approach claims that only the actions – not the intentions – of the players must be known in order to solve a game. This approach is based on the SSSM and is an example of constructivist rationality, or the idea that all social institutions are created by human rationality. Constructivist rationality would claim that, in the trust game, the sender will send no money, and thus no exchange will take place.

The intention-based approach to analyzing the trust game shows several deviations from the SSSM. Under the rules of the trust game, one can see that the sender must deviate from his/her subgame perfect strategy by *trusting* the partner in order to achieve a future benefit. Furthermore, the receiver must positively reciprocate based on his/her beliefs of the sender's intentions (McCabe *et. al* 2002). The concept of ecological rationality, in which human reason is used to examine the behavior of individuals based on their experience and cultural/ folk knowledge, also plays a key role in accurately analyzing the trust game (Smith 2003).

Experimental economics generally uses the approach of ecological rationality to understanding the predictive abilities of economic models. Vernon Smith (the 2002 *Nobel Laureate in Economic Sciences*) pioneered the field of experimental economics, recognizing the human capacity to communicate intentions through actions. Smith's research in human behavior through experiments and simulations of everyday economic transactions has provided a new and highly innovative form of research which allows economists, sociologists, and psychologists to recognize innate human characteristics such as altruism, punishment, trust, and reciprocity through simple games. These aspects of human behavior, which had never before played a significant role in game theory, are now approaching the forefront of psychological, behavioral, and economic thought.

Because the experiment which this study focuses on was conducted on peasants in Bangladesh, it is crucial to understand the lifestyle of and psychology behind "*communicating intentions through actions*" of such a subject. In this study, the term *"peasant"* refers to people belonging to lower echelon of the class society—but not necessarily extreme poverty ridden—who are largely agricultural, and have no literacy (or who are effectively illiterate) or lack knowledge of industrial market transactions.

In most developing countries, peasant life involves a significant amount of interdependence among the villagers. The agricultural base of a village entails that members of the village trust and depend on one another for assistance when necessary (not necessarily only during natural disasters or calamities). Though a village as a whole may be self-sufficient, each peasant cannot survive without the rest. Kinship and family identity are also especially strong among peasants. In Bangladesh, a village is often made up of only a few extended families. The nuclear family holds little significance; children are raised with multiple guardians rather than just the mother and father. Furthermore, adult males hold a considerable amount of authority in the village. Patriarchal norms and values (accordingly the mental frame) of the peasants affect everyday relations between men and women, and thus might play a role in transactions in trust games as well.

Amartya Sen (the 1998 *Nobel Laureate in Economic Sciences*), a leading welfare economist, attributes certain peasant behaviors and mentalities to the effects of famine. He refers to famine as the failure of exchange entitlement, or the failure to effectively exchange and distribute goods. Sen believes that famines are caused not so much by endowment failure or scarcity of food as by adverse changes in the entitlement of the poor (*i.e.* deterioration in *exchange entitlement*). Peasant psychology is in turn affected by the fear of famine (endemic or epidemic) and the lack of entitlement, opportunity, and freedom for the poor (Sen 1987).

The complexities of communicating human intentions through actions (in terms of both monetary and non-monetary exchanges) may also be seen in the framework of *human capability*. This human capability depends upon many things, and may be expressed in very many ways including income, expenditure, nature of transitory shocks (temporary or permanent) to income, asset ownership, state of access to public resources, state of investment in human capital, social capital, social relations (strength/weaknesses of friendship and kinship networks), personal security, culture, community resources, dignity, autonomy, natural environments etc (Baulch 1996, Sen 1985, 1987, Fulkingham and Namazie 2002, Barkat 2003). All these dimensions which determine human capability with variations in degree by context are important in deciding an individual's action in communicating intentions in general, and that relating to the poor and illiterate peasants of the underdeveloped agrarian economy of Bangladesh, in particular.

2.   PROCEDURE

The detailed experimental procedure for the Trust game, as conducted in Shastipur, is described in the Box-A below. The experimental game was played, following procedures delineated above, in 3 groups—male, female, and mixed. The information in Box-B depicts some useful demo-economic and social characteristics of the area in which the study was conducted.

Box A: Trust Game Procedure
as conducted in Shastipur village of Kushtia district, Bangladesh

1. [for first group] Choose 12 players; six male, six female.
    [for second group] Choose 10 female players.
    [for third group] Choose 10 male players.
2. [for first group] List names randomly on chart, making sure that there are three males and three females each in both Groups A and B, and that players are always paired with members of the opposite sex. [for second and third groups] List names randomly on chart, dividing the players into Group A and Group B evenly.
3. Take all players into Briefing Room; give them an explanation and demonstration of the game.
4. Move Group A into Waiting Room A and Group B into Waiting Room B.
5. Call A1 into the Market Room. Give him/her 50 taka, review key points of game, and ask A1 what he/she wants to do with the money (invest none, some, or all of the money). Record amount invested on chart, and take back the 50 taka, assuring the player that the final amount will be given to him/her at the end of the game.
6. Send A1 to his/her respective interviewer.
7. Multiply the amount A1 invested by three, and keep this money at hand.
8. Call B1 into the Market Room. Give him/her 50 taka, review key points of game, hand him/her money from A1 [times three], and ask B1 if he/she wishes to keep all the money, return some, or return all.
9. Record amount returned on chart, and take back all the money, assuring the player that the final amount will be given to him/her at the end of the game.
10. Send B1 to his/her respective interviewer.
11. [for first group] Repeat steps 5-10 for A2/B2 through A6/B6.
    [for second and third groups] Repeat steps 5-10 for A2/B2 through A5/B5.
12. After all players have completed the game, calculate final earnings and give each player his/her respective amounts.

Experimental Procedure as conducted by Abul Barkat and Reshmaan Hussam in Shastipur village, Bangladesh, August 2003

Box B: Demo-economic and social characteristics of Shastipur, Bangladesh

Location: Shastipur Masjid Para, Shastipur Village, Alampur Union, Kushtia District.
Population: Total of 4,308 with 2,240 males and 2,068 females.
Number of Households: 958.
Alampur Union monthly income range: Males: 3000-4000 Tk., females: 500-800 Tk.
Mother's Club of Swastipur Masjid Para:
- Established in 2002 by a local non-government organization named *Manob Sakti Unnayan Kendra* (MSUK)
- Mothers get together four to five days a week to play games, talk about health and living, learn about business networking
- There are doctor visits and field nurses; a veterinary doctor visits several times a year for lectures and demonstrations on poultry, dairy, fish culture, etc.

3.   DISCUSSION

This study focused on two variables: cultural differences and differences based on sex. To understand how significant an effect culture and folk knowledge had on the Bangladesh peasants' decisions about communicating economic intentions through actions, findings of the study have been compared with those of similar studies from Sweden and Tanzania. The studies in Sweden and Tanzania were conducted by Anders Danielson and Hakan Holm of Sweden in 2003. Both the studies focused on undergraduate students. However, the cultural differences between Sweden and Tanzania are immense: Sweden is a highly developed, industrialized, post modern country with social-democratic institutions and values, while Tanzania is a poor developing country with high extent of corruption and insignificant industrial activity. The cultural differences between the players from these countries and the players from Bangladesh are even greater, for the players from Bangladesh are poor, illiterate peasants from a densely populated agricultural developing country. To facilitate an in-depth understanding about the differences of the three countries, a comparative country profile with select key indicators is presented in Table 1.

Table 1: Comparative Country Profile: Sweden, Tanzania, Bangladesh

Indicators	Sweden	Tanzania	Bangladesh
Population (in million)	9.0	35.9	138.1
Population density (person/sq.Km)	22	41	1,061
Per capita GNI (US$)	28,840	290	400
GDP (in million US$)	300,795	9,872	51,897
Per capita merchandise export (US$)	11,215	28	49
High technology export as % of manufactured export	21	2	0
Value added as % of GDP:			
Industry	28	17	27
Services	70	40	52
Agriculture	2	43	22
Life expectancy at birth (in years)	80	43	62
Adult literacy rate (% population 15 and above)	92	77	41
Under-5 mortality rate (per 1000)	3	165	73
Population below poverty line (%):			
National	...	35.7	49.8
Rural	...	38.7	53.0
Urban	...	..	36.6
% population below 1 $ a day	...	19.9	36.0

Source: World Bank 2004 (World Development Report 2005). Per capita merchandise export is estimated by the authors based on the same data source.

Notes: The country profile presented in the Table shows a general macro-level situation, and not the situation of the study subjects in Sweden and Tanzania i.e. the undergraduate students, and the study subjects in Bangladesh – the peasantry.

Before presenting the analysis of the empirical results of the trust and reciprocity experimentation with the Bangladesh's peasantry, it would be methodologically worthwhile to present the formulas which were used to calculate trust and reciprocity in the study. The following methodology shown in Box-C was applied in measuring trust and reciprocity in the Bangladesh study. The detailed empirical results of the experiment are presented in the Transaction Charts (see Table 5).

Box C: Methodology of Calculating Trust and Reciprocity
C = Initial **Capital** of **Player A** (50 Tk.) **A** = Amount sent to **Player B** from **Player A** **TRUST = A ÷ C** **M** = Amount received by **Player B** from **Player A** through the **Market (3 × A)** **B** = Amount returned to **Player A** from **Player B** **RECIPROCITY = B ÷ M**

Based on the comparison of cross-culture trust and reciprocity shown in Table 2, it is apparent that *trust levels* for all three countries are nearly identical. This result is inconsistent with the received view that the income of countries is proportional to the amount of trust, implying that a high-income country such as Sweden should have high trust while a low income country such as Bangladesh should have comparatively lower trust (Danielson and Holm 2003).

Table 2: Cultural Comparisons in Trust and Reciprocity:
Sweden, Tanzania, Bangladesh

Trust and Reciprocity by culture	Sweden	Tanzania	Bangladesh*
Average Trust (%)	51	53	53
Average Reciprocity (%)	35	37	53

*Authors' estimation based on data presented in Table 5 (Transaction Charts)

There are several factors which may have led to these results. The simultinaneity effect, in which two completely different aspects of a population in an experiment lead to similar results, may have occurred between the level of market knowledge and the level of kinship among participants. In both Tanzania and Sweden, participants are undergraduate students who had taken or were taking an introductory course in Economics. Their experience with market transactions and the general principles of economics is, therefore, significantly higher than that of

the peasants of Bangladesh. Greater familiarity with economic principles could have led to a better understanding of the motivations behind the game, and thus higher levels of trust. With the Bangladeshi peasants, however, there is a greater sense of community and kinship among the participants, which is a characteristic of Bengali peasant culture. This sense of community may have also led to greater trust—even among anonymous strangers – which thus balanced out the effect of a lack of market knowledge.

Unlike trust levels, the *average level of reciprocity* shown by peasants in Bangladesh is significantly higher than those shown by the participants (undergraduate students) in both Sweden and Tanzania studies (Table 2). This result is again reflective of the culture, folk knowledge, and environment of the peasants. Inequity aversion has likely played a significant role in the decisions of the peasants. Inequity aversion occurs when a player feels uncomfortable while facing a situation where inequality exist, and does everything in his/her power to decrease the disparity between the two unequals. In the case of the receiver in the trust game, he/she may return more money than is predicted by the SSSM in order to restore monetary equality between himself/herself and the partner. Sharing is essential to the well-being of a Bangladeshi village; this strong emphasis placed on equality leads to the possibility that peasants have an unusually high level of inequity aversion, and thus greater reciprocity (than those in Sweden or Tanzania).

A study conducted in 15 small-scale societies by Henrich *et. al* in 2001 also provides some insight into the motivations behind the behavior of the peasants. Henrich's study is based on the Ultimatum game, a game similar to the Trust game. However, the Ultimatum game tests altruism and generosity rather than trust. The game conducted in 12 countries around the world has produced results that violate the canonical model (the SSSM) to a huge extent. Based on the SSSM, senders in the Ultimatum game (as in the Trust game) were expected to send nothing. However, some societies, such as the Lamelara of Indonesia, had a mean offer of 58%. Henrich *et.al* have explained these deviations in terms of cultural norms of each society. Concepts of gift-giving, sharing, and stealing have been found to exert significant influence on how participants behaved in this game. Similar results can be found in Bangladesh. In a peasant society, sharing of one's wealth is necessary for the community to survive and prosper. Dependence on others from outside the nuclear family leads to significantly higher degrees of trust as well as reciprocity.

Overall, the significant deviations from the Nash Equilibrium of the Ultimatum game lends support to the idea that the SSSM can not be an accurate method of predicting market behavior, especially in developing, agriculture-dominated, non-industrial settings.

The study conducted in Shastipur provides several insights among and between sexes of peasants in Bangladesh as well. Certain findings are consistent with results of studies conducted in other countries in which gender was a variable, which may be a sign of certain universal, innate characteristics of males or females in monetary exchanges. Our findings from Bangladesh however, completely contradict the results of other studies; this may signify a unique feature of Bangladeshi peasants, or may be due to experimental error, or due partly to both.

With respect to gender differences in trust and reciprocity, findings of the Bangladesh study have been compared with those conducted at the University of Melbourne in Australia by Chaudhuri and Gangadharan in 2002 and a cumulative study conducted in the USA, China, Japan, and Korea by Buchan and Croson in 1999. Table 3 presents the summary of the results of the three studies.

Table 3: Gender Comparisons in Trust and Reciprocity

Trust and Reciprocity by sex	Buchan/ Croson		Chaudhuri/ Gangadharan		Barkat/ Hussam*	
	Male	Female	Male	Female	Male	Female
Average Trust (%)	69.64	63.04	53.00	34.70	71.25	35.00
Average Reciprocity (%)	28.60	37.40	14.70	19.80	54.88	51.25

* Notes: Authors' estimate based on data presented in Table 5 (Transaction Charts). Overall *male trust* is the average of sum total of trust of ID# A4, A5, A6 in Group I, and A1, A2, A3, A4 and A5 in Group III; similarly overall *female trust* is the average sum total of trust of ID# A1, A2, A3, in Group I and A1, A2, A3, A4 and A5 in Group II. The overall *male reciprocity* is an average of sum total of reciprocity displayed by the ID# B1, B2, B3 in Group I, and B1, B2, B2, B4, and B5 in Group III. Similarly, the overall *female reciprocity* is the average of sum total of reciprocity displayed by the ID# B4, B5, B6 in Group I, and B1, B2, B3, B4, B5 in Group II. Names and sex of all participants with ID # is shown in Table 5.

Buchan and Croson's study has found that there is no significant difference between the amount of trust exhibited by males and that exhibited by females. They find, however, that females exhibit greater reciprocity than males, and conclude that females "…tend to be more generous and socially oriented….". The results from Bangladesh completely contradict these findings. The average levels of trust between males and females differ significantly; males exhibit more

than twice as much trust as females. Chaudhuri and Gangadharan's study also show significantly lower levels of trust among females, but not to the same extent. In the Bangladesh study, this lack of trust among females (as compared to the males) may be due to the insecurity of a female member of peasant family or a female member in a patriarchal underdeveloped rural setting. The role of a woman in peasant society is to provide food for and raise her family. Children are the woman's responsibility, and as a mother, risk-taking is not warranted. Unlike the female participants in Buchan and Croson's studies, who are educated and are familiar with business, the female member of peasant family of Bangladesh have a much narrower lifestyle – denoted by some economist as a 3D lifestyle, meaning *distress*, *destitution*, and *deprivation*; *eat last and least* – which do not allow taking risks (Barkat 2003).

As for reciprocity, although the Bangladeshi peasants exhibit greater overall reciprocity than those in the other studies, there is no significant difference in reciprocity between the sexes. This also contradicts Buchan and Croson's study, in which the women return approximately 10% more to their senders than the men did.

Results for trust and reciprocity behavior *between* the sexes in Bangladesh also provide several thought provoking insights. Although partners were anonymous and the sex of one's partner was not revealed to any participant by the experimenter, the setup of the game unintentionally allowed subjects to induce whether a partner of the same sex was more likely than one of the opposite sex. While males display considerable trust and reciprocity when paired with other males, far less trust and reciprocity are exhibited when males are paired with females or females are paired with other females.   Male senders have sent an average of only 47% to females, but an average of 86% to males; similarly, male receivers returned an average of only 27% to females, but an average of 71% to males (Table 4). On the other hand, female senders have sent an average of 33% to males and a marginally higher 36% to females, while the performance of females exhibit a return of 42% to males and 57% to females. The general pattern evident from Table 4 is male-to-male trust and reciprocity are highly pronounced compared to any other combination (male-to-female, female-to-male, and female-to-female). Another interesting finding is that, the female-to-female trust (36%) is much lower than the female-to-female reciprocity (57%)—this invariably leads to raise a pertinent question to be explored in the future experimental economics as to why the females trust them less but reciprocate more?

Table 4: Inter and Intra-Gender Comparisons in Trust and
Reciprocity: Bangladesh Study

Gender	Average Trust (%)		Average Reciprocity (%)	
	Male	Female	Male	Female
Male	86	47	74	27
Female	33	36	42	57

Source: Authors' estimate based on data obtained by the authors in the Shastipur experiment which
are presented in Table 5 (Transaction Charts)

The high trust and reciprocity among the males, and lack of trust and reciprocity of males vis-a-vis females may be due to the patriarchal nature of village societies, in which men control and command over most of the monetary aspects of a family/village. Overall, participants seem more comfortable (both in trust and reciprocity) in dealing with members of the same sex; however, men are *more so* than women.

4.   CONCLUSION

The results of the Shastipur study offer several unexpected findings. Overall, peasants exhibit significantly higher levels of trust and [particularly] reciprocity than is predicted by the SSSM. Though gender differences within the group show that women are far less trustworthy and comparable in reciprocity with men, these differences are not consistent with results from the other country studies. Some discrepancies can be attributed to experimental error and inconsistencies of this study with the other studies; in particular, language, stake size, subject size, artificiality, and experimenter interference. The context in which the directions were put may have altered the peasants' understanding of the game and its purpose; because directions were translated from English to Bengali, the meanings of certain terms may have been conveyed in a manner that are not fully consistent with the other studies. Furthermore, it cannot be assumed that the stake size (initial endowment) was subjectively controlled across studies conducted in different countries. If a standard stake size (for example, a day's wage or any other standardized size adjusted with cost of living) was set for Trust game universally, results may have been more robust for the purpose of comparison. The Bangladesh study subject size is also comparatively smaller than those of other studies, which may have led to discrepancies in results. This might be attributable to the widely held belief that the larger the pool of subjects, the more valid the data.

Artificiality and experimenter interference could have led to discrepancies in the data generated as well. Because players used money that was given to them (an artifact of the game), their behavior in handling it may have been less authentic; an experiment in which the subjects' own money is used as an initial endowment may produce more accurate results. Experimenters in the Shastipur study also may have contributed to the artificiality of the game because they have had a far greater role to play than in standard Trust games. Because the subjects were all illiterate, experimenters had to physically handle the money and facilitate the transaction, so there might have been some superficiality in the way the players behaved. Rather than being double blind (blind to both partner and experimenter) as in all the other studies, the Bangladesh experiment has been single blind (blind only to the partner). If members of the same class facilitated the exchange, the study results might have been more accurate.

Even with consideration to possible experimental limitations, the results of the Shastipur study deviate strikingly from the standard socioeconomic science model. Peasants in the Shastipur study have been found to have comparable trust and higher reciprocity than those in the other studies, participants in all of which are educated undergraduate students. The influence of interdependent peasant culture, patriarchal norms, values and mind-set, and female household management – all may have influenced the results of the Bangladesh study to a large extent, contrary to predictions from the SSSM. This is a significant finding, for high trust and reciprocity reflect high potential for the establishment of successful businesses. Further research in this field is critical in order to devise more effective strategies to foster economic development among peasants.

5.   PRACTICAL APPLICATIONS AND FURTHER RESEARCH

This study offers several practical applications which can potentially improve the welfare of the lower echelon of the class society in developing countries such as Bangladesh as well as accelerate the overall economic development of such countries.

The study in Shastipur has shown that women exhibit significantly less trust in transactions than men, and that transactions involving women are similarly less efficient (females gained less on average than males; see Table 5). This research provides further support for the efforts being made to institute business immersion programs aimed at women in the lower echelon of village community. Business programs for women, if established and managed over a long period of time, could guide females towards adapting to a market environment and thus help the overall development of the poor peasantry. Furthermore, based on the levels of trust and reciprocity which the people of Shastipur have displayed, certain

businesses have the potential for being truly successful in a peasant economy. An investigation into possible enterprises that are best suited to the peasant situation may lead to the development of activities, generating tangible improvements in the welfare of the peasants, particularly in South Asia.

Table 5: Transaction Charts

MIXED (Group I)
Group A

ID #	Name	**A**=Tk. Sent	**B**= Tk. Received (from **B**)	Final Amount [Tk.]	Trust: **A ÷ C** (%)
A1 (F)	Monjura	20	10	40	40
A2 (F)	Rezi	20	20	50	40
A3 (F)	Rina	10	10	50	20
A4 (M)	Bablu	20	20	50	40
A5 (M)	Shahidul	20	30	60	40
A6 (M)	Ramzan	30	40	60	60

Note: F = female, **M** = male

Average: 40%

Group B

ID #	Name	**M**= Tk. Received	**B**= Tk. Returned (to **A**)	Final Amount [Tk.]	Reciprocity **B ÷ M** (%)
B1 (M)	Alam	60	10	100	16.7
B2 (M)	Atar Ali	60	20	90	33.3
B3 (M)	Daud	30	10	70	33.3
B4 (F)	Kutila	60	20	90	33.3
B5 (F)	Monira	60	30	80	50.0
B6 (F)	Romesa	90	40	100	44.0

Average 35.1%

FEMALES (Group II)

Group A

ID #	Name	**A**= Tk. Sen	**B**= Tk. Received (form **B**)	Final Amount [Tk.]	Trust: **A ÷ C** (%)
A1	Romesa (2)	20	60	90	40
A2	Rina (2)	20	30	60	40
A3	Mojurun	20	10	40	40
A4	Maleka	20	50	80	40
A5	Nur Jahan	10	10	50	20

Average: 36%

Group B

ID #	Name	**M**= Tk. Received	**B**= Tk. Returned (to **A**)	Final Amount [Tk.]	Reciprocity: **B ÷ M** (%)
B1	Aleya	60	60	50	100
B2	Majeda	60	30	80	50
B3	Rupjan	60	10	100	16.7
B4	Akila	60	50	60	83.3
B5	Johora	30	10	70	33.3

Average: 56.7%

MALES (Group III)

Group A

ID #	Name	**A**= Tk. Sent	**B**= Tk. Received (from **B**)	Final Amount [Tk.]	Trust: **A ÷ C** (%)
A1	Rashed	15	25	60	30
A2	Ruhul	50	75	75	100
A3	Monohor	50	150	150	100
A4	Yunus	50	150	150	100
A5	Muksed	50	75	75	100

Average: 86%

Group B

ID #	Name	M= Tk. Returned	B= Tk. Received (to A)	Final Amount [Tk.]	Reciprocity: B ÷ M (%)
B1	Niyamot	45	25	70	55.6
B2	Syedul	150	75	125	50
B3	Lalukha	150	150	50	100
B4	Harun	150	150	50	100
B5	Dobir	150	75	125	50

Average: 71.1%

The concept of experimental economics has been applied for the first time in Bangladesh in the Shastipur study. The public and private sector commercial banks and the non-governmental microfinance institutions of Bangladesh, which provide loans to Bangladesh's poor (e.g. Grameen Bank, BRAC, ASA, Proshika, and many other microcredit NGOs) are therefore not familiar with the findings from this kind of study. The high levels of trust and reciprocity among the poor which the study reveals can be of high utility to microcredit providers and other relevant financial institutions. Trust and [particularly] reciprocity have direct correlation with interest rates and loan recovery; banks can use the results of such research to devise appropriate means and ways of fostering business and economic efficiency in villages for their own benefit as well as that of their customers.

In order to make these applications truly successful, further research in the field of experimental economics and peasant welfare is necessary. Other games in experimental economics, such as the Ultimatum Game, the Dictator game, and various Auction simulations, may be explored with groups similar to the one in Shastipur. The Shastipur study has shown that there is a great deal of latent and unexplored potential in relation to trust and reciprocity among the people of Shastipur. Studies may be undertaken to find out whether this is also true in the case of people in other villages and in respect of other characteristics such as altruism and generosity.

In order to understand how significantly culture, socio-economic status variables, and nationality affect a population, experimental studies may also be carried out across classes, occupational groups, and cultures. Results could potentially transform national and international trade policies and relations between developed and developing countries, because the commonly held belief is that the

poorer the country, the lower the trust. However, the findings of this study clearly contradict that view. Would this deviation from the results of standard socio-economic science model (SSSM) analysis also hold among all the population of a developing country? Answers can possibly be found, to a lavge extent, by conducting appropriately designed studies using foundations of experimental economics.

Advances in experimental economics must be pursued as well. The predictive value of the results of experimental economics depends largely on how descriptions of the context are related as well as what are the biographical characteristics of the individuals they are addressed to. Relating types of characteristics to an individual's memory-sensory system through brain-imagining could provide a significant contribution to increasing the accuracy of experimental economics. The field of neuroeconomics, in which the internal order of the mind is investigated in relation to individual decision making, social exchange, and institutions such as markets, could benefit greatly from such advances in neuroscience (Smith, *Neuroeconomics*).

A final area of further research which could potentially lead to considerable development in traditional economic thought is in revising—or perhaps creating—a new standard socioeconomic science model. All the experiments undertaken in this study have generated one identical result: deviation from the SSSM. With further research, a new SSSM can be established in which the intentions and ethics/morals of players are taken into consideration and quantified when predicting possible outcomes.

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Collateral Damage from an Unjust War*

Rehman Sobhan**

The Unjust War

The unjust and unequal war being waged on Iraq by the Anglo-American axis (AAA) appears to be over and the Saddam regime appears to have passed, unlamented, into history. However, the anarchy which is engulfing Iraq suggests that its problems may assume a new dimension. The unsavoury nature of the Saddam regime does not lend justice to what was after all a war of aggression by an invading army on a sovereign country. The illegitimate nature of such a war will come to haunt the AAA as well as the regime they put in place in Iraq and will infect their relations with the Arab world. It is argued here that the AAA decision to oust Saddam through a war of aggression may become its own nemesis and could affect the outcome of the bigger war for the hearts and minds of the Arab world.

The build-up to the war and its bloody outcome has already outraged the world. In countries across the world, including in countries whose governments are waging this war, an unprecedented scale of popular protests have challenged the legitimacy and morality of the war. Nor have these protests ended with the fall of the Saddam regime. It would be no exaggeration to say that this is one war against which virtually the entire population of the world was united, even where their governments paid lip service to the AAA. In Bangladesh, where the initial response to the war was muted, it would be rare to find anyone who is not outraged by this unjust war of aggression on Iraq. The scale of these protests across the world suggests that it is not just the aggression which is being protested but the hegemonic nature of a world order where such unjust wars can be waged with impunity.

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Collateral Damage

It is argued here that, notwithstanding the immediate outcome of the battle for Iraq, the unjust origins of this war of aggression may have inflicted incalculable collateral damage on the world order as it has evolved since the end of the Second World War. Whilst dictators come and go the damage inflicted by these acts may prove to be more durable. In this presentation I propose to discuss the nature of this damage and to examine its potentially dangerous consequences for the international community as well as its blowback on the AAA itself. The four areas where such damage has undermined the world order may be addressed under the heads of the rule of law, the institutions of democracy, the United Nations system and the sustainability of the Arab polity.

The Breakdown in the Rule of Law

The aggression launched on Iraq by the AAA may be seen to have ushered in an era of lawlessness for the world. When the most powerful country in the world, which should have served as the cornerstone for a world based on law and justice, launches a war of aggression on a sovereign state, without any legal mandate or authority from the United Nations, the age where might prevails over law would appear to have returned.

International Law recognizes the right of self-defense when a country's security is threatened. However, the AAA invasion of Iraq, did not originate in any ongoing or even perceived threat to the security of either the United States or the U.K. None of the immediate neighbours of Iraq, not even Israel, have indicated that they perceive Iraq as an immediate threat to their security. They always knew that Iraq's military capacity, including its so called *weapons of mass destruction* (WMD), if any, presented no serious threat to the AAA. This was ultimately made evident by the failure of Saddam to use WMD at any stage of the recent war, even when his regime was nearing its end and his own physical survival was at risk.

Saddam's failure to deploy WMD suggests that the UN sponsored disarmament progreamme over the last 12 years, was more successful than was recognized by the AAA or even the UN itself. Due to the UN disarmament regime in the 1990s, Iraq was not only rendered incapable of developing WMD but was also denied all means to upgrade its conventional weapons. This served an invaluable military purpose for the AAA by greatly facilitating their aggression against Iraq whose defenses had been severely degraded through the efforts of the UN disarmament programme. The UN disarmament regime, thus, ended up as an instrument which denied a member country the right to defend itself against an aggression which

remained ongoing over 12 years. In such circumstances, it was the moral as well as legal responsibility of the UN to protect a country which had been disarmed under their mandate, from a potential aggressor, in this case the United States.

As the case for pre-emptive war against use of WMD fades into history few will be left to recall that this farrago of half-truths was once used as the principal cause for launching a war of aggression in defiance of the UN charter. The agenda for regime change now appears to have been graduated from an instrumental means to eliminate WMD into the principal objective of the AAA invasion of Iraq. But a regime change was certainly not the rationale presented before the Security Council by the AAA for justifying the use of force in Iraq.

1000 US weapon inspectors are now being imported into Iraq to search for as yet undiscovered and unused WMDs. Even if some WMDs were to mysteriously be discovered in Iraq (arriving perhaps in the baggage of the US inspectors), these weapons, at best, would have constituted a hypothetical threat to the US. This threat, however, should not have been met by an act of war since the possession of WMD was of little significance unless Iraq actually threatened to use them against an adversary. Today neither the UN system, nor international law recognizes the principle of pre-emptive war. Moving the world into an era of pre-emptive war, where powerful countries can make war in anticipation of the most remote of hypothetical threats opens up a *Pandora's box* for the world. The latest move by the US to threaten Syria with pre-emptive war on the grounds that they may have WMD indicates the dangerous limits to which application of such a doctrine can take the world. In such a world, any country, acting without a UN mandate, can now make war on a smaller or weaker neighbour based on a subjective assessment by the bigger power that it feels that its future security may be endangered.

Regime change as a primary goal of war remains, perhaps, the most dangerous threat to a stable world order. There may be many regimes across the world whose citizens or some groups of citizens would like to see changed. Some countries or even groups of countries may feel that regime change in a country would serve the regional interest. All Arabs see Ariel Sharon's regime in Israel as a threat to their security and would love to see it changed. This privilege to effect regime change is, however, limited only to those countries with the actual power to effect change. But is this a feasible way to run the world? If every country possessed of such power can set out to forcibly change a regime they find unacceptable where will this leave the world? A global jurisprudence, where a powerful country will combine the role of prosecutor, judge, jury and executioner, spells death to the rule of law both at the national and global level. It is to avoid a potentially anarchic world, governed by arbitrary exercise of the principle of preemptive

action and externally driven regime change, that a UN system was created. It has not worked perfectly but it has at least offered some security to weaker states.

The Crisis for the United Nations

The assault on the rule of law has now created a crisis for the United Nations and endangered its relevance. The decision by the United States and the UK to deliberately bypass the UN represents a contempt for world opinion. The argument advanced by the AAA that the UN would be reduced to irrelevance if it did not wage war to enforce Resolution 1441 and disarm Iraq of WMD has been turned into a self-fulfilling prophecy. It is now the AAA, through its own unilateral act of aggression, which has pushed the UN towards irrelevance.

During the debate on Resolution 1441, there was, at one stage, a grave danger that the UN would be pressurized by the US into legitimising its invasion of Iraq. It appeared possible that the US would bully and buy enough votes to obtain a majority in the Security Council in favour of war. The members in the Security Council were exposed to quite ruthless pressure from the US to override their best judgment, the weight of democratic public opinion at home and indeed their national interest, to support the US-UK resolution for war on Iraq. This entire episode of power play by the US in the Security Council confirms that voting in the UN may not reflect the will of that country but the expedient judgment of their leaders. Most non-Permanent members of the Security Council remain dependent on the US for aid, market access, FDI, arms, or security and can thus be pushed to vote, in the cause of expediency, any way that serves the US interest.

It says much for the strength of their abhorrence for a pre-emptive war against Iraq, that these potentially pliable members of the Security Council could withstand intense US pressure to endorse the use of force in Iraq. Had the Security Council actually succumbed to US pressure and voted for war on the grounds that it was meant to disarm Iraq of WMD, the damage to the credibility of the UN system would have incalculable, particularly now that no WMDs are being located in Iraq or were used in the war. The resolve of the majority of the Security Council, led by France, Russia and Germany, to resist such pressure compelled the US and UK to abandon their efforts to buy a favourable vote in the Security Council, and to act alone, in defiance of the UN as well as world public opinion, to launch an illegitimate war of aggression on Iraq. A United Nations worth its salt would have instantly convened a meeting of the Security Council, to discuss what was a clear act of aggression against a fellow member of the UN. In fact, due to the power of the AAA in the UN the Arab League could not even generate support for a meeting of the General Assembly, let alone a resolution in the Security Council, asking for a cease fire.

Now that anarchy has descended on Iraq a restoration of the rule of law becomes crucial. But at the end of a victorious but illegitimate war what will constitute legality? International law does not recognize the right of conquest. Any decree issued by General Jay Garner can thus be challenged in courts of law across the world. Nor can Garner grant concessions to his cronies to exploit Iraq's oil resources, without any legal authority. It required a mandate from the UN to give legitimacy to the exercise of governance and the initiation of reconstruction work in both Bosnia and Kosovo, after NATO led military interventions. Unless the AAA are to operate in a twilight zone of the law, which would expose them to constant legal challenge, the conquerors may still need the UN, whatever Rumsfield may feel, to lend legitimacy to their actions and their multi-billion dollar contracts in post-war Iraq.

The need for the UN to save the peace in Iraq still does not settle the question of its future. The US and UK have already proclaimed to the world that the US will act exclusively in its own interests even if this is in violation of the provisions of the UN charter and the decisions of the UN system. In this emerging lawless world the UN may either have to accept its subordinate status as the instrument of the US or it will have to survive as a side show in world affairs. If the UN is to be saved, its current protectors such as France, Russia, China and Germany would have to decide to look beyond securing their bilateral interests with the US, and be willing to invest in building a countervailing alliance of countries, to strengthen the UN as a counterweight to its dominance by any one country. To reconstruct the UN may also require an element of regime change in the US, who currently appear incapable of viewing the UN as anything but their own strategic instrument.

Undermining Democracy

Can we envisage transformation in the US political landscape which would restore respect for the UN? It is argued that such a change in perspective in the US is far from certain. The immediate outcome of the Iraq war will, if anything, have validated the perceptions of those in the Bush administration who believe that wars win votes. It is, thus, argued here that whatever its outcome the Iraq war has already inflicted collateral damage on the very institutions of democracy, not just in the AAA but across the world.

The first blow to democracy was inflicted in the United States itself. It has been argued in the US that George W. Bush, drawing on the advise of political strategists such as Karl Rove and the neo-conservative ideologues close to the White House, quite deliberately chose to escalate Iraq into a major political issue.

Whilst Rove hoped that Saddam Hussain could be used to salvage the fortunes of the Republican Party in the Congressional elections of November 2002, the neo-conservatives saw Iraq as the first stage of a US campaign to redraw the political map of the Middle East. In effect, Saddam became Bush's *weapon of mass distraction.* Bush managed to persuade voters that they should close ranks behind their warrior President, whilst thinking less about the deteriorating state of the US economy. Now that Bush has successfully used Iraq to protect the Republican base in Congress it may be expected that the military victory of the AAA in Iraq will also be used as a launching pad for his re-election as President in November 2004. It would however be hard to believe that political opportunism alone sustained the war on Iraq. Wider strategic, ideological and eventually economic interests remain crucial factors, some of which are discussed later in this paper.

Across the rest of the world the Iraq war exposed the weaknesses in the workings of the democratic process. In the case of Europe, the epiphany of Tony Blair, from a pragmatic politician into an evangelical disciple of George W. Bush, demonstrated that even in mature democracies one man's obsession could override the concerns of 80% of the its population who had indicated that they opposed an invasion of Iraq without any UN mandate. In Australia, a right wing Prime Minister, in total defiance of public opinion, committed military support to the AAA. In Spain, another right wing Prime Minister, also chose to defy 90% of public opinion and lined up his government in support of George Bush's war on Iraq. Less surprisingly, the shallowness of the democratic process in the former Socialist countries of Europe has also been exposed. Following Bulgaria's opportunistic support of the US position in the Security Council, other so called `new Europeans', have lined up to be a part of Bush's *coalition of the willing*. As in Spain, most of these leaders acted in defiance of domestic public opinion. In the case of Bulgaria, one million people, out of a population of 8 million, have signed a petition to the Parliament, demanding an end to the invasion of Iraq.

The United States made no pretense of seeking to win the hearts and minds of the world to support its war. Bush and Blair preferred to build a cosmetic support for their war by confecting what is euphemistically termed a *coalition of the willing* which Arundhati Roy has appropriately renamed as the *coalition of the bullied and the bribed*. Inevitably, this infamous coalition was populated by politically vulnerable and economically dependent countries. To build an alliance based on a motley collection of dependent regimes presents a sorry picture of the nature of US diplomacy and the state of democracy across `New Europe' as well as the more pauperized Third world countries. The US attempt to purchase Turkey's real estate for as high a price as $26 billion, in order to establish a launching pad for the invasion of Iraq from the North, provides the most egregious example of the dependence on cash over principle as a driving force of US diplomacy. Across the

world, public opinion from South Asia to South East Asia, from Latin America to sub-Saharan Africa, was overwhelmingly against a war launched in violation of the UN charter. But such is the sorry state of the democracy in the world today that only a few leaders, such as Mahathir Mohammed of Malaysia, have taken cognizance of their public opinion and spoken out categorically in their denunciation of the war. This acquiescence to aggression has alienated the national leadership in most of these countries from the overwhelming surge of public opinion in relation to the Iraq war.

Destabilising the Arab World

Nowhere is this divorce between the national leadership and democratic opinion more conspicuous than in the Arab world. Across the entire Arab world, from well before the war, public opinion has remained overwhelmingly against the aggression on Iraq. The ongoing devastation of Iraq, the slaughter of women and children, seen daily on the TV screens of every Arab home, has left the Arab people seething with rage against the US and UK which is now spilling over into anger at the impotence of their governments. The rage will not be assuaged by the spectacle of Iraqis dancing in the streets of Baghdad cheering the fall of Saddam. It will only reinforce the sense of humiliation which has been a consuming passion in the Arab world since the spectacular victory of Israel over the Arab armies in the 6 Day war of 1967. It was this war which has led to the long night of Israeli occupation of Palestine. Even after 36 years this occupation, sustained by force and the US veto in the Security Council, continues to be bloodily resisted by Palestinians, and has served as one of the strongest motivations of terrorism across the world.

In contrast to the passion and unity on the Arab street the Arab leadership remains lukewarm, divided and pathetically ineffective in their challenge to the AAA aggression on an Arab country. Throughout the crisis the Arab League has proved itself to have feet of clay. Whilst proclaiming opposition to war in the meetings of the Arab League a number of Arab countries continued to provide crucial logistical support to the AAA war effort in Iraq. Without such bases in neighbouring Arab states, it would have been virtually impossible for the US and UK to launch a military operation, on such a scale, on Iraq. Such is the nature of governance in these states that their very future can be staked without any reference to public opinion. Given the sense of outrage and helplessness across the Arab world, the collateral damage from the war may include as its most immediate casualty, the political stability and even regime sustainability of a number of Arab countries. Nor has the so called *Islamic Umah*, represented in the *Organisation of Islamic Countries* (OIC), covered itself with glory. Their

pretensions about Islamic solidarity have been shamefully exposed as they bear mute witness not just to the invasion of Iraq but the ongoing slaughter of the Palestinians.

Collateral agendas : Democracy for the Arab World?

It is clear that the success of the US-UK aggression in ousting the Saddam regime from Iraq and its military occupation, with General Jay Garner installed as the US pro-consul to rule Iraq, may not sate the appetite of the US *hawks*. Collateral agendas for the US in the Middle East may extend beyond Iraq and could include regime change in Iran, Syria, Libya (they were a target for regime change throughout the Reagan administration), Sudan and Yemen. Within particular countries, the Hezbollah in Lebanon, Hamas, Islamic Jihad, perhaps even the PLO, in Palestine, remain potential targets of opportunity for US military action. The US neo-Conservatives, who have inspired the war on Iraq, have a clear agenda to politically reconstruct the Middle East, by force where necessary, to institutionalize Israel's military supremacy over the region within a *Pax Americana*. This goal can be realized by ensuring that no regime in the region acquires, or even comes near to challenging Israel's ongoing and unquestioned monopoly of WMD. The regimes in Iran, Syria and Libya, which have taken more uncompromising positions on liberating Palestine from Israel's military occupation, are likely to be targetted for change and have already been threatened by some US spokespersons to fall into line with a *Pax Americana.*

Within such a strategic perspective, talk of freedom and democratization of Iraq and beyond that the Arab world, so eloquently promoted by the AAA, would appear to serve a largely rhetorical purpose. The more indigenous expressions of democracy which are already manifesting themselves in demonstrations on the streets of Iraq, particularly from the long suppressed Shia majority, do not point to a very hospitable climate for the occupation regime of Jay Garner. Any serious exercise of electoral democracy in Iraq may not, therefore, register appreciation for the for the US's `liberating' role by electing their friends and admirers to office. Iraq has for 45 years been one of the most nationalist minded countries in the Arab world and its people, have been nurtured in such a tradition. Few among the assorted group of Iraqi exiles, some of whom were materially sustained abroad by the largesse of the US and UK intelligence establishments, appear to command any visible political base in Iraq. It is not clear how long many of these returning `leaders' would survive in Iraq without the protection of General Garner, let alone get themselves elected to an Iraqi legislature. Indeed, democracy in Iraq and other parts of the Arab world, where it may emerge, based on freely given votes, is as likely to elevate leaders and parties to power willing to be more assertive of Arab national interests, and may even have a strong fundamentalist expression. It

remains to be seen whether the current enthusiasm for democracy which is being projected by the AAA will remain as supportive of the 'unfriendly' outcome of an election in Iraq or any other Arab country or will feel that even such elected regimes will also need to be changed.

Blowback through the gates of hell

A world order with a dysfunctional or even subordinated United Nations, with the rule of law displaced by the rule of power, with a Europe divided within and from the United States, with leadership, particularly in the Arab world, which is held in contempt by its own citizens, threatens to be a dangerous and hence unsustainable world. It is in such a world of chaos that terrorism thrives. Ordinary people, made constantly aware of the subordination of their leaders to the power of the United States, their impotence in the face of aggression in Iraq and Palestine and their alienation from their rulers, may feel inclined to take extreme measures to express themselves in such an unjust world.

