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FROM THE EDITOR

In what I call our third phase of the pandemic – the first being the pre-vaccine phase ending with the Delta variant, and the second beginning towards the end of 2020, when both vaccines and the Omicron variant emerged – the effects of supply shocks combined with the Russia-Ukraine war has resulted in a resurfacing of the importance of the economy. Unfortunately, it has also meant that poverty rates are going up globally. While the global extreme poverty (headcount) rate was said to be at 9.1%, with 685 million people in poverty in 2017, this rate is at 42.9% in April 2022, with the number of poor risen to 3.26 billion. However inexact these estimates from the World Bank are, they reflect rising food prices, transportation costs, as well as the increased cost of other basic goods. The data for South Asia are not included in these measures, and points to how much more these figures must have escalated. In Bangladesh, it is well known that the lockdown and the economic crises brought about by supply shocks and a spike in fuel prices have caused a surge in poverty. Research by SANEM (South Asian Network of Economic Modelers) indicates that the national lower poverty rate is up to 28.5% in 2020 from 9.4% in 2018. The lower poverty rate uses a low non-food allowance in its measure, as opposed to the upper poverty rate, which was estimated to have increased to 42% in 2020 from 21.6% in 2018.

Within this backdrop, we orient this new issue of JBS primarily on economic questions. Our first article by Shahe Emran and Forhad Shilpi looks at the effect of microfinance on the poor and their ability to withstand shocks. From pre-pandemic data and literature, they find that microfinance membership has helped food security, but has not helped short-term migration to urban labor markets. Also, villages that had a substantial presence of microfinance likely saw interest rates charged by moneylenders go up. During the pandemic we saw that microfinance institutions used new technologies to reach more clients and maintain their presence in the welfare sector, as well as stay afloat as far as their own financial survival.

As mentioned above, inflation has become a problem worldwide. Bangladesh has managed to keep inflation at just over 6%, as reported by Bangladesh Bank in April 2022. The higher food costs largely figure into this level of the growth of the consumer price index. Akhtar Hossain looks at the appropriateness of a money based monetary policy for Bangladesh's price stability. He suggests that a floating exchange rate would be more appropriate to allow independence of monetary policy so that it could be better used to affect employment and growth under price stability.

Small and medium enterprises were particularly hard hit during the pandemic. The paper by Muaz Jalil and Behroz Jalil surveys over two thousand such merchants and notes that their location, ability to use the internet, and education level of the owner are important determinants of their sales performance. The data was collected prior to the pandemic, but the ability of these enterprises to access credit has continued to be a problem for which new solutions are being found in Bangladesh.

Our final article is about the acquisition of the English language by students in higher educational institutions – an important aspect of human capital development in the country. The authors, Mohoshin Reza, S. M. Wahiduzzaman, and A. M. M. Hamidur Rahman, find that there is some degree of negligence when spoken English is taught in Bangladesh. Teachers do not use practical methods, and do not deploy segmental elements of English pronunciation to train students. The structure of syllabi emphasizes theory over practice and Bangla speakers tend to follow the spelling of English words and mispronounce them. This is particularly true because certain sounds in English are missing in the Bengali language.

In keeping with the emphasis on economics topics, this issue also includes a review by Akhtar Mahmood of Rehman Sobhan's book Untranquil Recollections: Nation Building in Post-Liberation Bangladesh. Finally, Zaki Eusufzai reviews Wahiddudin Mahmud's new book Markets, Morals and Development: Rethinking Economics from a Developing Country Perspective.

We encourage our readers to comment on and debate the important topics covered in this issue.