The concept of blowback originates in the process of fighting fires. Under some conditions a misconceived approach to fighting a fire leads to the fire blowing back on the firefighters and consuming them. The invasion of Iraq, in the name of fighting terrorism and spreading democracy has, to quote the Secretary General of the Arab League, Amir Moosa, 'opened the doors to hell'. The tendentious motives and misperceived strategies to fight terrorism may now blowback `the fires of hell' to consume both the invaders and many more innocent people who stand in its path.

The warning of Hosni Mubarak, President of Egypt, that a hundred Bin Ladens may emerge out of the cauldron of the Iraq war should, thus, be taken seriously. In every corner of the Arab world, indeed in many other countries with Muslim populations, a generation is maturing, which feels that the only real challenge to the hegemony of a superpower across an unjust world, must come from the unity of the weak and the dispossessed. This coalition of the weak are now invited to earn immortality by embracing martyrdom as part of their *Jihad*, against the external occupiers of the Arab world. Those in the Muslim world, who have struggled for years to nurture a liberal, democratic and secular political tradition in their respective countries, stand in danger of being rendered irrelevant by a new generation wedded to more extremist agendas.

If the Iraq war was fought by Bush as part of his war on terrorism, it has now given a renewed cause for those who use terror as an instrument of struggle. In the eyes of a new generation of protestors across the Arab and even the Muslim

world, the illegitimate war on Iraq has served to legitimize all forms of retaliatory violence. In such a world, the quest to acquire WMD, both by non-governmental activists, as well as by countries who are under threat as potential victims of external aggression by more powerful countries, is likely to accentuate rather than diminish.

Contrary to the fantasies conjured up by Rumsfield, Saddam had kept Al-Quaeda out of Iraq, since his regime, even if undemocratic, was part of the secular tradition of Arab nationalism. Indeed, the Reagan administration encouraged Saddam to go to war with the post-revolution Iran in order to contain the ideological influence of Ayotollah Khomeini. In the same way the CIA patronized Osama Bin Laden to participate in a *Jihad* against the Soviets in Afghanistan which became part of the blowback from the Afghan war. The resurgence of Islamic fundamentalism among the Shia's of Iraq, under the influence of Iran, may now emerge as the latest blowback, this time from Bush's Iraq war.

It may be the ultimate irony if Bush were to now be instrumental in bringing both Iran and Al-Quaeda, along with Hezbollah, Hamas and other *jihadis*, across the Islamic world, into Iraq, to wage war against the AAA occupation where Iraqis are already proclaiming that the US has overstayed its welcome. It is, therefore, to be seen how far Iraq will sustain such a resistance and if it will emerge as yet another battleground, as in Palestine, for a generation of young people ready to invoke the tradition of Karbala to martyr themselves, in a struggle to expel AAA forces from an Arab land. This invocation of religious symbols into a resistance movement would be ironic, even sad, since the opposition to the Iraq war has extended far beyond the Muslim world and has mobilized people of all nationalities, faiths and political persuasions, to challenge its injustice.

In its preparation to fight terrorism by any means, the AAA needs to realize that the beliefs and passions of ordinary people cannot be destroyed by Cruise missiles launched through further wars of aggression or draconian measures to fight terrorism. Whilst Saddam may be an inappropriate symbol to invoke such passions, an unjust war remains unjust, whatever be its outcome. The use of force will only accentuate the struggle not just against such wars but against a world order where the arrogance of power and its underlying values of greed can override democratic opinion across the world. One should not be surprised to see a merging of the struggles against unequal globalization with those who have opposed an unjust war, to lend a new ferocity to the street battles which now accompany every gathering of the proponents of global power. The collateral damage of the Iraq war could thus blowback to the United States as well as its international support system, in most dangerous forms not just from the Arab world but from across the world.

The further barricading of US and UK embassies across the world, the periodic need to evacuate families and to issue travel advisories to US citizens, does not suggest that military adventures whether successful or not, will ensure a more secure post-war world for the citizens of the US and UK. Nor will such a world be more friendly to US strategic interests. The fact that a strategy for building security through periodic resort to force by the US has done little to restore peace of mind to US citizens may not indefinitely escape their attention as voters. These voters may not always remain politically intoxicated by the euphoria induced by the triumph of US military power over heavily out-gunned adversaries in Third World countries. Were the US electorate to awaken to this unrelieved threat to their sense of security their votes could make George W. Bush into the ultimate victim of collateral damage from an Unjust War.

Bangladesh: The Draft Poverty Reduction Strategy Paper (PRSP)–A Review

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1. INTRODUCTION

1.1 The Purpose of the PRSP

The PRSP is intended to be a national programme for poverty reduction, the formulation of which is required by the World Bank and the IMF as an aid conditionality. For the IMF, it replaces the Policy Framework Paper (PFP), which outlined a country's policies and reform proposals. The PRSP is to be the framework for the IMF and the World Bank on which to base their lending programmes to developing countries and providing debt relief to the highly indebted poor countries (HIPCs). The HIPCs and users of ESAF (enhanced structural adjustment facility) must prepare their own PRSPs before they can seek new programme support from the IMF or the Bank. A country's PRSP must be approved by the IMF and the World Bank before a lending programme can be negotiated for it or multilateral debt relief is available to it, as the case may be. In the case of debt relief, a PRSP outlines, amongst other things, how resources saved from debt relief will be spent. The PRSP is expected to be developed in a participatory manner so that it is nationally owned. The document is required to lay out a policy framework and the agenda for tackling poverty.

Poverty is multidimensional. It has many-fold expressions and, indeed, many roots. It has to be understood and addressed from economic perspectives such as access to resources and employment as well as from socio-cultural perspectives such as inequity, gender, caste, ethnicity, and community. Hence, for combating poverty in the country, all routes, income and non-income, matter. It should be attacked directly at its location with due regard to its extent and causes and processes. The poverty reduction strategy to be formulated needs, therefore, to be contextually relevant and realistic.

Attack on poverty must, therefore, continue relentlessly but such economic and social instruments must be used as can effectively address the basic causes of poverty. The traditional notion of stimulating strong GDP growth that would stimulate employment generation which in turn would reduce poverty has proven to be largely ineffective worldwide. The so-called S-curve syndrome of the innovation-diffusion theory or the notion of "trickle-down" has not been of much avail in addressing poverty.

1.2   Poverty in Bangladesh

Bangladesh is one of the poorest countries of the world. One out of every two of its citizens is absolutely poor on the basis of cost-of-basic-needs; and two out of three of the poor are hardcore poor. Every plan, five-yearly or otherwise, of the government since the early Pakistani days has aimed at reducing widespread poverty; and, generally speaking, there have been some successes over the years. But, given the rate at which population grew, the number of the poor is larger today compared to, say, 1991/92 and not much less than the total population of Bangladesh at the time of independence in 1971. Socio-economic disparity in Bangladesh is glaring and has been increasing, particularly in the wake of economic liberalization, vigorously pursued since the early 1999s.

1.3   PRSP Formulation in Bangladesh

Bangladesh is not a HIPC, but it is an LDC and seeks financial resources (soft loans, grants) from multilateral and bilateral sources and has accepted an obligation of formulating a PRSP. The PRSP formulation process initiated by the Government of Bangladesh is currently in progress. A "Draft for Discussion" or the interim PRSP (I-PRSP)—henceforth draft PRSP—titled *Bangladesh: A National Strategy for Economic Growth and Poverty Reduction* (Ministry of Finance, Government of Bangladesh, April 2002), has been made available for review by all concerned and interested. This review is expected to be an input into the PRSP finalization process. The succeeding section contains a brief summary of the basic contents of the draft PRSP. The next section presents a critical review

of this draft document in the context of the socio-economic and political realities currently prevailing in the country. Global experiences with respect to economic growth and poverty reduction are also highlighted. The final section outlines elements of an alternative PRSP.

2.   DRAFT PRSP: A QUICK SUMMARY

2.1   Structure of the Paper

The draft document under review is divided into seven chapters. The introductory chapter (chapter 1) discusses the context of the PRSP's national ownership, the progress achieved by Bangladesh in different fields (the silent ascent), and progress in cross-country perspectives. Chapter 2 reviews the poverty situation in Bangladesh; chapter 3 reviews the positive achievements and negative concerns about poverty reduction gathered through grass-roots consultations; chapter 4 presents the broad poverty reduction targets and social development goals as well as the feasibility of the attainment of the targets; chapter 5, the core chapter of the document, presents the proposed poverty reduction strategy; chapter 6 provides the policy matrix for the national poverty reduction strategy; and the last chapter, chapter 7, outlines some approaches to monitoring and evaluating the progress in implementing the strategy.

In addition to the seven chapters listed above the document also includes ten informative tables in the main text and seven others in the annex. Table 10 sets the time-line for full strategy development with targeted dates of completion of the activities, consultations with the stakeholders, and necessary adjustments in the framework by December 2002; the specification of disaggregated targets and programmes/projects, detailed costing and financing, and the operationalization of the poverty focal point and civil initiatives by March 2003; and finalization of the full strategy by March 2004.

In addition to the Annex Tables the document also includes nine important annexes viz. Methodology of Poverty Analysis (Annex1), Employment and Labour Market Issues (Annex2), Macro-economic Setting and Balances of the Bangladesh Economy (Annex 3), Agriculture and Rural Development (Annex 4), Manufacturing Sector (Annex 5), Infrastructure Development (Annex 6), Women's Advancement and Removing Gender Gaps (Annex 7). Proposed Poverty Reduction Indicators Tracking and Monitoring Matrix (Annex 8), and the Indicators of Macroeconomic Management (Annex 9).

2.2   Chapter-wise Brief Summary

Chapter 1 reports that different stakeholders were consulted regarding the needs and demands of the poor. The purpose of those consultations was to reach a broad-based consensus on a poverty reduction agenda, thereby securing national ownership of the strategy paper.

Chapter 1 also records that Bangladesh, over the years, has achieved some notable successes, which include significant reduction in population growth, infant mortality, and illiteracy rates; and significant increases in agricultural production, and women's education and participation in social and economic activities.

In chapter 2, a review of the poverty situation of the country is presented. On the basis of cost-of-basic-needs, poverty ratio fell by about one percentage point per year during the 1990s, declining from about 59 per cent in 1991/92 to 50 per cent in 2000. The reduction was relatively higher in the urban areas than in the rural areas. But income inequalities increased during the decade. As regards human poverty reduction that takes into account progress in education, health, and nutritional status, the progress has been relatively faster compared to income poverty. However, even though improvement in certain social indicators has been notable this has not often been accompanied by gender equality. Also, there is considerable regional variation in both income-poverty and social indicators.

Chapter 3 records several positive trends as well as negative concerns that emerged from the consultations with the poor and cross-sections of civil society. The positive trends include increase in education and health facilities, reduction in gender inequality in education, greater awareness about diseases and environmental health, positive increase in labour and credit market dynamism, a perceptible increase in employment opportunities both within and outside agriculture, enhanced access of the poor in some non-income dimensions of poverty, and some progress in women empowerment. But the participants in the consultations very strongly feel that all these past successes may prove fragile if the negative concerns are not properly guarded against. These negative concerns relate to: poor law and order; organized crimes; extortion and economic and social violence; lack of physical infrastructure; poor quality of education, health and other social services; lack of effective local government and administrative decentralization; and lack of coordination among development agencies and institutions particularly at the local level; lack of employment and economic opportunities; lack of social capital and low level of collective action at the community level; and lack of democratization of the political process.

In chapter 4, a set of poverty reduction targets and social development goals has been proposed to be achieved by 2015. These goals and targets are similar to those of the Millennium Development Goals (MDGs) and Bangladesh's commitment under the Partnership Agreement on Poverty Reduction (PAPR) with the Asian Development Bank (ADB). The targets are: (i) reduction of the incidence of national poverty by 50 per cent; (ii) attainment of universal primary education for all girls and boys of primary school age; (iii) elimination of gender disparity in primary and secondary education; (iv) reduction of infant and under five mortality rates by 65 per cent and elimination of gender disparity in child mortality; (v) reduction of the proportion of malnourished children under five by 50 per cent and elimination of gender disparity in child malnutrition; (vi) reduction of maternal mortality rate by 75 per cent; and (vii) ensuring availability of reproductive health services to all women.

It has been stated that the attainment of these targets, particularly that of reducing the incidence of national poverty by 50 per cent, will require a sustained GDP growth rate of about 7 per cent per year over the next 15 years. Moreover, pro-active public actions will be needed to realize the goals.

Chapter 5 sets out the poverty reduction policy package. It presents the poverty reduction strategy, grouped into five major categories, in detail. The *first* element is concerned with increasing pro-poor economic growth aimed at increasing income and employment of the poor. Relevant policy and institutional aspects have been outlined, a particular focus being on ensuring macroeconomic balances. Response directions indicated include: monetary and fiscal policy reforms, privatization of SoEs and private sector development, ensuring cost-effective fiscal and financial services, ensuring better environment for foreign investment; promotion of good governance including separation of judiciary; policies regarding agriculture and rural development including intensification of rice-crop production and diversification of high-return non-cereal crops and improvement in non-crop agriculture; policies for growth in the manufacturing sector which should envisage skill and technological upgrading, capacity building, development of export-oriented industries, development of small and medium enterprises etc.; and policies for infrastructure development including development of information technology.

The *second* element envisages policies for increasing human development of the poor for raising their capability through education, health, nutrition, and social interventions. Emphasis has been placed on vocational and technical education, increasing allocation to education from the current level of 2.2 per cent of GDP to

at least 4.5 per cent by 2010, involvement of NGOs in providing high-quality health care services and so on.

The *third* element relates to policies for women's advancement and for removing gender gaps. The policy thrusts include improvement of female life expectancy, elimination of violence against women, reduction of high maternal mortality, increasing employment and economic opportunities for women without barriers, ensuring equality of rights for women, and creating women-friendly institutional environment.

The *fourth* element is about social safety nets for the poor against income/consumption shocks. This element also includes policies for increasing social solidarity and strengthening natural disaster mitigating mechanisms.

The *fifth* element is concerned with issues such as participatory governance, improving non-material dimensions of well-being including security, power, removing institutional hurdles to social mobility, and improving the performance of anti-poverty institutions, and policies for environmental conservation.

For the implementation of the poverty reduction strategy, the draft document has specified a medium term macroeconomic framework covering the period FY 2003 and FY 2005 in chapter 6. The framework was worked out on the basis of the estimated values of the key macroeconomic fundamentals for FY 2002, which, it has been suggested, will be updated and adjusted periodically on the basis of actual changes, as part of the preparation of the strategy.

The last chapter, chapter 7, emphasizes a process of monitoring and evaluation of the progress in the implementation of the poverty reduction strategy and the outcome indicators. This will provide the basis for any corrective measures that may be needed to be designed and put in place towards more effective and efficient implementation of the strategy. In this connection, a poverty reduction indicators tracking and monitoring matrix has been proposed in the annexure (Annex-8).

3.   A CRITICAL REVIEW OF THE DRAFT PRSP

3.1   Past Performance and Present Poverty Situation

It has been rightly pointed out that Bangladesh's performance has been significant in several respects, including reduction in population growth rate, infant mortality, maternal mortality, and illiteracy rates; and significant increases in agricultural

production and women's education and participation. Also, however inadequate, democratic governance has been in place since 1991.

However, soft loans and grants had little, if any, role to play in such ascents. In fact, loans and grants received in billions over the past three decades have not been of much avail for the country's people at large. An overwhelmingly large part of those billions has gone to foreign consultants, contractors, and for the importation of luxury goods on the one hand, and misappropriation by people in authority and their collaborators in business and other walks of life on the other. In reality, it is the people's resilience and hard work that have in large part been responsible for the country's success stories. For example, there has been little public investment in agriculture since Independence. Indeed, at Independence, the population of the country was 73 million and we were food deficient. But, today, the population is well over 130 million and we are virtually self-sufficient in food, nationally speaking. But, due to lack of access to employment and assets, over half the country's population, as pointed out earlier, is poor, without access to adequate food and other basic needs.

3.2 The PRSP Process

The World Bank and the IMF asked assistance-seeking developing countries in 1999 for PRSPs to be prepared and submitted by them to the Bank-Fund duo for approval. This requirement has been imposed as an aid conditionally. Bangladesh embarked upon the task of its PRSP preparation in pursuance of this Bank-Fund call. Not every country has so far chosen to prepare a PRSP. Notably, India refused to participate in the process.

It has been mentioned in the introductory chapter of the draft PRSP that in the process of its preparation, consultations with cross-sections of the stakeholders at upazila, division and local levels were held. These consultations, it is claimed, would both ensure the right priorities and a broad-based consensus on the poverty reduction agenda. But, while this conventional way of opinion surveys through consultations with cross sections of stakeholders is a step forward towards participation, the draft document does not contain a strategy that is either participatory or democratic. It essentially remains a bureaucratic and technocratic exercise within the ongoing free market framework, as enjoined by the World Bank and the IMF.

As is understood now, the PRSP will be finalized taking into cognizance the views expressed on the draft by the interested groups, agencies, and individuals. There is one view that the available review process is an opportunity for expressing

genuine opinions by concerned people to make the final document as relevant and effective as possible. But, there is another view that since it is being formulated within the framework of the ongoing Washington Consensus based free market, its chance of success is no better than similar programmes undertaken in the past.

Indeed, civil society groups in Bangladesh and others concerned have raised doubts about the efficacy of this process in pursuing the goal of poverty reduction. The PRSP is clearly an externally driven instrument essentially related to accessing soft loans, and seeking debt relief where appropriate. In Bangladesh, the economic policy-making has historically been heavily concerned with external assistance procurement and, hence, by and large, followed the 'always wise' prescriptions of the World Bank, the IMF, and the influential bilateral assistance providers.

It is held by many that, in the PRSP preparation process, the so-called 'policy ownership', 'participatory policy-making' and consultations with the stakeholders', on which the strategy is supposed to be based, are likely to remain hollow slogans as the final outcome is not expected by the World Bank and IMF to deviate in any significant way from the ongoing neo-liberal fee market-driven policies and processes. This view is in line with the following statement emanating from a centre which routinely monitors World Bank and IMF activities: "The IMF appears to believe that participation will not challenge [the structural adjustment] programme content, i.e. it will not lead to radically different programmes being formulated, it will simply give civil society a better understanding of why 'IMF-style' reforms are necessary and thus ownership of them. Generally, many donors believe it will be business as usual with a greater focus on social sectors and better safety nets to address the poverty element" (Angela Wood, April 2000).

3.3   Grassroots Consultations and PRSP Preparation

Moreover, the consultations at the grass-roots levels, it has been pointed out in the document, have indicated the fragility of the successes achieved so far. The consultations have also indicated various points of worrying slippage and underscored various salient moments of regress. The citizens' concerns about, for example, the deteriorating law and order situation in the country, economic and social violence, lack of physical infrastructure, lack of effective local government and of decentralization, lack of democratization of the political process, and poor quality of education, health and other social services are genuine and reflect major past failures. The document records that the grass-roots level consultations have

suggested the creation of a multi-tier local government at union, upazila, and district levels for improved governance, accelerated economic growth, and faster poverty reduction. A close scrutiny of the proposed strategy document reveals that this suggestion has been ignored. The proposed strategy has talked more about the promotion of good governance at the centre.

3.4   The Conceptual Basis

In fact, the ongoing free market paradigm is inherently iniquitous; and the poor and the disadvantaged have little opportunity to participate in and benefit equitably from the various socio-economic processes that the ruling paradigm generates. The PRSP is simply a renewal of the basic ideas contained in the structural adjustment programmes—in the name of poverty reduction in place of the earlier focus on economic growth. The basic thrusts would remain unchanged, which the World Bank and IMF approval process would, it is believed, make sure.

Poverty alleviation is necessarily Bangladesh's topmost priority and it should essentially be the prime focus of the country's development planning and, undoubtedly, of the forthcoming sixth five year plan. There is no controversy about it. But the strategy for poverty reduction must be truly based on national perspectives. It should be home-grown and not based on 'dictates' from outside.

3.5   The Sixth Five Year Plan and the PSRP

It has been stated in the draft PRSP that the strategy being formulated will form the core of the Sixth Five Year Plan (2002-2007). But in the light of the past uninspiring achievements, such plan making does not generate confidence. Indeed, the proposals that the PRSP is advancing contain little that is new. These have been tried in the past, without much avail. How can, then, a worthwhile five year plan be formulated with such proposals as its core. The Sixth Five-Year Plan, according to its design, is a conventional top-down exercise. The country has had long experience of such plans and the resulting frustrating outcomes. It is therefore likely to add another dismal episode in continuation of the previous such plans. Since, as stated earlier, the fundamental cause of poverty is the glaring and increasing disparity in income distribution and access to assets and opportunities, a five year plan, if it is to be prepared, must be developed around the basic approach of addressing increasing disempowerment of the people at large and the related realities prevailing on the ground. That would call for a thorough overhaul of the policy and institutional regimes from the perspective of participatory democracy.

3.6   Bottom-up Planning

Since a strategy for poverty reduction to be effective must be directed towards effectively reducing socio-economic disparity, a bottom-up planning rather than a top-down approach should be the appropriate mechanism for addressing poverty reduction effectively. And both preparation and implementation of such a bottom-up plan depends on an effective local government with devolved powers and ensured access to adequate financial resources. Though the draft document recognizes the significance of bottom-up planning and the importance of local governance, it suggests no strategy and directions for the formulation and implementation of bottom-up plans.

3.7   Macro-Economic Stability

In discussing the policies for ensuring macroeconomic stability, draft document places emphasis on reforms in the public revenue and expenditure systems together with the creation of a sound macroeconomic environment, which will help promote investment and avoid economic chaos. Those in poverty should benefit directly from it and the policy should ensure sustained employment for the poor, the document claims. But there is nothing new in these statements. How can the macro economic dynamics lead to employment creation for the poor has not been spelt out? In fact, in the 1990s, Bangladesh achieved noteworthy macro economic stability in the wake of its undertaking stabilization policies within the framework of economic liberalization and has since, broadly speaking, maintained that stability with occasional blemishes in one respect or another. But, the GDP growth rate has not accelerated, let alone pro-poor economic growth. And, unemployment has worsened, as has socio-economic disparity.

3.8   Pro-Poor Policies

On close examination it is seen that the policies proposed are pro-poor in rhetoric and do not offer imaginative initiatives to bring about real improvements in the lives of the people in poverty. The strategy for ensuring macroeconomic stability and, for that matter, the suggested strategies for leveraging globalization, developing private sector, and managing financial sector well are all 'business as usual' prescriptions, which have been and will remain pro-rich rather than pro-poor. Macroeconomic approaches which ignore microeconomic realities cannot be helpful to the poor people operating at local spaces, often engaged in eking out a living. The draft document recognizes the need for reducing social inequality, but it lacks realistic proposals even for arresting further worsening of income distribution.

It talks about the need for providing access of the poor to land through tenancy market, human assets via education and training, financial assets via micro credit, social assets through grassroots organizations of the poor, and political assets through greater empowerment. An emphasis has been placed on NGOs and CBSs in the process of helping the poor to access assets of various kinds. All these are part of business-as-usual-speak and the prescribed policy prescriptions imply only tinkering with the status quo.

An appropriate redistribution of assets, starting with land ownership, is essential and so is reorientation of access to employment in favour of the poor. Easy access to credit for small and medium enterprises is another called-for major element. Micro credit is good as for as it goes; but it creates a low level equilibrium trap, and no sustained upgrading of economic operations is known to have occurred starting with micro credit. Also, the poor remain disadvantaged even when they receive some education because the schools they can go to give them very poor quality education. Local people's participation in ensuring quality education and training is a key necessity. But, these and other poor-centred steps are unlikely to be taken as long as the ongoing free market policies and processes, underpinned by rampant corruption and criminalization, hold away. Under this paradigm, the rich and powerful in fact are enhancing their wealth and power and people at large remain marginal. Hence, unless there is a paradigm shift to participatory democracy in political and economic processes, social inequality will continue to increase, rather than declining.

The approach must be 'poor-centred'—rather than 'pro-poor'—to provide the conceptualization process with a radical twist. The former would imply starting with the poor and their circumstances i.e. bottom-up, while the latter (pro-poor) essentially provides a top-down thinking process in which people's plight is to be dealt with through trickle down type of policies and activities. It is in the latter sense that the proposals have been put forward in the draft PRSP.

3.9   Agriculture and Rural Development

The draft document proposes that a supportive policy and institutional environment will be created for agriculture and rural non-farm activities. But, the policies suggested are basically the ones which have been in place. The basic problem of skewed land distribution and the inability of small and marginal farmers to invest in agriculture have not been even touched. The issue of land degradation and the possible adverse impacts of climate change on agriculture also remain unaddressed.

As to the non-farm activities, there has been awareness in Bangladesh about the importance of these activities for a long time. Over the years, policies have been discussed and what needs to be done identified. But the main issue here: is there the will to act?

3.10 People's Health

Regarding people's health, it has been recognized that health and nutrition remain relatively neglected and it has been suggested that these will be corrected. Again the proposed approaches and policies are within the framework of reaching out to the people at large through traditional channels. But such policies and approaches are known to have remained ineffective to a large extent in the past. Placing faith on the process that has not adequately delivered in the past is unlikely to respond properly to the health sector needs in future. Moreover, health risks faced by the poor as a consequence of environmental degradation including air and water pollution and the unsatisfactory conditions in which they generally live have not received any attention. But, these health risks are real and are likely to be compounded in the wake of climate change.

A major overhauling of the whole health management—preventive and curative—process is needed in order that people at large can participate in planning and implementing health sector programmes, starting from the grassroots.

3.11 Women's Status

It has been rightly identified that women's advancement is a critical need for poverty alleviation and social progress. The draft document recognizes that there has been significant improvement in women's education and social status. But, unfortunately, the progress has remained mainly limited to the urban middle classes. There has been little change in the situation of women of poorer segments of society. A major thrust is therefore necessary to mobilize resources and promote institutions at the grassroots for the advancement of the poor and disadvantaged women. Action is also necessary relating to women's rights and legal issues, particularly from the point of view of implementation but, also, if necessary, formulation/re-formulation and enactment of legal provisions.

3.12 Safety Nets

Safety nets, in terms of work and income transfer programmes as well social solidarity building, should be understood in the sense of protecting the livelihoods

of those who are most vulnerable and cannot be enabled to participate in economic processes in any meaningful way. Those who can be enabled should be facilitated to get involved in the mainstream economic and market processes. However, when natural disasters strike, an immediate need arises for assisting people to survive and recover from sudden destitution. These activities can also be categorized as safety nets, for which there must be preparation.

The document has rightly pointed out the need for safety nets in both the senses. But it has also talked about credit, education, and health related activities as part of safety nets; these aspects should not be categorized as safety nets but as part of mainstream activities.

3.13 Water Sector

Water sector has not received the attention it deserves. Indeed, water sector problems are becoming increasingly entrenched. It is absolutely necessary that water management should be based on an integrated approach involving all sources of water as well as all of its uses (drinking, household use, agriculture, industry, navigation, fishery, forestry, environment), i.e. a holistic approach is needed. But, the main point here is that appropriate water sector intervention can be helpful towards alleviation of poverty. There is a number of critical water-poverty interfaces such as the following: lack of access to clean water for drinking purposes and for other domestic uses can jeopardize the life and living of the poor; drinking and domestic use of polluted water can cause health hazards for them—arsenic contamination of groundwater in Bangladesh affecting the source of drinking water for millions of poor Bangladeshis is a case in point; lack of water for overall agricultural use at critical times of crop growth and for other economic activities that generate employment opportunities adversely impact on the livelihoods of the poor people; the urban poor, who often live in urban slums, suffer from lack of access to clean water for drinking and household purposes—in fact, they often have no alternative to drinking and using for other purposes contaminated water, which tells on their health and increases their economic vulnerability; water also causes such hazards as floods and river bank erosion constricting economic conditions of the affected people. It is necessary to analyze these and other water-poverty interfaces with a view to finding out the best possible ways of addressing them.

3.14 Poverty Alleviation and Environmental Concerns

The draft document has recognized the importance of environmental degradation and risks that the poor face. It is also recognized that women and children are particular victims of environmental degradation and that the poor are not

necessarily the polluters but are forced by circumstances to impinge on natural resources unsustainably. It has referred, in general, to the need for sound environmental management in order that the livelihoods of the poor are not adversely impacted upon. It has also talked about the need for the identification of groups of people who are at high risk of exposure to both poverty and environmental degradation as well as for a holistic approach to address both poverty and environmental issues.

Clearly, these statements are part of the general wisdom now and there can be no dispute about what has been said and proposed to be done. But the point is that the document has not outlined an effective strategy to reduce environmental risks that the poor face. In particular, no awareness has been shown regarding the projected climate change and sea level rise and the severe impacts these developments can lead to in terms of both sudden poverty and further entrenching of endemic poverty. The more frequent floods, cyclones, and other natural hazards as a result of climate change will make for immediate destitution for many affected people. At the same time, the long-term economic prospects of the affected people will be damaged. They will also face health hazards due to vector-borne as well as heat-related diseases.

The various linkages between poverty and the ongoing process of environmental degradation, which may be compounded as a result of climate change and sea level rise, need to be investigated and characterized with a view to addressing them as a measure towards environmental protection and poverty alleviation. In this context, both knowledge-base creation and improvement and institutional capacity building for environmental management are important elements. The crucial issues relating to these aspects of poverty alleviation and environmental management need, therefore, to be identified. The draft document falls far short of proposing any meaningful approach and strategy to environmental management for ensuring economic growth and poverty alleviation as well as protecting the environmental heath.

3.15 The Global Setting

Bangladesh, like any other country, is part of a global system. The global dynamics are therefore very relevant for Bangladesh in its efforts to move forward in economic and social terms. However, the global setting is highly iniquitous, and the situation is in fact worsening. The following statistics give a graphic description of the prevailing global scene. Twenty per cent of the world population now disposes of 86 per cent of the world's total wealth, the proportion was 80 per cent 10 years earlier.

Bangladesh, being a least developed country, is at the wrong end of this global iniquitous order. Bangladesh receives negligible foreign direct investment; and the foreign assistance climate is worsening. Also the developed countries broadly remain in a protective mode in so far as their markets are concerned. On the other hand, Bangladesh has opened up markets precipitously, while, at the same time, it is dependent on a few exportables. In fact, readymade garments, jute and jute goods, fish, and tea account for almost 80 per cent of its annual export earnings. A major problem will arise after 31 December 2004 when the quota system relating to garments exports will be dismantled. All available evidence suggests that Bangladesh's garment exports will virtually collapse after that. On the other hand, there is international pressure on Bangladesh to further liberalize its import regime. The process disempowers Bangladesh in so far as protecting and supporting its potential industries and services are concerned. Hence, Bangladesh faces a rather hostile international environment.

Under the circumstances, Bangladesh must focus on improving its internal strengths in terms of human capability, social capital, good governance, and economic reorganization to face the external environment more effectively towards enhancing its benefits from the available opportunities and minimizing injuries from the challenges.

4.   ELEMENTS OF AN ALTERNATIVE APPROACH

It has been seen from the review of the draft PRSP presented above that the strategy proposed is basically within the ongoing neo-liberal economic framework. While it recognizes that social inequality is a major problem, there is little awareness shown that this is the basic conundrum which must be faced squarely in developing an appropriate strategy for poverty alleviation. Indeed, in the wake of economic liberalization and globalization, disparity has been accentuating globally, and within nations including Bangladesh. A least developed country like Bangladesh faces a hostile global environment and is enjoined by the World Bank and the IMF and other international and bilateral assistance providers to liberalize and globalize without recognizing that the country needs to develop its own strategy on the basis of the realities prevailing in the country. The policy and institutional proposals offered in the draft PRSP contain very little that is new. All have been tried in the past without much avail. Hence, there is no guarantee that the same policies and institutional framework will deliver in future. Also, the ownership of the PRSP when finalized is unlikely to lie with the people of the country, despite the fact that consultations with cross-sections of various

stakeholders have been undertaken. In fact, the consultations have not properly involved the grassroots. Moreover, some of the fundamental issues raised by the people who participated in the consultations have not been properly addressed. Also, since the final document will have to be approved by the World Bank and the IMF, it is generally seen to be an exercise reflecting the concerns of those organizations more than the genuine concerns of the people of Bangladesh.

A paradigm shift is therefore necessary to be developed centering around policies and institutions aimed at reducing socio-economic disparity and increasing inclusion, participation, and empowerment of the people at large. It is important to focus also on the development of productive forces at the grassroots level to enable the poor to find avenues for income generation either through self-employment or wage-employment. In fact, a major focus must be on employment generation, which needs to be properly conceptualized on the basis of education, training, and organization of the various groups of poor and deprived people. The basic framework is participatory democracy, which can effectively mobilize local people and local resources. In this context, an effective local government is a crucial element. Simultaneously, environmental issues need to be built into the economic and social processes for ensuring sustained economic and social progress. The above are elements of sustainable development which is seen as an alternative to the ongoing neo-liberal paradigm.

Indeed, largely as a result of initiatives taken by the United Nations (e.g. the report of the World Commission on Environment and Development (1987), the 1992 Rio Earth Summit, various other agreements/protocols/conventions, and various preparatory activities leading to the Johannesburg World Summit on Sustainable Development in August-September 2002) there are some policies and institutional developments already in place internationally as well as in countries around the world including Bangladesh. But nothing much has happened in practice. It is necessary to build on these few achievements towards the establishment of the new paradigm.

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Poverty Creation or Poverty Reduction Under PRSP: A Case for Reviewing and Rethinking the Role of the State in Bangladesh*

Muinul Islam**

1. INTRODUCTION

The Government of Bangladesh has been engaged in the process of preparation of the Poverty Reduction Strategy Paper (PRSP) as required by the World Bank and the IMF as an aid conditionality. For the IMF, the PRSP replaces the Policy Framework Paper(PFP), which was supposed to be a joint IMF-WB document outlining a country's policies and reform proposals. (However, the PFP was produced by the IMF and was never really jointly used by the two organisations). Only highly indebted poor countries (HIPCs) and users of Enhanced Structural Adjustment Facility (ESAF) of the IMF are supposed to be required to produce a PRSP before they can seek new programme support from the IMF or the World Bank. Bangladesh is not a HIPC, but as a least developed country (LDC), it felt obligated to formulate a PRSP in the hope of getting future debt relief or new soft loans from the two donor organisations. Though a PRSP is supposed to contain the following three main features that 1) it will be developed in a participatory way, 2) it will be nationally owned, and 3) it will lay out a policy framework and agenda for poverty reduction, in the Bangladesh reality it is safely surmised that the process will be a government-led one where the inputs will be overwhelmingly dominated by the bureaucrats, special interest groups, consultants and policy elites. In this tradition, a 'draft for discussion' of the interim PRSP (I-PRSP) titled, *Bangladesh: A National Strategy for Economic Growth and Poverty Reduction,* has already been floated in April 2002 as a step toward that goal. The present article aims at providing a critique of the role of the Bangladesh state in the context of the current socio-economic and political reality of the country vis-à-vis the stated goal of poverty reduction in the Bangladesh society as envisioned in that document.

The whole concept of embarking on the task of formulating a strategy paper for poverty reduction under the dictates of donor organizations should be quite unacceptable to any self-respecting nation. But, the long-practiced policy-making creed of abiding by the 'always wise' prescriptions of the donor big brothers has been ascribed almost a hallowed status by the economic policy-makers of the present ruling party in Bangladesh. Therefore, in spite of the oft-repeated clatter of the cliché of 'policy ownership', 'participatory policy-making' or 'consultations with the stakeholders', the preparation process of the PRSP remains tainted with the alleged bureaucratic and technocratic disposition of the authors of the strategy paper. However, it is significant to note that the document declares right at the first page that for operation purposes, the strategy paper will form the core of the Sixth Five Year Plan (2002-2007) beginning from 1 July 2002. It would have been really heartening for people like us if a full-fledged plan document could be prepared with poverty reduction as its prime focus in order to tackle the issue of poverty with the seriousness it truly deserves in Bangladesh at the present moment. It would have been doubly creditable if such a document would have come out of a truly home-grown perception of need for urgent action in this front. The fact that the PRSP has already been perceived as an externally driven instrument for accessing soft loans from external agencies and for achieving eligibility for future debt relief will definitely raise genuine doubts about the sincerity of purpose of the Government of Bangladesh in pursuing the goal of poverty reduction as its true priority.

In the present article, we like to organise our discussion around the main theme that the present socio-political and economic system of Bangladesh has been functioning as a prolific breeding ground of poverty. The 'system' in Bangladesh breeds and reproduces poverty. It does not, in itself, alleviate poverty.

Theoretically speaking, if 'surplus' is expropriated from the producers through different institutional mechanisms persisting in the economic, social and political system of a country trying to emulate the capitalistic principles of the 'open market economy', and if equally strong mechanisms to plough back the surplus to the producers in different forms are not built up in the social structure, poverty will be an inescapable end product of such a social system through the intermediation of increasing inequality in the distribution of income and wealth, exploitation and deprivation of a vast section of the productive population. Economic growth itself cannot arrest the process of poverty creation and reproduction in such a society in the absence of strong redistributive mechanisms and pro-poor policies pursued by the state or through state-led security system for the poor. Jean Dreze and Amartya Sen (1989) showed through their concepts of 'Growth-Mediated Security', 'Unaimed Opulence', 'Public Provisioning' and 'Support-Led Security' and empirical evidence from a number of country

experiences that the state had a definite role in combating hunger and poverty in different developing countries.

The economic, social and political system in Bangladesh is constantly transferring 'surplus' from the productive segments of the population to the small groups of middle and big landowners, middlemen, traders and businessmen, smugglers and black marketers, bureaucrats, importers, indenters, industrialists, politicians and top professionals. The 'system' transfers surplus from the villages to the towns and cities, from the small towns to the large cities and the capital. It transfers surplus from agriculture to trading, and to rent-seeking bureaucrats and political functionaries. It transfers surplus from small savers to borrowers of bank loans masquerading as industrialists, and to 'bank loan defaulter' elite traders and political elements. It also transfers surplus overseas. Therefore, the state in Bangladesh, as the apex institution of the superstructure of this social formation, must be considered a prime institution for nurturing and protecting the social structure which is creating and reproducing the processes of increasing economic inequality, exploitation and deprivation of the productive sections of the population, and hence creating and reproducing poverty. The case for reviewing and rethinking the role of the state in Bangladesh rests on these themes, which will be further elaborated in the latter sections of the paper.

Lamenting on the wrong development policies pursued by all the post-liberation regimes in Bangladesh, a leading economist of the country, Prof. Anisur Rahman notes the following historical facts of our economic development process:

"The "development strategy" of increasing inequalities was followed with increasing commitment by each succeeding government, resulting in economic and social inequalities reaching the astronomical heights that they have reached today. And it seemed that rampant corruption was encouraged by all these governments as if as part of a strategy to distribute favours to their political allies and clientele to consolidate their power.

The collapse of East European socialism was picked up as an open excuse to move toward an uncontrolled market economy and gradual abdication from the government's responsibility to provide any guardianship of economy to promote social objectives. Socialism was redefined in the constitution as "economic and social justice" making this promise, which had been flagged so colourfully in the independence struggle, totally superfluous; however, no development strategy even to promote social justice of any vintage was visible………The reality we are living is that we have unholy dialectics between our national leaderships and foreign interests in the country whose respective interests are in part overlapping and in part conflicting. The overlapping part consists of an interest in creating inequalities in the society so that an affluent elite class is elaborated that will

provide the desired market for foreign goods and technology, and a supply of cheap labour is assured for foreign private investment to promote economic interests of the donor countries. The national leaderships themselves are part of this elite class with aspirations for ever higher ostentatious consumption and who are prepared to engage in deals with the donor countries to sell "development strategy" for favours in terms of foreign "development assistance", much of which can be appropriated by this class to aggrandise themselves. The conflicting part consists of the national leaderships, being bitterly divided among them and competing for power and the concomitant favours from the donors, not following the norms of western democracy. They follow, instead, the norms of disruptive politics inherited from a tradition of politics of street protest and violence that does not permit the economy to settle down to facilitate its smooth exploitation by foreign interests. This results in a dual contradiction in the whole scenario: contradiction between the broader society and the elites, and contradiction between the internally divided elites and the foreign interests seeking opportunities to exploit the economy with the collaboration of the country's elites."(Rahman, 1999, p.6)

We reproduce this long quotation to present our case for reviewing and rethinking the role of the state and the ruling elite in Bangladesh on the issues of poverty creation and poverty reduction in the light of the honest evaluative comments of the historical records mentioned above. We reiterate that this is written as a theme paper, where we want to bring out the different dimensions of the main theme of poverty creation and poverty reproduction.

We present the major features of the I-PRSP draft relating to the strategies recommended by the Government for poverty reduction in Section B. In Section C, we evaluate the role of the Bangladesh state in creating and reproducing poverty through different machinations and policy regimes. In Section D, we examine the suitability and efficacy of the recommendations of the I-PRSP for poverty reduction in the light of the guardianship of such strategies by the state with its present characteristics. In Section E, the concluding section of the paper, we present some alternative strategies, which, we think, may address the issue in its proper perspectives.

2.   MAJOR STRATEGIES FOR POVERTY REDUCTION IN THE I-PRSP DRAFT

The draft I-PRSP document under discussion titled, ***Bangladesh: A National Strategy for Economic Growth and Poverty Reduction***", has been divided in to seven chapters. Chapter 1 is the introductory chapter, which is further sub-divided in to five sections: A) The Process of Policy Ownership; B) The Silent Ascent; C)

Progress in Cross-Country Perspectives; D) Structure of the Paper; and E) Summary Points. Chapter 2 presents the poverty state of the nation in five sections titled: A) Broad Trends over Last Decades; B) Trends in Rural Poverty; C) Trends in Urban Poverty; D) Dimensions of Human Poverty; and E) Summary Points. Chapter 3 is titled as 'Participatory Consultations on Poverty Reduction Strategy: Emerging Lessons', and it has got three sections: A) Positive Achievements; B) Areas of Key Concerns; and C) Summary Points. Chapter 4 presents the broad targets of poverty reduction strategy. It is titled as 'Major Milestones: Poverty Targets and Key Social Development Goals', and is sub-divided in to three sections: A) The Vision; B) Feasibility of Target Attainment; and C) Summary Points.

Chapter 5 is the core chapter of the document titled as 'The Poverty Reduction Strategy', which presents the poverty reduction strategy in detail. It is sub-divided in to nine sections: A) The Strategy: All Routes Matter; B) Increasing Pro-poor Economic Growth; C) Increasing Human Development of the Poor; D) Women's Advancement and Removing Gender Gaps; E) Strengthening Social Protection; F) Enhancing Participation from Below; G) Policies and Institutions for Reducing Inequality; H) Caring for Environment; and I) Summary Points. Section B of this chapter is further sub-divided in to six sub-sections: B1) Ensuring Macroeconomic Balances; B2) Promoting Good Governance; B3) Agriculture and Rural Development; B4) Manufacturing Growth; B5) Infrastructure Development; and B6) Technology Policy.

Chapter 6 is titled as ' Medium term Macroeconomic Framework'. It presents the policy matrix for national poverty reduction strategy. Chapter 7 is titled as 'Monitoring and Evaluation, and is divided in to three sections: A) Institutional Mechanisms; B) Monitoring Indicators; and C) Road Map to Full Strategy. The document also includes nine important annexes, ten informative tables in the main text and seven other annex tables, which help the readers by providing some interesting information relating to the issues discussed in the text.

In the first chapter, the authors note that Bangladesh has achieved impressive success in the areas of population control, overcoming mass starvation and the threat of famine, reducing child nutrition, mainstreaming women in the development process, involving the non-government organisations (NGOs), civil society organisations (CSOs) and community based organisations (CBOs) in developing a pro-poor development agenda and achieving a transition to a viable democratic system in spite of the negative predictions about its viability at the early stages of its post-independence existence.

In Chapter 2, the authors review the poverty situation of the country. They give figures in favour of their claim that income-poverty was reduced by about one percentage point per year during the decade of the nineties of the twentieth century, which was a faster rate compared to that of the earlier decade. Reduction of the head-count index of poverty was better in the urban areas than in the rural areas, but rural areas displayed better progress in reducing the depth and severity of poverty, as captured by trends in poverty gap and squared poverty gap. Inequality increased during the nineties, as the rise in Gini Coefficient of consumption expenditure shows. Human-poverty trends also showed improvements, the authors claim. The human poverty index declined from 61 per cent to 35 per cent during the nineties. Three broad dimensions of human poverty are considered to reach the above conclusion: a) deprivation in health, b) deprivation in education, and c) deprivation in nutrition. Considerable regional disparity in income-poverty and social indicators as well as gender inequality in some indicators are noted.

Chapter 3 brings out some key areas of concern from participatory consultations. The concerns are: 1) law and order, organised crimes, extortion and economic and social violence, 2) lack of effective local government and decentralisation, 3) poor quality of education, health and public services, 4) lack of coordination among development agencies and institutions, 5) lack of remunerative employment and economic opportunities, 6) lack of physical infrastructure, 7) lack of social capital resulting in low-level of collective action, and 8) lack of democratisation of the political process and the resulting polarized and quarrelsome politics.

Chapter 4 starts with a list of poverty targets and social development goals that Bangladesh will try to achieve by the year 2015 as commitment under Millennium Development Goals (MDGs) and the Partnership Agreement on Poverty Reduction (PAPR) with the Asian Development Bank. The targets are: i) reduction of the number of people living below the poverty line by 50 per cent, ii) attaining universal primary education, iii) elimination of gender disparity in primary education, iv) reduction of infant and under five mortality rates by 65 per cent and elimination of gender disparity in child mortality, v) reduction of malnourished children by 50 per cent and elimination of gender disparity in child malnutrition, vi) reduction of maternal mortality rate by 75 per cent , and vii) ensuring availability of reproductive health services to all women. The authors declare that Bangladesh will need to attain and sustain a GDP growth rate of 7 per cent per year over the next 15 years in order to achieve the goals. Additionally, pro-active public actions will be needed.

Chapter 5 contains the poverty reduction strategy grouped in to five major categories: i) policies to accelerate and expand the scope of pro-poor economic

growth, ii) policies to foster human development of the poor, iii) policies to support women's advancement and closing of gender gap in development, iv) policies to favourably influence participatory governance, and v) policies to improve non-material dimensions of well-being including security, power and social inclusion by improving the anti-poverty institutions and removing institutional hurdles to social mobility.

2.1   Policies to increase pro-poor economic growth are further sub-divided in to six sub-categories:

- **Policies for ensuring macroeconomic balances**, which covered monetary policy reforms, policies to improve external and domestic imbalances, fiscal revenue reforms, rationalisation of public expenditure, reduction of subsidies to state-owned enterprises (SOEs), moving toward more flexible exchange rate regime, reforms in the banking sector and the financial market, privatisation of SOEs, etc. A Public Expenditure Review Commission and a Public Revenue Reforms Commission are established. Several steps are envisioned to strengthen pre-budget consultations, parliamentary oversight of the budget, budget preparation and project selection, financial management and public procurement, monitoring and evaluation of projects. Under the sub-head of leveraging globalisation the requirements of a sound investment climate, affordable access to information and communication technologies, improved efficiency of trade promoting services, and investments in human capital and skill formation are emphasised for exploiting globalisation opportunities. Under the sub-head of developing the private sector, it is declared that the private sector will be the engine of economic growth. The Government will create an investment-friendly environment and act as a facilitator through policies to create a stable macro economy, improve law and order, promote good governance, maintain competitiveness, alleviate infrastructure bottlenecks, ensure cost effective fiscal and financial services, and provide market information and support services. The key areas will be: infrastructure, financial and capital market, quality of labour force, reduced cost of doing business through reforms in institutional and regulatory framework, improved law and order, and better environment for foreign investment. Under the sub-head of financial sector management, three major shortcomings are identified: i) weak regulatory power of the Bangladesh Bank, ii) poor governance of

public financial institutions, and iii) deficiency of the legal framework. A banking sector policy will be formulated including a regulatory framework for micro finance institutions (MFIs).

- **Policies for promoting good governance,** which include separation of judiciary, modernisation and improving efficiency of police force, establishing effective planning and budgeting system, strengthening of Comptroller and Auditor General 's office, improving public purchase and procurement systems, establishment of the office of ombudsman, establishment of an independent Anti-Corruption Commission, implementing the recommendations of the Public Administration Reforms Commission, use of information and communication technologies, etc.

- **Policies regarding agriculture and rural development,** which include intensification of production of rice, diversification to high-return non-cereal crops, improvements in non-crop agriculture like fishery, poultry, livestock and forestry, reforming the rural credit market, agro-processing and agri-business development, re-orienting food grain procurement programme, liberalisation and further privatisation of input delivery systems, expansion of the rural non-farm sector and rural infrastructure, etc.

- **Policies for manufacturing growth:** The Government will pursue a globally competitive industrialisation strategy dictated by dynamic comparative advantage. Policy reforms to achieve this will include improving trade infrastructure, controlling *hundi* mechanism, competitive exchange rate regime, streamlining of legal and regulatory framework, necessary financial sector reforms, development of the capital market, rationalisation of fiscal incentives, reforming customs and VAT administration, skill and technology upgrading, capacity building and industrial support services, developing the information and communication sector, developing the export-oriented industries, development of small and medium enterprises through providing credit access, etc.

- **Policies for infrastructure development:** The Government will re-orient sectoral priorities and increase private participation to alleviate infrastructural bottlenecks. Policies like clear assignment of responsibilities of different organisations and agencies, capacity building of BRTA and local government institutions, implementation of the power sector reform proposals, enactment of a Gas Act to provide a regulatory framework for the gas sector, developing growth

centres, developing rural roads, providing drainage structure on rural roads, involving community participation through NGOs, beneficiary groups, user committees and the private sector, private participation in port development, granting more autonomy to the port authorities, implementing labour reforms in ports, setting performance evaluation criteria, establishing procedures for accountability, reforming the BTTB, restructuring the ICT sector, adopting transparent tariff policies, etc. are noted.

- **Technology policy:** Development of information technology through enhancing technological capability in the public sector and removing barriers in the private sector is emphasised.

2.2 Policies for increasing human development of the poor

These policies will be in the fields of education, health and nutrition. Quality of education, health and nutrition facilities for the poor remains neglected, the document notes. The control of communicable diseases, improving maternal and child health, a package of essential health interventions with enhanced programmes of family planning, higher resource allocation for the health sector, involving the NGOs in providing high-quality health care services, introduction of the National Nutrition Programme (NNP), improvement of VGD and RMP, strengthening of incentives for enrolment of children of poor households and of girls, emphasis on vocational and technical education, increasing allocation to education from the current level of 2.2 per cent of GDP to at least 4.5 per cent by 2010, reform of the examination systems and the education governance systems, increasing the access of the poor in high-quality education, improving the quality of primary education and making it universal, etc. are noted as major policy interventions in these fields.

2.3 Policies relating to women's advancement and removing gender gaps

The areas of policy reforms to achieve the above goals are: a) Combating continuing negative sex ratios by improving female life expectancy; b) Eliminating violence against women; c) Reducing high maternal mortality; d) Removing restrictions on women's employment and economic opportunities; e) Ensuring formal equality of rights for men and women; f) Supporting quotas and affirmative action for women at all levels and all spheres; g) Creating women-friendly institutional environment; and h) Generating sex-disaggregated statistics.

2.4   Policies for strengthening social protection

These policies will include three sets: a) The social safety net policies such as VGD/IG-VGD, FFW, old-age pension schemes in rural areas, support for destitute females and traditional relief programmes; b) Policies for increasing social solidarity; c) Policies relating to risk insurance like providing access to credit to the poor in times of emergency, ensuring good health services to cope with health hazards, strengthening disaster mitigating mechanisms, etc.

2.5   Policies for enhancing participation from below

These policies will include decentralisation and devolution of power through effective and elected local government bodies and building grass-roots level initiatives to foster community activities.

2.6   Policies and institutions for reducing inequality

These policies will be taken to prevent any serious worsening of income distribution. One policy would be to ensure broad-based asset access to the poor through access to basic education and higher skills, access to financial assets through micro credit, access to common property resources, greater empowerment of the poor through strengthening the organisations of the poor (NGOs and CBOs). Policies will also try to make the different agencies more accountable to the poor. Measures will be taken for removing existing legal and institutional barriers in the way of social mobility of the poor.

2.7   Policies for environmental caring

These policies will try to integrate the national poverty alleviation strategies with environmental conservation.

At the end of the chapter, the document notes that policies and institutional actions delineated under the proposed poverty reduction strategy will be designed to reach out to the poorest and the remote rural areas, which are vulnerable to adverse ecological processes (including *chars* and river erosion affected areas) and those with high concentration of socially disadvantaged and marginal ethnic groups. Special attention will be given to the people of CHT and tribal population in other parts of the country.

3.   ROLE OF THE STATE IN POVERTY CREATION IN BANGLADESH: SOME MAJOR DIMENSIONS OF THE THEME

Prof. Yunus, a world famous champion of the cause of poverty alleviation, declares in his autobiography *Banker to the Poor,* "Poverty is not created by the poor, it is created by the structures of society, and policies pursued by society." (Yunus,1998, p.215).To be more specific, we believe, as we stated in the introductory section, that poverty is the inescapable end product of the system of exploitation, economic inequality and deprivation in a society trying to emulate the capitalistic principles centring around the philosophy of 'open market economy'. As a country situated at the periphery of the World Capitalist System, Bangladesh is a prolific breeding ground of endemic poverty. In spite of the gains achieved regarding poverty reduction noted in the draft I-PRSP document (as measured by different measures of income-poverty and human poverty), poverty creation and reproduction of poverty remain systemic problems in Bangladesh. Dr. Binayak Sen, one of the two consultants working for preparing the I-PRSP, writes in a separate article on poverty.

"Poverty is a multi-dimensional concept. It focuses on various aspects of deprivation, both income and non-income. It reflects disempowerment, insecurity against shocks, and lack of opportunities. It has manifold expressions and, indeed, many roots. It is about income deprivation, about shortfalls in consumption and inadequate supply of nutrition. It is about poor access to education and low physical asset bases. It is about risks, uncertainties and vulnerabilities. It is about personal insecurity as much as it is about lack of food security. It is about crisis coping capacities. It is about self-development initiatives. It is about dismal state of health and health care access. It is static and dynamic, transient and chronic, sporadic and systemic. It is seasonal as much as spatial. It is inter-generational. It is about all known vicious circles, of low savings, low investment and low growth. It is about the quality of growth and being left out of growth. It is also about personal freedom, alienation, and social justice. It is expressed in each of these and all of these together."(Sen, 2002, p.27).

The above conceptualisation of poverty is undoubtedly a notable exercise in semantics, an almost all-pervading description of the nature and scope of the concept of poverty. However, the core of the definition should not be lost in the milieu of words that inequality in income and asset distribution must be considered the main causal factor in any society responsible for breeding poverty, as poverty is more meaningful a concept in the relative sense. Therefore, the state must be put in the dock in explaining the process of poverty creation and poverty reproduction as the apex institution of the superstructure of a social system

perpetuating and increasing inequality through the mechanisms of surplus expropriation and surplus appropriation, and various other institutions.

In Bangladesh, the economy is characterised by a relatively small 'enclave-type' modern sector in the midst of a vast and mostly pre-capitalist agrarian rural economy, where, in spite of the gradually increasing penetration of market relations, the peasant mode of production still dominates, and a fast expanding tertiary sector consisting of trade and service activities. An increasing part of this tertiary sector is actually dominated by informal types of activities, which are providing, in the majority of cases, bare survival incomes through mostly self-employment to a vast multitude of people both in rural and urban areas, who are failing to get employment in formal activities either in the agricultural sector or the manufacturing sector. This 'disarticulation' of the modern capitalist sector and the different pre-capitalist modes of production is responsible for 'development of underdevelopment', which is conceptualised as "Peripheral Capitalism" by Samir Amin (1976). Peripheral capitalism is a distorted and weak form of capitalism co-existing with pre-capitalist modes in the post-colonial least developed and developing countries of the Third World, which thrives in a society mired in 'dependency syndrome' of the neo-colonial world order based on inter-state relationships characterised by dominance of the few developed industrialised countries and virtual hegemony of the world's only remaining super power, the U.S.A. and the increasing dependency of the LDCs like Bangladesh. The government in such a state becomes a 'comprador government' a la Paul Baran (1957), more interested in serving the interests of world capitalism.

On the other hand, the nature of the state of Bangladesh remains largely bureaucratic as a colonial legacy because of the 'relative overdevelopment' of the state compared to class formation during the colonial era. In this scenario, the state attains and enjoys a sort of 'relative autonomy' of the different emerging elite groups jostling for state power in the post-colonial political nexus. The members of the bureaucracy, both military and civil, who become the major beneficiaries of this relative autonomy by wielding the powers of the de facto rulers rather than functionaries in the government administration, zealously protect and try to perpetuate their privileged position in the 'grand ruling alliance' of such a state comprising of the military and civil bureaucrats, comprador capitalists thriving on international trade, marketing agency of multinational corporations and patronage of state functionaries, and the politicians, either elected or selected by the above ruling clique. As the comprador capitalists can only flourish through marketing of goods produced by the multi-national companies, their business success critically depends on the fiscal, monetary, commercial and investment policies of the state. This means that the fast emerging comprador bourgeoisie of Bangladesh needed and still need state patronage for their trade-oriented endeavours. The resulting

liaison among the policy-makers, bureaucrats and the businessmen has evolved through time in to an institutionalised system of corruption and a patron-client network, which tend to make state policies trade-promoting rather than production-friendly. Industrialisation was pursued in the Pakistani era at the cost of sheer neglect of the agricultural sector in the traditional export sectors and also on the basis of import substitution principle under a protective import regime. Many of these industries, which were nurtured by the state patronage up to the decade of the eighties, are now suffering from 'sick-industry syndrome' as the tariff, para-tariff and non-tariff protective barriers are being lifted too rapidly under the dictates of the 'open market economy' philosophy prescribed by the donor organisations, agencies and countries. In order to accelerate the rate of industrialisation, generous amounts of artificially-made-cheap institutional credit were doled out to the favoured sections of the elite having close connections with the successive ruling parties, military officers, civil bureaucrats and top-level bank executives or on the basis of rent-sharing arrangements, but these industrialisation exercises have all along been thwarted by the massive diversion of capital to legal and illegal trade, capital flight, real estate investment, hoarding of gold and foreign currencies and conspicuous consumption with the help of the increasingly expanding system of institutionalised corruption. In this perspective, the rural economy in particular and the productive sectors in general have long been subjected to a process of transfer of surplus, which has resulted in virtual stagnation in some sectors and slow progress in others. This transfer of surplus from the productive segments of the population to the small groups of traders, a long hierarchy of marketing middlemen and financial intermediaries charging usurious rates of interests from the borrowers, middle and big absentee landowners, bureaucrats, non-farming landowners of the families of overseas migrants, importers, indenters, contractors, suppliers, smugglers, politicians, *mastans and chandabaaj rackets(illegal toll collectors)* and armed cadres of the political parties continues unabated, which is impoverishing an increasing number of people, because, the surplus generated in the economy is mostly diverted away from the circuit of extended reproduction of capital, and may even be transferred abroad through the 'extraverted' circuit of capital in a neo-colonial world order.

Let us now explain the processes and dimensions through which the state is creating and reproducing poverty in the Bangladesh society:

- The agricultural sector remains the largest reservoir of poor people in Bangladesh. It is the largest employer in the rural economy, though its share is shrinking. The dominant mode of production in agriculture is the peasant mode, which has shown strong resilience and stability, and which mainly depends on 'self-exploitation' of the members of the peasant families in a largely subsistence farm production system. The land ownership

distribution has been getting more and more skewed. Sizes of operational holdings are getting smaller every day. The proportion of landless families (less than 0.5 acre of cultivable land owned) has reached almost four-fifths level in the rural areas. Farms are afflicted more and more with the problems of sub-division, fragmentation and scattered locations of plots. Absentee ownership problems are increasing because of increasing concentration of land ownership in the hands of overseas migrants, businessmen, smugglers, corrupt government officials and employees, urban-based professionals, political functionaries, *mastans* and illegal toll extortionists. Sharecropping has emerged as a crucial tenancy system. Small and marginal peasant families are being gradually pushed out of cultivation through the processes of marginalisation and pauperisation caused by social differentiation and accentuated by increasing marketisation of the input delivery mechanisms. Agricultural marketing remains a happy hunting ground of the middlemen, which continues to deprive the producers from a fair price for their produce. Agricultural credit market is still largely dominated by informal money lenders charging usurious rates of interest. Agricultural prices in general, and food grain prices in particular are continually suppressed through a number of government interventions because of the political sensitivity of changes in such prices. Terms of trade of agriculture and other sectors of the economy are deteriorating continually, which implies that agricultural prices are getting relatively cheaper in real terms compared to the goods and services produced in other sectors of the economy. The agricultural sector remains largely deprived of the cheaper institutional credit of the formal banking system. In the absence of dynamism in creating employment in adequate numbers in the formal manufacturing and service sectors, agriculture remains the major residual employer in the rural economy to accommodate the unemployed, underemployed and the 'disguised unemployed' multitudes actually suffering the pangs of unemployment and miserable existence. As a consequence, the real wage of the unpaid family labour in agriculture remains dismally low, and the daily wage of the hired labour does not increase much in many areas of the country. As the bulk of production activities in the main crop, rice, is driven by mere survival instinct of the peasant families, there is an increasing trend in production for the last few years in spite of the grinding poverty of the marginal and small farmers and sharecroppers, which the policy-makers and their donor mentors are claiming as evidence of success of the market-oriented reforms implemented at the behest of the donors. Crop diversification in particular and agricultural diversification in general have fallen victims of the lack of profit incentives in agriculture and imported and smuggled goods pouring

in from abroad as a result of the on-going import liberalisation drive of the successive governments. Therefore, the fact remains that without a genuine agrarian reform, the successes achieved in growth rates in this sector will be short-lived and unsustainable. Prof. Rehman Sobhan (1993) in his comparative survey of historical experiences of agrarian reform in 36 countries shows authentically that only those countries of the Third World which could successfully implement genuinely radical agrarian reforms on both sides of the ideological divide of the last half of the twentieth century are the success stories of the present days in breaking the vicious circle of poverty. The Nobel laureate Bangalee economist, Prof. Amartya Sen also acknowledges the centrality of the issue of agrarian reform in development discourse quite often. But, the state in Bangladesh and its rulers remain almost oblivious about this crucial imperative. Rather, the I-PRSP document seems to suggest that more market-oriented reforms are in order, which, I am afraid, will be leading the society to a dangerous future of conflict and upheavals through the untenable course of increasing poverty.

- The state is also creating poverty through increasing inequality in the education sector. For a densely populated poor country like Bangladesh, population could be the largest reservoir of human capital, if the people could be provided equal and adequate access to modern, technology-oriented and qualitatively up-to-date education, training and skill-formation through massive investment efforts of the state in education as well as with a scientific education system. Unfortunately, the state has been deliberately building up an education system based on unequal access, differing qualities and discriminatory foundations. State funding is managing an education system, where elite cadet colleges for the affluent sections of the population and out dated *madrashas* for the sons and daughters of poor parents are simultaneously run by the state finances; government schools and colleges co-exist with private institutions, which are largely dependent on government subventions and development funding; market–driven private institutions of higher learning are proliferating to cater to the needs of the emerging upper middle class and the rich elite created through the machinations of the black economy and institutionalised rent-seeking system, and the decadent and inadequately funded public institutions of higher education are being blatantly misused by the major political parties for narrow partisan politicking with the help of student cadres and a tiny fraction of teachers blinded by the career ambitions; and several parallel systems, some with questionable quality, are being simultaneously nursed right from the primary levels of education (e.g. kindergartens, government primary schools, private primary schools, *madrashas*, BRAC schools, etc.)

up to the highest tertiary levels. In these circumstances, the tall claims of achievements in the field of education sound as cruel jokes in the virtual mess of Bangladesh's education sector mired in corruption, copying in examinations, massive drop out rates at the primary and secondary levels, wholesale failures in public examinations resulting in huge system loss, mushrooming of private tutoring systems, note books, coaching centres, etc. up to the college level and session jam, armed violence and terrorism, breakdown of accountability, consultancy syndrome, part-time teaching in private institutions, etc. in the institutions of higher learning. Above all, the most dangerous trend of raising and maintaining armed cadres by the major political parties has turned the campuses of higher education in to virtual battle grounds for violent confrontations all the year round leading to wholesale commercialisation and criminalisation of the country's student politics. Science education, technical education and training, vocational training and applied disciplines based on modern technological knowledge remain victims of neglect and inadequate funding in the public education institutions and training facilities. In the present scenario, the education sector has degenerated in to a manufacturing ground of unemployed as well as unemployable youth hankering after white-collar jobs, which are in short supply. Consequently, in spite of having a huge population, Bangladesh remains poor in terms of the production and supply of skilled manpower and professionals. Especially, the mismatch between the types of skills demanded by the modern technological era and the kind of education and training provided by Bangladesh's mainstream education systems has reached a crisis proportion so much so that for the poorer sections of the populace, education has lost much of its value in the case of choosing career opportunities. On the other hand, the government statistical sources cannot hide the fact that Bangladesh Government has been spending a meagre 2.2 per cent of the country's GDP for the education sector, and that this shamefully low percentage is the lowest in South Asia. The loud claims of success of the I-PRSP document are based on inflated data of deliberately inflated statistics of rising literacy rate, enrolment rate in general and enrolment of girls in particular, decrease of the drop out rate from the primary level, food for education programme, stipends for girl students, etc. The document mentions about 'the education divide' and uneven quality of education provided to the rich and the poor. But, the state has been deliberately widening the inequality gap in the education sector, which should be termed a heinous crime of the perpetrators, because, this is a recipe for accelerating poverty creation among the poorer sections of the population.

- In the health sector, the situation is even more grim, and the culpable neglect of the successive governments much more deplorable. There is wide consensus among the development thinkers that serious health hazards and incidence of a long-drawn or hard-to-cure major disease in a poor family or in a lower-middle-income family often push such families in to deeper economic crises and increase the probability of driving such families in to poverty trap. Therefore, rapid marketisation of the curative and diagnostic health services in Bangladesh with their high costs, and the criminal degradation of the government health facilities at all levels have emerged as very potent tools for poverty creation and reproduction. It must be appreciated that market cannot adequately provide for modern health facilities for the relatively low-income sections of the population. Therefore, if the publicly provided health system is allowed to become dysfunctional as is the case in Bangladesh, the whole system will degenerate in to one of the major mechanisms for creation and reproduction of poverty.

- Regarding the systems of government revenue and expenditure, the role of the state reveals much more direct culpability in its bias for the more privileged sections of the society. The taxation system is overwhelmingly dependent on value added tax (VAT) and customs duties, with the income tax, the most important of the direct taxes, a distant third in terms of revenue collection. In spite of the declining importance of the customs duties, these are still used on grounds of convenience in revenue collection rather than on economic grounds in this era of import liberalisation, creating ample opportunities for smuggling, institutionalised corruption and multifarious malpractices. Even, among the goods coming under the tariff net, a clear anti-poor bias is clearly perceptible, where one can find wholesale elimination of quantitative restrictions as well as rapid lowering of tariffs of luxury items in the current liberalisation drive and imposition and/or increase of tariffs on many necessary goods. The gradual expansion of the VAT net has also spread the harassment and extortion of the common people through the extended network of institutionalised rent-seeking. There is a stronger ground for contending that the whole revenue system is transferring 'surplus' from the common people to the richer sections of the population if one analyses the government expenditure priorities simultaneously. Defence, Public administration and internal security eat up about 60 per cent of the Government's actual revenue expenditure. (From another angle, salaries and interest payments for foreign and domestic debts of the government eat up about 78 per cent of revenue expenditure). The development budget has degenerated in to a happy hunting ground for

reckless corruption and looting of public fund. Even, in case of subsidies, we find that the Government has been withdrawing or lowering subsidies in the agricultural inputs, public food distribution to the common people, health services, education, etc., but the defence forces, the internal security services, the government bureaucracy, the autonomous and semi-autonomous corporations are continuing to receive substantial amounts of subsidies and wasteful allowances and perks in different garbs. The successive governments and their donor mentors are very vocal about subsidies that the Government has to give in the loss-making state owned enterprises, and legitimately so, but they are very generous about forgiving interests due from defaulters of bank loans, and silently moving in the direction of writing-off the defaulted loans (and loan forgiveness subsequently).That is subsidising the plunderers of the deposits of the common savers, I must reiterate.

- Coming to the machinations of the banking sector itself, there is hardly any need to elaborate that it is acting as another major siphon for transferring 'surplus' from the common people to the richer sections of the population, from villages to towns and cities, to the capital Dhaka, and ultimately out of the country. During the three decades of independent Bangladesh, the banking sector created several thousand millionaire robber-barons in Bangladesh, who are now in the process of capturing the elected legislature of the country through the process of commercialisation and criminalisation of politics. Nationalisation of banks was tried as a way out in the beginning, but the endeavour failed to arrest centralisation and concentration of bank loans among the favoured clients of the political and bureaucratic patrons during the last three decades. Privatisation has been pursued from the early eighties as an alternative prescription, but it only changed the pattern of the looting game. Project loans were disbursed on the pretext of industrialisation, but they mostly bred abandoned, incomplete, half-finished or 'sick' projects. Massive diversion of borrowed money to legal import and smuggling, conspicuous consumption, and as flight capital frustrated almost all attempts of rejuvenating the investment scene with the help of bank credit. According to statistical sources, almost 58 per cent of bank deposits belong to the small and medium depositors, but small and medium enterprises get only 13 per cent of the loans. Prof. Yunus' world famous Grameen Bank has made a viable alternative system of reaching credit to the poorer target groups, and made micro credit a fashionable pursuit for the NGOs, but it could not break up the segmentation of the credit market and the stranglehold of the elite over the mainstream banking system, which is becoming more and more anti-poor in case of the private banks. A

cancerous growth of rescheduling culture has been effectively hiding the true magnitude of defaulted loans in the NCBs, DFIs and the first generation PCBs established in the eighties, but knowledgeable quarters are truly alarmed about the malaise in the financial sector. Recent trends of loan port folios show that even the loans advanced to trading are being defaulted, and the percentage have crossed the one-third mark. The Government's failings in this sector are crucial for our theme of poverty reduction, especially because, a sincerely designed and successful re-orientation of the bank's portfolios toward the productive pursuits of the common people can be the most effective weapon in the nation's fight against poverty.

- Bangladesh received about US$38 billion as foreign loans and grants during the last 31 years of its independent existence, and it is widely alleged that the lion's share of this flow has been devoured by the 'aid pipeline' extending from the donor countries or agencies down to the field level in Bangladesh. Government functionaries, both in political and bureaucratic arenas, are among the corrupt beneficiaries in this institutionalised money-grabbing game, to say the least. Especially, the project loans and grants have earned widely believed notoriety as lucrative wishing cow (*kamdhenu)* of margin-expropriation, though the signboards of mass poverty are always used to attract such project aid. Food aid is another notorious hierarchical mechanism of institutionalised corruption among the rank and file of the political party in power, the bureaucratic pipeline, contractors, businessmen, local government functionaries, local *mastans* and myriad other fortune-hunters. Now that Bangladesh has achieved self-sufficiency in food grain production, there is a growing realisation that the country should seriously reconsider the wisdom of accepting whatever project on offer. The Government can exercise its right of judicious choice in this regard, if it wants to. It is time to realise that the game of enriching the vested interests in a small pipeline of project aid can be easily shunned without harming the poverty reduction campaign a bit.

- During the 31 years of Bangladesh's independent existence, all the governments' most telling record relates to their failure in creating sufficient employment opportunities for the fast increasing labour force of the country, which is believed to be increasing at 3.5 per cent in recent years. The present explosive state of the unemployment situation can largely explain many of the major maladies facing the country. There is no denying the fact that employment creation in tandem with the growth of labour force is one of the most formidable tasks in one of the most densely populated countries having the eighth largest population in the world, and that is the core of the poverty problem. But, the successive governments

have to share the blame for adopting wrong policies and strategies for employment creation all along our history. The Government ministries, directorates, departments, agencies and bureaus, autonomous and semi-autonomous bodies, sector corporations, and state owned enterprises—all are suffering from the acute problem of excess personnel. This has also created the notorious hierarchy of institutional rent-seeking which has brought shame on the country as the most corrupt country among the 92 countries coming under the purview of the Transparency International survey. This bloated size of the government cannot be considered a legitimate avenue for providing employment opportunities, because, this is too costly, and it is also eating up the major share of the Government revenue expenditure. On the other hand, people are suffering because of red-tapes and obstacles faced at the multiplicity of desks encountered for obtaining service from the government functionaries. The story in the industrial sector is equally dismal. Bank loans were doled out for import substituting industrialisation on the main pretext of employment generation right from the early Pakistani era up to the present times, but if one such job needs Tk. 5,00,000 to Tk. 1 million of investment on average, this definitely becomes an untenable proposition for a poor country like Bangladesh, where about three million persons are entering the job market every year according to the government statistical surveys. Unfortunately, the banking sector of Bangladesh continues to be plundered through the same route even today.

- The Government embarked on the task of gradually liberalising the country's import regime from the financial year 1986-87, but the pace of its liberalisation drive has exceeded that of its giant neighbour India all along. This has accelerated the spread of smuggling, and changed the pattern of smuggling drastically during the last sixteen years. Understandably, there are no good estimates of the magnitude of the flows of goods coming in to and going out of Bangladesh because of the very nature of smuggling operations, but there is a consensus among the researchers on the subject that the flows are increasing, and that the patterns of both types of flows in terms of goods smuggled change continuously in response to price differentials created because of asymmetric policy changes in the countries involved. One of the major consequences of this opening up of the domestic market for foreign goods is the sick industry syndrome. But, agricultural goods, cottage industries, manufacturing goods produced by the small and medium enterprises, industrial items produced by import-substituting industries and even Bangladesh's traditional export items are threatened by this increasing flow of imports coming in both legally and illegally. Unused excess capacities, demand constraints, lay-offs and ultimate closure of

enterprises have been creating a real crisis in all productive fields of the country. Even the country's vibrant export sectors— garments, knitwear and shrimp culture sectors—are facing tough times. The Government denies any responsibility for the current crisis by shifting the burden on to the ongoing world wide recession, but the fact remains that smuggling is an economic problem created by wrong policies, and has to be tackled through proper policy changes. Mere closing down of losing concerns like the Adamjee Jute Mills will not help the Government much in tackling the stagnation in the investment scene; it will only create many more poor people throughout the country with productive and trading linkages with such closed down enterprises.

- Another disturbing phenomenon of governance of the country relate to excessive centralisation of decision making as well as government's development efforts in the capital Dhaka, which is depriving the other areas of the country, both urban and rural. The feeling of relative deprivation has reached such a level, where even the people of the second largest city and the main port city of the country, Chittagong, are loudly complaining of gradual decline of their city's long-standing prominence as the main business hub. Dhaka is a booming metropolis, where the population growth has reached fantastic proportion with all the concomitant urban nuisance like traffic jams, pollution, slums, urban sprawl, unplanned high-rise buildings, overcrowding, etc. Rural to urban migration flows from all areas of the country are targeting Dhaka for the better prospects of livelihood even in the informal sector of Dhaka compared to other urban destinations. In the process, rural poverty is being transformed in to urban poverty with the squalor and vices of such sub-human living environments of the city slums. Bright lights theory of migration or the pull-factors theory has found a classic example in Dhaka. This policy-induced urban mess created in Dhaka is the sorry outcome of the blunders of bad governance of the successive governments of Bangladesh. In addition to this centralisation, the development policies of the country are carrying a historical legacy of urban bias, which result in an all-pervading perception of neglect and deprivation among the majority of the population languishing in the villages.

- The local government institutions of the country has been victims of gradual disempowerment by the elected governments of the last decade. Union councils are turned in to dens of misappropriation of development funds trickling down the project pipelines or generated through sale of food-aid allotments. The Upajila System was abolished in early nineties, and it will not be revived in all likelihood. Therefore, the people of the

villages are effectively pushed out of the development process initiated from the capital. It must be reiterated that any loud claim of pro-poor growth, participatory policy-making or development policy ownership will sound hollow in the absence of a political will for truly representative and effectively functioning local government system in the country.

- The successive governments can also be blamed for creating the severely confrontational political culture in the country, which hampers productive activities throughout the year through intermittent *hartals*, violent clashes, work stoppages of different hues, labour troubles and politicised trade unions playing havoc with the work environment in most of the formal manufacturing and service organisations. Even after the restoration of democracy and elected parliament good governance remains illusory. Organisational discipline and chain of command, accountability, work ethics, job sincerity and honesty have become rare attributes. As a result, total factor productivity as well as labour productivity in Bangladesh are among the lowest in the South Asian region. This does not provide any positive signals to any investor, domestic or foreign. When one adds to these factors the all-pervading problem of institutionalised corruption and politically patronised 'system' of toll extortion, one can easily explain why Bangladesh cannot attract foreign investment. This also largely explains why almost all efforts of patronised capitalist development of the successive governments have been failing miserably. The World Bank is claiming that corruption is responsible for 1%-1.5% lower growth of GDP every year. In fact, bad governments and governance failures have been identified as the prime obstacles in the way of 'take off' of the Bangladesh economy at its present juncture.

- Last but not the least, we reiterate that criminalisation of the country's politics, patronisation of armed cadres and *mastans* by the successive ruling parties of the last one decade like the BNP, Awami League and Jamat-e-Islami and an all-pervading institutionalisation of rent-seeking are the three most serious scourges afflicting Bangladesh for the last few years; and lawlessness, violent crimes, extortion and politics of vengeance have clearly reached a level, where governance failure is threatening the very existence of the fledgling democratic system of the country. Politics has been taken over by black money and godfathers of terror. Winning in elections by all means fair or foul has become the most profitable business to make quick fortunes. Anarchy is engulfing the whole body politics, and there are signs that the country may be heading toward another era of violence and autocratic rule. Poverty will definitely take a back seat in such a national crisis.

4.   PROSPECT OF POVERTY REDUCTION STRATEGIES OF I-PRSP WITH THE STATUS QUO OF THE BANGLADESH STATE

As the I-PRSP is an interim document prepared in the process of formulating the PRSP, a full-fledged evaluation will be premature. Therefore, we offer some pertinent comments on the prospective efficacy of strategies suggested in the context of the nature of the Bangladesh state outlined in the earlier section. In Section C, we have delineated the major dimensions of poverty creation and reproduction by the state in Bangladesh through the formulation of a number of general hypotheses. It should be clear from the discussion that poverty alleviation must start from adopting strategies for reversing the trend of inequalities in the society, and that the state has been instrumental in leading the society in the opposite direction. Therefore, the primary task will be the initiation of policy changes to arrest and reverse the process of deterioration of inequality in the distribution of both income and assets, and inequality in access to different vital institutions in the society. Let us quote Prof. Anisur Rahman again at this stage:

"Having come as far as we have come in the wrong direction, development needs to be assessed now in terms of growth with ***inequality alleviation*** rather than with *poverty alleviation.* This is not only because of the gross injustice in the distribution calculus but also because one's sense of poverty itself is relative, and the subjective index moves up with the display of wealth and ostentatious consumption notwithstanding where the economists of the national and international establishments put the "objective" index. And a strategy of growth with inequality alleviation may in fact give us higher growth itself in so far as resources will be channelled toward producer classes from rentier classes who have so far given us little growth." (Rahman, 1999, p. 6)

The I-PRSP document mentions the need for reducing inequality in Section G of Chapter 5, but a careful reading of the more prominently discussed strategies reveals that in spite of the window dressing efforts, the strategies have the familiar prescriptions of the structural adjustment programme (SAP) as the core, which have already been found to be increasing inequality, as measured by different methods. As already noted in Section B, the strategy for 'increasing pro-poor economic growth' gets the most importance in the I-PRSP, and a number of strategies in six relevant fields are mentioned under this head. The authors deserve accolades for seriously thinking over the required policies. But, the need for proper prioritising the strategies remains unfulfilled and ignored. Actually, without zeroing in on the issue of inequalities, the mere use of the concept of pro-poor economic growth will remain largely empty and rhetorical. For example, in discussing the policies for ensuring macroeconomic balances, reforms in the

public revenue and expenditure systems are mentioned as necessary strategies. But, the strategy paper could be much more specific in the selection of fields and the directions of policy needed, e.g. a)that the country needs gradual but substantive reductions in government expenditure on unproductive heads like defence, public administration and internal security, salaries and interest payments, and diversion of expenditure thus saved to investment in education, health, infrastructure development, social security programmes, etc.; or b) that 25 per cent of bank portfolios must be earmarked for small and medium enterprises; or c) that deposits collected from the rural branches of banks must be advanced for projects in rural areas; or d) that the banking system will not cater to the need for capital for relatively large scale industrial projects of entrepreneurs if the size of the loan exceeds certain amount. They will have to go to the capital market for their project funding. The same tendency of avoiding specific policy or programme is discernable in many other strategies mentioned, and it can be termed as the general pattern. As a result, the policy matrix presented in Table 9 of pages 46 and 47 of the I-PRSP does not provide specific policy proposals under the head 'future agenda' for the majority of the strategies listed in the table. May be at this preliminary stage, neither the authors nor the Government have put serious thoughts about the specific policy changes to be selected under the strategy concerned! But, it must be said that this PRSP is supposed to form the core of the 6th Five Year Plan, the time-frame of which, according to their own words, had already started from 1 July, 2002. A plan without programmes is an exercise devoid of substance, and we cannot find 'programmes' for achieving the targets mentioned for most of the strategies suggested in the I-PRSP. If the vagueness is deliberate, then there is good reason to question the sincerity of purpose of the Government, and the allegation that whatever is contained in the I-PRSP or the ultimate PRSP it will be 'business as usual' will be substantiated. We hope the future documents in the series will contain much more substance regarding policy formulation.

SAP policy prescriptions have been pursuing the targets in four general categories, namely 1) privatisation and denationalisation, 2) deregulation, 3) liberalisation of trade regime, and 4) globalisation under the philosophy of 'open market economy'. In the eighties, the government and the market were put almost in an adversarial position in these prescriptions during the heydays of supply-side economics. But, there is a gradual realisation that the market and the government should actually complement each other in a developing country by re-orienting their functions and roles in order to confront poverty. Unfortunately, we have not been able to delineate the proper roles for either the government or the market. Marketisation of education and health is being encouraged, but the Government's excess baggage in production, infrastructure, defence, public administration,

unnecessary regulations and formalities, etc, are not relieved in the face of stiff resistance put up by the vested interests. The I-PRSP does not address these issues adequately. Serious considerations are needed to come to a judicious apportioning of responsibilities of the state and the market based on sound analysis of our true national priorities of inequality alleviation.

The following issues, which need to be addressed on a priority basis, have not received the serious attention they deserve:

1) Agrarian reforms; 2) Education Reforms; 3) Reforms in curative health systems for both rural and urban poor; 4) Reforms in public utilities sector regarding electricity, telephone, gas and water distribution systems; 5) Prioritisation of provision of vital infrastructure; 6) Reforms of public revenue and expenditure priorities; 7) Reforms in public administration; and 8) Reforms of the local government systems including city governments.

5. CONCLUSION: SOME ALTERNATIVE PROPOSALS FOR POVERTY ALLEVIATION THROUGH INEQUALITY ALLEVIATION

As the article is designed as **a key-note paper** on a topic like poverty, which is not easy to conceptualise and operationalise, we have not ventured to write a technical paper, which would have been a daunting task in such a vast canvas. Neither did we cover the whole canvas. We have focussed on a particular theme regarding the role of the state in Bangladesh in poverty creation rather than as an institution to fight poverty. We have also focussed on the issue of inequalities. Both these topics may provoke intense debates, because, they are two central issues in Political Economy. As there cannot be any real winners in such debates, we urge upon the readers of this theme paper to refrain from generating heat, and to try to provide constructive insights on the issues so that more light can be focussed to better appreciate the strategies recommended in the I-PRSP. With that objective in mind, we have decided to present some alternative strategies, not as substitutes but for strengthening the efficacy of strategies suggested in the I-PRSP document, which, we think, may address the issue of poverty alleviation in Bangladesh in its proper perspectives. (Personally, I do not like the new coinage of the donors, 'poverty reduction', but I do not want to start another debate on semantics per se).

The proposed strategies will be in the following fields and/or directions:

5.1   Agrarian Reforms

There are scopes for even land ownership reforms and redistributive land reforms, but more importantly, land tenure reforms, reforms in agrarian labour relations and the agricultural labour market, rethinking the subsidy issue in agricultural input delivery systems like seeds, fertilisers, water, pesticides and insecticides and in mechanisation of agriculture, agricultural marketing reforms to eliminate rentier middlemen and to ensure fair price to the direct producers, agricultural credit reforms, reforms in land records, reforms in sale and purchase of land, distribution of *khas* lands, reforms in land administration, introduction of land bank and cattle bank, ownership and leasing of water bodies like ponds, tanks, *beels and haors* and rivers, community forestry, ownership and leasing reforms of '*shikasti and payasti'* land, reforms of agricultural price support programmes, reforms of irrigation rights and practices, computerisation of land records and transfers, etc. are urgently needed if the Government is really sincere about the issue of poverty. The convenient postponement of the initiation of these reform issues will accelerate the poverty creation process.

5.2   Defence Expenditure Reforms

i)   For gradual reduction of government expenditure on defence, a crash programme for downsizing the armed forces by at least one-third in ten years should be undertaken;

ii)   ***Poverty Creation or Poverty Reduction and Rethinking the Role of the State in Bangladesh: Moinul Islam*** Government subsidies and various perks provided to defence personnel should be brought down at par with government officials in general. Only in exceptional circumstances and difficult postings, special allowances should be provided to the incumbents.

iii)   A reserved armed force can be raised through a six-month long compulsory training of all students appearing at the higher secondary examination to complement the war efforts of the regular armed forces.

5.3   Reforms in General Administration

i)   The size of the Government administration should be reduced at least by one third in ten years by reducing the number of ministries, directorates, bureaus, departments, institutes, etc. by implementing the recommendations of the Public Administration Reforms Commission, reduction of class three employees through a crash

programme of computerisation of the administration and compulsory computer training of the officers and reduction of class four employees through quick introduction of e-governance.

ii) The administrative unit at the division level should be abolished forthwith.

iii) A four-tier local government system should be introduced at the district, upajila, union and village levels through elected representatives with effective financial powers and functions, and adequate arrangements of accountability to the electorates.

iv) City governments should be established in all the six major cities now categorised as divisional headquarters, where the present development authorities of different cities will be amalgamated along with the agencies responsible for providing civic amenities like electricity, water and sewerage. Even the police can be put under the jurisdiction of such city governments.

v) Requisition of private land for developing urban residential areas, and the distribution of residential plots in those areas to the favoured few should be stopped forthwith. Urban planning should designate the residential and commercial areas of an urban centre, and zoning laws should be enacted and enforced to facilitate planned urban development.

5.4 Fiscal Policy Reforms to Curb Smuggling

i) In order to curb smuggling, tariff liberalisation in Bangladesh in particular and import liberalisation in general must be rationalised in consonance with the Indian policies in these regards so that price differentials are not widened enough to allow arbitraging profitable for the smugglers, who normally operate in connivance with the law enforcement agencies on both sides of the border. As the Indian budget is declared in March each year, an item-wise analysis should be done each year by a special cell in either the Ministry of Commerce or the Ministry of Finance and the Tariff Commission to rationalise the tariff changes or import policy changes to be announced in Bangladesh budget in June.

ii) A well-designed policy of 'selective liberalisation and selective control' should be adopted to liberalise import of items of commodities, which do not adversely affect domestic production, and to curb import of luxury items and superfluous consumer goods,

which cater to import-oriented demands of the affluent sections of the population.

5.5   Reforms in Education System

i)   The madrasha education system should be fully integrated in phases with the mainstream education system at all levels with the same curricula, and with some special subjects. A few specialised institutions of higher learning for religious studies of each major religious communities can be provided for higher level specialised education.

ii) The cadet colleges and the public schools should be integrated with the mainstream education system in phases. During the transition period, government subsidies should be gradually brought down in these institutions to bring them at par with the institutions providing the same levels of education.

iii) Uniform curricula should be followed in all government-managed and government-funded institutions up to the higher secondary levels for each discipline.

iv) Compulsory education should be extended up to the eighth level.

v)   Publication, sale and use of note books should be banned at all levels of education.

vi) Coaching centres and private tuition should be banned.

vii) All the private institutions of higher education should be non-profit organisations.

viii) Full-fledged computer labs and science laboratories should be established through crash programmes.

ix) Partisan political activities in campuses should be banned for both students and teachers.

5.6   Reforms regarding bank credit

i)   At least 25 per cent of bank port folios of each bank must be compulsorily earmarked for financing small, medium and micro enterprises (SMMEs). A separate cell for small enterprises should be established, where loan programmes will be managed on the basis of group banking based on movable assets as collateral securities.

ii)   Each bank branch in the rural areas should be required to advance credits to customers in rural areas equal to its deposits collected, at the least.

5.7   Reforms in some other crucial development issues

i)   At least 10 per cent of the government budget should be allotted to the health sector to counter serious under-funding.

ii)   Private practice by the doctors of government establishments should be banned in phases.

iii)   Bangladesh's natural gas should be harnessed primarily for providing electricity to the estimated 80 per cent of the population through a crash programme of ten years.

iv)   Compressed natural gas should be supplied in cylinders as cooking fuel through establishing transformation plants and bottling plants on an emergency basis. Import of gas cylinders should be made tariff-free, and/or domestic production of such cylinders should be encouraged through proper policy incentives.

In the end, let me humbly submit that I am not very optimistic about the prospect of acceptance of my proposals, because, they are unpalatable for a state described in Section C of this paper. To some, the proposals may seem radical suggestions of a 'bleeding heart' exponent on the issue. I admit that without societal transformation, many of the proposals may prove unattainable in the near future. But, I like to remain true to my conscience. I firmly believe that there is no short-cut to poverty alleviation in Bangladesh except through the path of inequality alleviation.

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ANNEX TABLES

Table 1

Social Development in Bangladesh: Predicted vs. Actual Values

Indicators	Predicted values	Actual values
1. Population growth rate (annual %)	2.45	1.59
2. Total fertility rate (TFR) (births per women)	4.68	3.20
3. Contraceptive prevalence rate (% of women aged 15-49)	23.16	53.00
4. Crude birth rate (CBR)	35.26	23.40
5. Crude death rate (CDR)	11.49	8.40
6. Infant mortality rate (IMR) (per 1000 live births)	70.78	65.00
7. Life expectancy at birth, female (years)	59.50	60.8
8. Life expectancy at birth, male (years)	56.19	60.4

Source: Based on available data of 163 countries out of 210 obtained from 'World Development Indicators, 1999' published by the World Bank.

Table 2

Trends in Poverty and Inequality in the Nineties

	1991/92	2000	Change per year (%)
Headcount Rate			
National	58.8	49.8	-1.8
Urban	44.9	36.6	-2.2
Rural	61.2	53.0	-1.6
Poverty Gap			
National	17.2	12.9	-2.9
Urban	12.0	9.5	-2.5
Rural	18.1	13.8	-2.8
Squared Poverty Gap			
National	6.8	4.6	-3.6
Urban	4.4	3.4	-2.7
Rural	7.2	4.9	-3.8
Gini Index of Inequality			
National	0.259	0.306	2.1
Urban	0.307	0.368	2.3
Rural	0.243	0.271	1.4

Source: BBS, *Preliminary Report of Household Income and Expenditure Survey 2000*, Dhaka, 2001 and World Bank, *Poverty Trends in Bangladesh during the Nineties*, Background Paper No.1 (Draft), World Bank, Washington D.C.

Table 4

Major Goal-Posts: Poverty Targets

Target	Current (2000)	2003	2005	2010	2015
Indicators in light of MDGs:					
Income-Poverty	50	46	44	35	25
Adult Literacy	56	63	68	79	90
Primary Enrollment	75	80	83	92	100
Secondary Enrollment	65	70	75	85	95
Infant Mortality Rate (IMR)	66	58	51	37	22
Under-Five Mortality Rate	94	82	73	52	31
Maternal Mortality Rate (MMR)	320	300	280	240	147
Life Expectancy	61	63	65	69	73
Population Growth	1.6	1.5	1.5	1.4	1.3
% Children Underweight	48	45	43	39	35

Reduction in Anti-Female Bias:		
Female (7+) Literacy (% of Male)	80	
Female Enrollment at Tertiary Level (% of Male)	33	Eradicate by 2010-15
Female Underweight Moderate or Severe, <5 Years (% of Male)	8	
Female Underweight Severe, <5 Years (% of Male)	26	
Female Mortality, 1-4 Years (% of Male)	133	

Source of Benchmark Data: Income-Poverty (Table 2); Adult Literacy (BHDR 2000); Primary Enrollment (HIES 2000); Secondary Enrollment (HIES 2000); Tertiary Enrollment (HIES 2000); IMR (BDHS 1999/00); Under-Five Mortality (BDHS 1999/00); MMR (NIPORT/ Macro International); Life Expectancy (BHDR 2000); Population growth (BBS); Children Underweight (BDHS 1999/00).

Table 5

Medium Term Macroeconomic Framework

	Estimate FY 02	Projections		
		FY 03	FY 04	FY 05
National income and prices				
Real GDP growth (%)	4.8	5.6	6.0	6.3
Inflation (annual average, %)	2.3	3.1	3.5	4.2
Investment and savings (% of GDP)				
Gross investment	23.2	23.9	24.6	25.5
Private	16.1	16.8	17.5	18.1
Public	7.1	7.1	7.2	7.3
Gross domestic savings	17.9	18.4	19.0	19.5
Gross national savings	22.4	23.1	23.8	24.5
Government budget (% of GDP)				
Total revenue	9.8	10.7	11.7	12.4
Tax	8.0	8.7	9.5	10.0
Non Tax	1.8	2.0	2.2	2.5
Total expenditure	15.1	15.9	16.6	17.2
Revenue	8.1	8.2	8.2	8.2
Development	6.1	7.0	7.7	8.3
Budget balance	-5.3	-5.2	-5.0	-4.8
Net financing				
Domestic	3.0	3.0	2.7	2.7
Foreign	2.3	2.2	2.3	2.0
Money and credit (% change)				
Domestic credit	10.40	12.77	12.99	13.61
Private sector	10.60	11.24	13.08	14.08
Broad money (M2)	10.00	12.84	13.05	13.64
Balance of payments (% of GDP)				
Exports	13.09	13.56	13.86	14.14
Imports	19.45	19.58	18.92	18.12
External flows (billion US $)				
Remittances	2.39	2.42	2.62	2.83
Aid disbursements	1.48	1.59	1.66	1.67

Table 6

Budgetary Expenditures: Revenue Expenditures

	Estimate		Projections					
	FY 02		FY 03		FY 04		FY 05	
	Billion Tk.	% of GDP	Billion Tk.	% of GDP	Billion Tk.	% of GDP	Billion Tk.	% of GDP
Total Expenditure	410.51	15.14	468.50	15.87	538.80	16.64	617.16	17.21
Growth (%)	13.30		14.13		15.01		14.54	
Current/Rev. Expend /1	220.80	8.14	241.00	8.16	264.80	8.18	293.66	8.19
Growth (%)	9.50		9.15		9.88		10.90	
Composition of Revenue Expenditure								
A. General Administration	87.15	3.21	92.24	3.13	98.36	3.04	105.46	2.94
GPS	33.01	1.22	34.90	1.18	37.33	1.15	40.10	1.12
Defence	36.39	1.34	37.52	1.27	38.83	1.20	40.46	1.13
POS	17.75	0.65	19.82	0.67	22.20	0.69	24.90	0.69
B. Social Services	63.96	2.36	71.93	2.44	83.82	2.59	96.05	2.68
Education	38.50	1.42	43.12	1.46	50.50	1.56	56.42	1.57
Health	12.18	0.45	14.10	0.48	16.54	0.51	19.85	0.55
SSW	10.80	0.40	11.88	0.40	13.53	0.42	15.98	0.45
RCRA	2.48	0.09	2.83	0.10	3.25	0.10	3.80	0.11
C. Economic Services/2	12.88	0.48	13.67	0.46	15.50	0.48	17.92	0.50
AFL	9.91	0.37	10.06	0.34	11.08	0.34	12.62	0.35
MMC	0.55	0.02	0.69	0.02	0.83	0.03	0.98	0.03
RDC	0.82	0.03	0.98	0.03	1.25	0.04	1.56	0.04
CHTs	0.97	0.04	1.05	0.04	1.18	0.04	1.36	0.04
CLE	0.63	0.02	0.89	0.03	1.16	0.04	1.40	0.04
D. Infrastructure Services/3	12.54	0.46	14.71	0.50	17.62	0.54	21.96	0.61
ST	0.97	0.04	1.17	0.04	1.45	0.04	1.88	0.05
FE	0.09	0.00	0.14	0.00	0.18	0.01	0.25	0.01
TC	4.76	0.18	5.80	0.20	7.25	0.22	9.48	0.26
HCS	6.72	0.25	7.60	0.26	8.74	0.27	10.35	0.29
E. Interest	46.47	1.71	48.45	1.64	49.50	1.53	52.27	1.46
Domestic	36.68	1.35	37.81	1.28	38.75	1.20	40.72	1.14
Foreign	9.79	0.36	10.64	0.36	10.75	0.33	11.55	0.32

Notes: The composition of FY02 refers to a total of Tk. 223 billion.
/1 Current Expenditures also include losses of Railway and Post Office.
/2 Rural Development and CHTs are assumed to be parts of Economic Services rather than parts of GPS.
/3 Science and Technology is as well assumed to be part of Physical Infrastructure rather than part of GPS.

SSW = Social Security and Welfare, RCRA = Recreation, Culture and Religious Affairs, MMC = Mining, Manufacturing & Construction, AFL = Agriculture, Fisheries & Livestock,
CLE = Commerce, Labour & Employment, HCS = Housing and Community Services, GPS = General Public Services
POS = Public Order & Safety, RDC = Rural Dev. & Coop, ST = Science & Technology, FE = Fuel and Energy, TC = Transport and Communication.

Table 7

Budgetary Expenditures: Development Expenditures

	Estimate		Projections					
	FY 02		FY 03		FY 04		FY 05	
	Billion Tk.	% of GDP	Billion Tk.	% of GDP	Billion Tk.	% of GDP	Billion Tk.	% of GDP
Total Expenditure	410.51	15.14	468.50	15.87	538.80	16.64	617.16	17.21
Growth (%)	13.30		14.13		15.01		14.54	
Development Expenditure/1	165.20	6.09	206.50	7.00	250.00	7.72	296.50	8.27
Growth (%)	-0.40		25.00		21.07		18.60	
Composition of Development Expenditure								
A. General Administration	3.88	0.14	4.44	0.15	5.38	0.17	7.11	0.20
GPS	2.91	0.11	3.20	0.11	3.68	0.11	4.60	0.13
Defence	0.09	0.00	0.09	0.00	0.10	0.00	0.11	0.00
POS	0.88	0.03	1.15	0.04	1.60	0.05	2.40	0.07
B. Social Services	47.46	1.75	58.07	1.97	71.95	2.22	88.60	2.47
Education	23.21	0.86	28.42	0.96	34.55	1.07	42.75	1.19
Health	12.32	0.45	16.01	0.54	20.41	0.63	25.50	0.71
SSW	10.25	0.38	11.79	0.40	14.74	0.46	17.40	0.49
RCRA	1.68	0.06	1.85	0.06	2.25	0.07	2.95	0.08
C. Economic Services/2	26.55	0.98	31.08	1.05	37.12	1.15	43.44	1.21
AFL	21.53	0.79	24.76	0.84	28.70	0.89	32.28	0.90
MMC	2.88	0.11	3.24	0.11	4.05	0.13	4.96	0.14
RDC	0.18	0.01	0.60	0.02	1.10	0.03	1.65	0.05
CHTs	0.86	0.03	1.00	0.03	1.20	0.04	1.45	0.04
CLE	1.10	0.04	1.48	0.05	2.07	0.06	3.10	0.09
D. Infrastructure Services/3	94.11	3.47	112.91	3.83	135.55	4.19	157.35	4.39
ST	0.92	0.03	2.25	0.08	3.38	0.10	5.50	0.15
FE	23.39	0.86	26.90	0.91	31.62	0.98	35.95	1.00
TC	39.33	1.45	47.20	1.60	54.85	1.69	63.36	1.77
HCS	30.47	1.12	36.56	1.24	45.70	1.41	52.54	1.46
Other Expenditures (Non-ADP Capital, Food and other Expenditures)	24.51	0.90	21.00	0.71	24.00	0.74	27.00	0.75

Notes: The composition of FY02 refers to a total of Tk. 172 billion.

/1 Development Expenditures = ADP – Self-Finance + Non-ADP FFW.

/2 Rural Development and CHTs are assumed to be parts of Economic Services rather than parts of GPS.

/3 Science and Technology is as well assumed to be part of Physical Infrastructure rather than part of GPS.

SSW = Social Security and Welfare, RCRA = Recreation, Culture and Religious Affairs, AFL = Agriculture Fisheries & Livestock, MMC = Mining, Manufacturing & Construction
CLE = Commerce, Labour & Employment, HCS = Housing and Community Services, GPS = General Public Services

Table 8

Budgetary Expenditures: Revenue and Development

| | Estimate | | Projections | | | | | |
| | FY 02 | | FY 03 | | FY 04 | | FY 05 | |
	Billion Tk.	% of GDP	Billion Tk.	% of GDP	Billion Tk.	% of GDP	Billion Tk.	% of GDP
Total Expenditure	410.51	15.14	468.50	15.87	538.80	16.64	617.16	17.21
Current/Rev/1	220.80	8.14	241.00	8.16	264.80	8.18	293.66	8.19
Development/2	165.20	6.09	206.50	7.00	250.00	7.72	296.50	8.27
Non ADP Capital, Food & other Expend.	24.51	0.90	21.00	0.71	24.00	0.74	27.00	0.75
Composition of Expenditure: Revenue and Development								
A. General Administration	91.03	3.36	96.68	3.28	103.74	3.20	112.57	3.14
GPS	35.92	1.32	38.10	1.29	41.01	1.27	44.70	1.25
Defence	36.48	1.35	37.61	1.27	38.93	1.20	40.57	1.13
POS	18.63	0.69	20.97	0.71	23.80	0.73	27.30	0.76
B. Social Services	111.42	4.11	130.00	4.40	155.77	4.81	184.65	5.15
Education	61.71	2.28	71.54	2.42	85.05	2.63	99.17	2.76
Health	24.50	0.90	30.11	1.02	36.95	1.14	45.35	1.26
SSW	21.05	0.78	23.67	0.80	28.27	0.87	33.38	0.93
RCRA	4.16	0.15	4.68	0.16	5.50	0.17	6.75	0.19
C. Economic Services/3	39.43	1.45	44.75	1.52	52.62	1.62	61.36	1.71
AFL	31.44	1.16	34.82	1.16	39.78	1.23	44.90	1.25
MMC	3.43	0.13	3.93	0.13	4.88	0.15	5.94	0.17
RDC	1.00	0.04	1.58	0.05	2.35	0.07	3.21	0.09
CHTs	1.83	0.07	2.05	0.07	2.38	0.07	2.81	0.08
CLE	1.73	0.06	2.37	0.08	3.23	0.10	4.50	0.13
D. Infrastructure Services/4	106.65	3.93	127.62	4.32	153.17	4.73	179.31	5.00
ST	1.89	0.07	3.42	0.12	4.83	0.15	7.38	0.21
FE	23.48	0.87	27.04	0.92	31.80	0.98	36.20	1.01
TC	44.09	1.63	53.00	1.80	62.10	1.92	72.84	2.03
HCS	37.19	1.37	44.16	1.50	54.44	1.68	62.89	1.75
E. Interest	46.47	1.71	48.45	1.64	49.50	1.53	52.27	1.46
Domestic	36.68	1.35	37.81	1.28	38.75	1.20	40.72	1.14
Foreign	9.79	0.36	10.64	0.36	10.75	0.33	11.55	0.32

Notes: The composition of FY02 refers to allocations mentioned in Tables 6 and 7.
/1 Current Expenditures also include losses of Railway and Post Office.
/2 Development Expenditures = ADP – Self-Finance + Non-ADP FFW.
/3 Rural Development and CHTs are assumed to be parts of Economic Services rather than parts of GPS.
/4 Science and Technology is as well assumed to be part of Physical Infrastructure rather than part of GPS.
SSW = Social Security and Welfare, RCRA = Recreation, Culture and Religious Affairs, MMC = Mining, Manufacturing & Construction, AFL = Agriculture, Fisheries & Livestock,
CLE = Commerce, Labour & Employment, HCS = Housing and Community Services, GPS = General Public Services
POS = Public Order & Safety, RDC = Rural Dev. & Coop, ST = Science & Technology, FE = Fuel and Energy, TC = Transport and Communication

Historical Decompositions of Price and Output in The Post Financial Liberalization Era of Bangladesh and The Role of Monetary Policy*

Mudabber Ahmed**

Abstract

This paper assesses the relative importance of the various shocks, monetary policy shocks in particular, in explaining the paths of price and output in the post financial liberalization era of Bangladesh. A Structural Vector Autoregressive (SVAR) model is developed and the objective is achieved through the relatively new technique, termed historical decomposition. The results show that monetary policy has begun to play a leading role in price and output determination of Bangladesh after the country adopted neo-liberal prescriptions for financial reform at the beginning of 1990s.

1.   INTRODUCTION

Bangladesh emerged as an independent country on March 26, 1971. Before 1971, it was a rural economy with a few public sector industries. The role of manufacturing in the development process was marginal; pattern of industrialization was dominated by import substitution policies. After the war of independence, socialism was adopted as a guiding principle in the Bangladesh Constitution. Banks, financial institutions, and various private sector industries were nationalized. A process of a shift to private capitation was soon initiaful, but proceeded slowly up to the and the 1980s, During the 1990's Bangladesh has steadily liberalized its economy, and increasingly the private sector has assumed a more prominent role as the climate for free markets and trade has improved. The Awami League government, which came to power in June 1996, largely continued the market-based policies of its predecessor, the Bangladesh Nationalist Party Garment. It placed a high priority on increasing foreign direct investment in the economy, and made some regulatory and policy changes toward that end.

One of the salient features of reforms is interest rate liberalization. In Bangladesh, real rate of interest remained negative for most of the period from late seventies to mid eighties. Real rate started becoming positive and showed an increasing trend since the late 1980s. There has been a certain convergence in monetary policy instruments and procedures in recent years in most of the developing economies. Major forces for change have been the rapid development and deepening of a variety of financial markets and instruments, and diversification of financial institutions. The question naturally arises is: Did monetary policy play any significant role in price and output movement in the post financial liberalization period of Bangladesh?

The objective of this paper is to determine the role of monetary policy in price and output movement in the post financial liberalization period of Bangladesh. A Structural Vector Autoregressive (SVAR) model is developed and the objective is achieved through one of the innovation-accounting technique, termed historical decomposition. The technique can decompose the actual movement of variables in the system into expected path, given information known up to pre-liberalization period, and the unexpected movement attributable to shocks in each variable; thus separate the role of different variables in the post financial liberalization period in Bangladesh. The appropriateness of such a technique to determine the role of policy variables in post financial liberalization era of Bangladesh is, therefore, justified.[1]

The rest of the paper is organized as follows: section II presents a brief overview of the financial sector, reform measures and conduct of monetary policy in Bangladesh. Section III outlines the model and methodology. Section IV gives a brief discussion about the data set used in the present paper. Section V discusses the empirical findings. Section VI concludes.

2.   FINANCIAL SECTOR, REFORM MEASURES AND CONDUCT OF MONETARY POLICY IN BANGLADESH

The financial sector in Bangladesh consists of the banking sector, the non-bank financial institutions and the stock market. The banking sector dominates the financial sector accounting for around 96% of the total assets. The banking institutions in Bangladesh comprise the central bank, four nationalized commercial banks, four government owned specialized development banks, 18

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[1]   To the best of author's knowledge, this paper is the first of its kind in analyzing the role of monetary policy in Bangladesh economy because no one has used the technique of historical decomposition. Empirical study in developing countries in general, using such a technique, is still in its infancy.

private domestic banks and 12 foreign banks (IMF country report on Bangladesh, 1998). The specialized banks and financial institutions are created with specific objectives to address the financial needs of agriculture and industrial sectors. The country has two stock exchanges - one in Dhaka and the other in Chittagong.

Government policy towards the financial sector in Bangladesh since independence can be divided into two regimes. The first regime (1972-1990) was characterized by i) direct control on interest rates, ii) high statutory reserve and liquid asset requirements, both designed to absorb liquidity and to provide government deficit finance, iii) aggregate and individual credit ceilings, iv) lack of close control on the large refinance programs, and v) relaxation of lending criteria for special groups, etc.

The second regime (1990-) is characterized by certain major reforms in the financial sector. During the 1990's Bangladesh has steadily liberalized its economy, and increasingly the private sector has assumed a more prominent role as the climate for free markets and trade has improved. Though reform process was initiated in the early eighties, measures to liberalize the financial sector took a formal shape in the late 1980s. The broad features of the Financial Sector Reform Programme (FSRP) that started at the beginning of 1990 are: i) liberalization of interest rates, ii) less reliance on direct control to allocate credit and removal of other discriminatory regulations that segment the financial system, iii) high standards for supervision of bank portfolios, iv) shift toward a system of market based instruments, and v) development of new financial instruments and revitalization of stock market (Bangladesh Economic Review, 1995, 1996).

Bangladesh Bank, the monetary authority of Bangladesh, is responsible for formulating monetary policy and is empowered to implement it. The monetary policy objectives of the bank may be summarized as follows: i) growth of the economy; ii) maintaining external value of the national currency; iii) price stability; and iv) creation of productive capacity in the long run (Bangladesh Economic Review, 1996). Instruments avilable to Bangladesh Bank are: i) open market operations; ii) interest rate; iii) bank rate/ discount rate; and iv) statutory reserve requirement.

The financial sector reform, which was launched in 1990, was continued till the end of the 1990s. However, political interference in highly technical economic management issues still impeldes a barrier on the free functioning of Bangladesh Bank on grounds of expediency. Excessive borrowing by government from the banking system to mitigate budget deficits speaks of the helplessness of the Bangladesh Bank regarding its efforts to contain monetary and credit expansion.

3.   MODEL AND METHODOLOGY

Derivation of Historical Decompositions

Let us consider the following SVAR model with M variables and p lags[2]

$$Y_t'B + Y_{t-1}'\Gamma_1 + Y_{t-2}'\Gamma_2 + \ldots + Y_{t-p}'\Gamma_p = ?/t \tag{1}$$

where, *Y* is an M1 vector of variables, *B* is an MM nonsingular matrix, *Γ s are MM matrices, and   is an M1 vector of structural disturbances. Each column of the co-efficient matrices is the vector of coefficients in a particular equation while each row applies to a particular variable. Assumptions about $_t$:*

A1: $E(_t) = 0$

A2: $E\left(_t\,_t'\right) = \ =$

$$\begin{bmatrix} Var(\xi_{1t}) & 0 & \ldots & 0 \\ 0 & Var(\xi_{2t}) & \ldots & 0 \\ 0 & 0 & \ldots & 0 \\ 0 & 0 & \ldots & Var(\xi_{Mt}) \end{bmatrix}$$

The assumption (A2) arises from the belief that structural shocks originate from independent sources. The solution of the above system in VAR form:

$$Y_t' = -Y_{t-1}'\,_1 B^{-1} - Y_{t-2}'\,_2 B^{-1} - \ldots - Y_{t-p}'\,_p B^{-1} + \,_t' B^{-1}$$
$$= Y_{t-1}'\,_1 + Y_{t-2}'\,_2 + \ldots + Y_{t-p}'\,_p + e_t' \tag{2}$$

where, $-_i B^{-1} = \,_i \quad (i = 1 \ldots p)$

and $e_t' = \,_t' B^{-1}$

The moving average representation of equation (2) is:

$$Y_t' = e_{t0}' + e_{t-1}'\,_1 + e_{t-2}'\,_2 + \ldots + e_{t-p}'\,_p + \ldots + \ldots \tag{3}$$

Using the relationship between reduced form error and structural form error **$et/$** = */tB-1 we can represent Yt as a linear combination of current and past structural shocks.*

$$Y_t' = \,_t' B^{-1}\,_0 + \,_{t-1}' B^{-1}\,_1 + \,_{t-2}' B^{-1}\,_2 + \ldots + \,_{t-p}' B^{-1}\,_p + \ldots \tag{4}$$

Alternatively,

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[2]   See Sims (1986), Gali (1992), Hamilton (1994) and Enders (1995) for details about SVAR.

$$Y'_t = {'}_{t0} + {'}_{t-11} + {'}_{t-22} + \ldots + {'}_{t-pp} + \ldots + \ldots$$

$$\sum_{s=0}^{\infty} = {'}_{t-ss} \qquad\qquad (5)$$

where, $B^{-1}{}_i = {}_i \quad (i = 1 \ldots p)$
each ${}_i$ is an MM matrix of parameters derived from the structural model.

Historical values of a set of time series can be decomposed into a base projection and accumulated effects of current and past shocks. Historical decomposition allows us to quantify the relative importance of specific shocks to each variable.[3] The historical decomposition partitions the MA representation into the following two segments:

$$Y'_{t+k} = {'}_{t+k-ss} + {'}_{t+k-ss} \qquad\qquad (6)$$

The second sum is the dynamic forecast or "base projection" of Y_{t+k} conditional on information available at time t; it can also include a constant, linear time trend, etc. The first sum represents the difference between the actual series and this base projection due to innovations in the variables in periods $t+1$ to $t+k$. Thus, the gap between each data series and its base projection can be assessed in terms of the contributions of the innovations to each series in the analysis. Since sum of the forecast and the contributions of shocks account for the data, it is always possible to explain the dynamic path of any variable in the VAR model using Historical Decomposition (HD) technique.

Identification
Given the structural form (1), we can deduce the reduced form (2) uniquely since **B** is non-singular. But given the reduced form, we cannot always deduce uniquely the structural form. If a reduced form has two or more structural forms associated with it, the structures are said to be observationally equivalent. If we can deduce a unique structural form, given the reduced form, by imposing restrictions then the model is said to identified.

In each equation, each contemporaneous variable has a coefficient of one. This normalization is a necessary scaling of the equation, which is equivalent to putting

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[3] See for example, Fackler and McMillin (1998) and Doan (2000).

one variable on the left-hand side of an equation. So we need (M2-M)/2 restrictions to be imposed on the system.[4]

Model Specification
Since our objective is to examine the relative importance of the various shocks, monetary policy shocks in particular, in explaining the path of price and output, our model includes two policy variables, viz. money stock (m) and interest rate (r) and two non-policy variables, viz. output (y) and price (p). A narrower view of monetarism is that monetary policy is the central cause of business cycle and the time path of money stock is a good single index of monetary policy. The broader view of monetarism, however, includes not only money stock but also other policy variables, such as interest rate as index of monetary policy. When monetary policy shocks are identified with innovations in money stock, such a monetary expansion leads to an increase in price and output. On the other hand, when monetary policy shocks are identified with innovations in the interest rate, monetary contraction generates declining price and output. So the Y-vector is $\mathbf{Y}^{/}$ = [y, p, r, m]

where,
y = Log of real GDP
p = Log of consumer price index
r = Nominal interest rate
m = Log of nominal broad money stock M2.

Matrix of contemporaneous coefficients $\boldsymbol{B}$ is:
$$\begin{bmatrix} 1 & \beta_{12} & \beta_{13} & \beta_{14} \\ \beta_{21} & 1 & \beta_{23} & \beta_{24} \\ \beta_{31} & \beta_{32} & 1 & \beta_{34} \\ \beta_{41} & \beta_{42} & \beta_{43} & 1 \end{bmatrix}$$

We need $(4^2 - 4)/2 = 6$ restrictions to identify the structural system. Identifying restrictions postulate that the output equation allows output innovations to depend on innovations in price, interest rate and money. Price equation is autonomous and no other innovations but price innovations can influence it contemporaneously. The interest rate equation allows interest rate innovations to depend on innovations in money alone. The money equation allows money innovations to

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[4]   According to Doan (2000, p.295), the simplest approach to check this condition in practice, is to look at the log likelihood value of the estimated model and the log likelihood value of an unrestricted model; for a just identified model those should be equal.

depend on innovations in interest rate, price and output with the latter two having symmetric effects. Under this identification scheme, contemporaneous relations among variables and the innovations are:

$$
\begin{bmatrix} y_t & p_t & r_t & m_t \end{bmatrix}
\begin{bmatrix}
1 & 0 & 0 & \beta_{14} \\
\beta_{21} & 1 & 0 & \beta_{14} \\
\beta_{31} & 0 & 1 & \beta_{34} \\
\beta_{41} & 0 & \beta_{43} & 1
\end{bmatrix}
\quad
\begin{bmatrix} \xi_{yt} & \xi_{pt} & \xi_{rt} & \xi_{mt} \end{bmatrix}
$$

4.   DATA

The data used in this study are taken from the IMF, *International Financial Statistics* (IFS) CD-ROM supplemented by IMF, IFS Yearbook except for Consumer Price Index (CPI). Quarterly observations comprising the period 1974:Q2-1998Q4 are used to estimate the models.

Price (line 64): It is the cost of acquiring a fixed basket of goods and services by the average consumer. CPI is obtained from Monthly Statistical Bulletin of Bangladesh, Bangladesh Bureau of Statistics and its various issues. This CPI represents cost of living of the government employees in Dhaka city. This is the only CPI available in Bangladesh that covers the whole sample period. Quarterly figures are calculated as simple averages of the corresponding monthly figures.

Interest rate (line 60): The bank rate (discount rate) is used for the nominal interest rate variable. The bank rate is the main lever that central bank uses to conduct monetary policy. It is the rate of interest that the central bank charges on short term loans to financial institutions. It is seen as the trendsetter for other short-term interest rates.

GDP (line 99b): Comprises of final expenditure on export of goods and services + import of goods and services + government spending + private consumption + gross fixed capital formation + increase/decrease in stock. Real GDP is computed by deflating the nominal GDP by the Consumer Price Index.

Money (lines 34+35): Broad Money (M2) is used as money stock. It comprises of currency in circulation + demand deposit+ time deposit + savings deposit + foreign currency deposit of resident sector.

5.   RESULTS

As Bangladesh adopted neo-liberal prescriptions for financial reform at the beginning of 1990s, historical decompositions capture the character of the post liberalization period beginning from the first quarter of 1991. Taking the VAR estimates as given, we decompose the actual movement of the price level and real GDP into the following:

(a) the expected path or base projection, given information known in the 4th quarter of 1990. So "t" is set to the 4th quarter of 1990; and

(b) the unexpected movement attributable to shocks in interest rate, money, price level and real GDP.

Tables 1 and 2 and figures 1 and 2 display the results. It should be noted that the last four columns of each table give the sum of forecasted values plus effects of respective shocks. This addition makes the corresponding graphs more meaningful. The last two rows of each table represent: i) Root Mean Squared Errors (RMSE) of base projection, and base projection plus contribution of innovation to each variable; and ii) ratio of Root Mean Squared Errors (RMSE) of base projection plus contribution of innovation to each variable to Mean Squared Errors (RMSE) of base projection. These statistics are important because they help us rank the variables in explaining output and price in the post liberalization period. While considering the figures, we shall focus on three types of visual evidence: i) how well the base projection is able to track the general pattern of actual movement in price and output; ii) how well innovation to a particular variable closes the gap between the base projection and the actual observation; and iii) how far innovation to a particular variable helps reproduce the turning points in various sub periods.

A two-step procedure is used to estimate the structural VAR model. First, the reduced form VAR, with sufficient lag length, is estimated by OLS method[5].

Next a sufficient number of restrictions are imposed on B to identify the parameters. Finally Broyden, Fletcher, Goldfarb, Shanno (BFGS) method estimates the models; see Press et. al. (1988) and Doan (2000, p. 213).

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[5]   The VAR is estimated with a lag length of eight quarters. The lag lengths are determined by likelihood ratio test Sims (1980, p. 17) and also supplemented by Akaike Information Criterion (AIC) and the Bayesian Information Criterion (BIC). Three seasonal dummies and a constant are included.

In figures 1 and 2, the solid line represents the actual value, the small dashed line represents the expected path or baseline projection and the long dashed line represents the baseline projection plus the effects of shock.

According to figure 1, we can divide the gap between actual output in Bangladesh and its baseline projection over the period 1991:1 to 1998:4 into three sub-periods: from 1991:1 to 1992:4 actual output is higher than projected output, from 1993:1 to 1995:1 actual output is lower than projected output and finally from 1995:2 onwards actual output is higher than projected output making the gap positive again.

Although output shock reproduces the turning points of output movement reasonably well, its performance in closing the gap between the base projection and actual observation is poor. In the first and second sub-period, the output shock actually pulls the output above the actual path. On the other hand, in the last sub-period output shock pulls the output below the expected path. The overall performance of output shock in closing the gap is reflected in the RMSE ratio, which is 1.28.

The price shock also plays virtually no role in closing the gap between the actual and projected output as seen from the left hand figure in the lower panel. In the first and last sub-period, the price shock actually pulls the output below the expected path. On the other hand, in the second sub-period price shock moderately helps close the gap. The overall performance of output shock in closing the gap is reflected in the RMSE ratio, which is 1.29.

The interest rate shock accounts for a remarkable portion of the unexpected run-up in the output. In the upper right panel of figure 1, at the beginning interest rate shock explains almost nothing of unexpected variation in output. But the line giving the path of the output that is obtained due to shock in interest rate is close to the path of the actually observed values from mid 1992. The lowest value of RMSE ratio, 0.74, among all the four ratios captures the fact and the interest rate shock also explains the turning points very well.

Finally, the money shock plays a good role in the second sub-period and a moderate role in the last sub period. But it cannot explain some of the turning points. The RMSE ratio for money shock is 0.99. A ranking of the variables in terms of relative importance in explaining output movement based on historical decomposition is {r, m, y and p}. When monetary policy shocks are identified with innovations in money stock, such a monetary expansion leads to an increase in price, money and output but a decline in interest rate.

Figure 2 and table 2 document the effect of shocks to all the variables on the path of the price in the VAR system. Figure 2 shows that the gap between the actual movement of price and its baseline projection is very close which leaves unexpected shocks with little to explain. We see that it is initially narrow, then the two lines are submerged in the year 1994 and finally the gap gets slightly larger. Although output shock reproduces the turning points of price movement reasonably well, its performance in closing the gap is the worst among all the four variables. The output shock actually pulls up the price above the expected path. This trend grows as we move forward. The overall performance of output shock in closing the gap is reflected in the RMSE ratio, which is 0.90.

The price shock itself also plays virtually no role in closing the gap between the actual and the projected prices as seen from the left hand figure of the lower panel. In this case the picture is just the opposite of what we have seen in the case of the effect of output shock. The price shock actually pulls down the price below both the expected and actual paths. Moreover, the turning points are not captured well. The overall performance of price shock in closing the gap is reflected in the RMSE ratio, which is 0.50.

The interest rate shock again accounts for a remarkable portion of the unexpected run-up in the output as the lowest value of RMSE ratio, 0.17, captures the fact. In the upper right panel of figure 2, the line giving the path of the price that is obtained due to shock in interest rate is close to the actually observed path. The interest rate shock also explains the turning points very well.

Finally, the money shock plays no impressive role of the unexpected run-up of price. It also cannot explain some of the turning points. The RMSE ratio for money shock is 0.30. A ranking of the variables in terms of relative importance in explaining price movement based upon historical decomposition is {r, m, p and y}.

The overall impression from figures 1 and 2 reveals the role of monetary policy during the post financial liberalization period of Bangladesh. Monetary policy shocks are termed as demand shocks in business cycle theories. The main hypothesis of currently popular real business cycle paradigm is that aggregate demand shocks are irrelevant over any time horizon. The business cycle, according to this theory, is the result of dynamic effect of aggregate supply shocks in a competitive economy. The evidence in this paper has put real business cycle paradigm into question.

6.   CONCLUDING REMARKS

The main objective of this paper has been to examine the role of monetary policy in the post financial liberalization period of Bangladesh. Structural Vector Autoregressive (SVAR) model has been developed and the objective achieved through historical decomposition. Analyses of historical decompositions show that monetary policy shock, particularly interest rate shock plays a leading role in determining price and output in Bangladesh. In view of interest rate liberalization, the effects of such shocks begin to be felt. The serious problem in conducting empirical study on developing countries like Bangladesh is the quality and availability of data. For that reason, one must be careful in drawing important conclusions and use the results for implementing policy measures. For example, this study uses quarterly time series data, which may mask some important dynamic aspects of the short run behavior of output and prices. An analysis based on monthly data should certainly be more enriching. But availability of monthly data for Bangladesh would continue to be a major stumbling block at least in the foreseeable future.

Table 1: Historical decomposition of output of Bangladesh

Entry	Actual	Base projection	Base projection plus accumulated effects of shocks in			
			y	p	r	m
1991:01	4.83541	4.825813	4.83541	4.825813	4.825813	4.825813
1991:02	4.85537	4.824064	4.857719	4.822362	4.825745	4.821737
1991:03	4.861307	4.818166	4.871611	4.807776	4.820414	4.816004
1991:04	4.876566	4.832156	4.900062	4.809538	4.835544	4.827891
1992:01	4.885302	4.85267	4.923144	4.824164	4.851665	4.84434
1992:02	4.870048	4.866488	4.909147	4.841727	4.861962	4.856677
1992:03	4.883747	4.868247	4.902528	4.864938	4.862805	4.858217
1992:04	4.890008	4.880811	4.916054	4.867961	4.880921	4.867505
1993:01	4.890355	4.899028	4.91999	4.884711	4.899071	4.883666
1993:02	4.886526	4.896624	4.931103	4.871483	4.88785	4.885961
1993:03	4.896722	4.912487	4.951325	4.889935	4.894761	4.898163
1993:04	4.912766	4.936791	4.958402	4.930848	4.912051	4.92184
1994:01	4.926471	4.955133	4.967947	4.943769	4.940273	4.939881
1994:02	4.930885	4.956585	4.954017	4.950788	4.950481	4.945353
1994:03	4.943306	4.96463	4.952668	4.970408	4.958663	4.955456
1994:04	4.977053	4.987363	5.000932	4.989405	4.97538	4.973426
1995:01	4.999361	5.011052	5.037254	4.994444	5.00446	4.996357
1995:02	5.012887	5.013284	5.01566	5.010078	5.019699	5.007301
1995:03	5.024961	5.01658	5.000379	5.02147	5.035591	5.017261
1995:04	5.045688	5.033543	5.0005	5.060858	5.059809	5.025149
1996:01	5.074519	5.054384	5.024304	5.086064	5.083839	5.043465
1996:02	5.093962	5.054583	5.060918	5.055927	5.087636	5.05323
1996:03	5.105042	5.058994	5.08196	5.049964	5.090758	5.05934
1996:04	5.105571	5.077057	5.081344	5.069026	5.106647	5.079724
1997:01	5.107864	5.094906	5.079697	5.101495	5.117759	5.093629
1997:02	5.104322	5.092644	5.075631	5.105181	5.108178	5.093263
1997:03	5.105476	5.09609	5.073947	5.10069	5.113852	5.105258
1997:04	5.134869	5.113915	5.115077	5.111341	5.125856	5.124339
1998:01	5.135937	5.132069	5.155744	5.099069	5.138715	5.138615
1998:02	5.146589	5.128761	5.147503	5.1249	5.129243	5.131225
1998:03	5.156285	5.12942	5.163278	5.117327	5.130632	5.133308
1998:04	5.168048	5.144676	5.184111	5.12271	5.146122	5.149134
Root Mean Error (RMSE)	Squared	0.023069	0.029592	0.029779	0.017108	0.022917
RMSE of base projection plus effect of shock / RMSE of base projection			1.282776	1.290867	0.741601	0.993411

Figure 1: Historical decomposition of output of Bangladesh
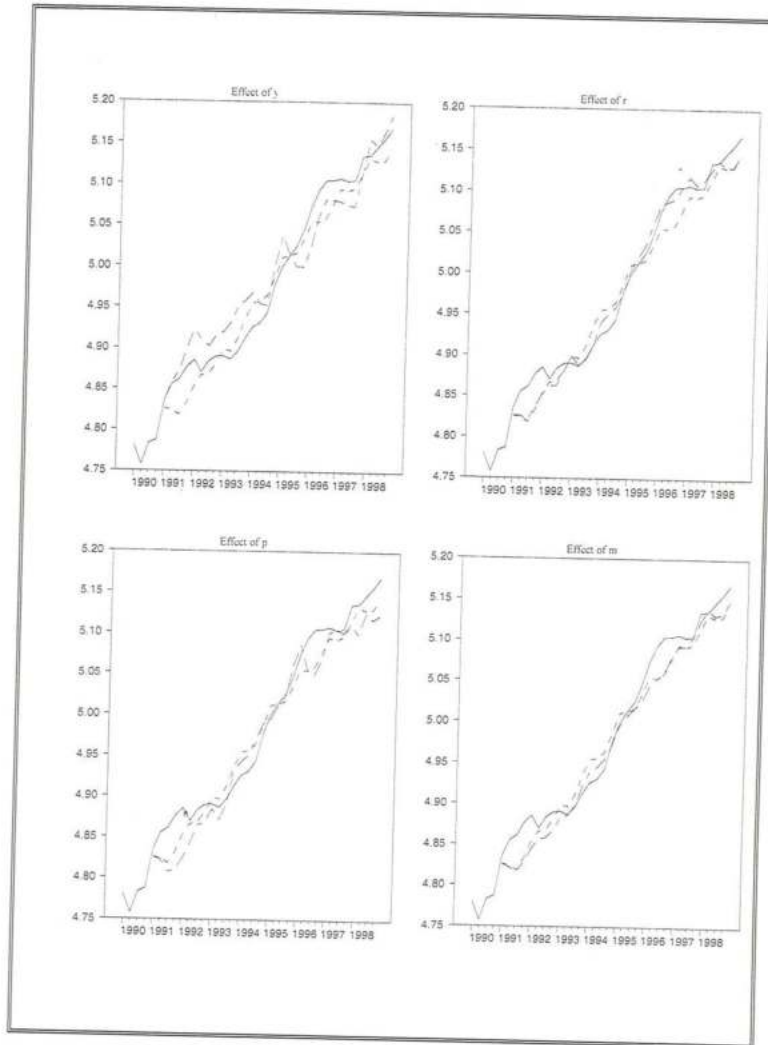
Table 2: Historical decomposition of price of Bangladesh

Entry	Actual	Base projection	Base projection plus accumulated effects of shocks in			
			y	p	r	m
1991:01	7.37086	7.372614	7.372614	7.37086	7.372614	7.372614
1991:02	7.383157	7.390613	7.393497	7.379765	7.390068	7.391668
1991:03	7.402452	7.414305	7.42577	7.39017	7.415737	7.413689
1991:04	7.405897	7.417866	7.436147	7.386374	7.420365	7.41661
1992:01	7.418379	7.420183	7.444914	7.388654	7.427331	7.418029
1992:02	7.456645	7.430232	7.467871	7.412026	7.440648	7.426797
1992:03	7.458567	7.445502	7.484885	7.414011	7.456729	7.439449
1992:04	7.46087	7.449537	7.489577	7.422397	7.454827	7.442682
1993:01	7.465272	7.779415	7.499868	7.418922	7.452297	7.442433
1993:02	7.476659	7.472907	7.515782	7.442404	7.477349	7.459845
1993:03	7.482868	7.483089	7.530856	7.443615	7.48665	7.471015
1993:04	7.491645	7.48668	7.550763	7.43497	7.492453	7.473501
1994:01	7.49739	7.49139	7.549247	7.454644	7.488315	7.479357
1994:02	7.508787	7.509695	7.567538	7.480101	7.498552	7.491679
1994:03	7.523481	7.525041	7.587279	7.496134	7.513428	7.501763
1994:04	7.527256	7.529941	7.587214	7.492142	7.52579	7.511932
1995:01	7.541858	7.531919	7.587895	7.503799	7.52942	7.516501
1995:02	7.559731	7.551681	7.608836	7.526869	7.547968	7.531101
1995:03	7.57661	7.569453	7.619036	7.559988	7.564503	7.541442
1995:04	7.582569	7.575923	7.629024	7.558793	7.569087	7.553435
1996:01	7.58172	7.578623	7.635711	7.55213	7.568532	7.561215
1996:02	7.590008	7.601113	7.645315	7.585009	7.585902	7.577122
1996:03	7.601232	7.620573	7.669806	7.594041	7.604521	7.594582
1996:04	7.617922	7.628168	7.687003	7.605426	7.609451	7.600547
1997:01	7.629811	7.633913	7.6859	7.616959	7.615639	7.613049
1997:02	7.649216	7.658508	7.707213	7.635343	7.641984	7.640199
1997:03	7.670116	7.680075	7.737479	7.6593	7.655688	7.657874
1997:04	7.668561	7.690168	7.742369	7.660476	7.666474	7.669745
1998:01	7.691502	7.697587	7.736191	7.69098	7.67624	7.680851
1998:02	7.701951	7.723952	7.771872	7.6838	7.707803	7.710331
1998:03	7.720311	7.747676	7.796862	7.701422	7.732018	7.733037
1998:04	7.742979	7.759492	7.81458	7.718246	7.745224	7.743405
Root Mean Squared Error (RMSE)		0.056788	0.051402	0.028452	0.009773	0.017538
RMSE of base projection plus effect of shock / RMSE of base projection			0.905156	0.501021	0.172096	0.308833

Figure 2: Historical decomposition of price of Bangladesh
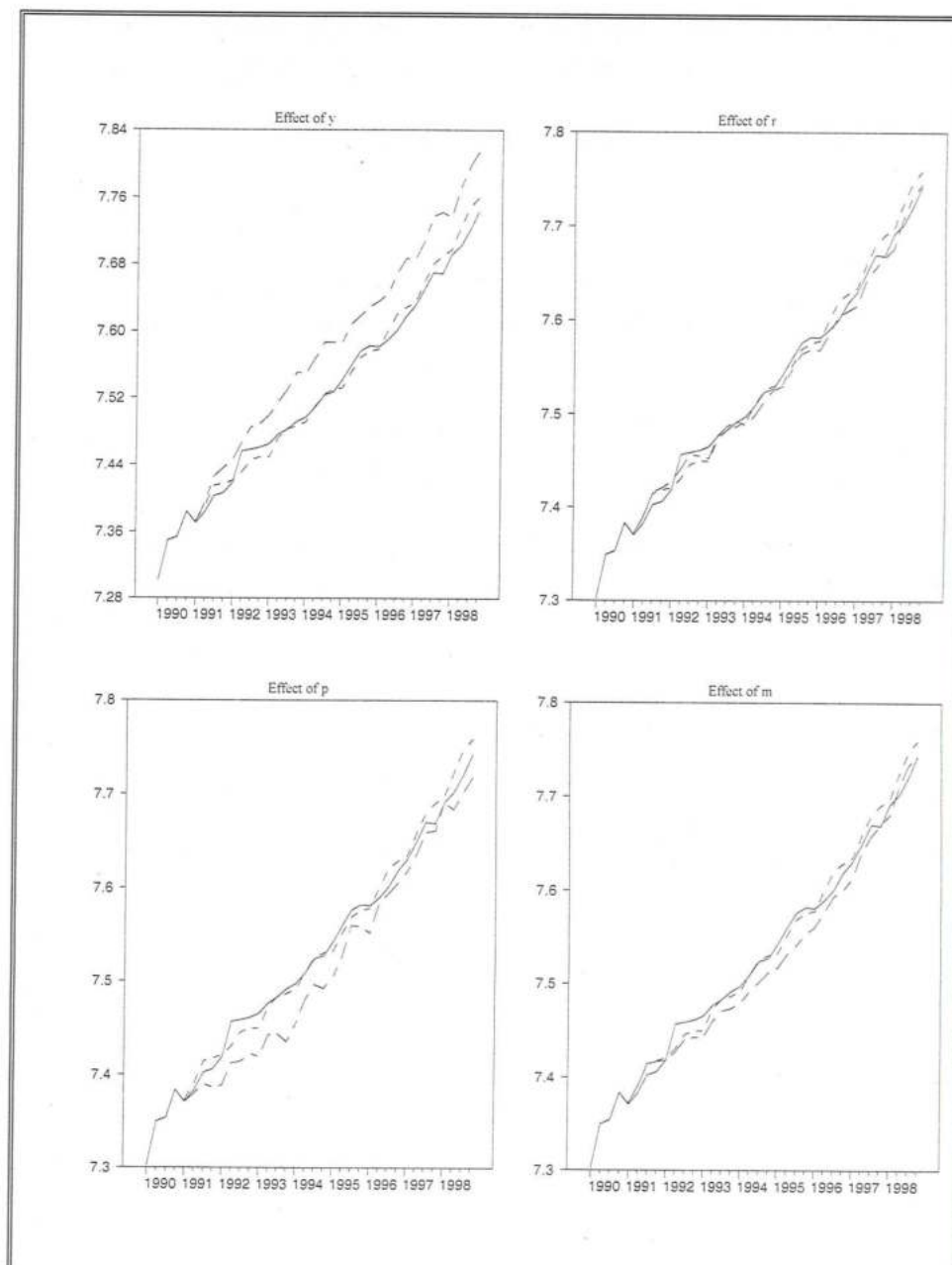
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Development and Management Challenges of Integrated Planning for Sustainable Productivity of Water Resources*

Murshed Ahmed**

Abstract

This paper explores the actual and potential contribution that can be made for enhancing the sustainable productivity of water resources. There are immense possibilities of converting waters of the GBM region and other transboundary rivers into wealth. It is a great challenge to integrate water resources to work out an environmentally sound, socially responsible and economically productive water management paradigm in this region. The challenges of water management, lies in overcoming water scarcity, water quality deterioration, threat to regional and world peace and security. Water resources management in Bangladesh are degrading and reducing their ability for promoting essential goods and services to humankind. However, if the country is to achieve higher, sustainable, poverty-reducing growth, water resource system should be developed in an integrated and comprehensive manner taking into account the multiple functions it performs and the goods and services it produces. IWRM is closely interlinked with benefits sharing of transboundary rivers but this depends on strengthening international cooperation and partnership approach. Strong political commitments and partnerships will bring together all players in the development chain in making the most of its benefits and share them equitably.

1.   INTRODUCTION

Water as a basic human right is the single-most important input and a crosscutting resource. In addition to the importance of water as a basic human right, water is crucial to socio-economic development and poverty alleviation. The Third World

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Water Forum 2003 concluded calling water a "driving force for sustainable development" and a strategic tool to fight against poverty[1]. But water resources management in Bangladesh are degrading ecosystems and reducing their ability for promoting essential goods and services to humankind. Reversing this threat and achieving sustainability requires an integrated approach to managing water, land and ecosystems, taking into account socio-economic and environmental needs. Water as a basic need and a human right is considered as the engine for economic growth for sustainable poverty reduction strategy. It is a vital resource for human survival, socio-economic development of the country and preservation of its natural environment. Water resources should be managed in a comprehensive, integrated and equitable manner. Water resources planning has to take into account a variety of geographic, morphologic, hydrologic, social, economic, ecological and environmental factors[2].

As water is a precious national resource its proper utilization is of utmost importance in achieving our long-term goals and objectives. Sound and balanced management of water resources is a pre-requisite to ensure quality of life and the sustainable socio-economic development of our societies. Development of agriculture, industries, forestry, environment, fisheries, navigation etc. has deep-rooted linkage with Integrated Water Resources Management (IWRM). Although agricultural sector that contributes 24% to the country's Gross Domestic Product (GDP) Bangladesh Water Development Board (BWDB), pursuant to National Water Policy (NWP) has gradually been adopting the IWRM strategy in place of traditional agricultural bias.

2.   OBJECTIVE

This paper aims to explore the actual and potential contribution that can be made for enhancing the sustainable productivity of water resources. The main objective is to cater for IWRM to satisfy multi-sector water needs with limited resources for promoting socially acceptable, environmentally sustainable, economically productive and efficient water management rather than fragmented and uncoordinated management of water resources. The final objective is to attain sufficient coping capability of the society to meet the challenges of IWRM.

3.   APPROACH AND METHODOLOGY

Development and management of water resource is engineering and science based. Water is not only an economic good but also a social and environmental good that needs to be managed quantitatively and qualitatively. The management

of water resources is quite complicated and a difficult task that needs to focus on both supply and demand aspects. The concept of IWRM is globally accepted as the optimal approach for future water resources development. The IWRM is based on the many past experiences in water management throughout the world and hence is viewed as a flexible methodology to be adapted for each individual country[2]. It is also based on the perception of water as an integral part of the eco-system, a natural resource and social and economic good. IWRM is a well-coordinated and participatory approach of a multi-functional system of water, man, land and related resources. Its objective is to ensure sustainable utilization of the water resources and an equitable distribution of its benefits, which optimally contribute to the social and economic development of the society as a whole, without compromising the sustainability of the vital eco-system. Development of comprehensive systems analysis model is required for this approach that would enable the identification of development priorities by accounting for the trade-offs between conflicting objectives. These approaches focus on the multi-dimensional character of water resources and their uses. The quantity and quality of water must be seen as a global concern requiring a unified management approach.

Water resources planning and management concept is multidimensional and multifarious. A multidisciplinary and comprehensive approach is adopted to optimize the water needs of agriculture, environment, public health, fisheries, navigation and industries. An integrated view of the hydrologic cycle and the interactions of human interference's have been taken into consideration. The data base and support services has been necessarily drawn upon the available sources inside the country although regional data base is felt to be an urgent necessity to make the management system dependable on the long run basis. The study is based on both macro-level and micro-level data. As a support to the said methodology, the secondary sources at the macro level have also been used. BWDB, Water Resources Planning Organization (WARPO), Ministry of water Resources (MOWR), Institute of Water & Flood Management (IWFM), Institute of Water Modeling (IWM) and South Asian Disaster Management Centre (SADMC) of International University of Business, Agriculture and Technology (IUBAT) are the major sources of the secondary level data and information.

4.   LIMITATIONS OF THE ANALYSIS

It would be pertinent to mention some of the limitations of presented in this paper. The limitations include the follows:

a.   Case study both for country and region could not be done. Limited discussions on transboundary issues for an integrated water resource

management and benefit sharing have been made. Legal issues regarding water rights, codes, laws, regulations and its uses could not be covered based on master plan or basin management.

b.   Financing mechanism and financial implication could not be addressed. Water to all in a sustainable way has a cost which should be recovered from all those who benefit has not been worked out. Participatory decision-making on investments, cost recovery and enforcement mechanisms that give voice and choice to users and societies have not been done.

c.   Integrated information, on institutions, monitoring system and planning of joint ventures and research programs have been highlighted on a limited scale.

d.   Sustained benefits of water for the poor is a major challenge which remains to be addressed.

5.   ISSUES AND PROBLEMS OF THE WATER RESOURCES SECTOR

The importance of water resources, in overall context of Bangladesh, is unlimited. Water is central for human survival, socio-economic and environmental sustainability[4]. However, it is a limited and finite resource with problems of different dimensions and issues. Various conflicting and complementary uses of water like domestic, agriculture, navigation, fisheries, livestock, forestry, hydropower and above all, in maintaining environment for a healthy and prosperous society make this resource an economically critical one. Although Bangladesh has been historically a land of rivers with variety of hydrological, morphological and meteorological characteristics it has been facing a dual challenge: unlimited flood water during the wet season on the one hand and increasing scarcity of water during the dry season on the other (Box-1). The twin problems of water scarcity during winter and abundance of the same during monsoon is a unique feature of water resources of the country. Water resources management system consists of (i) components of the natural system (ii) human made infrastructure and also (iii) institutional arrangements to regulate and control the availability and access to these components by users. Such a system produces goods and services in response to the final demand from society.

6.   CHALLENGES IN MANAGING WATER RESOURCES

The problems of abundance of water during the monsoon and its scarcity in the dry season are critical to the development and management of water resources in

Box I:	Some Critical Factors Adversely Affecting Management and Development of Water Resources in Bangladesh

➢   Floods
➢   Drainage congestion and water logging
➢   Reduced fresh water availability
➢   Disturbance of morphological processes
➢   Rise of river beds due to siltation
➢   Erosion of river banks
➢   Cyclone and storm surges
➢   Coastal dynamics and salinity intrusion
➢   Pollution of surface & ground water
➢   Arsenic contamination of groundwater
➢   Human intervention in the flood plains and in the water bodies
➢   Poor Institutional development
➢   Upstream interventions
➢   Storage reservoirs in the Himalayas
➢   Upstream river basin development beyond the border of the country
➢   Non-optimal regional water sharing arrangements
➢   Inter-basin water transfer project/International river-linking project
➢   Drought and desertification
➢   Non-establishment of water rights

Bangladesh. The problem of scarcity has been further compounded by human interventions beyond the borders. Perhaps, nowhere else in the world does water pose such challenge and at the same time offer such potential for development as it does in this riverine delta. It is thus imperative that this resource be developed and harnessed to its optimum for our very survival as a vibrant society in the 21st century. In the dry season optimum use of available water resources will have to be taken into consideration the multifarious demand for use of water in domestic, irrigation, navigation, fisheries livestock, forestry, environment etc. On the other hand, in the wet season, the main tasks, in addition to provision of supplementary irrigation, are controlling, regulating and managing of floods to protect human lives, properties, crops etc. Mitigation of impacts of global warming, sea level rise and climate change throws another challenge for Bangladesh, along with other countries of the region. Some of the suggested critical measures against water-related disaster issues are depicted in the following Table 1.

Table 1 : Development Objectives and Water Disaster Reduction		
Development Objectives	Water-related Disaster Reduction Option	Suggested Measures and Modeling Needs
Economic Development	➢ Reduction of damages due to floods, storm surges etc. ➢ Reinforcement of flood plains management	➢ Flood management modeling ➢ Shared vision modeling ➢ Basin wide management ➢ River basin planning ➢ River basin management on the basis of participatory approach ➢ Flood forecasting & warning system
Poverty Reduction	➢ Erosion control ➢ Land accretion ➢ Char development	➢ River erosion mitigation project ➢ Resettlement action planing ➢ Water management improvement project ➢ Irrigation & drainage management modeling under command area development ➢ Morphological assessment & modeling
Food Security	➢ Irrigation ➢ Drought management ➢ Improve fish habitat	➢ Assessment & management of dry season water shortage ➢ Crop damage assessment modeling ➢ Integrated water resources management at level of river basins
Public Health & Safety	➢ Safe drinking water ➢ Sanitation ➢ Drainage ➢ Cyclone /storm surges etc.	➢ Water quality monitoring ➢ Managing surface and ground water quality for mainstreaming the environment in the water sector ➢ Urban drainage management
Decent standard of living for the people	➢ Access to fresh water resources and making water flows for production, health & hygiene ➢ Fresh water availability for multipurpose and multiple economic use	➢ Striking a balance between use of surface & groundwater ➢ Integrated planning for sustainable water management ➢ Urban flood control & drainage improvement
Protection of the Natural Environment and bio-diversity	➢ Improve water quality ➢ Strongly enforce existing legislation related to water ➢ Environmental impact assessment and social impact assessment ➢ Preservation of the aquatic Eco-system	➢ Balancing supply and future demand ➢ Water quality modeling ➢ Capacity building for integrated management ➢ Developing partnerships & regional co-operation

In the Ganges-Brahmaputra-Meghna (GBM) region, particularly in Bangladesh, much of water is distributed unevenly in space and time. It is a great challenge to integrate water resources to work out an environmentally sound, socially responsible and economically productive water management paradigm in this region. The challenges of water management, therefore, lies in overcoming water scarcity, lack of accessibility of many to safe water for drinking and sanitation, water quality deterioration, threat to regional and world peace and security, lack of adequate awareness in decision makers, decline of financial resources and finally, fragmented water management. Thus, the management of water resources has been one of biggest challenges facing this sub-region. The 2nd and 3rd World Water Forum held in the Hague and Kyoto underscored the importance of IWRM to respond to the challenges of global water management. An 'Intent' was declared by five countries (Argentina, Bangladesh, China, the Netherlands and Vietnam) concerning cooperation in the field of integrated flood management in deltas and lowland river regions[5].

7.   DIMENSIONS OF INTEGRATED WATER RESOURCES MANAGEMENT

IWRM takes into account of all natural aspects of the water resources, of all sectoral interests and stakeholders, relevant policy frameworks, and all institutional levels. It has three main dimensions after Savenije, 1970 with modification and a number of crosscutting issues[6]. This is to note that water resources come in different forms and have multiple uses. Water is available in surface stocks and flows, as ground water in aquifers or as soil moisture. All forms of occurrence of water including surface and ground can be used for diverse purposes and all are important to the viability of ecosystems. As mentioned earlier, water resources also move and vary over both space and time, with the variability operating at different temporal and spatial scales. The movement of water, flowing over the surface and through aquifers, means that water resource issues can never be purely local. These multiple sources and multiple uses of water resources mean that there are likely to be various stakeholders with competing interests, especially since water use often involves externalities whereby secondary costs or benefits do not accrue to the water user. The multiple nature of water resources and their uses is reflected in a move away from traditional sector approaches to what has become known as IWRM[7].

7.1   Dimension I: Kinds of Water Resources

Water resources of Bangladesh can be classified based on hydrological context and land type concept[7]. Water resources can take several forms of occurrence

including salt water and fossil ground water. An interesting distinction, which can be made, is between blue and green water. Blue water consists of both open inland waters and closed waters. The open inland waters are in the rivers, estuarine area, beels and haors, inundable floodplains and lakes while closed waters are in the ponds, baors (oxbow lakes), brackish water farms and shallow aquifers[8]. Both the kinds of water have received all the attention from water resources planners and engineers. Green water, the water available in the unsaturated soil responsible for production of bio-mass has been largely neglected but it is the green water that is responsible for 60% of the world food production and all of the bio-mass produced in forests and pasture. Fossil water, the deep aquifers that contain non-renewable water, should be considered a mineral resource, which can only be used at the cost of foregoing future use. In this definition, underground water distributed over blue, green and fossil water. Figure 1 provides a basis for identifying the nature and use of water resources.

7.2   Dimension II : Water Users

The various water users, which can be categorized into, are domestic, agricultural, industrial, power, livestock, fisheries, forestry and transport. Water users consists of consumptive use and non-consumptive (often in-stream) uses. It includes all uses of water resources (including fishing, navigation, besides direct use of water), and also includes ecosystems as "users" or stakeholders whose 'interests' need to be central to water resources management decisions. Besides quantity, the users also depend on the quality of the resource. An integrated approach to using water will be necessary to avoid conflicts that have been experienced in other countries. The fundamental basis of the approach should emphasize integrated river basins management including environmental protection in the use of shared water resources.

7.3   Dimension III: Spatial Scales

Water resources issues are apparent at different levels: the international level, the national level, the regional level, the local level and the household and intra-household levels. Parallel to these administration levels are hydrological system boundaries such as river basins, sub-catchment and watersheds. Hydrological boundaries seldom concur with administrative boundaries. River basins[9] are very appropriate units for operation management but present problems for institutions, which have a different spatial logic. Defining the most appropriate spatial boundaries is a key challenge in many countries of the worlds. However, the management of resources and other aspect of life is undergoing a process of decentralization[10]. Dimension of integrated water resources management after

Savenije, 1970 with modification is shown in figure-1 where three dimensions: (i) Production/ water function aspects, (ii) Users' aspects (Preferences), (iii) Hydro-morphological aspects have been considered.

8.   GLOBAL PERSPECTIVE

Over the past few decades, demand for water is constantly rising throughout the Globe. Water quality and quantity have deteriorated at local, regional, national and international level. Concomitantly the water for the environment has degraded and the cost of developing new water resources have risen alarmingly. This, combined with population growth and fragmented water management, has created an unsustainable environmental situation in many parts of the world. Bangladesh is faced with full range of global water-related problems which the entire world is now scared about. If a quick "blue accounting" on global perspective is made, it reveals that as much as 97.5 percent of world's water is salty, 1.67 percent is locked up in ice caps and glaciers, 0.17 percent lies too remote for human access, 0.53 percent comes at the wrong time and place (eg. in Bangladesh, only 3710 million cubic meters is available in February while as much as 111,250 cubic meters in August) and the remainder i.e. 0.13 percent of total water, is only available for human needs[11]. Water is, therefore, really scarce. But it is still observed that actions of human mankind are continuing to pollute water in rivers all around the country. These problems need to be addressed to have a meaningful basis for water management.

9.   DIVERSE APPROACHES TO WATER RESOURCES
   MANAGEMENT

With an expanding agro-based economy and manufacturing sector the demand for water of good quality and sufficient quantity is increasing dramatically. The scenario is exacerbated by rapid population growth and urbanization in most developing countries. As demand for water for human, industrial, agricultural, navigational, environmental and other uses has escalated, so have the different uses been under severe competition. In Bangladesh, despite the unique dimension of water as a resource, its variation in temporal and spatial occurrence is a major impediment to water development for marking contributions to the national economy. The important of this scarce resource management, therefore, lies in optimizing the use of water in each deserving sub-sector under short, medium and long-term perspectives. Conflicts and complementarities among them through careful project planning and design have to be minimized. Balanced set of policies and institutional reforms in water resources sector have to be obtained to mange water resources more effectively. These will harness efficiency of market forces

and strengthen the capacity of Bangladesh economy. In order to meet the water demand for the various and often conflicting use', available water resources have to be properly managed in a sustainable manner.

Identification of Problems of Managing Water Resources

The traditional benefit cost analysis does not reflect the consequences of water sector investments upon other sectors. It is important to develop a planning methodology that relates water sector plans to macro-economic decisions which would help to guide the investment policies for the overall development of a country. The management of water resources has, however, suffered from weaknesses that include : (i) fragmented and poor institutional approach to water management; (ii) over-emphasis on new investment programs combined with limited attention to ensuring effective operation and maintenance (O&M); (iii) low priority of environmental considerations and (iv) allocation of resources in Annual Development Program (ADP) and revenue budget on an ad hoc basis rather than on needs and priorities.

In general, the following three types of maladies are observed in water management:

  a. Fragmented public sector management that neglect inter-sectoral implication of water development in a particular sector or agency.

  b. Overextended public agencies neglecting financial accountability, user participation and efficiency of delivery services; and

  c. Public investments neglecting water quality, health and environmental impacts in the long run.

As water is largely a public good; its integrated management has to be based on the perception of water as an integral part of ecosystem, a natural resource and social and economic good. And management of this scarce resource has been a challenge for the Governments concerned. Proper development of water resources sector requires multi-objective planning, integrated land and water resources management, risk-based decision making, fostering citizen's involvement in planning decision making, social equity and environmental preservation, feedback from beneficiaries and project evaluation and many other elements.

The planning process should address the interactions between people, water, land and floodplain environment in a river basin. It should also take an integrated view of floods, droughts, river erosion, sedimentation, dry season flow, groundwater,

agriculture, crop diversity, soil fertility, fish habitats, wetlands, charlands, salinity, water quality, non-point source of pollution etc. However, Fig-1 illustrates emerging conflicts in land use and water use. Population growth, urbanization, agricultural expansion and industrial development are a great challenge to water resources management. This has resulted in widespread shortages in water availability and deterioration in water quality.

Monitoring /Enforcement

Environmental /
Ecosystem degradation

Industrial &
Agricultural pollution

POOR WATER QUALITY

Land degradation and
poor land use

(FCD/FCDI/Barrage/ CDSP/ CADP)

Human Intervention

Reduced freshwater
Flows Shortage of
water for irrigation

Effluent discharges
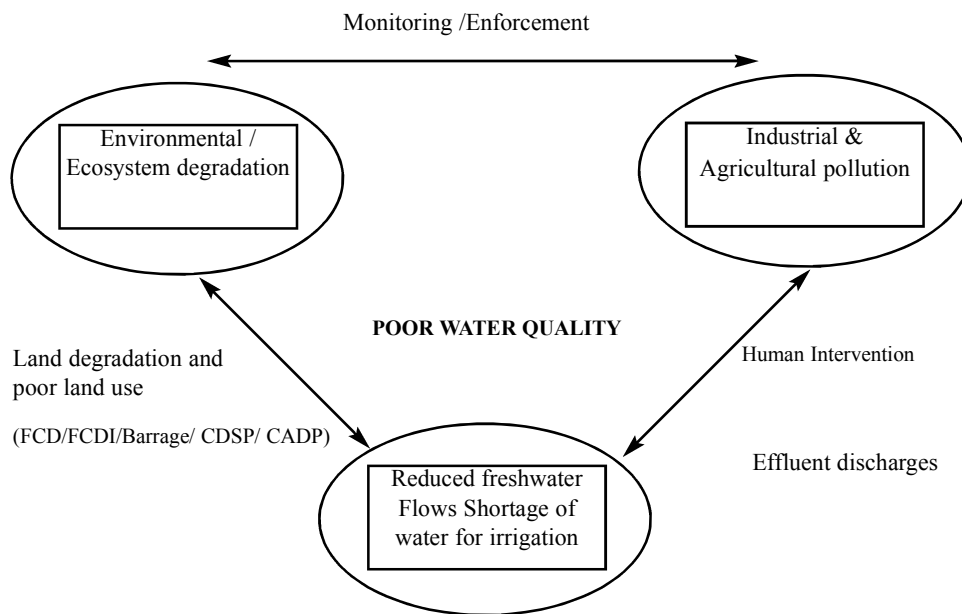
Figure 2: Poor Management of Water Resources

The consequences of the above mentioned problems shown in Figure 2 affect all the sectors of the economy in a given geographical area. Water infrastructure has also affected social, economic and environmental aspects adversely. Pollution, over consumption, growing sectoral demands and poor management of water resources are causing degradation of both quantity and quality of freshwater. Here three issues need elaboration, which are analysed below:

Water-Related Disaster: Water is the source of life, but it is also a threat and disaster. Water is closely linked to the socio-economic development of mankind. It is critical for long-term economic development for social welfare and for ensuring environmental sustainability. Water is identified as a big hazard only when it is "too much" or "too little". Water-related disaster such as repeated

floods, storms cyclones, tidal surges, erosion of river banks and upstream withdrawal create a threat to the human environment and lead to socio-economic losses and deprivation. The effects of water-related hazards are thus social, economic and environmental shown in Figure 3. The over-exploitation of natural resources is accelerating depletion of important resources such as water, soils, forests and fisheries. The texture of causes and consequences of over exploitation brings about a myraid of socio-economic, technological, physical and governance problem. Indicative measures against the problems are shown in the Figure 4. In some areas of the northern region, use of deep tubewells along with the effects of the Farakka barrage on the Ganges river have lowered the water table. Similarly, withdrawal of Ganges water combined with siltation at the Gorai river off-take are

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┌──────────────────────────────────────┐
│          Water-Related Risks          │
└──────────────────────────────────────┘
                    │
                    ▼
┌──────────────────────────────────────┐
│   Flooding, Cyclonic Storm Surges,    │
│    Tidal Bores, Salinity, Drainage    │
│     Congestion, Dry Season Water      │
│   Shortage and River Bank Erosion     │
└──────────────────────────────────────┘
                    │
                    ▼
┌──────────────────────────────────────┐
│  Decline of river systems, Opportunity│
│   to expand Irrigated Agriculture     │
│     denied, Reduced Navigability of   │
│    Rivers, Environmental degradation  │
└──────────────────────────────────────┘
                    │
                    ▼
┌──────────────────────────────────────┐
│  Disruption to Industrial activities, │
│     Extinction of natural forestry,   │
│          Ecological Imbalance         │
└──────────────────────────────────────┘
                    │
                    ▼
┌──────────────────────────────────────┐
│  Water Logging/Stagnation of Water,   │
│       Siltation, Water Pollution      │
│   Arsenic contamination of ground water│
│          Disease and Epidemics        │
└──────────────────────────────────────┘
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| Uncertainty and Health hazard Crop failure | Reduced reinvestment Surplus | Vicious Circle of poverty | Social deprivation Social Crime Social Unrest Migration | Insanitation Decrease in fish/Animal, Resources |

Figure 3: Schematic Representation of the Problems and consequences of Water-Related Hazards

greatly increasing the salinity in the South-Western Region. This is a major problem in over 25,900 sq. km. of the Ganges dependent area and is causing both short and long-term problems in crop production, fishery, forestry, power generation, industrial development, health care and domestic water supply. Although the situation seems to be improving following the Ganges water sharing treaty signed on December 12, 1996, nevertheless the desired improvement will not take place till the proposed Ganges barrage is constructed and water flowing down the Gorai and other relevant distributaries is augmented.

Water and Poverty: Poverty is also identified as a hazard. The major causes of poverty in Bangladesh are low economic growth, inequitable distribution of income, unequal distribution of productive assets, unemployment and under employment, high rate of population growth, low level of human resources development and limited access to public services. The poor class has increased due to crop failure by water-related disasters. As there are very little agricultural reinvestable surplus, low saving, low investment and low productivity make a case for below-poverty level equilibrium trap and perpetual poverty as shown in Figure 3. Salinity resulted in the scarcity of drinking water, change in vegetation affecting the livestock resources due to the scarcity of animal fodder and decline of the Sundarbans.

International Water Issues: The water management problem has another important dimension that is, the management of international water courses. More than 200 river basins are shared by two or more countries, occupying about 60% of earth's surface. More than 300 treaties have been signed by countries to deal with specific use of international water resources and more than 200 treaties signed by co-riparian to deal with water related issues, but co-ordinated management has still been a far-cry, resulting in economic, environmental and even political crisis among nations. Inefficiency caused by interdependent water uses cannot be resolved through a single Government policies. Without enforceable international rights established through treaties, upstream countries withdraw at the cost of downstream ones and the consequence is fatal for the lower riparians. On the other hand, her flat terrain prevents construction of storage dams to conserve the monsoon flood for use during the dry season.

With regard to water resources, the issue of concern is how to implement an integrated river basin management system, specified in the NWP (1999) in order to achieve the sustainable use of rivers and water bodies for present and future generations. This management system seeks to balance of interests of different sector users (hydropower, water supply and sanitation, irrigation, navigation etc). In order to meet with ever increasing and diversified demands, water resources management should be organized in an integrated manner at both national and

Dynmic and Complex Interrelationship Between Causes of
Disaster And Impact on Natural Resource Base

Institutional, Management and organizational factors
Uncoordinated development activities:
- within the country
- within the region

- Intensive-use of land, water, mineral and forest
- Upstream withdrawal
- Lowering of the Ground Water Table
- Depletion of soil moisture
- Deterioration in soil fertility
- Arsenic Contamination
- Green house effect and Global imbalance
- Rise in Sea level
- Global warning
- Climate change

Macro Economic Policy
- Monetary
- Fiscal
- Trade

Exogenous Factors
- Flood
- Cyclone
- Tidal Surge
- Drought
- River Bank Erosion
- Salinity
- Environmental Crisis

Socio-Economic Factors
- Poverty
- Inequality
- Unemployment
- Inflation
- Famine
- Death

Technological Factors
- Human intervention on nature
- Water pollution and soil degradation by extensive use of fertilizers and pesticides
- Industrial pollution by transfer of industrial and agricultural technologies

Government Policies
- Sound and Stable Political Process
- Strong Political Commitment
- Resource Distribution Programme

Demographic Factors
- High rate of Population growth, low consumption levels
- landlessness, assetlessness, homelessness, joblessness, loss of access to common property, kinship bondage disintegration and social disarticulation

Sustainable environment
through environmental management plan and Resettlement Action Planning

Disaster Mitigation/Reduction Strategies
- Structural measures
- Non-structural policy Intervention
- Combination of Structural and non-structural

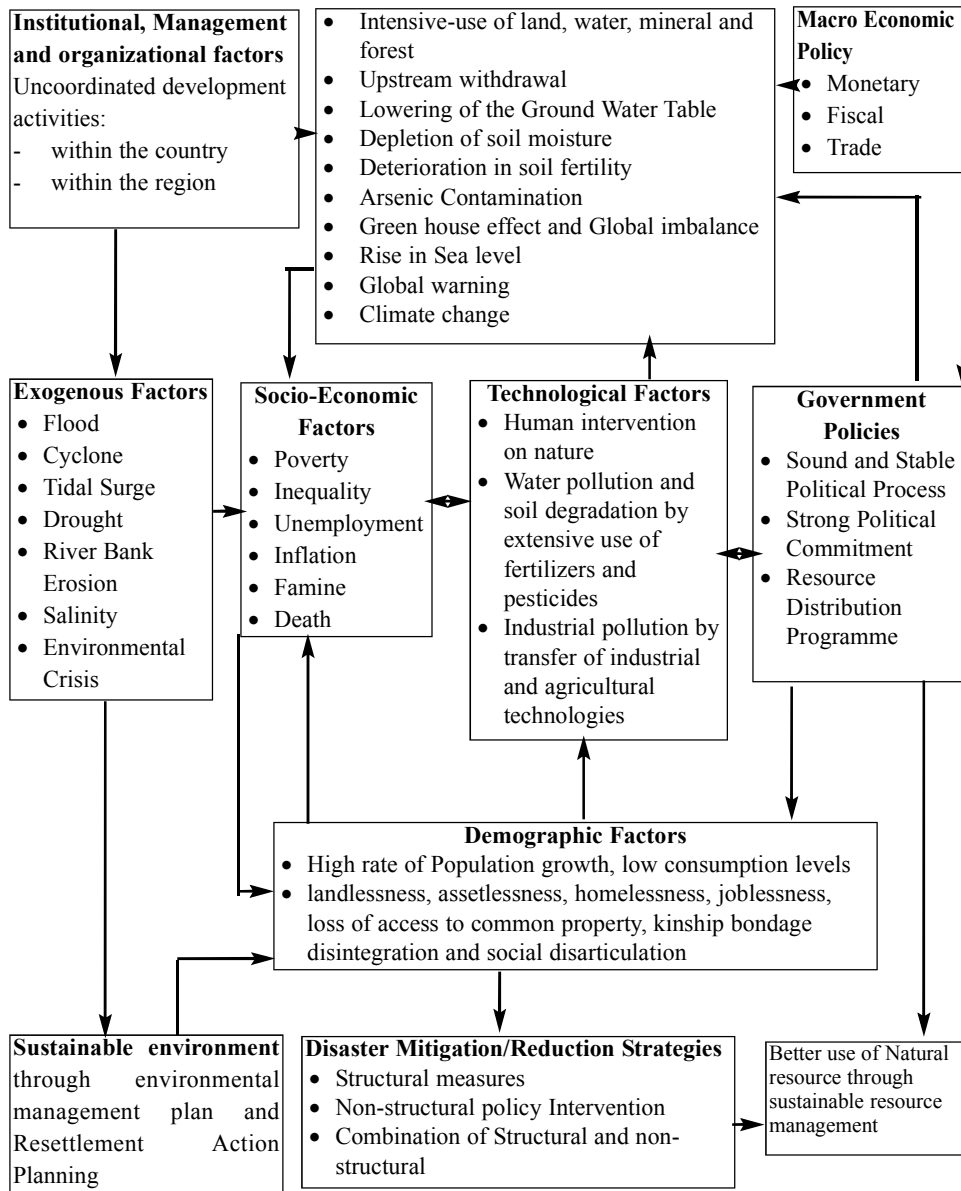Better use of Natural resource through sustainable resource management

Figure 4: Interlinkages between causes of Disaster and
Impact on natural resource Base

international watershed levels. Rational management of water resources is essential for ensuring the quality of growth and the sustainable development of the region.

10. INVESTMENT OPPORTUNITY IN WATER MANAGEMENT

Planning and management for water resources in the fragile ecology and changing environmental of Bangladesh is a complex and exceedingly difficult task involving hydrology, water management, forest and fishery resources, people, government policies and institutions. Planned utilization and efficient management of land and water resources in Bangladesh should be with a strategy of sustainability and exploited within their optimum sustainable capacity for achieving desired changes in agricultural growth and productivity. Investment is an economic activity. Water management activities need structural and non-structural components together for better and more comprehensive solutions. Water being basically a public good, as said earlier, return to investment on it may indicate its relative strength or weakness for the potential investors – both public or private as may be the case. But among few sectors of economy, water management in terms of irrigation, flood control and drainage, sanitation, water supply and sewerage turns up the financial rates of return as shown in Table 2.

Table 2: Average Economic Rates of Return on Project in different Sectors (1974-1992)

Sector	1978-82	1983-92
1. Irrigation and Drainage	17	13
2. Water and Sanitation	7	9
3. Sewerage	12	8
4. Water Supply	4	6
5. Infrastructure Projects	18	16
6. Telecommunications	20	19
7. Transport :		
– Airport	17	13
– Highways	20	29
– ports	19	20
– Railways	16	12
8. Power	12	11

Source: World Development Report 1994, Infrastructure for Development, The World Bank, June 1994

Relative worthiness of investment in water management sector range, as per the World Bank's analysis above, between 6%-13% while other sectors have relatively higher values of return. Given water's special characteristics, it is difficult to use unregulated markets to deliver water efficiently or to allocate it among sectors. Even more important, as a cause of low realized returns, water moves through an intricate hydrological cycle of rainfall, absorption, runoff and evapotranspiration that makes water activities highly interdependent and result in numerous externalities from various uses of surface and groundwater. Market forces, e.g. taxes regulations, enhancement of competitive pressure etc. and inadequate or highly monopolistic private investment in water sector give rise to problems. IWRM principles can eliminate these problems by optimizing the benefits and minimizing the costs of competing sub-sectors in water management sector.

It is necessary to carry out lending operations for water project where assessment of the complications for involving other water-using sub-sectors within the relevant regional setting, most likely a river basin, is accomplished. Relevant pricing issues, cost recovery, financial autonomy and sustainability and community participation including Non-Governmental Agencies should receive particular attention. It will also be needed to carry out priority reforms and activities such as: public investment priorities, environmental restoration and protection, water resources assessment and data collection, comprehensive analytical framework, legislation, institutional structure and capacity improvement.

Investment Needs in Water Sector: Although the over-all returns on water infrastructure has to a great extent been disappointing neverthe less reasonable investment is required to meet the welfare needs of the society for which economic returns need not be competing with fast growing modern sectors. The Investments in water resources are investments not only in the water sector, but also socio-economic development and poverty alleviation. When compared with investments in other sectors like telecommunications and highways, these investments may appear to produce low returns. But when viewed from a national or regional angles, they can be considered very productive.

Investment levels in water institutions and infrastructure are far too low. Funding in this sector is declining. Water rates and collections are too low to cover costs, putting them at risk the financial and physical non-sustainability of water systems. Governments have to be prepared to meet the challenge of meeting financial resources in the water sector for investment as well as O&M.

New Issues and Approaches: The new and diverse approaches to managing water resources should build on the lessons of experience in different countries of

the world. Water is a unitary resource, and that surface and ground water are an interconnected system, which must be addressed with comprehensive planning. Water is both a public and a private good. Water is also economic and environmental good, as within each hydrological unit renewable fresh water is limited. A comprehensive policy framework is required for decentralized management and delivery structures, greater reliance on pricing and fuller participation by stakeholders[12]. Degradation of the water for the environment of its quantity and quality are the result of poor and fragmented water management. In order to correct the situation new and diverse approaches to water resource management should move beyond traditional water management that will promote economically viable, environmentally sustainable and socially equitable management of water resources. The most important of these water resources issues are:

1. Quantity and quality concerns through an integrated approach.
2. Land use management with sustainable water management.
3. Freshwater flows for environmental management.
4. Water as an economic good that promotes cost-effective solutions.
5. Balance water management for different water users.
6. Supports innovative framework for stakeholders participation.
7. Effective legislative framework and enforcement capability.
8. Sustainable rural livelihoods and the quality of their environment.

To address some of these issues, it is suggested that the following can be considered:

1. Water should be considered as an economic good since it has a value in all its competing uses.
2. Water conservation should be an integral activity of the environmental management plan.
3. River basin studies should be taken up as a tool for integrated management.
4. Environmental Impact Assessment (EIA) should be undertaken for all major projects.
5. The water users should be encouraged to participate in water management activities.
6. Data and statistics on national and international water resources should be disseminated to the public.

Following international conferences, particularly in Dublin and Rio de Janerio, the World Bank published a Water Resources Management Policy paper in

September 1993 to address the growing global water resources management challenges. To support the implementation of the Water Resources Management Policy, the Economic Development Institute (EDI) of the World Bank developed a special initiative, the "Water Policy Reform Program," in collaboration with national and international organizations. The overall objective of the EDI Water Policy Reform Program is to assist countries in preparing and implementing reforms leading to sustainable water resources management.

The international Conference on Water and the Environment: Development Issues for the 21st Century, held in Dublin (January 1992), called for new approaches to the assessment, development and management of freshwater resources. The conference report sets out recommendations for action at the local, national and international levels, based on four guiding principles. First, the effective management of water resources demands a holistic approach linking social and economic development with protection of natural ecosystems, including land and water linkages across catchment areas or groundwater aquifers. Second, water development and management should be based on a participatory approach involving users, planners and policymakers at all levels. Third, women play a central part in providing, managing and safeguarding water. Fourth, water has an economic value in all its competing uses and should be recognized as an economic good.

The United Nations Conference on Environment and Development (June 1992) in Rio de Janeiro, Brazil, confirmed the widespread consensus that the management of water resources needs to be reformed. The conference stated that, the holistic management of fresh water as a finite and vulnerable resource and the integration of sectoral water plans and programs within the framework of national economic and social policy are of paramount importance for actions in the 1990s and beyond. The conferences stressed the implementation of allocation decisions through demand management, pricing mechanisms and regulatory measures.

The World Water Forum 2000: The World Water Forum, ended with Ministerial Declaration of the Hague made on the 21st of March, 2000 confirms the commitment of the world to achieve water security in the 21st century. The call can well be traced to the declaration of NWP of Bangladesh made in January, 1999 - more than a year before the recent Hague Declaration. The main challenges of the Hague Declaration can well be seen textured nearly in the said policy which reads, "The policies enunciated here in are designed to ensure continued progress towards fulfilling the national goals of economic development, poverty alleviation, food security, public health and safety, decent standard of living for the people and protection of the natural environment." Water pricing and regulatory principles are also laid down in the Policy sections 4, 5 and 6 to cover the good governance of water.

To ensure proper development and management of the water resources various policies and strategies have been implemented in Bangladesh. The Government in 1999 approved a NWP to integrate water resources potential into development. The NWP has been formulated to meet the growing demand for water and the main directives include the following: provide the rational for comprehensive water management planning; define the government's thinking and direction on water management issues; point to the strategic direction for accomplishment of water management objectives; indicate legal measures and institutional support for the system.

The Third World Water Forum 2003: The main theme of the Kyoto Water Forum was "Addressing: Water issues through ownership and partnership for "Sustainable Development". The theme included 'Encouraging Governance and Ownership of Water Management', which is a key to sustainable development and a better quality of life, enabling developing countries to stand on their own feet (Box-2). The themes were outlined to enhance for water strategies for individual countries or for river basins where appropriate: participation in water activities reinforced by role sharing with civil society and stakeholders: and water networking within the international community.

The Third World Water Forum prioritized water actions as an urgent global agenda and suggested certain policy actions to help tide over the global water crises. The Forum urged better co-operation among nations sharing common water sources and suggested to spur the United Nations into taking a leading role

Box 2 : The identified actions of the basic concept of sustainable water development and Management	
Encouraging Governance and Ownership of Water Management :	Fostering Partnerships to Support Ownership
Positive Actions ➢ Identify problem ➢ Raise awareness ➢ Build capacity ➢ Mobilize financial resources ➢ Formulate strategies ➢ Integrated Water Resources Management ➢ River basin management on the basis of participatory approach	Positive Actions ➢ Stakeholder involvement ➢ Sector-wide approach ➢ Development assistance ➢ Technology transfer ➢ International networking ➢ Developing partnerships & regional co-operation ➢ Basin wide planning

Based on discussion and interview with BWDB officials who attended the Third World Water Forum, 2003

in liaising, mediating and co-operating with other organizations involved in water sector. The Forum concluded calling water a "driving force for sustainable development" and a strategic tool to fight against poverty.

11. A FRAMEWORK FOR SUSTAINABLE PRODUCTIVITY OF WATER RESOURCES

Since development and management of water resources activities in Bangladesh are multidimensional and multifarious, the dynamics involved in the process may have to be pursued under the framework of certain guidelines. The four key issues can be considered as a follow-up of the Hague Declaration (World Water Forum 2000) for enhancing the sustainable productivity of water resources. The goals of the Declaration are inspiring but difficult to achieve. They imply viable technology, workable institutions, incentives, behavioral changes and investments for bringing the vision to reality. The essence of the *four key issues* is as follow:

Issue 1-Approach: It is an integrated approach to water resources management. IWRM provides a holistic and participatory approach in which decision making would recognize three areas for integration: (i) the relations between water and land use, (ii) the trade-off between social and economic development (different sectors) and the environment, and the interaction between management at international, national and local levels. To strengthen and reinforce these management approaches, the GOB recently prepared the NWP (1999) and has currently formulated the draft National Water Management Plan (NWMP). It is an integrated water resources management. Here, a framework at the catchment, basin and aquifer level operates, where nature manages water. Actors are the base-level water users who decide in a participatory way, enriched with adequate scientific and technical information.

Issue 2-Technology: It is less wasteful, more environmentally and socially friendly. The technology is drawn basically on traditional wisdom, but harnesses as much revolutionary changes as stimulation and incentives of society can afford. Several models are used in water resources planning (i) water balance model (ii) groundwater model and (iii) investment analysis model. These models are now being used in the planning processes of water sector. But some of them needs improvement and some new models are also required.

Issue 3-Institutions: Appropriate legal and institutional framework for the management of the environment including water resources have to be established when approaching water resources management from an integrated perspective. Water management is everybody's responsibility. Role of the government is primarily legislative and regulatory even through introduction of private sector as

a service-provider, accompanied by demand from consumers, is in the offing in water sector in Bangladesh, a true public-private partnership is still to grow where government must ensure clear and sustained rules for accountability and transparency for each actor. The communities and users have to have a water management culture. They will be the guardians of sound water management practices, by enforcing principles and flagging violations. Local community empowerment and their participation should act as the basic building blocks and women should provide the glue to hold the communities together. Private sector can come up as catalysts, but basin management rules and water rights must be well defined. Government role remaining as the pivot for providing an enabling environment, alliance of local people NGOs - agencies may go for water-asset creation.

Issue 4–Funds: Public sector funding in water sector has a definite role to invest in cost-effective services in accountable and transparent way. To bring about changes of the magnitude needed as per the vision, provisions of funds will have to be almost trebled, up to 2025. In Bangladesh context, the present level of public sector allocation (say, Tk. 10.00 billion a year) will have to be increased to about Tk. 30 billion a year which can be foreseen as very difficult for the government to provide. Moreover, the bilateral and multilateral sources are also getting scarcer. Domestic and foreign private investment is, therefore, considered to be the next best approach to address the funding problem.

The public sector initiatives through MOWR, BWDB, WARPO, DOF, LGED etc are now being convergent towards an integrated water resources management. BUET, IUCN, IWM and CEGIS are also contributing to the integrated approach by providing analytical tools, models and guidelines. But the basic fact remains: the vision approach of catchment, basin and aquifer level planning, design and implementation cannot be materialized without establishing a high speed Internet link through data providers. For example, flood monitoring and forecasting in Bangladesh requires compressed or full resolution imagery for mapping flooding time, extent, duration etc based on remote sensing, GIS and hydrological data. High priority processing and delivery mode of the data providers in each of the co-basin countries (say, Nepal, India in our case) have, therefore, to be ensured.

In this pursuit, the framework of action outlined in the recent World Water Forum in the Hague has clearly underscored the importance of regional and sub-regional cooperation in data exchange and management. Before any Apex Body for such regional cooperation in water sector can be created for coordination, exchange of data and information at professional levels in different public and private water agencies can break the ice and pave the way for preparing the ground for integrated water system. If participation of local stakeholders is the key to micro-

level water resources management, it is more so for international stakeholders at the macro-level to make micro-management sustainable. Absence of the later preempts the efficacy of the former.

The Forum has opened the global eye that those who look at political and administrative boundaries as the basis of decision making in water, are only ignoring a crystal truth that those boundaries seldom conform to the catchment and basin characteristics[13].

Guidelines for a Rational Management of Water Resources: Improvements in the management of water resources must strike a balance both in the supply and demand for water. It will have to examine the supply of water in the context of international rivers and groundwater, and the demand from irrigation, fisheries, navigation, drinking and municipal needs, and other important areas[14]. Therefore, one of the most difficult strategic issues will be deciding how to allocate limited supplies of water in the long run among its uses for agriculture, industrialization, salinity control, fisheries, navigation and a growing urban population. The following are the vital issues involved in the IWRM for enhancing the sustainable productivity of water resources:

Balancing demand and supply—The ever rising demand for water use and uneven distribution of water resources in both time and space make balancing water demand and supply quite a challenge. Severe imbalances of water availability in different part of the year and in different part of the country make the issue of water resources management more complex. So quantification and minimizing of impacts is vital for any planning or management problem, which is a complex exercise requiring sufficient data, knowledge and appropriate tools. Competition for the available water by the various water user sectors is stiff and is expected to get stiffer in the future unless comprehensive guidelines are put in place to dictate the allocation of the available water resources. Balance water management addresses all the issues of water users to provide adequate water in time, minimizing the adverse impact and maximizing the benefits. The issue of balancing water supply and demand during the dry season is a critical one. Water resource planning must achieve a balance among sectors as well as among users at the regional or hydrological unit level. Different water management approaches are needed during wet and dry seasons for creation of the best balance between the different needs of all water users in area, where these resources are scarce that have neglected water quality, health and environmental concern.

Conserving resources—IWRM is a process, which should promote the coordinated development and management of water, land and related resources, in order to maximize the resultant economic and social welfare in an equitable manner without compromising with the sustainability of vital eco-systems.

Bangladesh must achieve a rational and integrated management of water resources by striking a balance between use of groundwater and surface water, This is to maximize benefits for all without jeopardizing the quality and sustainability of the resources themselves or the ecosystems they support.

Upstream and downstream—Policies for integrated water resources management should support sustainable development in such a way, which does not affect the quality or quantity of these resources available to other users the other places.

Dealing with variability—Bangladesh has a huge surplus of water in the wet season and a shortage of water in the dry season. The critical impact issue is minimizing the effects of the variable and uncertain character of water resources. Minimization of conflicts between in-stream and off-stream users of water and maximization of complementarities must be achieved through careful project planning & design, particularly in case of FCD and FCDI projects.

Appropriate management—Appropriate water management is a key to national development. Appropriate use of surface water and ground water must be complementary to each other instead of being competitive. Identifying the most appropriate management system and finding a better way of managing water are needed during wet and dry season for achieving intersectoral balance and integrated water resources management. Appropriate management is required to produce water and water related goods and services for the benefits of the society as whole. It can be considered a production function, which transforms the quantity, time and location characteristics of surface and groundwater resources into quantity, quality, time and location characteristics of the desired outputs.

For a sustainable development of the life and living condition of the people and environment a comprehensive National Water Management Plan is an absolute necessity. The **NWMP** by WARPO is expected to take care of the holistic approach to integrated water resources management in Bangladesh. Understanding between co-basin countries for cooperation is also on a positive move. Information superhighway is now a crying need for these nations to be transparent enough about their respective water use, availability, quality and hazard[15].

The NWP focuses on the balanced use of water and also flood and drought management rather than only irrigation and flood control as in the past. The policy will provide guidelines for identification of future programs of government and non-government sectors for the optimum development and sound management of water resources. To operationalise the water policy, a dNWMP with a holistic and integrated approach is being developed which aims at optimal use of available water resource and distribution of benefits to all concerned.

Recent shift in water sector planning and cross-sectoral issues

With declaration of NWP and preparation of dNWMP, the planning approach of BWDB has taken an strategic shift from sectoral planning to multi-sectoral planning. Thus scope has been enlarged to involve all water related sectors in its planning process. The new planning outfit is getting multidisciplinary and viable in nature, according to the needs of water sector planning as per NWP. The signing of agreement with Global Water Partnership in March, 2000 in the Hague has opened a larger avenue for BWDB to extend its water resources planning from FCD/FCDI approach to holistic integrated water resources management approach for sustainable water management. A major background work of this integrated planning approach has been the preparation of guidelines for participatory water management for involving all the stakeholders into the stages of water resources project cycle.

The BWDB planning performs micro-level planning for water resources projects for increased productivities in agriculture and fisheries for socio-economic development and poverty reduction of the country[14]. Flood management, drainage and irrigation project planning for agricultural and fisheries development constitutes the mainstay of BWDB's planning activities[16]. Preparing and updating inventories of potential projects on the basis of feasibility studies accomplished by BWDB's in-house professional or outsource cunsultants are also one of the major functions of BWDB. In this connection appointment of consulting firm /individual consultants is one of the major task of planning offices. Recently, planning wing of BWDB takes care of the IWRM for agricultural, fisheries, forestry and navigation so that the project is sustainable form institutional and environmental viewpoint.

Conflicts regarding water needs and use can emerge between big farmers and small /land less farmers; high land farmers; farmers and boat man; and, not the least of our concern, development activities and environmental concerns. Apart from these conflicts, which are likely to occur within a project area, conflicts can also arise outside between protected and un-protected lands; upstream and downstream areas; local level and regional, or national levels. The basic purpose of planning is to optimize the interests of varying group so that each user can pursue his /her own livelihood in harmony with others. Planning, if done effectively, can prevent conflicts and minimize disruption to the environment and, thus, ensure sustained growth. Such a function is sometime referred to as planning for IWRM. Interest of cross-sectoral stakeholders can be best obtained if conflict can be resolved by institutional interference within the stakeholders themselves.

The coordinated development for IWRM can be achieved through proper integration of two basic systems, the natural system and the human system. In the

case of Bangladesh, this integration will have to contend with, among others, the issues of integration between land and water resources management; surface and ground water management; flood and drought management; upstream and downstream water management; water quantity and quality; scales; and human culture and IWRM philosophy.

The key issue for IWRM is to develop an appropriate human system that is responsive to people's needs and is generally capable of delivering the intended services without jeopardizing the sustainability of the natural resources.

12. POLICY INITIATIVES

Bangladesh has no control over the international water courses. There are six major adverse effects related to water resources development: (i) flooding and drainage congestion, (ii) drought, (iii) siltation, (iv) river bank erosion, (v) salinization, (vi) pollution of surface and groundwater. Water resources management in Bangladesh, as the lower riparian country, is closely interlinked with and largely dependent on 57 transboundary rivers having shared basins with the neighboring countries (Box-3).

Box 3 : The proposed program for fostering regional cooperation in water resources development

➢ Work with co-basin countries to establish a regional level network for unhindered flow of water related data and information on relevant aspects of hydrology, morphology, water pollution, ecology, changing watershed characteristics, cyclone, drought, flood warning etc., and to help each other understand the current and emerging problems in the management of shared water resources.

➢ Work with co-basin countries for regional cooperation for basin wide harnessing, development, sharing and management of common water resources.

➢ Work in close cooperation with co-basin countries to resolve international water issues related to floods, water scarcity and environmental degradation.

➢ Explore ways to augment the water available for all users and sectors in the basin.

➢ Work jointly with co-basin countries for the prevention of chemical and biological pollution of the rivers flowing through these countries, by managing the discharge of industrial, agricultural and domestic pollutants generated by human action.

➢ Seek international and regional cooperation for achieving the goals of joint management of transboundry rivers for mutual benefit of all.

NWMP by WARPO is under process of approval by the government. IWRM in Bangladesh needs a strong and sustainable WARPO which would be able, to implement and update a NWMP. NWP provides the directives and the guidelines for fundamental and wide-ranging reforms of the water sector and its two principal organizations, the WARPO and the BWDB. It declares clearly the intention of the government to pursue a policy of IWRM and further pledges to take all necessary measures to manage the water resources of the country in a comprehensive, integrated, equitable and environmentally, sustainable manner. The NWP provides a comprehensive policy framework for dealing with such issues as river basin planning, water rights and allocation, delineation of public and private domains, water supply and sanitation, preservation of the natural environment and the development concerns of fisheries, navigation and agriculture[17]. The policy also provides guidance on its disposition towards water as an economic good, water pricing, fuller participation by stakeholders, decentralized management and delivery structures. The policy also formulates views on regulations, incentives, public investment plans and environmental protection and on the inter-linkages among them.

The policy has successfully integrated internationally accepted water management principles, norms and standards, with the demanding social and economic needs of a developing country. The true strength of this policy, however, emanates from its decentralized and democratic nature that gives every user opportunity to vote for the use and sharing the water in an efficient, equitable and environmentally sustainable manner. A Guideline for people's participation (GPP) was prepared by MOWR and approved in 1995. The GPP was further elaborated jointly with other water related government agencies in 2001 as the Guideline for Participatory Water Management. Efforts are now underway to effectively operationalize the Guideline for application in practical field.

The recent adoption of Interim Poverty Reduction Strategy Paper (IPRSP) adopted by the government envisages a sustainable integrated water resources management system to enhance the livelihood opportunities of rural people which is an overarching objective of Water Management Improvement Project (WMIP)[18]. Finally, the policy enunciates the basic principles for reforming the WARPO and the BWDB to facilitate the emergence of an IWRM regime.

13.   POLICY IMPLICATIONS

- Access to fresh water resources has been a global concern since the beginning of human civilizations. Driving forces for increasing fresh water supply are: rapid population growth, expanding urbanization

and fast growing needs for irrigation and power generation. Safe and sufficient water is needed to sustain life and for raising people's standard of living giving them the ability and opportunity to advance. Safe water is also an important tool for development. The importance of water security implies meeting the basic needs like food supply, health and sanitation, protection of ecosystem, sharing water resources, managing risk, capacity development and financing. No growth and poverty alleviation strategy for Bangladesh can succeed without a healthy water and agricultural sector.

- Water is termed as lifeline for survival and sustainable development in the 21st century. Water is not only a powerful tool in combating poverty rather water can elicit democracy and spark peace for human development[19]. Economic value of water has to do with encouraging governance and ownership of water management which is the key to sustainable development and better quality of life, enabling developing countries like Bangladesh to stand on their own feet. Governance of water resources is a crucial issue, involving ownership rights on water for various uses.

- At river basin level, water problems become water 'challenges' when they help countries to understand the effects of their actions on neighboring countries. The scarce water gives rise to complex international problems that share the waters of international drainage basin. International /shared rivers have become sources of conflict as well as catalysts for cooperation. Basin-wide water management approach is fundamental for efficient and sustainable water use for the countries with predominantly transboundary rivers. Transboundary waters bring together policy-makers from different countries, giving them the opportunity to discuss and understand each others' positions for decision-making. It is essential to encourage such talks before conflicts arise. The river basin approach also offers another platform on which interest groups of all sorts can gain from mutual consultation. The bottom-up process will enable people for taking responsibility of integrated water management.

- Partnerships can yield a wide range of benefits (i) solidarity among countries and the region. (ii) regional security and economic development. Cooperation should go beyond single purpose solution towards integrated water resources management including land, water, ecosystems and people for all transboundry water basins[20]. Resolution of conflicts will help building joint water management

institutions with proper understanding and by using human and political processes. While so much could have been done, achievement in terms of sharing and management of water resources of the common rivers through mutual cooperation has not been encouraging. Without the active cooperation of the co-basin countries, the above policy objectives of Bangladesh can never be achieved. Bangladesh's sincere efforts to foster regional cooperation among the co-basin countries of the GBM regions has to be reciprocated equally by the co-riparian countries[21]. Closer cooperation can work out the most feasible policies and effective instruments to water resources management.

- Management of water resources effectively and in a sustainable manner is an intricate process which requires comprehensive and innovative approach keeping in view the policies adopted at the international level. No strategy can be successful unless the interests of all stakeholders are taken fully into consideration. The problem becomes complicated when it concerns shared water systems between neighboring countries. The strategy should also ensure all co-basin countries increased benefits taking into account their major demands for effective water management.

- A strategy for conjunctive and non-conjunctive use of water over short, medium and long term is an imperative for conservancy of environmental balance. Besides consumptive and non-consumptive use, stakeholders depend on certain management practices such as flood protection, drainage, water level control, water distribution etc. This is a key dimension of IWRM: different stakeholder's interests operate and these can vary in scale from intra-household differences to transboundary disputes between countries. They also vary temporally, as needs and resource availability changes with development, population growth, changing land-use and settlement patterns, ecological change and so on. This implies that water resources management is conflict management, for the capacity to take account of different stakeholder interests and resolve actual or potential conflicts between them which is central to an IWRM approach.

- Multi-objective water resource planning approach is required to optimize the water needs of agriculture, environment, public health, fisheries, navigation and industries. The framework for improving water resource management should take into account all sectors and

usage for achieving intersectoral balance. The environmental, technical, social, economical, and institutional factors are necessary for ensuring economically viable, environmentally sustainable and socially equitable water management structure.

- Water allocation policies should be based on the principle of integrated water resources planning and management, covering all types of interrelated freshwater bodies, and taking into consideration water quality and quantity. Governance of water resources is a crucial issue, involving ownership rights on water for various uses. Within the holistic framework, strategies should be aimed at (a) improving the efficiency of water utilization, (b) preventing the contamination of known resources and (c) ensuring that all potential water resources are identified and protected. These policies should also consider the inextricable link of social and economic development with the protection of natural ecosystems and land and water uses across a catchment area or a ground water aquifer.

- Financial and economic sustainability for economic efficiency of water use is a major policy consideration. Policymakers have been compelled to adopt a comprehensive framework for improving water resources management that reflects the nation's social, economic and environmental objectives. NWMP in Bangladesh aims at developing a comprehensive framework for promoting environmentally sound, economically efficient, socially desirable and productive management of water resources. Multiple and economic use of water will increase in future. Steps have to be taken now to make adequate arrangement for supply of safe and required volume of water for drinking, domestic use, agricultural, industrial and fish culture purposes, maintenance of navigation facilities and saving environment.

- Managing water resources and making best use of this precious resource for all is truly a global challenge. So, the imperative is for its appropriate management and augmentation of water flow for the benefit of agriculture, navigation, pisciculture and also for ensuring safe for drinking and domestic /municipal uses. Demand for water will rise very strongly in the coming decades. The question now arises how to get sufficient water to provide food security, health and livelihoods to a growing population in harmony with other water users and the environment[22]. Participatory planning and development of water supplies for agricultural, municipal and industrial

applications will help achieve the most efficient water use and allow for the best possible reuse[23].

- Allocating water in the most rational way to make the most of its benefits and share them equitably has become increasingly important as demand for food and water increases and as water scarcity becomes more acute. Reducing conflicts among water users and conflict management of water resources is thus a major challenge. Water has no administrative border: its only limits are the river basin. The challenges of integrated water resources management are not, therefore, confined within territorial limits. Integration of all national efforts for multi-purpose and multiple economic use of water resources into a regional framework is thus imperative. The ultimate goal is to establish mechanisms for joint management for achievement of IWRM with predominantly transboundary rivers for efficient and sustainable water use by all the co-basin countries like China, India, Nepal and Bhutan for mutual benefits.

14.   FINDINGS AND LESSONS

- Fresh water availability has become a major constraint for development and social well being. An equitable and economically efficient water allocation policy should be developed to satisfy the water demands of various competing water-use sectors. Conflicts over water have become more common among such competing users as urban water supply, irrigation, power generation, flood control and inland navigation. Water resources management and development issues need to be addressed and treated in a systematic and comprehensive manner. Policy makers must develop a comprehensive framework for water resources management rather than fragmented management of water sectorally by its separate uses.

- Bangladesh as a lower riparian in the eastern waters basin makes it extremely vulnerable to flood or drought. The high water levels in the major rivers during monsoon cause drainage congestion and over-bank spillage of their tributaries and distributaries[24]. Besides flooding or drought and inadequate drainage, salinization and river bank erosion is another major problem. These threats will have to be addressed which constitute hazards of different degrees to the economy and mankind.

- A number of studies have been undertaken on how best to address floods and manage water in the dry and wet seasons[25]. Managing the supply of water has been addressed in piecemeal fashion in the past without protecting the interest of navigation and fisheries. Flood management has been a top priority for decades, but an environment-friendly mechanism for balanced and harmonious development of water resources is yet to be designed. Efficient water and flood management and assured shares of the dry season flows of the transboundary rivers have, therefore, become imperative for the survival of Bangladesh[26].

- The Ganges water-sharing treaty has created a favourable atmosphere for agreement on sharing of the water of 53 other common rivers. The Treaty is a manifestation that cooperation for mutual benefit can be attained though negotiation and strong political will on the part of the involved parties. Although the 1996 Treaty on Sharing of the Ganges Waters with India has brought some relief to the drought-prone areas of the southwest of Bangladesh, the water shortage problem during the dry season still persists and likely to aggravate in the Ganges and other basins with rising demands of the increasing economic activities.

- As the competition for water can only become more intense in the future, it is imperative that an equitable and well-administered water allocation and regulatory framework be formulated for countries in the region. The framework should be based on (i) sharing and exchanging information; (ii) information highlighting the strong features of water allocation policies; (iii) water conflicts that act as serious constraint to socio-economic development.

- Water is an ever scarcer commodity and is frequently contaminated. In some rivers, the quality of water has deteriorated to such an extent that the quantity of water available for drinking and domestic use has been significantly reduced. For such rivers, appropriate remedical measures should be undertaken to restore the quality of water to its natural condition so as to maintain sustained socio-economic growth[27]. These are all intended to provide knowledge and experience in formulating water allocation policies and practices that will ensure optimum and equitable allocation of water resources, thus contributing towards sustainable development and poverty alleviation.

- Over the last three decades Join Rivers Commission (JRC) has always concentrated on the quantitative aspect of Common River during its deliberations. Increasing pollution of river waters by the rising population, industries and use of agro-chemicals and pesticides has now become a matter of great concern. JRC, therefore, should give proper emphasis on the quality aspects of water and formulate necessary management strategies.

- The comprehensive assessment will ensure increasing productivity of water in agriculture while the program through basin-wide water management approach will help to arrive at concrete solutions promoting the changes needed for efficient and sustainable water use. The Dialogue will help disseminate research findings and determine research priorities from a stakeholder perspective. The collaboration among the transboundry rivers and river basins will initiate self-help strategy for development of water resources.

- The construction of Ganges Barrage Project which needs 500-600 million US dollars would help check desertification in the southwestern and northern region of the country and rejuvenate the flow of around 20 rivers including the Padma that alone contributes 20 percent of total surface water during the lean period (CAS for Bangladesh, BUP, World Bank, 2003). The barrage project is the only remedy to Bangladesh to solve many water-related disasters like salinity., desertification and arsenic contamination. The barrage project would not only help increase food production, but also to meet demands of surface water for drinking and irrigation purposes. All the nine feasibility studies on the Ganges barrage have found the project viable and socially desirable with no adverse environmental impacts.

- Water is essential for broad-based agricultural and rural development in Bangladesh. It is unique to all ecosystems and all human activity and has no known substitute. The earth contains approximately 1.4 million cubic kilometers of water, but approximately 97.5 percent of the amount is brackish water. About three-quarters of remaining 2.5 percent is locked up in icecaps and glaciers, leaving humans only a fraction of percentage point of the total water on earth available for human use with increasing stress[28]. Balancing the use and development of available water in a sustainable way is urgent. More in practical applications, water is the engine for economic growth for sustainable poverty reduction strategy. The poverty of a large percentage of population is both a symptom and a cause of water crisis.

- An IWRM program can only be launched when the necessary conditions are sufficiently met or are in the process of being met. These conditions are represented by the building blocks like enabling environment, sound basis for planning and prioritization, appropriate tools or technologies and effective institutional structures to carry forward the national goals of an IWRM.

- Guidelines for Participatory Water Management (GPWM) has been approved for management transfer of small and medium schemes. The recent reforms in water sector has created an enabling environment for taking concrete action. The WMIP has been conceived as an instrument for facilitating the emergence of integrated water resources management regime. A National Water Management Plan is also under process of approval by the Government.

15. VISION FOR THE FUTURE

A regional water management plan is required which will be based upon adequate hydrological and agro-socio-economic and ecological system. Bangladesh requirement for sustainable management of transboundary rivers and preservation of natural eco-system are to be identified. Cooperation from neighboring countries are sought through agreements and partnerships approaches. The sharing water with India can open up opportunities for regional, sub-regional, basin, sub-basin wide development of water resources for the benefit for all people of the region. Sharing the water of transboundary rivers is, however, a major challenge for all the countries of the region. Joint planning for integrated water resources management at the basin level should be carried out for increased water productivity[24]. Regional cooperation should be pursued to increase food security and socio-economic growth in all fields of sustainable development and management of the river basin and its resources, including navigation, flood management, fisheries, agriculture, power production and environmental protection.

Water resources management is not only technical, it requires huge organizational resource including finance and institutional management. The main activities should include:

- Strengthening national water resources management by adjusting the regulatory framework to improve stakeholder participation in river basin management.

- Defining the water rights and fixing water code.

- Improving information gathering at national level.

- Developing a framework for national capacity building in water resources management.

All these activities need finalization of water management plan and a national water code to give effect to the NWP. What is needed is a vision for short, medium and long-term needs of the dimensions of integrated water resources management. With regard to water resources, the issue of concern is how to implement IWRM, specified in the NWP, in order to achieve the sustainable use of rivers for present and future generations. Appropriate course of national and international measures are, therefore, required to address water resources in an integrated manner. A long-run perspective study upto 2025 is, therefore, needed to provide the vision and option for the future management of water resources. The NWP of the government provides a broad outline for this. The historic Ganges Water Sharing Treaty between Bangladesh and India in 1996 opened up the opportunity for mitigating the severe adverse environmental effects in the southwest region as a consequence of the Farakka Barrage upstream. Gorai River Restoration Project (GRRP) was designed to restore the flow of Gorai river during the dry season and prevent environmental degradation in the south-west region by ensuring fresh water flow in the wet season, augmenting flow during the dry season and controlled disposal of dredged materials of the river. The pilot dredging has been completed, the rest is under consideration of GoB.

Report on the options for Ganges Depended Area (OGDA) has been completed for taking up construction of Ganges Barrage Project by BWDB for restoring the environment and improving the soci-economic status of GDA. As a start to implementing the Ganges Barrage Project, the action recommendations are as follows :

Review of GRRP to find out its overall complementarily with the Ganges Barrage Project to ensure optimal and wise investment of the scarce national resources by avoiding duplications.

Agree to the terms of reference and commission the feasibility study with emphasis on environment and detailed engineering of the Ganges Barrage Project for long-term multipurpose water resources management of the GDA on a priority basis.

Draw up terms of reference and commission a research project to investigate the relationships between Sundarbans ecological health and different water system parameters under different scenarios of climate change and sea-level rise.

These recommendations are, however, very general. These have to be translated into workable program and implementable terms. Since the policy-regime is favorable, complicated issues like harnessing internal and international river resources in an integrated way to achieve sustainable development of water sector should be taken up. The institutions for such integrated approach also should not be left in a low-key. The creation and strengthening of basin organizations for making it a basin-wide management to influence the policy makers of respective riparians has to be supported by the co-riparian countries. This vision would help to clarify the options available for India and Bangladesh for water-sharing agreements for harnessing and development of IWRM and disaster management in the region. Future efforts should emphasize resource planning rather than project planning. Such an approach would view water resource system in an integrated manner, taking into account the multiple functions it performs and the goods and services it produces to meet human demand and sustain the ecosystem. This would call for independent planning and prioritization for conflict management of water resources.

16.   CONCLUDING OBSERVATIONS

Water management is an issue of politics, administration, finance and human relationships with a legal perspective. Strengthening regional co-operation and dialogue on water issue will yield the greatest benefits in the long run. There are immense possibilities of converting waters of the transboundary rivers into wealth. However, if the country is to achieve higher, sustainable, poverty-reducing growth, water resource management system should be developed in an integrated and comprehensive manner taking into account the multiple functions it performs and the goods and services it produces. IWRM is closely interlinked with benefits sharing of transboundary rivers but this depends on strengthening international cooperation and partnership approach. These cross-cut the artificial political boundaries of countries and enter into an estuary of multi-country water management regime for mutual consultation. Strong political commitments and partnerships will bring together all players in the development chain to expedite joint planning and management of transboundry water systems, allocating water in the most rational way to make the most of its benefits and share them equitably.

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11.   Of the total available water on this planet, around 2.5 to 3.5 percent id freshwater or 35 to 49 M km3. Some 95 percent of this volume is looked up in the cryosphere (as snow and ice in the polar regions and glaciers), and in deep-seated groundwater. The total water available for human

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Farm-Specific and Farm-Size-Specific Efficiency Measurements and Related Policies for Bangladesh Rice Crops

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Abstract

Farm-specific and farm-size-specific efficiencies are estimated through single estimation of Cobb-Douglas stochastic production and cost frontiers. The factors which influence inefficiency effects are identified through simultaneous estimation of the stochastic frontiers (production and cost) and inefficiency effect models. Government extension service has positive impact on the production of *Boro* and *Aman* whereas education has negative effect on them. Human labour, seed, fertiliser, age and experience are important factors for the production of *Boro*. Age and extension contact have negative impact on the technical inefficiency. Similarly, age and farm size have positive impact on the economic inefficiency whereas extension contact has negative effect on it. Medium farmers achieve maximum technical and economic efficiencies for all rice crops. From a policy point of view, the main responsibility of the government in this area is to ensure that the land market is flexible enough to allocate land to the most efficient farmers. Furthermore, the government can assist the land market by offering extension programmes to encourage farmers not to fragment land.

1. INTRODUCTION

The measurement of the productive efficiency of a farm relative to other farms or to the "best practice" in an industry has long been of interest to agricultural

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economists. Efficiency measurement has received considerable attention from both theoretical and applied economists. From a theoretical point of view, there has been a spirited exchange about the relative importance of various components of firm efficiency (Leibenstein 1966,1977; Comanor and Leibenstein 1969; Stigler 1976). From an applied perspective, measuring efficiency is important because this is the first step in a process that might lead to substantial resource savings. These resource savings have important implications for both policy formulation and firm management (Bravo-Ureta and Rieger 1991)

In the policy arena, there is a continuing controversy regarding the connection between farm size, efficiency and the structure of agricultural production. For individual farms, gains in efficiency are particularly important in periods of financial stress. Efficient farms are more likely to generate higher incomes and thus stand a better chance of surviving and prospering.

Economic development in Bangladesh mainly depends on the progresses to be made in the agricultural sector, but agricultural development is dependent on appropriate policies relating to augmenting productivity and efficiency of agricultural crops. Increase of productivity and efficiency are based on some socio-economic and demographic variables. Proper policies can be formulated only after the empirical measurement of the core variables.

When one talks about the efficiency of a firm one usually means its success in producing as large as possible an output from a given set of inputs. Economic efficiency is generally defined as the ability of a production organisation or any other entity, for instance, a farm to produce a well-specified output at the minimum cost. Farrell (1957) proposed that economic or overall efficiency of a firm consists of two components: technical efficiency, which reflects the ability of a firm to obtain maximal output from a given set of inputs under certain production technology, and allocative efficiency, which reflects the ability of a firm to use the inputs in optimal proportions, given their respective prices. In fact, economic efficiency is the product of technical and allocative efficiencies. If a firm has achieved both technically efficient and allocatively efficient levels of production, then the firm is economically efficient. A firm is technically inefficient if it fails to produce the mximum output from a given bundle of inputs. On the other hand the firm is said to be allocatively inefficient when the marginal rate of technical substitution is not equal to the inverse of their price ratio. Putting it differently a firm is considered to be allocatively inefficient in the sense that marginal value product may not be equal to marginal cost, given input prices. Both types of inefficiencies are costly to the society and thus should be eliminated.

Economic relationships based on optimisation behaviour define efficient frontiers of minimum (e.g. cost) or maximum (e.g. production) attainment. Traditional econometric methods for estimating stochastic economic relationships have implicitly assumed that all economic agents are successful in reaching the efficient frontier. If, however, the economic agents are not equally efficient, then the average relationships estimated by ordinary least squares methods might not reflect the frontier relationships (Stevenson, 1980).

Numerous studies have been devoted to the respecification of empirical production and cost models to make them more compatible with the underlying theory, and to the derivation of appropriate estimators. In some cases, this has amounted to minor modifications of least squares results. The remaining estimators are based on two distinct specifications. The very recent work on composite disturbances has relaxed somewhat the orthodox interpretation of the underlying function as a strict frontier with all observations lying on one side of it, and has produced well behaved maximum likelihood estimators with all of the usual desirable properties (Greene, 1980).

The objectives of this paper, therefore, are: (i) to develop a specification and estimation for a stochastic production and cost frontier models; (ii) to estimate farm-size-specific and farm-specific technical, allocative and economic efficiencies for individual sample farmers; (iii) to identify the factors causing variations in inefficiency (both technical and economic) effects (or efficiencies) among the sample farmers; and (iv) to suggest some policies to increase efficiency of farm production.

This paper has been organised in four sections. In section 2 data and specification of stochastic production frontier and technical inefficiency effect model are described. Section 3 contains empirical results and discussions. Some conclusions and policy implications are made in the final section.

2. DATA AND SPECIFICATION OF STOCHASTIC PRODUCTION AND COST FRONTIERS AND INEFFICIENCY EFFECT MODEL

Data

The three regions, that is, Brahmanbaria, Mymensingh and Dinajpur were selected purposively considering the relative importance of these regions in producing rice. These three great regions (old district) produce about 16 percent of total rice in Bangladesh (BBS 1998). Considering their contribution to the total output, the selection of these regions was appropriate for a study on the efficiency of rice production. Moreover, the soil texture of these regions represents a good cross section of the soil texture of the country. Farmers of these regions are

familiar with new inputs of production such as HYV* seeds, artificial irrigation, chemical fertiliser etc. for several years and in these regions there are the requisite number of households with different farm sizes. The regions are also relatively easily accessible and well communicated. Since Dinajpur is the north-west district of the country, Mymensingh is the middle district and Brahmanbaria is the south-east district, the selection of these areas was uniform on the spatial context.

To collect primary data from the farmers of Bangladesh, probability sampling technique was adopted. At first a sampling frame of farmers was constructed with the help of village leaders and some other relevant persons. The villages were selected with simple random sampling technique but the farmers were selected with stratified random sampling with arbitrary allocation. The data were collected for the crop year July 1998 to June 1999. The sample was composed of small (below 1.00 hectare), medium (1.00 - 3.00 hectares) and large (above 3.00 hectares) farms. Within the sample, 50 percent were small, 30 percent were medium and 20 percent were large farmers. Five hundred farmers in total were interviewed in this study. Of the five hundred sampled farmers, 300 farmers had direct contact with extension workers and were selected 100 from each region to ascertain the importance of extension service in Bangladesh. Another 200 farmers who had no relationship with the extension workers were selected, 100 from each region except Mymensingh region. For the region Mymensingh, only a sample of 100 farmers with access to the extension service was collected but no sample of non-extension farmers was collected because there is one agricultural university known as Bangladesh Agricultural University and from this university every year several extension programmes are carried out in this region side by side with government extension programmes. Thus most of the farmers in this region are connected to extension programmes. To compare the productivities and efficiencies between farmers with extension services and farmers without extension services, these two types of data are very useful.

Model Specification

In order to estimate the level of technical efficiency (TE) in a way consistent with the theory of production function we have specified a Cobb-Douglas type stochastic frontier production function. We will estimate economic efficiencies (EE) from the Cobb-Douglas normalised derived stochastic cost frontiers. The allocative efficiencies (AE) are estimated by using the expression, AE = EE/TE, which is obtained from the relationship, EE = TE X AE. The Cobb-Douglas form of production function has some well-known properties that justify its wide application in economic literature (Henderson and Quandt 1971). It is a

homogeneous function that provides a scale factor enabling one to measure the returns to scale and to interpret the elasticity coefficients with relative ease. It is also easy to estimate and mathematically manipulate. On the other hand, the Cobb-Douglas production function makes several restrictive assumptions. It is assumed that the elasticity coefficients are constant, implying constant shares for the inputs. The elasticity of substitution among factors is unity in the Cobb-Douglas form. Moreover, this being linear in logarithm, output is zero if any of the inputs is zero, and the output expansion path is assumed to pass through the origin. However, it is also argued that if interest rests on efficiency measurements and not on an analysis of the general structure of the underlying production technology, the Cobb-Douglas specification provides an adequate representation of the production technology. In addition, its simplicity and widespread use in agricultural economics outweigh its drawbacks.

The explicit Cobb-Douglas stochastic frontier production function is given below:

$$\ln Y_i = \ln \beta_0 + \sum_{i=1}^{9} \beta_i \ln X_i + \beta_{10} \, EDU + \beta_{11} \, EXT + V_i - U_i \qquad (1)$$

where Y = Output (kg)
X_1= Area under rice crops (hectare)
X_2= Human labour (man-days)
X_3= Seed (kg)
X_4= Fertiliser (kg)
X_5= Manure (kg)
X_6= Bullock power (pair-days)
X_7= Irrigation cost (real value, Taka)
X_8= Age of farm operator
X_9= Experience of farm operator
 EDU = Education of farm operator (year of schooling)
 EXT = Extension service (Dummy variable which receives 1 if the farm had contact with extension agents and receives 0 otherwise)

V_i are assumed to be independently and identically distributed random errors, having N $(0,6_v^2)$-distribution; and the U_i are non-negative one-sided random variables, called technical inefficiency effects, associated with the technical inefficiency of production of the farmers involved. It is assumed that the inefficiency effects are independently distributed with a half normal distribution $(U \sim N(0,6_u^2))$.

The Cobb- Douglas normalised stochastic frontier cost function for *Boro* rice is given below:

$$\ln(C_i/P_{fi}) = ß_0 + ß_1 \text{ EDU} + ß_2 \text{ EXT} + ß_3 \ln(\text{AGE}) + ß_4 \ln(\text{EXPERIENCE}) + ß_5\ln(Q_i) + ß_6$$

$$\ln(W_i/P_{fi}) + ß_7 \ln(P_{si}/P_{fi}) + ß_8 \ln(P_{bi}/P_{fi}) + ß_9 \ln(C_{ii}/P_{fi}) + ß_{10} \ln(R_{li}/P_{fi}) + (V_i + U_i) \quad (2)$$

where C_i is the observed cost of production for the ith farm;
EDU, EXT, AGE and EXPERIENCE are defined as earlier;
Q_i is the output quantity (kg) for the ith farm;
P_{fi} is the price of fertiliser per kg for the ith farm;
W_i is the labour price (wage rate) for the ith farm;
P_{si} and P_{bi} are price of seed and bullock power for the ith farm, respectively; and
C_{ii} and R_{li} are cost for irrigation per hectare and rent of land per hectare for the ith farm, respectively.
U is a non-negative cost inefficiency effect, which is assumed to have a half-normal distribution;
V is a random variable, which is assumed to be independently and normally distributed with 0 mean and constant variance $^2{}_v$.

We may note that the inefficiency effect, U, is added in the cost frontier, instead of being subtracted, as in the case of the production frontier. This is because the cost function represents minimum cost, whereas the production function represents maximum output. Stochastic frontiers of equation (1) and (2) will be applied to estimate farm-size-specific and farm-specific efficiency measures.

The model for the inefficiency effects in the stochastic frontier of equation (1) and (2) is defined by

$$U_i = d_0 + d_1 \text{ AGE}_i + d_2 \text{ EDU}_i + d_3 \text{ EXPERIENCE}_i + d_4 \text{ CONTACT}_i + d_5 \text{ FARMSZ}_i + W_i \quad (3)$$

Where AGE represents age of farm operator;
EDU is defined as earlier;
EXPERIENCE is the experience of the farm operator;
CONTACT represents extension contact by the extension agents to the farmers;
FARMSZ represents farm size; and the W_i are unobservable random variables, which are assumed to be independently distributed with a positive half normal distribution.

The β and δ coefficients are unknown parameters to be estimated, together with the variance parameters which are expressed in terms of

$$s^2 = s_u{}^2 + s_v{}^2 \tag{4}$$

and

$$l = s_u{}^2/s^2 \tag{5}$$

where the -parameter has a value between zero and one. The parameters of the stochastic production and cost frontier models are estimated by the maximum likelihood method, using the computer program, FRONTIER Version 4.1.

It is important to note that the model for the inefficiency effects (3) can only be estimated if the inefficiency effects are stochastic and have a particular distributional specification. Hence there is interest to test the null hypotheses that the inefficiency effects are not present, H_0: $g = {}_0 = d_1 = d_2 = d_3 = d_4 = d_5 = 0$; the inefficiency effects are not stochastic, H_0 : $= 0$; and the coefficients of the variables in the model for the inefficiency effects are zero, H_0 : $d_1 = d_2 = ... = d_5 = 0$. These and other null hypotheses of interest are tested using the generalised likelihood ratio test and t-test. The generalised likelihood ratio test is a one-sided test since can not take negative values. The generalised likelihood-ratio test requires the estimation of the model under both the null and alternative hypotheses. Under the null hypothesis, H_0 : $g = 0$, the model is equivalent to the traditional average response function, without the technical inefficiency effect, U_i. The test statistic is calculated as

$$LR = -2\{\ln[L(H_0)/L(H_1)]\} = -2\{\ln[L(H_0) - \ln[L(H_1)]\} \tag{6}$$

where $L(H_0)$ and $L(H_1)$ are the values of the likelihood function under the null and alternative hypotheses, H_0 and H_1, respectively.

The technical efficiency of a farmer at a given period of time is defined as the ratio of the observed output to the frontier output which could be produced by a fully-efficient firm, in which the inefficiency effect is zero. Similarly, economic efficiency or cost efficiency of a farmer is defined as the ratio of frontier minimum cost to the observed cost. Given the specifications of the stochastic frontier model (1) – (3), the efficiency (both technical and economic) of the ith farmer can be shown to be equal to

$$
\begin{aligned}
TE_i &= \exp(-U_i) \\
&= \exp\{E(U_i/\Sigma_1)\} \\
&= 1 - E(U_i/{}_i) \tag{7}
\end{aligned}
$$

Thus the technical efficiency as well as economic efficiency of a farmer is between zero and one and is inversely related to the inefficiency effect. The farm-specific efficiencies are predicted using the predictor that is based on the

conditional expectation of U_i given composed error $_i = (V_i - U_i)$ for production function and $_i = (V_i + U_i)$ for cost function.

Firm-specific or observation-specific estimates of technical inefficiency, U (subscripts can safely be omitted here), can be obtained by using the expectation of the inefficiency term conditional on the estimate of the entire composed error term, as suggested by Jondrow et al. (1982) and Kalirajan and Flinn (1983). One can use either the expected value or the mode of this conditional distribution as an estimate of U:

where f and *F* are, respectively, the standard normal density and distribution functions, evaluated at el/s, $s^2 = s_u^2 \, s_v^2/s^2$, $l = s_u/\, s_v$ and $s^2 = s_u^2 + s_v^2$.

The mean technical efficiency or the mathematical expectation of the farm-specific technical efficiencies can be calculated for given distributional assumptions for the technical inefficiency effects. The mean technical or economic efficiency can be defined by

Mean T.E. $= E\,[\exp\text{-}\{E(U_i/\Sigma_1)\}] = E\Sigma_1 - E(U_i/\Sigma_1\,)$ \qquad (9)

Because the individual efficiencies of sample farms can be predicted, an alternative estimator for the mean efficiency is the arithmetic average of the predictors for the individual technical efficiencies of the sample farms. This is what is calculated by FRONTIER (Version 4.1c) Package. With the help of the FRONTIER programme the parameters of the stochastic frontiers (1) and (2) are estimated, together with farm-specific efficiencies and mean efficiency for the farms involved.

The above models have been estimated for three different rice crops, *Boro*, *Aus* and *Aman*, for all farms and for different farm-size groups separately in all regions. The data used in this model are cross-sectional data and sample sizes for *Boro*, *Aus* and *Aman* rice are 490, 82 and 460, respectively.

3.   RESULTS AND DISCUSSION

Table 1 shows the simultaneous estimation of the maximum likelihood estimates for parameters of Cobb-Douglas stochastic production frontiers and technical inefficiency effect model for *Boro*, *Aus* and *Aman* rice. If we estimate the technical efficiency effects frontier by FRONTIER 4.1 package, we can

simultaneously estimate the stochastic frontier and technical or economic inefficiency effect model. The stochastic frontier estimated simultaneously is a little bit different in respect of some significant coefficients from the single estimation procedure. Although the simultaneous estimation procedure has simultaneous-equation bias, it is also important to identify the factors, which influence the technical inefficiency of farmers. Kumbhakar, Ghosh and McGuckin (1991), Reifschneider and Stevension (1991), Huang and Lui (1994) and Battese and Coelli (1995) specify stochastic frontiers and models for the technical inefficiency effects and simultaneously estimate all the parameters involved. This one-stage approach is less objectionable from a statistical point of view and is expected to lead to more efficient inference with respect to the parameters involved. Table 1 reveals that for *Boro* rice extension, human labour, seed, fertiliser, age and experience variables have positive and significant coefficients and the coefficient of education is also significant but it is negative. Indeed, there have been many empirical tests of the effect of education on farm productivity. These generally have employed Cobb-Douglas production functions. Lockheed et al. (1980) have surveyed many of these studies. Although they conclude that the effect of education on productivity is positive, a significant number of studies (40%) found either a negative effect or no impact on productivity. For *Aus* rice, area and bullock power have significant coefficients but education has significantly negative impact on production. For *Aman* rice, extension, area and bullock power are found to have positive and significant coefficients but education and age have significantly negative coefficients.

The estimated -coefficients in Table 1 associated with the explanatory variables in the model for the inefficiency effects are worthy of deeper discussion. We observe that age of the farmers has a significantly negative effect upon the inefficiency effects for all rice crops. That is, the older farmers tend to have smaller inefficiencies than younger farmers. In other words, we can also say that the older farmers are technically more efficient than the younger farmers. Coelli and Battese (1996) found the same results while studying technical efficiency of Indian farmers.

Education is found to have no effect upon the technical inefficiency effects for all rice crops since its coefficient is insignificant for these crops. Kalirajan and Flinn (1983) and other researchers did not find any impact of formal education on the technical inefficiency effects.

Experience of farm operators has negative and significant effect upon the inefficiency effects for *Boro* and *Aman* rice. This means that the inefficiency effects decrease with the increase of the experiences of farm operators for *Boro*

and *Aman* rice. That is, technical efficiency increases with the increase of experiences of the farmers for *Boro* and *Aman* rice. Experienced farmers can manage and allocate inputs more efficiently than less experienced farmers. For *Aus* rice, the effect of experience upon the inefficiency effect is also negative but not significant. These findings are in conformity with findings of Herdt and Mantac (1981) and Kalirajan (1984). They found that technical efficiency increases with the increase in experiences of farmers.

Extension contact has significantly negative effect upon the inefficiency effects for *Boro*, *Aus* and *Aman* rice. That is, farmers with more extension contacts with the extension agents are more technically efficient than farmers with less extension contacts or with no contact at all. Kalirajan (1984) and Herdt and Mantac (1981) found the same result. Kalirajan (1984) studied technical efficiency of rice farmers in Philippines. He found that technical efficiency increases with the increase in the number of extension contacts. He also showed that there existed a wide variation in the level of technical efficiencies among the sample farmers and an extension service had been identified as an important factor causing such variations.

Herdt and Mantac (1981) concluded in their study that the lack of effective extension service was responsible for lower output in the Philippines.

The coefficient of the farm size variable in the model for the inefficiency effect is estimated to be significantly negative for *Boro* rice. This indicates that farmers with larger farms tend to have smaller inefficiency effects than farmers with smaller operations. The same phenomenon was observed by Coelli and Battese (1996) while studying technical efficiency of Indian farmers. This contradicts the claim, which is frequently made for developing country agriculture, that smaller farmers tend to be more efficient in production than larger farms. The coefficient of farm size for *Aus* rice is also negative in the inefficiency effect model but it is not found to be significant while the corresponding coefficient for *Aman* rice is positive and insignificant.

The -parameter associated with the variances in the stochastic frontier is significant for all rice crops. It indicates that there are inefficiency effects in the production of rice crops and the random component of the inefficiency effects does make a significant contribution in the analysis of agricultural production.

Table 2 reveals that there are significant technical inefficiency effects in small and large farm groups but in medium farm group there is no inefficiency effect in the production of *Boro* rice. That is, small and large farmers are technically inefficient but medium farmers are technically efficient for producing *Boro* rice. In case of

Table 1: Maximum Likelihood (ML) Estimates for Parameters of
Cobb-Douglas Stochastic Production Frontier Functions and Technical
Inefficiency Effect Model for Boro, Aus and Aman Rice

Variables	Parameters	Rice crops		
		Boro	*Aus*	*Aman*
Stochastic Frontier:				
Intercept	β_0	3.66487** (0.13028)	5.646703** (1.23827)	5.33988** (0.36731)
Education (EDU)	β_1	-0.00001182** (0.00000052)	-0.00000995** (0.00000129)	-0.00000831** (0.00000065)
Extension (Dummy)	β_2	0.00825* (0.00383)	0.00967458 (0.0114258)	0.011887* (0.00534)
Area	β_3	-0.06293 (0.04129)	0.00000379** (0.00000123)	0.0000025* (0.0000012)
Human labour	β_4	0.68233** (0.05294)	0.007801826 (0.11337730)	-0.044411 (0.044729)
Seed	β_5	0.000006709** (0.00000075)	-0.00000265 (0.00000175)	-0.00000049 (0.00000074)
Fertilizer	β_6	0.07499* (0.03583)	-	-
Manure	β_7	0.00000107 (0.00000069)	-	-
Bullock power	β_8	0.03569 (0.03592)	0.7612193** (0.1725159)	0.64954** (0.036802)
Irrigation cost	β_9	0.000000025 (0.00000058)	-	-
Age	β_{10}	0.15364** (0.03492)	0.34402435 (0.1151759)	-0.140091** (0.051822)
Experience	β_{11}	0.000001602* (0.00000066)	-0.19449378 (0.25152956)	0.1612939 (0.100812)
Inefficiency Model: Intercept	δ_0	-0.000000000041 (0.000000000033)	2.003633* (0.814667)	1.59587** (0.1721)
Age	δ_1	-0.000000000031** (0.000000000011)	-0.0000091** (0.0000022)	-0.0000092** (0.0000016)
Education	δ_2	0.00000173 (0.0000012)	0.0843766 (0.1158312)	-0.05613 (0.05060)
Experience	δ_3	-0.000000000036* (0.000000000016)	-0.00000186 (0.00000194)	-0.00000215* (0.00000099)
Extension contact	δ_4	-0.0000000239** (0.0000000035)	-0.15929535* (0.07758695)	-0.25741** (0.05785)
Farm size	δ_5	-0.000000000158* (0.000000000071)	-0.00000198 (0.00000151)	0.00000029 (0.00000084)
Variance	α^2	0.134* (0.0651)	0.1017** (0.0162)	0.129** (0.0096)
Parameters:	λ	0.680** (0.2159)	0.999** (0.1701)	0.787** (0.095)
Log-likelihood function		-152.34	-22.60	-164.11

** and * indicate significance at 0.01 and 0.05 probability level, respectively.
Source: Own estimation.

Aus rice, there are no technical inefficiency effects in small and medium farms but large farm is characterised by technical inefficiency effect. There are significant

Table 2: Test of Hypothesis for Coefficients of the Explanatory Variables for the Technical Inefficiency Effects in Farm-Size-Specific Cobb-Douglas Stochastic Frontier Production Functions

Null Hypothesis	Log-likelihood value	Test statistic LR	Critical value	Decision
$H_0: \gamma = \delta_0 = \delta_1 = ... = \delta_5 = 0$				
All farms:				
Boro rice	-152.34	15.36	12.02	Rejected
Aus rice	-22.60	35.72	12.02	Rejected
Aman rice	-164.11	235.36	12.02	Rejected
Boro Rice:				
Small farm	8.45	12.81	12.02	Rejected
Medium farm	-84.41	1.77	12.02	Accepted
Large farm	-13.42	33.28	12.02	Rejected
Aus rice:				
Small farm	-9.27	0.98	12.02	Accepted
Medium farm	4.12	1.19	12.02	Accepted
Large farm	4.54	17.03	12.02	Rejected
Aman rice:				
Small farm	-65.37	120.62	12.02	Rejected
Medium farm	-46.43	82.74	12.02	Rejected
Large farm	-12.37	50.14	12.02	Rejected

Source: Own estimation

technical inefficiency effects in all farm groups in the production of *Aman* rice. There are significant technical inefficiency effects for all rice crops.

To have an idea of the farm-specific variables that influence economic inefficiency effect, we have estimated simultaneously Cobb-Douglas stochastic normalised cost frontiers and economic inefficiency effect models for *Boro*, *Aus* and *Aman* rice. Table 3 shows ML estimates of normalised cost frontiers and economic inefficiency effect models. For *Boro* rice, cost function was normalised with fertiliser price and for *Aus* and *Aman* rice cost functions were normalised with seed price. The coefficients of education and age are significantly negative for all rice crops in the cost frontiers.

For *Boro* rice, the coefficients of experience, output, labour price (wage), per hectare irrigation cost and per hectare rent of land are positive and significant in the stochastic cost frontier. In the economic inefficiency effect model, the coefficients of age and farm size are significantly positive which indicates that the economic inefficiency effect increases with the increase in age and farm size. That is, there is inverse relation between age and economic efficiency and between farm size and economic efficiency. The coefficients of experience and extension contact are found to be negative and significant which means that the economic inefficiency effects decreases with the increase in experience of farmers and with the increase in extension contact of extension agents with farmers.

For *Aus* rice, the coefficient of per hectare rent of land is positive and significant in the cost frontier. In the economic inefficiency effect model, the coefficients of age and farm size are positive and significant whereas the coefficient of extension contact is significantly negative.

The coefficient of per hectare rent of land is positive and significant in the cost frontier for *Aman* rice. The coefficients of age, education and farm size are found to be positive and significant whereas the coefficient of extension contact is significantly negative in the economic inefficiency effect model for *Aman* rice.

The significant value of indicates that there are significant economic inefficiency effects in the production of *Boro, Aus Aman* rice crops.

Table 4 shows generalised likelihood ratio test statistic to detect the presence of economic inefficiency effects in the farm-size-specific Cobb-Douglas stochastic cost frontiers for all rice crops. Table 4 reveals that in the production of *Boro* and *Aman* rice crops there are significant economic inefficiency effects in all farm size groups. For *Aus* rice, there is no significant economic inefficiency effect in small farm but inefficiency effect is significant in medium and large farms.

Individual farm-specific technical efficiency measures are more useful for policy makers than the average technical efficiency estimates. Individual farm-specific efficiency measures facilitate identification of the determinants of efficiency ratings among farms. Appropriate policies then may be formulated to decrease efficiency differentials, which is important to accelerate the overall growth of farms.

Table 5 shows frequency distribution of farm-specific technical, allocative and economic efficiency estimates for *Boro*, *Aus* and *Aman* rice from Cobb-Douglas stochastic frontiers. These farm-specific efficiencies are estimated by single estimation of Cobb-Douglas stochastic production and cost frontiers. A careful examination of the results reveals that only about 5% of sample farmers were

Table 3: Maximum Likelihood (ML) Estimates for Parameters of Cobb-Douglas Stochastic Normalised Cost Frontier and Economic Inefficiency Effect Model Boro, Aus and Aman Rice

Variables	Parameters	Rice crops		
		Boro	Aus	Aman
Intercept	β_0	-0.139335 (0.365222)	0.48056 (0.88409)	0.749115 (0.411309)
Education (EDU)	β_1	-0.00000921** (0.0000046)	-0.0000112** (0.00000148)	-0.0000097** (0.00000078)
Extension (Dummy)	β_2	-0.0037849 (0.0043796)	0.01286 (0.01218)	-0.002488708 (0.00564227)
Age	β_3	-0.3293718** (0.0406014)	-0.29884** (0.08853)	-0.315697** (0.05196)
Experience	β_4	0.8142846** (0.022885)	0.21215 (0.27679)	0.08645 (0.11019)
Output	β_5	0.00000966** (0.00000036)	0.00000178 (0.00000362)	0.000000578 (0.00000138)
Labour price (wage)	β_6	0.2434224** (0.0943733)	-0.007351 (0.10569)	0.049843 (0.054028)
Seed price	β_7	0.00000164 (0.0000081)	-	-
Bullock power price	β_8	0.0936754 (0.0437707)	0.0000000269 (0.00000168)	0.00000073 (0.00000085)
Per hectare irrigation cost	β_9	0.00000159** (0.00000065)	-	-
Per hectare rent of land	β_{10}	0.3276076** (0.0592764)	0.608917** (0.076258)	0.7198295** (0.0279797)
Inefficiency effect model: Intercept	0	-0.000000000053 (0.00000000065)	0.007668 (0.565308)	-1.52219 (0.07321)
Age	1	0.0000070284** (0.000000447)	0.00000483** (0.000001718)	0.0000075** (0.00000093)
Education (EDU)	2	0.00000000011 (0.0000000021)	0.219793 (0.22201)	0.964716** (0.04778)
Experience	3	-0.000005293** (0.000000239)	0.00000142 (0.00000223)	0.00000868 (0.00000091)
Extension contact	4	-0.000661** (0.0000562)	-0.00045** (0.000036)	-0.0000667** (0.0000075)
Farm size	5	0.0000000000229* (0.000000000011)	0.217822* (0.100999)	0.1348833** (0.0415128)
Variance parameters:	2	0.17544** (0.01456)	0.09513** (0.018379)	0.1446007** (0.011042)
Log likelihood function		0.440** (0.0627)	0.99999** (0.25866)	0.7190691** (0.015962)
		-169.34	-18.03	-198.01

** and * indicate significance at 0.01 and 0.05 probability level, respectively.

Source: Own estimation.

obtaining outputs which were very close to the maximum output estimated through frontier (efficiency is 90% to100%) and there are about 92% of sample farmers whose technical efficiency levels range from 80% to 90% for *Boro* rice.

There are 70% sample farmers who can optimally allocate their inputs for *Boro* rice production and whose allocative efficiency levels vary from 90% to 100%. There are only about 3% *Boro* rice farmers whose observed costs of production are very much close to the frontier minimum cost (economic efficiency is 90% to 100%) and observed costs of most of the farmers lie above the frontier minimum cost. The average technical, allocative and economic efficiency indexes computed for *Boro* rice are 86%, 92%, and 79%, respectively.

Table 4: Test of Hypotheses for Coefficients of the Explanatory Variables for the Economic Inefficiency Effects in the Cobb-Douglas Normalised Stochastic Cost Frontiers

Null Hypothesis	Log-likelihood value	Test statistic LR	Critical value	Decision
H_0: $= _0 = _1 = ...= _5 = 0$.				
Boro rice:				
Small farm	-35.88	18.98	12.02	Rejected
Medium farm	-61.41	21.02	12.02	Rejected
Large farm	-28.19	13.24	12.02	Rejected
Aus rice:				
Small farm	-7.79	0.44	12.02	Accepted
Medium farm	3.92	12.76	12.02	Rejected
Large farm	12.01	28.18	12.02	Rejected
Aman rice:				
Small farm	-100.54	111.77	12.02	Rejected
Medium farm	-34.07	85.96	12.02	Rejected
Large farm	-6.16	95.02		Rejected

Source: Own estimation.

Table 5 reveals that for *Aus* rice all of the farmers were found to be produced outputs which were very close to the maximum frontier outputs (efficiency levels vary from 90% to 100%) but *Aus* rice farmers were not allocatively and economically efficient since only about 13% of sample farmers were found to be allocated their inputs near about optimally (allocative efficiency ranges from 90% to 100%) and there are only about 2% sample farmers whose observed costs are very close to the frontier minimum cost and observed costs of rest of the farmers

Table 5: Frequency Distribution of Farm-Specific Technical, Allocative and Economic Efficiency Estimates from Cobb-Douglas Stochastic Frontiers

Efficiency level (%)	Crops								
	Boro			*Aus*			*Aman*		
	Technical Efficiency	Allocative Efficiency	Economic Efficiency	Technical Efficiency	Allocative Efficiency	Economic Efficiency	Technical Efficiency	Allocative Efficiency	Economic Efficiency
35-40	0	0	1 (0.20)	0	0	1 (1.22)	1 (0.22)	1 (0.22)	2 (0.44)
40-45	0	1 (0.20)	2 (0.41)	0	1 (1.22)	0	1 (0.22)	1 (0.22)	2 (0.44)
45-50	0	2 (0.41)	1 (0.41)	0	0 (1.22)	2	0 (0.22)	2 (0.22)	2 (0.44)
50-55	1 (0.20)	1 (0.20)	1 (0.20)	0	2 (2.44)	3 (3.66)	0	2 (0.44)	8 (1.74)
55-60	1 (0.20)	1 (0.20)	1 (0.20)	0	3 (3.66)	6 (7.32)	1 (7.32)	2 (0.44)	16 (3.48)
60-65	2 (0.41)	1 (0.20)	3 (0.61)	0	6 (7.32)	4 (4.88)	2 0.44	3 (0.65)	49 (10.65)
65-70	1 (0.20)	2 (0.41)	13 (2.66)	0	5 (6.09)	8 (9.76)	15 (3.26)	9 (1.96)	72 (15.65)
70-75	2 (0.41)	4 (0.82)	42 (8.58)	0	7 (8.54)	10 (12.20)	55 (11.96)	25 (5.43)	107 (23.25)
75-80	8 (1.64)	11 (2.25)	153 (31.22)	0	8 (9.76)	19 (23.16)	120 (26.08)	38 (8.26)	117 (25.43)
80-85	103 (21.02)	39 (7.96)	189 (38.57)	0	16 (19.51)	20 (24.38)	203 (44.13)	55 (11.96)	66 (14.35)
85-90	347 (70.82)	85 (17.35)	71 (14.49)	0	23 (28.05)	7 (8.54)	7 (11.52)	73 (15.87)	18 (3.91)
90-95	24 (4.90)	145 (29.59)	13 (2.66)	75 (91.46)	6 (7.32)	2 (2.44)	9 (1.95)	79 (17.17)	1 (0.22)
95-100	1 (0.20)	198 (40.41)	0	7 (8.54)	5 (6.09)	0	0	170 (36.95)	0
Total number of farms	490 (100.00)	490 (100.00)	490 (100.00)	82 (100.00)	82 (100.00)	82 (100.00)	460 (100.00)	460 (100.00)	460 (100.00)
Mean Efficiency	86	92	79	93	77	72	80	89	71
Minlmum Efficilency	54	43	38	92	42	39	39	38	35
Maximum Efficiency	96	99	93	95	99	92	93	99	90

Figures in the parentheses indicate percentage.

Source: Own estimation.

lie above the frontier minimum cost. The average technical, allocative and economic efficiency indexes computed for *Aus* rice are 93%, 77%, and 72%, respectively.

An examination of farm-specific technical efficiency for *Aman* rice reveals that only about 2% of sample farmers were obtaining outputs which were very close to the frontier maximum outputs (efficiency 90% or more), and the rest were far below the frontier. But about 54% farmers can allocate inputs for producing *Aman* rice near about optimally (efficiency levels 90% or more) while no farmer was found to achieve economic efficiency in this level. The average technical, allocative and economic efficiency indices computed for *Aman* rice are 80%, 89%, and 71%, respectively.

Table 6 presents crop-specific and farm-size-specific technical, allocative and economic efficiency estimates from single estimation of Cobb-Douglas stochastic frontiers. It reveals that the technical efficiency for all rice crops is the highest for medium farm, which is 88% followed by large farm (84%) and small farm (82%), respectively. The allocative efficiency for all rice crops is the highest for small farm (92%) followed by medium farm (91%) and large farm (85%), respectively. The economic efficiency is the highest for medium farm (80%) followed by small farm (75%) and large farm (71%), respectively. It is obvious that medium farmers are the most efficient farmers, which achieve maximum technical and economic efficiencies for all rice crops.

4.   CONCLUSIONS AND POLICY IMPLICATIONS

Farm-size-specific and farm-specific efficiencies (technical, allocative and economic) are estimated through single estimation of Cobb-Douglas stochastic production and cost frontiers. To identify factors which influence inefficiency effects (technical and economic) simultaneous estimation of stochastic frontiers and inefficiency effects models were done. The factors which help increase production of *Boro* rice are extension service, human labour, seed, fertiliser, age and experience. Area and bullock power have positive effect on the *Aus* output. Similarly, extension service, area and bullock power have positive effect on the *Aman* output. But age has negative impact on the production of *Aman* rice. Education has negative effect on the production of all rice crops.

The factors, which have negative impact on the technical inefficiency effects, are age, extension contact for all rice crops. Experience has negative impact on the technical inefficiency effects for *Boro* and *Aman* rice while farm size has negative impact on it.

There are technical inefficiency effects for all rice crops. But medium farmers are technically efficient for *Boro* rice, and small and medium farmers are technically efficient for *Aus* rice. But for *Aman* rice all farm groups are technically inefficient.

Table 6: Crop-Specific and Farm-Size-Specific Technical, Allocative and Economic Efficiency Estimates from Cobb-Douglas Stochastic Frontiers

Farm size l	Crops											
	Boro			*Aus*			*Aman*			All crops		
	T.E. (%)	A. E. (%)	E. E. (%)	T. E. (%)	A. E. (%)	E. E. (%)	T. E. (%)	A. E. (%)	E. E. (%)	T. E. (%)	A. E. (%)	E.E (%)
Small	86 (243)	93 (243)	80 (243)	99 (34)	86 (34)	85 (34)	76 (229)	92 (229)	70 (229)	82 (506)	92 (505)	75 (506)
Medium	93 (148)	92 (148)	86 (148)	96 (27)	70 (27)	67 (27)	80 (139)	94 (139)	75 (139)	88 (314)	91 (314)	80 (314)
Large	76 (99)	92 (99)	70 (99)	76 (21)	92 (21)	70 (21)	94 (92)	76 (92)	71 (92)	84 (212)	85 (212)	71 (212)
All	86 (490)	92 (490)	79 (490)	93 (82)	77 (82)	72 (82)	80 (460)	89 (460)	71 (460)	84 (1032)	89 (1032)	75 (1032)

Figures in the parentheses indicate sample sizes. T.E.= Technical Efficiency, A.E.= Allocative Efficiency, E. E. = Economic Efficiency.
Source: Own estimation.

The factors which increase the cost of *Boro* rice are experience, output, labour price (wage), per hectare irrigation cost and per hectare rent of land. But for *Aus* and *Aman* rice, only per hectare rent of land has positive effect on the cost of production. Education and age have negative effect on the cost of production of all rice crops.

Age and farm size have positive impact on the economic inefficiency effects whereas extension contact has negative effect on it for all rice crops. Experience has negative impact on the economic inefficiency effects for *Boro* rice whereas education has positive impact on it. There are economic inefficiency effects in all farm groups for all rice crops except for small farm for *Aus* rice. Small farmers for *Aus* rice are economically efficient.

Medium farmers are the most efficient farmers, which achieve maximum technical and economic efficiencies for all rice crops. From a policy point of view, the main responsibility of the government in this area is to ensure that the land market is flexible enough to allocate land to the most efficient farmers. Furthermore, the government can assist the land market by offering extension programmes to encourage farmers not to fragment land, which is an effect of the inheritance law. As the study shows, agricultural extension services can be extended to all farmers in order to enhance sustainable agricultural growth.

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Government, Business, and Human Development:
An International Experience

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Abstract

The article is a study of association between the roles of government and human development indicators. It discusses, relating to the public sector, the theories of growth, restraints, performance, reforms, privatization, regulation, and welfare state. It uses data from various publications of the United Nations, Europa, CIA of New York, and Transparency International for the period from 1996 to 1998. Regression results suggest that human development indicators are positively associated with public welfare schemes and quality of government but negatively associated with the size of governments' and its direct involvement in business and industry. The article concludes that government should not be involved in business where it does not have competitive advantage rather it should work more on other important areas, where it has competitive advantage, like income redistribution and removal of extreme forms of human deprivation, social services, cultural and welfare activities, maintaining harmonious labor-employer relationship, human well-being and human rights. It recognizes the need for further studies on the process aspects of these roles of government for a better understanding of the efficiency and effectiveness of such roles.

1. INTRODUCTION

Government plays important roles throughout the globe. The areas where government contributes the most are public welfare, monitoring and regulating business and industry, policy issues, fiscal and monetary matters, and planning and allocation of resources. In UK, USA, and Canada, government plays mainly the supervisory role whereas in many developing countries it is directly involved

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in business and industry. In Europe, it plays a wider role in social welfare activities. All countries of the world have government agencies and organizations in areas of banking, finance and securities, insurance, and trade. In many countries, governments have direct ownership in heavy industries like steel and engineering, shipbuilding, mining, telecommunications, petroleum, gas and other natural resources where huge capital is necessary, risk is high, and profitability in the initial years is low. While there are theories for growth of public sector there are theories for its restraints. Theories of growth mainly relate to pure public goods and governments' welfare activities, and theories of restraints mainly relate to governments' direct involvement in business and excessine regulation. There is misunderstanding among various quarters of the society over the roles of government. It is widely believed that public sector is wastage. Another extreme view is that government should regulate business, economy, and society as much as possible. Also, there is a gap in knowledge that the roles of government have changed over time and that the structures of economy, polity, and social composition have also changed. In this article, an attempt is made to synthesise these divergent views for arriving at a better 'knowledge' about the nature of the roles of government.

There are studies on government-business relationships in the context of individual countries and regions (Kalecki 1972; Kole and Mulherin 1997;Li 1997; Besley and Ghatak 2001). Also, there are country-specific studies on the roles of government in human development (Barr and Whynes 1993; Yeon 1986; Krause 1988; Oxford University Press 1999; Harvard School of Public Health 1985). To my knowledge, there is no study that looked into these issues from the global perspective. This article attempts to look empirically into the global evidence in support of the theories of growth and the theories of restraints. In particular, it examines the roles of government in human development through public provisions and restraints from business and industry. It is, however, recognized that both the roles of government and human development issues are multi-dimensional in nature, including historical and cultural perspectives, resource base, technology, and demographic variables. This article only considers some secondary data on government such as government provisions for public welfare, public sector enterprises, size of government, women participation in government, etc. and examines if there is any association between these roles of government and human development indicators. The hypothesis of the paher is that government welfare provisions are positively and government involvement in business is negatively associated with human development. For researching a topic of global experience this approach appears to be easier and appropriate. The

rest of the paper is organised into the following sections: literature, theoretical framework and model, data, results, and discussion and conclusion.

2.   LITERATURE

There is diversified literature on the roles of government. These include the rationale for the growth of government, both central and local, growth of public sector enterprises in an intermediate regime, superior performance of private firms over state-owned enterprises, reform in state-owned enterprises, privatization, government regulation, and government welfare provisions.

2.1.   Rationale for the Growth of Government

According to the Scottish philosopher David Hume:

> "Man, born in a family, is compelled to maintain society from necessity, from natural inclination, and from habit. The same creature, in his further progress, is engaged to establish political society, in order to administer justice, without which there can be no peace among them, nor safety, nor mutual intercourse. We are therefore, to look upon all the vast apparatus of our government….We need a free government to serve the lives and properties of the citizens, to exempt one man from the dominion of another, and to protect everyone against the violence or tyranny of his fellow-citizens" (Hume 1993: 28, 62).

Ulen (1990) views that human beings make errors in the processing of information because of their cognitive imperfections in addition to asymmetry of information and market imperfections. So, he feels the need for corrective public policy for providing or subsidizing the production of information. Stiglitz (1989) argues that among the 'commodities' for which markets are most imperfect are those associated with knowledge and information. He further argues that when spillovers of knowledge within a country are less than perfect, then markets will never be perfectly competitive. He illustrated the thesis that market failures, particularly those related to imperfect and costly information may provide insights into why the LDCs have a lower level of income. Available statistics reveal that there has been growth in public sector internationally in terms of total revenue, total expenditure, number of laws enacted, the services performed by the government, and degree of regulation imposed upon the private sector (Middleton 1996: 85-132). The growth is prominent in social services, economic services, law and order, and environmental services. Public sector growth can be analyzed

using a number of different approaches: the historical, which stresses the role of war, technology, searing influences such as the inter-war, depression and stagflation in the 1970s, and the advent of democracy; short and long-term forces, which differentiate over time and can be used to distinguish between policy and non-policy determinants; and in terms of the demand for public services and supply conditions. One reason for government ownership often through nationalization was a historical resentment of the foreigners who had owned many of the largest firms in these countries. Musgrave (1969) noted three main forces for the growth of public expenditure: the expansion of administrative and protective functions of the state, which stemmed from both the substitution of public for private regulatory activity, and additional demands generated by industrialization, which had increased the complexity of legal and economic arrangements; the growth of cultural and welfare expenditures, especially on education, and the redistribution of income; changes in technology and the scale of investment which created conditions of monopoly requiring government regulation or production. Brown and Jackson (1990) explained market failures and externalities behind growth of government. Downs (1967) and Niskanen (1971) argue that the benefits of public expenditure are systematically overstated by self-serving interest groups. More particularly, it is not just politicians, but budget-maximizing and potentially self-aggrandizing bureaucrats who have incentives to expand their departmental budgets to increase their prestige and status within the bureaucracy.

2.2. Public Sector in an Intermediate Regime

According to Kalecki (1972: 163) an intermediate regime is characterized by the domination of the polity by an alliance of the lower middle class or petty bourgeoisie and the rich peasants. Its intermediate character comes from the fact that this ruling class comes neither from the top nor the bottom echelons of the social hierarchy. The upper bourgeoisie is not only politically weak but has limited capacity to stimulate growth. In this regime, the expansion of the state sector becomes an indispensable precondition for the growth of the economy and the prosperity of the intermediate regime. In economies, where foreign capital had limited access or was so totally identified with the colonial system that the demise of the colonial regime led to the complete withdrawal of foreign capital, a natural vacuum exists which in the post-colonial phase of the intermediate regime is filled by the state. In such a situation, the upper bourgeoisie is either non-existent or underdeveloped because of the backwardness and/or domination of the national

economy by foreign capital. Its growth was and is likely to be a function of state patronage. In some countries, the resource base of the economy or its market potential does not make obviously attractive to new foreign investment. In such a regime, the state sector becomes the lead sector of the economy.

2.3.   Performance of State-Owned and Private Firms

In the above two sections we see some rationale for the growth of public sector. This section looks at the literatures on performance of state-owned and private firms. Literature on the economics of property rights suggests that public ownership is inherently less efficient than private firms (Furuboton and Svetozer 1972). The essential argument is based on the fact that public ownership is diffused among all members of society, and no member has the right to sell his share. Given these aspects of public ownership, there is little economic incentive for any owner to monitor the behavior of the firm's management. Boycko et al. (1996) argue that politicians cause government-owned firms to employ excess labor inputs. Krueger (1990) suggests that such firms may be pressured to hire politically connected people rather than those best qualified to perform desired tasks. More generally, government-owned firms are thought to forego maximum profit in the pursuit of social and political objectives. State firms are inefficient not just because their managers have weak incentives to reduce costs but because inefficiency is the result of the government's deliberate policy to transfer resources to suppliers (Shleifer and Vishny 1994). Megginson and Netter (2001) have summarized the papers on efficiency of state and private ownership. The studies show that private firms outperform government-owned and mixed enterprises. They, however, have inconsistent findings as to the superior performance of mixed enterprises over SOEs. There is increasing evidence as well that private firms have substantially lower costs and higher productivity in many services that governments have traditionally provided, such as garbage collection (Savas 1982).

There are also agency problems where imperfect information and the absence of direct monetary rewards complicate how and to what extent government (the agent) acts in response to the wishes of voters (the principal). The residual cash flow claims of these firms are not readily transferable like the shares of a private corporation (agency problem). This impairs residual claimant incentives to monitor managers and, ultimately, degrades firm performance. In such circumstances, it is costly for the principal to control the agent and also difficult for the agent to interpret the principal's wishes and willingness to fund policy

programs (Myhrman 1985). Vickers and Yarrow (1991), however, point out that agency problems arise in private firms as well as public ones. In most of large private corporations managers own little of the stock. Because monitoring of managers is costly, a divergence arises between their objectives and those of private shareholders. Caves and Christensen (1980), and Kole and Mulherin (1997) view that government firms are intrinsically no less efficient than private firms. These studies take the position that competition in the product market is a more influential determinant of firm efficiency than ownership and that under competitive conditions government and private firms are equally efficient. One would expect competition to exert some market pressure on government firms to control costs and to reduce some of the opportunities for discretionary behavior on the part of bureaucracy.

2.4. Reforms and Incentive Pay

The above section shows enough theories and evidences for government firms to be inefficient. It also appears that government firms can be efficient if there is competitive environment in the market. This section looks at these competitive elements and the state of government firms. Li (1997) documents marked improvements in the marginal and total factor productivity of 272 Chinese SOEs over the period 1980-89 as a result of economic reforms in China, including the increased use of incentives. Shirley and Xu (1998) came to the opposite conclusion concerning the ability of incentive contracts to improve firm performance. They analyze the effects of these contracts in twelve monopoly SOEs, and find that the incentive contracts have no effect on profitability or labor productivity. They attribute the failure of the contracts to the inability of governments to follow through on promised actions and the inability of supervisory agencies to negotiate and monitor the contracts effectively. Chowdhury (2001) showed that managers in public sector enterprises in Bangladesh misused incentive schemes for their own benefits, and received, on average, two months' basic salary as cash bonus a year as incentive pay, in spite of millions of dollars as losses in the income statements. These results could be due to the fact that the country was ruled by the military and did not have its parliament in twelve years out of its thirty-one years since independence in 1971. Pinto et. al. (1993) test whether privatization is required to improve performance of SOEs by examining how 'Big Bang' reforms of January 1990, which liberalized prices, tightened fiscal and monetary policy and introduced competition without privatization. They found significant performance

improvement due to macroeconomic stabilization package, even without privatizing, mostly due to hard budget constraints, tight bank lending policies, enhanced credibility of government's 'no bailout pledge'. Bertero (2000) shows that Italian state-owned manufacturing enterprises do respond to financial pressure by increasing productivity and reducing employment in a hard budget constraint environment.

2.5.   Privatization

The objectives of privatization discussed in this section are more diversified than the objectives of reforms in the public sector discussed above. The objectives of privatization as described in Price Waterhouse (1989) are: (i) to raise revenue for the state, (ii) promote economic efficiency, (iii) reduce government interference in the economy, (iv) promote wider share ownership, (v) provide the opportunity to introduce competition, (vi) subject SOEs to market discipline, and (vii) develop national capital market. State ownership has been substantially reduced since 1979 in most countries of the world (Megginson and Netter 2001). According to Gibon (1998), the cumulative value of proceeds raised by privatizing governments exceeded $1 trillion during the second half of 1999. Megginson and Netter (2001) report the studies on post-privatization performance of SOEs, which show that in most countries performance improved after divestment. However, Sachs et al. (2000) conclude that change in ownership is not enough to improve macroeconomic performance; the gains from privatization come from change in ownership combined with other reforms such as institutions to address incentive and contracting issues, hardened budget constraints, removal of barriers to entry, and en effective legal and regulatory framework. In recent years, there has been a dramatic change in the division of responsibility between the state and the private sector for the delivery of public goods and services with an increasing trend toward contracting out to the private sector and public-private partnerships (Besley and Ghatak 2001).

2.6.   Regulation and Excess Regulation

The government plays an important role in regulating the market. A government regulates not only the public sector but also the private sector business, commerce, and trade in an economy. Pigou (1932) indicated that some kind of government actions was required to restrain those whose actions had harmful effects on others, often termed negative externalities. Externalities arise when the

private economy lacks incentives to set up a potential market in some commodity and when the non-existence of this market results in a pareto-suboptimal allocation. Even in the most advanced states there are failures and imperfections, there are obstacles that prevent a community's resources from being distributed in the most efficient way. Government regulation is continuously expanding in the USA. Number of regulatory agencies was below 10 in 1980 whereas about 60 in 1990s. The operating expenses of these agencies were $10 billion in 1989-almost twice the amount spent a decade ago. Examples of the newer regulator agencies include the Environmental Protection Agency, the Consumer Product Safety Commission, the Occupational Safety and Health Administration, and the Equal Employment Opportunity Commission (Weidenbaum 1990: 20-22). The rationale for regulation is: responding to natural monopoly conditions, encouraging sensible use of natural resources, requiring producers and consumers to take account of external costs, and dealing with asymmetry of information. Government regulation should be a device for enforcing competition and be carried to the point where the incremental benefits equal the incremental costs so that excess regulation is avoided.

There are criticisms against excess government regulation, monitoring and supervision because they involve rent seeking, corruption and privileges thus frustrating competition and increasing transaction costs. According to Becker (1997: 26), "when government regulation and control go too far, the engine of growth first sputters and then stops working altogether". Growth is slowed when special interest groups use their influence to obtain excessive political favors, such as large subsidies for exports or big quotas and tariffs on competing imports. In Spain, where it is almost impossible to fire workers on the regular payroll, about one-third of employees are temporary. Tax benefits for employee share ownership have reduced US federal revenue by billions of dollars since 1983, a period of large budget deficits. Growth in employment protection legislation in Britain was responsible for much of the rise in male unemployment rate from 5.5% in 1975 to more than 15% in 1984 (Becker 1997: 25-47). Analysis of case studies show that intervention by the Singapore government in fostering economic development has not always been successful. In particular, past intervention in the labor market like the high wage policy of the early 1980s has proved to be an unmitigated disaster. However, interventions that led to the direct creation of national competitive advantage, like the information-telecommunications infrastructure, R & D subsidy and manpower development, have proved to be more successful. A strong non-corrupt and market-oriented public sector appears to be crucial to ensure that interventions are market facilitating, correcting and enhancing, rather than distorting (Tan 1995).

2.7. Welfare State

Welfare is diverse in the source and also the manner of its delivery. Nevertheless, the state is the most important single agency involved in welfare activities in Britain and in most industrialized countries (Barr and Whynes 1993: 1-19). One common argument against support-mediated strategy (welfare state) however, is that it deflects resources to social services from investment and thus reduces economic growth and adversely affects future opportunities. Another argument against the excessive cost of welfare state is that it develops a dependency syndrome in which welfare recipients become dependent both economically and psychologically on the welfare services of the state (Campbell 1981). European social welfare policies that are financed by high taxes and mandates on business are at least partly responsible for a spectacular increase in European unemployment during the 1980s and 1990s. Generous leave for sickness and other reasons increase Sweden's absenteeism rate to 10% and Germany's to 9% compared with 2% to 3% in Japan and the US (Becker 1997: 39). But it is also true that a strategy of growth-mediated security does not necessarily make private incomes an exclusive vehicle for spending the fruits of growth. Direct provisioning by the state can assume an important role even when security is mediated by general economic growth. In growth-mediated strategy, high growth is often accompanied by increased inequality in the distribution of incomes so that the people in greatest need of capability enhancement may end up benefiting least from the general process of economic expansion. Furthermore, this strategy may be preoccupied with the expansion of material opulence rather than with the basic quality of human life. As Yeon (1986) observes, in recent years government policy in the Republic of Korea has recognized the fact that rapid economic growth is a necessary condition but not sufficient condition for improving the income and standard of living of the population. In Singapore, the government has an impressive record of extensive activism in both income and social matters which has been seen as a major factor behind the rapid improvement of living conditions in that country in the last few decades (Krause 1988). Exchange entitlements depend not only on market exchanges but also on those exchanges, if any, that the state provides as part of its social security program. Given a social security system, an unemployed person may get 'relief', an old person a pension, and the poor some specified benefits. What prevents starvation and famine in Britain and USA is not the high average income or wealth of the British or the general opulence of the Americans, but the guaranteed minimum values of exchange entitlements owing to the social security system (Oxford University Press 1999: 6-7). The inadequacy of official policy in tackling the Bengal famine of 1943 has

been widely noted and criticized. The Famine Inquiry Commission (1945) provided a detailed analysis of the policy failures both of the Bengal government as well as of the Indian government. The governments of some of the oil-rich countries have been able to use their unusual and relatively recent opulence to make widespread public provisions for their citizens, and this is one of the reasons why life expectancy at birth and similar indicators have in recent decades moved to comparatively high figures in countries such as Kuwait and UAE. Experiences of China, Costa Rica, Chile, Sri Lanka, and the Indian state of Kerala suggest a close connection between the expansion of public support measures and the improvement of living conditions (Oxford University Press 1999: 246). The crucial role of public support in removing deprivation is visible not only in the achievements and failures of developing countries today, but also in the historical experiences of the rich and industrialized countries. This is illustrated by the sharp increases in longevity in Britain during the decades of the world wars, which were the periods of rapid expansion of public support in the form of public distribution, employment generation, and health care provisioning. The resilient persistence of hunger and deprivation in some sections of the population even in the richest countries of the world (e.g., the USA) seems to have a clear connection with the neglect of public support (Harvard School of Public Health 1985).

2.8. Local Government

It is difficult for the central government to grasp the problems of grassroots levels, so there are local governments to deal with areas, which are unique and exclusive to them. In USA, beside the federal government there are 50 states, 3043 counties, 19296 municipalities, 16666 township, 14556 school districts, and 33131 special districts (Rosen 1995). The most common form of government enterprise in USA has been the public authority (Walsh 1980: 213). Public authorities build and run public works of monumental ports, bridges, tunnels, parkways, great dams, ports, airports, public buildings, industrial and recreational parks. They provide essential services: water, gas, electric power, transportation, training, insurance, and mortgage finance. Because they are widely regarded as business rather than as political enterprises, public authorities have enjoyed support from groups in nearly all positions of the political spectrum. They are owned by the government that so establishes them, but they are hybrid creatures possessing some of the characteristics of private firms and some of public agencies. They are corporations without stockholders, political jurisdictions without voters or taxpayers. Sweden's municipal expenditure was 27.5% of GDP in 1994, which

was the largest among European countries. There are wider variations in municipal funding across Europe. On average, 35% of municipal funding comes from intergovernmental transfers including shared taxes and grants, and 65% from internal sources such as local taxes, user charges and borrowing (Bailey 1999: 87). In USA, Australia, Canada, and the European countries, the growth in user charges is the highest compared to grants and local taxes. Although there are wider variations in the extent of local government activities among countries regarding choice of activities, financing, and allocation of expenditures, there are some common trends however, for example, local government activities are financed mainly by internal sources, and among the internal sources, growth in user charges is the most common.

2.9.   What the Government Should Do

The Greek word governmeans to steer. The government's job is to steer the ship of the state, not to row it. Rowing, the delivery of services (or implementation of policies) is generally not well done by government. Policy-making and implementation should be separated. Government should see that services are provided, regulate their quality, and finance them as necessary, but it should leave the delivery to non-state organizations, which act as agents of the state (Ridley 1995). The government should act in an economy to create an infrastructure enhancing the rule of law, political stability, harmonious labor-employer relationship, a developed infrastructure to facilitate business communication, transportation, and government-business communication, a skilled, competent, and quality-conscious labor force, improved living conditions, and a lean, adaptable and honest public service (Carino 1995). Government as a non-market organization should not concentrate on those areas of activity in which it has no comparative advantage, such as manufacturing, as this will divert scarce government resources from those areas of activity (maintenance of law and order) in which it has an advantage in undertaking. A government can take the following functions: (i) rely on market-based private sector driven initiatives in the mobilization and allocation of resources, (ii) intervene only in cases of clearly established market failure, i.e., in cases where private sector operations do not correspond to social interests, (iii) provide pure public goods such as law and order, national defense, public infrastructure including assignment of property rights, and (iv) stable and predictable macroeconomic environment through appropriate coordination of fiscal, monetary, and exchange rate policies (Krueger 1990). In 1990s and beyond, there are at least three factors that will further change

traditional business-government relations (Jung 1995: 98-112). First, opening up the domestic market for foreign business community will affect the overall regulation of the economy by government, since the latter has to treat the domestic and foreign business sector on the same basis. Second, local government reform, i.e., the decentralization of economic decision making to local governments will erode the power that is currently held by economics ministries of the central government. Third, a new social and political environment will also influence the business-government relationship in future. Voluntary citizens' organizations with such causes as consumer protection and environmental protection have become more vocal and have more influence on governments' positive actions. Although government should cut its size, unregulated and uncontrolled private sector is not the alternative. There are evidences of exploitative behavior of unregulated private sector in many forms including exploitation of labor, environmental pollution, and monopoly profit. The strategy of public action can be as difficult as it is urgent. Public action includes not just what is done for the public by the state, but also what is done by the public for itself. Public action will be determined by what the public is ready to do, what sacrifices it is ready to make, what things it is determined to demand, and what it refuses to tolerate. The vehicles of public action are immensely varied. The terrible problems of resilient hunger in the modern world call for a more adequate challenge (Oxford University Press 1999: 61).

3.   THEORETICAL FRAMEWORK AND THE MODEL

Synthesis of the above literature leads to the 'knowledge' that government should not be involved in business rather it should concentrate on prudent policy making, and, importantly, invest in public welfare goods and provisions. The public sector business under-performs compared to private firms for reasons including the lack of property rights and involvement of politics. Also, reforms in state-owned enterprises do not give dividend unless there is effective legal and regulatory framework. Government should invest in public welfare schemes because of market failures, information asymmetry, cognitive imperfections and self-interested behavior of human beings. To operationalize the above synthesis the following hypotheses are developed. Government provisions for public libraries and telephones can reduce asymmetry of information among rich and poor and thus help in human development. Quality of government and its small size are also hypothesized to be important predictors of human development. Government ownership in industries particularly in non-heavy industries is expected to be

dysfunctional because there are common criticisms against nationalized industries for being run by politics rather than commercial considerations. Women participation in government as a proxy for governments' neutral policy for gender is expected to be positively associated with human development. Various regression models are tested to determine the association between human development indicators as dependent variables and various roles played by government as independent variables. Human development, the dependent variable, however, is a multidimensional issue. It involves among many other things, the economic, socio-political, legal, and cultural factors. We use the measures of human development determined by the United Nations in the Human Development Report although these measures do not capture truly the multidimensional issues. Human development measures are: composite human development index, life expectancy at birth, adult literacy rate, gross enrolment ratio, GDP per capita, poverty level, and dependency ratio. The roles of government are measured by provisions for public telephones, provisions for public libraries, size of ministries, corruption in government, extent of nationalized industries, and women participation in government. The gross domestic product is used for controlling size and resource base of the economies, and age of the first constitution is used as a proxy for democracy and years of experience.

The regression models are checked for fulfillment of their assumptions. Logarithmic transformation of the variables is performed where necessary. Multicollinearity problem has been avoided. Diagnosis of the models shows that the linearity assumption holds good. Scatter plots of residuals against predicted values and also against each independent variable show no systematic patterns in the observed residuals. Moreover, the histogram of studentized residuals shows that almost all data fall under the normal curve. Various alternative functional forms of regression are tested. However, for place constraint, only selected results are printed.

4.   DATA

Composite human development index, life expectancy at birth, adult literacy rate, gross-enrolment rate, GDP per capita, poverty level, dependency ratio, total GDP, women participation in government, and public telephones are available in the Human Development Report of the United Nations. UNESCO provides data on public libraries. Number of ministries and number of nationalized industries are available in Europa's the International Directory of Government. Countries' years

of first constitution are collected from CIA, New York, and corruption perception index is available from the Transparency International. The variables are defined in the respective publications. For example, the Human Development Index (HDI) is a composite index based on three indicators: longevity, as measured by life expectancy at birth; educational attainment, as measured by a combination of adult literacy (two-thirds weight) and the combined gross primary, secondary and tertiary enrolment ratio (one-third weight); and standard of living, as measured by GDP per capita. The number of nationalized industries here is not the actual number of units under different industries rather it is the number of listings for different types of industry, for example, listing for aircraft, automobile, and other heavy industries; listing for consumer products; and listing for textile, footwear, and household items. It is assumed that higher the number of listings the higher is the number of industries in the public sector.

5.   RESULTS

Regression results in the acompanying table show that the various roles of government are significantly associated with human development. Public provisions for telephones and libraries are positively and significantly associated with human development index (HDI). Corruption perception value is positively associated with HDI indicating that good government influences human development. Governments' direct involvement in non-heavy industries is negatively and significantly associated with HDI. But governments' ownership of heavy industries has no significant predictive power although there are theoretical justifications for government involvement in heavy industries in some situations. Size of ministries is negatively associated with HDI indicating that high human development countries have small number of ministries compared to low human development countries. Women's participation in government as a proxy for governments' neutral policy towards gender is also a significant predictor of human development. All these results came after controlling for GDP as a proxy for countries' resource base, and age of the first constitution as a proxy for democracy and years of experience. Changes in R^2 and F value are significant except in column (4). These values suggest that the independent variables have significant predictive power after controlling for size of economies and age of constitution. It is to be noted that GDP in all the models and age of the constitution in most of the models have significant influence on human development. The independent variables explain 32% to 62% variations in the dependent variable. The results are similar when the dependent variables are GDP per capita, life

expectancy at birth, adult literacy rate, gross enrolment rate, poverty, and dependency ratio. These results however, are not printed here for brevity.

6.   DISCUSSION AND CONCLUSION

The paper shows that government plays important roles in human development across the world. It documents that government provisions viz., public libraries and telephones help human development. Also, a good government, its neutral policy for gender, and non-involvement in business and industries are good for human development. Acquiring knowledge, particularly global knowledge, involves huge investment. Billions of people who earn less than $2 a day are deprived of the knowledge and thus remain unskilled. Therefore, government provisions of public libraries both at central and local government levels can reduce the asymmetry of information and knowledge among the rich and the poor. This provision helps not only for acquiring skill but also for pleasure and cultural enlightenment. Also, public libraries are useful not only for students but also for the aged and retired. The New York Public Library's mission statement (Internet, May 2002) says, "It is everyone's university; the scholar's and author's haven; the statesman's, scientist's and businessman's essential resource; the nation's memory."

The results also suggest that government should not be involved in business and industry particularly in non-heavy industry where it does not have comparative advantage. Even, governments across the world have been divesting from the heavy industries in stages. The usual stages are reforms in incentive system and remuneration structure, subcontracting to private sectors through competitive tendering, agencification, worker-management buy-outs, partial privatization through selling shares in the capital market, and finally full divestiture. With the increasing globalization, joint ventures, mergers and acquisitions have become easier. In this changed scenario even if there are not many domestic entrepreneurs available, foreign investment can reduce that gap. Particularly in weak democracies, reforms in public sector do not work well. Also, managers of political firms are less constrained by market considerations and find it easier to obtain subsidy and to mask bad management under the guise of fulfilling other social goals. Importantly, government has the comparative advantage in other important things including redistribution of income, cultural and welfare activities, maintaining harmonious labor-employer relationship, and human rights.

The human behavior literature and economic literature suggest that every rational

individual (there are exceptions, however) acts for his or her own interest. But people do not live separate. They live in communities. They have different philosophies, attitudes, perceptions, and ways of life. Good human qualities require basic needs, quality of life, enlightenment, dignity, self-respect and respect for others, independence, harmony, competition, cooperation, trust, individualism and collectivism. The above scenario may lead to conflicts among various sections of a society. In the absence of government regulations and government assistance, many of these human qualities and logical opposites may be under threats. A representative government can work towards this package of life because individual sections of a society work more for their own interests. A government can bring alignments in the interests of different sections of a society. It has a role in bringing a minimum consensus and balance among diversified interest groups. Also, government interacts with the people as well as international authorities and international culture. Gender discrimination, for example, is still present in many developing countries but government has to respond to queries about this discrimination from various international bodies including the United Nations. Thus a government is under obligation to provide for equal opportunities, human rights, harmony, and cohesiveness among various sections of a society.

The results have higher implications for developing countries where most of the public services are at abysmal levels. Also, governments in developing countries are highly involved in business, trade, commerce, and regulation, which open higher avenues for corruption and rent seeking. Although official statistics in many of these countries show increasing enrolment ratio in primary and secondary levels, there are wider differences in quality of schools available to rich and poor children (World Economic Forum 2000). In village levels, materials in schools and colleges are mainly local; materials on international knowledge are costly and are almost out of their reach. But, for enlightenment both local and international knowledge are necessary. Public provisions appear to be important in reducing this gap in quality of education. Public or institutional libraries are expected to have better quality materials than in personal libraries for the simple reason that one is based on institutional approach and the other is based on individual approach. Public libraries can help individuals sustain their love for learning when they cannot buy for their personal libraries during periods of economic uncertainties. If an individual depends only on his own collections it could limit his ability and interest for learning. Good materials are costly and an individual has limitations on his investment for learning and knowledge. Public libraries can help fill up this individual limitation and help people sustain their life

long learning.

The limitation of the paper is that it uses figures rather than the process in arguing about the roles of government in human development. Also, the paper does not address the socio-historical and political context in which the data is generated. Figures do not, however, always explain the quality of government. Rather processes, methods, efficiency, effectiveness, and output are more important in understanding the various roles of government in human development. Detailed process studies on various public provisions–public libraries, telephones, transport, park and recreation can be future research agenda. Process aspects such as the nature of partnerships (between the welfare state and citizens, and between public and private organizations) and networks in providing public services can be future research agenda. Also, the measures of human development used in this study are narrow; these measures do not consider prudential values such as autonomy and liberty, self-respect and aspiration, participation in social life, and political and civil rights required for well-being and human development.

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Regresslon Analysis with Human Development Index (1988) as the Dependent Varlable

$HDI = a1 + b1LogGDP + b2LogAge + b3RG$

Independent varlables:	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Constant:							
T	17.6	9.23	11.4	9.20	10.5	8.91	8.84
Sig.	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Log of GDP:							
Beta	0.17	0.25	0.58	0.49	0.52	0.48	0.38
T	2.79	1.87	8.75	6.54	7.75	7.03	5.08
Sig.	0.00	0.06	0.00	0.00	0.00	0.00	0.00
Log of Age of Constitution:							
Beta	0.05	0.19	0.17	0.19	0.13	0.15	0.00
T	0.94	1.94	2.60	2.65	1.89	2.17	0.02
Sig.	0.34	0.05	0.00	0.00	0.06	0.03	0.98
Roles of Government (1-7)							
Beta	0.65	0.32	-0.35	-0.07	-0.26	0.23	0.57
T	10.2	2.47	-5.67	-1.04	-4.03	3.60	6.45
Sig	0.00	0.01	0.00	0.29	0.00	0.00	0.00
Adjusted R	0.60	0.33	0.43	0.32	0.38	0.36	0.62
F	67.2	13.1	42.6	27.1	34.6	31.3	44.9
Change in R^2	0.32	0.06	0.11	0.00	0.06	0.05	0.19
Change in F	105	6.14	32.1	1.09	16.2	12.9	41.6
Significance	0.00	0.02	0.00	0.29	0.00	0.00	0.00
N	133	73	164	164	164	161	80

HDI: Human Development Index.

LogGDP: Log of GDP total.

LogAge: Log of age of the first constitution.

RG: Roles of government from 1 to 7 below.

1. Log of number of public telephones per 1000 people.

2. Log of number of books in public libraries.

3. Number of ministries.

4. Log of number of heavy nationalized industries.

5. Log of number of non-heavy nationalized industries.

6. Women in government as a percentage of total government employment.

7. Corruption perception index.

Economic Growth and Corruption:
Evidence from Panel Data

Amirul Islam[*]

Abstract

Corruption has been found to be one of the most retarding factors of growth in many parts of the world. It is a common phenomenon today in many developing countries and it arises from their poverty and rent seeking activities among the government officials. Economists view corruption-underdevelopment interaction as resulting from two effects: distortionary effects and disincentive effects. The present study compares the empirical results of corruption development interaction from two models. One is the usual linear regression model that arrives at the conclusion that economic development or per capita GDP significantly depends on level of corruption and per capita investment expenditure of the country concerned. The other is a fixed factor model that tries to eliminate the country specific effects that may be influential in affecting per capita GDP growth. Contrary to the first simple OLS model in the second differenced model there is no significant direct relationship between corruption and economic development while investment still remains a significant variable in affecting economic development. This somewhat contradictory result is reconciled by the observation that empirically corruption and investment have been found to be highly correlated variables but the first differences of these two variables are not so. Hence the second model's insignificant result implies that the first model's significant result arises from the fact that corruption reduces investment and this in turn hampers economic growth. These two effects are not well separated in the first model.

1.   INTRODUCTION

By corruption we usually mean the dishonest or preferential use of power or position that has the result of one person being advantaged over another. The

definition of corruption varies according to the areas where it is being used. E.g., from a public official's point of view it may indicate bribery, obtaining secret offering or secret concession, from private point of view it may mean tax evasion, forgery, fraud, get admission in schools without passing the qualifying test, etc. So it is difficult to give a single definition of corruption and we should define the term in accordance with our area of investigation. Corruption is also difficult to measure since it often occurs in clandestine. There have been several attempts at measuring and comparing corruption internationally. According to World Bank's 1996 estimate New Zealand, Denmark, and Sweden lie near the clear end of the scale while Kenya, Pakistan and Nigeria are situated near the most corrupt end of the scale. An organization named Transparency International publishes an index of corruption ranging from 1 (most corrupt) to 10 (cleanest). According to its 1998 rankings the cleanest country in the world was Denmark (scoring a perfect 10) and the most corrupt was Cameroon (scoring a dismal 1.4). Incidentally the score for the United States was 7.5, and for Japan it was 5.8.

This paper aims at identifying the growth corruption linkage from a sample of 38 countries over the period 1996 to 1998. The selection of the countries and years are based on the availability of data. Some key factors of economic corruption, its consequences for economic development are also discussed and finally some policy recommendations have been made. The data used in this study were collected mainly from two sources depending on the nature of the data. For corruption index, I resorted to Tanzi (1998) published by the IMF and the remaining data like investments, GDP, population, and exchange rates were extracted from International Financial Statistic (IFS) CD Rom (Year 2000), also published by the IMF.

2.   THE ECONOMICS OF CORRUPTION

Like any other market corruption is also based on contracts between different interests. Firms, pressure groups, or citizen try to maximize their gain by paying bribes, while public officials try to maximize their illegal earnings and politicians their power and wealth (Bresson 2002). Bribe payers may seek to reduce or avoid costs by not paying tax or fines. Bribe can also be paid to get government services ahead of time as happens in getting telephone connections. All parties involved impute their costs and benefits associated with the corrupt activities. Bribers' costs are the extra money income they have to pay to obtain the service and their benefit is obtaining the service without hassle or delay. On the other hand public officials' cost of involving in corruption is the possibility of being caught and fired from the job and the gain is the extra income they receive from corruption.

Both parties assess their respective costs and benefits marginally and participate the corruption game as long as their benefit exceeds costs at the margin. Now the question naturally arise what will be the corruption fee (price) charged for each unit of corrupt activity. Since there is absence of competitions in the supply of corrupted commodities or services, the price is determined through some kind of bilateral monopoly or monopoly (where there is one service provider and numerous customers interested to obtain the service) market mechanism. The gain from exchange is shared according to the bargaining power of the service providers and that of service takers in case of bilateral monopoly.

3.   GROWTH-CORRUPTION INTERACTION

Developing country governments heavily restrict economic activities in almost every sphere of life including tax, capital control, and exchange rate management to achieve various policy objectives. Economic agents who are best known as personal benefit maximizer, rather than social gain maximizer, attempt to evade these rules and regulations, if they find it to their advantage, through corrupt practices such as bribery and extortion. Sometime it is argued that development of underground economic activity has in some instance aided economic efficiency by replacing command based resource allocation with a degree of market-based solution. The proponents of the positive growth corruption relation put forward that firms and individuals avoid burdensome regulations and ineffective legal systems by resorting to corruption. On the other hand opponents of the above view often presents data showing that corruption and poverty go hand in hand. For
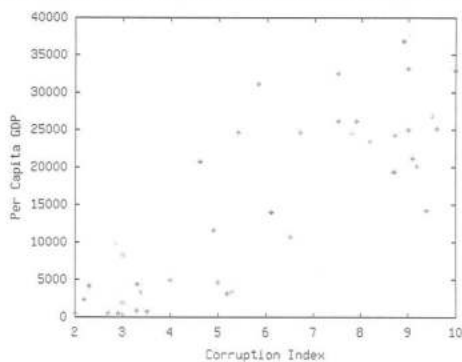

Figure 1: Corruption index and per capita GDP in 1998

a large sample of developing and industrial countries figure 1 shows a strong positive relationship between annual real per capita GDP and an index of corruption (note that a higher index means a relatively lower corruption). But this type of simple result from a cross section of data should be taken with a grain of salt. The degree of corruption to a large extent is determined by social settings, consciousness among the citizens and attitude towards corruption. Some country specific or fixed effect (e.g. amount of effort exerted in the workplace, weather condition, productivity, etc) may be influential in determining the level of development. To get a meaningful picture of corruption development interaction, we need first to remove fixed country effects and second control for other variables that may explain growth.

4.   FIXED EFFECT MODEL

To deal with the first problem we collect data on per capita GDP and corruption index for a number of countries over two years. The corruption data are from Tanzi (1998) and the per capita GDP data have been taken from the International Financial Statistics (2003) CD Rom. The data are for the year 1996 and 1998. The data for these two separate years are then differenced to get rid of the fixed country effects. To see how this works let i denote cross sectional unit and t the time period. The model with single observed and unobserved variables can be written as

$$y_{it} = \beta_0 + \delta_0 d_t + \beta_1 x_{it} + a_i + u_{it} \; ; i=1,2 \text{————————(1)}$$

where y_{it} denotes per capita GDP and x_{it} is the corruption index of country i at period t and a_i captures all unobserved, time constant factors that affect y_{it}. d_t is a dummy variable that takes the value 1 in period 1998 and 0 in 1996. Since a_i is constant over time it is dropped when we difference the data over the two periods. Differencing (1) for each observation i across the years 1998 and 1996 we get

$$y_{i(98)} - y_{i(96)} = \delta_0 + \beta_1 (x_{i,98} - x_{i,96}) + (u_{i,98} - u_{i,96})$$

$$\text{or} \quad \Delta y_i = \delta_0 + \beta_1 \Delta x_i + \Delta u_i \text{ ————————(2)}$$

where Δ denotes the changes in the relevant variables from t=1996 to t=1998. Coefficient of δ_t (i.e. d_0) allows the intercept in equation (1) to change over the two periods. The unobserved effect a_i has been differenced away in equation (2).

The intercept δ_0 in equation (2) accounts for the change in intercept from 1996 to 1998. Now assuming Δu_i and Δx_i are uncorrelated and the later has sufficient variation in it, OLS estimate of β_1 will be unbiased and statistical inference about it will be valid. Since per head amount of investment is also an important time varying factor that affects per capita GDP growth, differencing does not resolve the omitted variable problem. So per capita investment in first differenced form is used an additional variable while estimating equation (2). The estimated model thus obtained is:

$$\Delta pgdp = -518.64 - 75.031\ \Delta cor + 2.5262\ \Delta inv \text{\hspace{1em}}\text{———————(4)}$$

s.e.   (200.9)   (211.43)   (0.31007)

t-ratio (-2.5816) (-0.3549)   (8.1471)

p-value (0.0142)   (0.7248)   (0.0000)

R^2=0.6998   DW=1.63   d.f.=35   F-value = 40.795

Thus when country specific effects are removed by differencing, corruption looses its significance in affecting per capita change in income. On the other hand investment remains a significant variable in explaining change in income. The estimated intercept in equation (4) (which is in fact the slope of the dummy if the variables in the equation were in level form) implies that over the period 1996 to 1998 world per capita GDP has shown a secular decline of about –518.64 dollars, i.e. if we fit two separate cross section regressions for the same sample of countries, one for the period 1996 and the other for the period 1998 we would experience a –518.56 unit of downward shift in the later regression. The coefficient of Äinv shows that for each unit increase in per capita investment expenditure, per capita income grows by about two and a half dollars. The estimated coefficient is highly significant too with a p value of zero. On the other hand the coefficient of Äcor is insignificant implying that corruption is not a significant factor in economic development. This later conclusion seems to run contrary to the popular belief that corruption is inimical to growth. To get a clear picture of why get here such a result let us estimate the above model again with all the variables in level form, i.e. we are in fact estimating model (1) now. The estimated model is

$$pgdp = 6665.2 - 92.903\ cor + 3.4895\ inv \text{\hspace{1em}}\text{———————(5)}$$

s.e.   (2158.3) (0.4200) (30.692)

t-ratio (3.0881)   (8.3082) (-3.0269)

p-value (0.0039)   (0.0000) (0.0046)

R^2=0.9071   DW = 1.2643 d.f. = 35 F-value =341.34

In equation (5) both the corruption and the per capita investment are highly significant variables in affecting per capita GDP. The problem with the estimated equation (5), however, is that corruption and per capita investment can interact with each other and the effect on per capita income of these two variables may not be separable. The correlation matrix for equation (4) and (5) in Table 1 below shows that correlation and per capita investment are in fact highly correlated for equation (5). This correlation problem is less severe for equation (4) i.e. for the differenced form model. So the differenced form model is more appropriate in separating the effect of correlation and per capita investment on per capita GDP.

Table 1: Correlation Matrix

Equation (4)		Δcorruption	Δinvestment
	Δcorruption	1.0000	-0.3803
	Δinvestment	-0.3803	1.0000
Equation (5)		corruption	investment
	corruption	1.0000	0.8249
	investment	0.8249	1.0000

Source: Calculated by the author using SHAZAM

Inspection of these two results suggests us that the alleged corruption-poverty interaction is in fact occurring through the pernicious effect of corruption on investment.

Corruption not only reduces investment, it at the same time suppresses business activities and makes the economy function less efficiently. Financial Times (1999) points out clearly the economic inefficiencies associated with corruption. In Brazil which has 4.0 score in the corruption scale, bureaucrats and public officials at the municipal, state and federal levels make such intricate laws, regulations, decrees and directives that it is quite difficult for a businessman to fully comply with. They either pay fines or bribes to evade laws. The bribes and fines make up part of what is known as Brazil Cost, that inflate the cost of conducting business in Brazil.

Corruption affects the quality of public expenditure, which in turn impedes growth. Large investment projects are taken through the decision of some high level public officials who are frequently affected by the incumbent political leaders. These projects are carried out to provide opportunities to some individuals or political groups to get commissions from those who are to execute the projects. These projects are inferior to some other good projects on the basis of investment selection criteria like cost benefit analysis. Thus distorted projects are chosen and productivity of public expenditures reduced. Efficiency of government expenditure is also low when they are procuring something. Complex and costly procedures for collecting goods and services sharply increase the prices at which they are purchased.

5.   LOW WAGE AND CORRUPTION

It is often argued that low public sector wage is associated with high level of corruption in the public sector in developing countries (Tanzi, 1998). To explain the interaction between low wage and corruption let us first differentiate between corruption due to need and corruption due to greed. The later type of corruption occurs irrespective of the wage level. In aggregate it may be determined by existing values and customs among the population toward corruption or by the amount of consciousness among the masses against corruption. The former part, corruption because of need, can be systematically related to the wage level. Figure 2 elucidates the relation where OA is the minimum amount of income needed to maintain a decent or socially acceptable life and OC is the amount of corruption
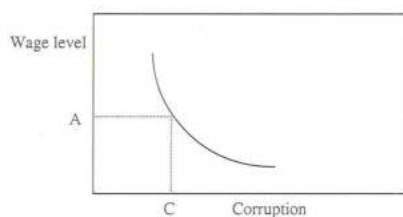

Figure 2: Corruption-wage tradeoff curve. Source: Tanzi (1998).

that will anyway happen. If government decreases wage level below OA corruption will increase. But reducing corruption below OC requires sharp increase in the wage level. Even corruption is minimally fixed at OC by greed when wage level increases too high the cost of involving in corruption and thereby increase the possibility of loosing more from getting discharged from the highly paid job if caught of corruption. This may explain why the corruption-wage tradeoff curve still slopes negatively above the OA wage level.

This type of relationship has been tested by Rijckeghem and Weder (1997) and Haque and Sahay (1996). Using cross section data they have been able to found a statistically significant relationship between corruption and wage level. They also found the existence of minimal level of corruption in their studies. High wage in the public sector attracts more able, productive, and honest individuals. Since corruption cannot be root out solely with a high level of wage, wage increase should be accompanied by other measures.

6.   CORRUPTION RISK FACTORS

Different intensities of corruption across different areas and sectors suggest that some factors are responsible for different level of corruption. In the early stages it is not difficult to identify them but as corruption becomes rooted in the economy e.g. it becomes systematic it becomes hard to identify and root out corruption then turns into a formidable task. The entrenched nature of systematic corruption requires bold action during the anti-corruption campaign.

Most of corruption cases arise from the rent seeking activities and government intervention in the economy. Economic rent is created when supply falls short of demand. We do not have to do much about rent seeking activities that arise out of natural limitation of supply. But if rent-seeking behavior arises from artificial limitations of supply we begin to feel alarmed about the emergence of corruption. Government interventions in the area of trade control are notorious for creating corruption. Government restrictions on import through import quota create rent for import license holder. To get the lucrative import license interested parties bribe the government officials. In case of tariffs, producers try to influence the political leaders to impose tariff on imported commodities that they produce.

Low wages of public employees relative to their private counterpart often lead to corrupt activities among the government officials. Government officials often use their power and position and take bribe to match their income with the private sector income. The risk of corruption is high if the cost of living far exceeds the income level and the cost of being caught is being low. One might think that

corruption can be abolished through the liquidation or demise of the state. But a civilized society cannot function without a state. Moreover in some of the clean countries in the world like Canada, Denmark, Finland, Sweden and the Netherlands have larger government size than some of most corrupt countries in the world. As Tanzi (1995) notes the way state operates and carries out operations is far more important than sheer government size in determining the level of corruption. If government activities involve a lot of regulations and authorizations, which requires frequent contact between citizens and bureaucrats and requires enormous amount of time dealing with public officials, people may be forced to bribe officials to reduce the cost of their obtaining the service. Taxation based on clear laws and not requiring contacts between taxpayers and tax inspectors are much less likely to produce act of corruption.

Government expenditure through extra budgetary accounts lacks transparency and often leads to corruption. Extra budgetary accounts may be set up for specific purposes like pension funds, road funds, etc. It may also be established to reduce political and administrative controls that are likely to accompany budgetary expenditure. Money received from foreign aid or selling natural resources is channeled to special accounts that tend to be less transparent and often a big portion of it end up in illegal pockets.

Sociological factors like ethnic background and family ties often contribute to corruption. There is strong tendency among public officials of developing countries to give undue advantage in the provision of services. In many countries public officials have power to take discretionary decisions as to provide tax incentive against income taxes, use of government owned land, sale of state owned assets or public enterprises. These decisions involve tremendous gain to the party involved. To get favorable decisions sometimes bribes are offered and in other cases personal relation with the public relation do the work.

7.   EFFECTS OF CORRUPTION

We can divide the effects of corruption on the economy into two parts:

- Effects on the allocation of resources: Corruption redirects the ongoing economic activity and makes them less efficient. This has adverse effect on economic growth. Corruption impedes long-term foreign and domestic investment, suppresses entrepreneurship, and misallocates talents to rent-seeking activities. In a corrupt society politicians and bureaucrats imposes excessive and discretionary regulations on entrepreneurs. Mauro (1995) studied the effects of corruption on growth. In his regression relevant to

corruption Mauro finds that both the individual corruption and the bureaucratic efficiency index are statistically significant determinants of the average level of investment over the period 1960-1985 even when controlling for other determinants of investment. A one standard deviation improvement of corruption index is associated with a 3.3 percent GDP increase.

- Disincentive Effects: Bribery or corruption increases transaction costs and uncertainty in an economy. Genuine investors see the return to their investment reduced in a corrupt society. As a result some prospective investors may not come forward with their investment packages. This may have negative multiplier effects on the economy. Sometime it may be the case that projects are allocated to the contractors on the basis of corruption and the efficient contractors who do not get the contract because of corruption may feel disheartened and withdraw themselves from their activity in the economy.

8.   POLICIES FOR COMBATING CORRUPTION

Since corruption emerge from both the demand and supply side it should be tackled also in these two fronts. On the demand side measures are taken to reduce the price differences of obtaining the same commodity through legal and illegal ways. Reducing import duty and deregulation measures can reduce the incentive for obtaining imports through illegal ways. In the long run charging citizens with moral values through religious or moral teaching can substantially reduce corruption from both demand and supply sides.

We have seen that an important factor behind corruption is the existence or creation of economic rent. So to reduce corruption competition of should be increased from the supply side. When more than one government authority can issue the same license, competition among different officials will drive the bribe price to zero (Ackerman 1999) because from the officials point of view producing bribe taking behavior is essentially costless. Raising the cost of involving in the corrupt activities can also reduce corruption from the supply side. Strict vigilance leading to frequent detection and punishment, reallocation of duties within the organization can reduce corruption from the supply side (Dey 2002).

Sometimes corruption occurs due to asymmetric information. The principle at the top level of government does not have the same level of information as the agent of a government official designated to carry out a specific task has. The extent of accountability and transparency should be increased to reduce corruption. Shortening the hierarchical control structure can also reduce the asymmetric information problem.

9.   CONCLUSION

Corruption is itself a vast idea with its many faces. Corruption may be social, political, economical, and ethical or any other form involving deviation from the accepted practice. When corruption becomes widespread it is difficult to root it out. In many developing countries corruption is associated with the way government operates. Thus to reduce corruption state machinery should be reformed in the right manner. Rules and regulations based system should be substituted by incentive mechanism and government policies should be as transparent as possible. Increasing public sector wages can be one method of creating incentive for the honest public officials. Since corruption is multifaceted, when government is thinking of reducing of corruption it need consider a package of policies rather than a single measure.

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Appendix A
Data Set for Corruption Growth Interaction Study

Country	Corruption Index 96	Corruption Index 98	Total Investment in year 96	Total Investment in year 98	Total Population in year 96	Total Population in year 98	Exchange rate 96	Exchange rate 98	GDP in year 96	GDP in year 98
Argentina	3.41	3	49211	59595	35.22	36.12	1	1	7727.14	8276.52
Australia	8.6	8.7	116248	135624	18.31	18.73	1.28	1.59	22250.05	19423.99
Austria	7.59	7.5	571198	615098	8.06	8.08	10.59	12.38	28703.05	26138.65
Belgium	6.84	5.4	1661000	1875000	10.16	10.21	30.96	36.3	26567.81	24585.63
Brazil	2.96	4	150050	179982	157.87	161.79	1.01	1.16	4884.88	4871.09
Canada	8.96	9.2	142657	174082	29.67	30.25	1.36	1.48	20666.55	20143.18
China	2.43	3.5	2333610	2818080	1232.46	1255.7	8.31	8.28	667.18	768.03
Colombia	2.73	2.2	21749500	26453200	39.3	40.83	1036.69	1426.04	2471.93	2420.82
Denmark	9.33	10	198400	240971	5.26	5.3	5.8	6.7	34774.16	32920.3
Finland	9.05	9.6	99726	128913	5.12	5.15	4.59	5.34	24929.79	25072.54
France	6.96	6.7	1470400	1578100	58.37	58.85	5.12	5.9	26618.98	24665.99
Germany	8.27	7.9	779360	804900	81.9	82.02	1.5	1.76	29190.07	26115.3
Greece	5.01	4.9	5828100	7615100	10.48	10.52	240.71	295.53	11866.57	11592.95
Hong Kong	7.01	7.8	372327	381079	6.48	6.64	7.73	7.75	23794.78	24471.63
Hungary	4.86	5	1475540	2384610	10.19	10.11	152.65	214.4	4431.96	4653.75
India	2.63	2.9	3118700	3732100	939.54	970.93	35.43	41.26	411.02	438.91
Indonesia	2.65	2	1.58E+08	2.43E+08	196.81	204.42	2342.3	10013.6	1155.28	466.91
Ireland	8.45	8.2	8512	13275	3.63	3.7	0.63	0.7	19954.52	23390.73
Italy	3.42	4.6	3.49E+08	3.85E+08	57.38	57.51	1542.95	1736.21	21486.32	20805.03
Japan	7.05	5.8	1.45E+08	1.39E+08	125.76	126.41	108.78	130.91	37338.86	31171.42
Malaysia	5.32	5.3	107825	76275	21.17	22.18	2.52	3.92	4756.13	3271.86
Mexico	3.3	3.3	451081	804002	92.72	95.82	7.6	9.14	3590.2	4393.97

Country	Corruption Index 96	Corruption Index 98	Total Investment in year 96	Total Investment in year 98	Total Population in year 96	Total Population in year 98	Exchange rate 96	Exchange rate 98	GDP in year 96	GDP in year 98
Netherlands	8.71	9	131646	149879	15.53	15.71	1.69	1.98	26453.86	24952.26
New Zealand	9.43	9.4	21110	19972	3.71	3.79	1.45	1.87	18014.69	14198.21
Norway	8.87	9	216217	276925	4.38	4.43	6.45	7.55	35984.21	33167.9
Pakistan	1	2.7	368100	402800	134.15	131.51	35.91	44.94	440.12	453.07
Philippines	2.69	3.3	508745	563636	71.9	75.15	26.22	40.89	1152.08	870.22
Portugal	6.53	6.5	4005100	4992100	9.93	9.97	154.24	180.1	10974.58	10718.27
Singapore	8.8	9.1	49171	51352	3.67	3.92	1.41	1.67	24876.22	21161.1
South Africa	5.68	5.2	99381	125877	40.34	42.13	4.3	5.53	3565.14	3156.96
Spain	4.31	6.1	14975700	19800200	39.27	39.37	126.66	149.4	14825.94	14051.7
Sweden	9.08	9.5	276265	298961	8.84	8.85	6.71	7.95	29610.02	26865.65
Switzerland	8.76	8.9	73884	76017.3	7.07	7.11	1.24	1.45	41443.86	36022.12
Thailand	3.33	3	1886100	1028250	60	61.16	25.34	41.36	3040.54	1829.72
Turkey	3.54	3.4	3.71E+09	1.28E+10	61.53	63.39	81404.9	260724	2949.2	3238.46
UK	8.44	8.7	125604	151969	58.8	59.24	0.64	0.6	20254.3	24190.02
USA	7.66	7.5	1212100	1472900	265.46	270.56	1	1	29432.68	32488.91
Venezuela	2.5	2.3	4645760	9991300	22.31	23.44	417.33	547.56	3161.73	4089.08

(Note: 1. Population is in million

2. Exchange Rate is expressed as amount of Domestic Currency per U.S. Dollar

3. Investment is in local currency. It was converted to per capita U.S. dollar using the exchange rate and population data.

4. GDP are in local currency and was converted to U.S. dollars and in per capita terms

Source: Tanzi (1998) for column one and three, IFS CD Rom (2000) for the remaining columns.

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2. Manuscripts of research articles, research notes and reviews written in English or Bangla should be sent in triplicate to the Editor. The Bangladesh Journal of Political Economy. Bangladesh Economic Association. 4/c Eskaton Garden Road. Dhaka-1000. Bangladesh.

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5. All articles should be organized generally into the following sections: a) Introduction: stating the background and problem: b) Objectives and hypotheses: c) Methodological issues involved; d) Findings: e) Policy implications: f) Limitations. if any; and g) Conclusion (s).

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