Farida Chowdhury Khan
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Microfinance, Moneylenders, and Economic Shocks: An Assessment of the Bangladesh Experience

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Abstract

The effectiveness of microfinance in improving the economic lives of the poor has been under extensive scrutiny in the last two decades. The experience of Bangladesh has played an important role in this debate. Most of the existing studies on Bangladesh focus on the impact of microfinance on poverty and empowerment of women. We provide a discussion of the recent literature on two relatively neglected aspects: the impacts on moneylenders and the coping ability of households facing adverse shocks such as flood and seasonal famine (Monga). The available evidence suggests that the microfinance NGOs in Bangladesh helped free many households from the "clutches" of moneylenders, contradicting the claim of some critics that microfinance exacerbates the dependence on moneylenders. The likelihood that a household goes to moneylenders for credit declines by about 70 percent once it becomes a member of a microfinance program. However, the evidence also suggests that moneylender interest rates go up when the MFI coverage is high enough in a village, implying that the remaining clients of moneylenders suffer a negative pecuniary externality. The evidence on coping ability suggests that microfinance membership improves food security during floods and the Monga. But microfinance membership does not reduce the propensity to sell labor in advance in the lean season and may not help a household finance short-term migration to urban labor markets in response to a shock.

***Keywords**:* Microcredit, Moneylenders, High Interest Rates, Monga, Seasonal Shock, Food Security, Pecuniary Externality, Bangladesh

Introduction

The effectiveness of microfinance as a poverty alleviation and development strategy has come under extensive scrutiny in the last 20 years (Banerjee, 2013; Mahmud and Osmani, 2016).[1] The Bangladesh experience is of special importance for the ongoing debate because it is a pioneer in the microfinance movement. Many of the studies on microfinance in Bangladesh focus on its impacts on poverty measured in terms of household consumption and/or assets (Mahmud and Osmani, 2016). There is also a substantial literature on the impact of microfinance membership on women's decision-making power in the household (Kabeer, 2017). The focus of this paper is on two relatively less researched areas - the effects of microfinance on informal credit market in Bangladesh, especially moneylenders, and the effects of microfinance membership on the ability of a household to cope with economic shocks.

The first-generation microcredit programs, which later came to be known as the Classic Grameen or Grameen-I model, focused primarily on how to create a credit market for poor borrowers, especially women, who lacked any collateral, and ensure repayment. However, the microfinance non-governmental organizations (NGOs) were very much aware that the poor face a host of other missing or imperfect markets in addition to the credit market failures. For example, labor markets in developing countries are usually highly segmented because of high transaction costs and are characterized by high rate of unemployment. The demand for microcredit would be strong in such a

context because it creates self-employment opportunities, thus addressing imperfections in both labor and credit markets.[2] A substantial literature in development economics emphasizes the interlinked nature of credit, labor, land, and product market transactions in poor villages (Bardhan, 1980). For example, landless households are likely to be involved in interlinked labor and credit transactions with the landlord/moneylender. The adoption rate and the impact of microcredit would therefore depend both on the design of the loan product and the set of functioning markets available in a village. The impact of microfinance on the moneylenders, who are also the landlords or shopkeepers in the village, would vary depending on the nature of imperfections in other markets through this interlinked web of economic relations. If households switch from moneylenders to microcredit, the value of the microfinance institution (MFI) loan contract outweighs the value derived from the interlinked transactions with moneylenders. Since microcredit allows the borrower to start a backyard economic activity, the borrower may no longer be as dependent on the landlord-moneylender for employment opportunities.[3]

As we discuss below, the classic microcredit model, with its emphasis on inculcating discipline in the form of weekly repayment and commitment savings, is not suitable for filling in for any missing insurance market. The microcredit NGOs in Bangladesh began to appreciate this trade-off after the 1998 flood, and redesigned their loan contracts, known as Grameen-II model. The redesigned loan contract did not only deal with a failing credit market but could also partially fill in for missing insurance markets for economic shocks such as floods, seasonal famine, and illness. Since a large part of the demand for moneylender loans is to meet the emergencies such as health shocks and crop failure because of flood, a redesign of MFI loan product with built-in features of insurance can create effective competition for the moneylenders. The goal of this paper is to draw a set of conclusions regarding the effects of microfinance on the moneylenders and the coping ability of the borrowers facing economic shocks. It is based on recent research in the context of Bangladesh and utilizes heterogeneity in loan contracts and multiple missing markets as organizing principles.

Does Microfinance Help Free the Bangladesh Poor from the "Clutches" of Moneylenders?

There is a widely and deeply held perception, backed by substantial evidence, that moneylenders engage in predatory lending and charge usurious interest rates (Banerjee, 2003; Hoff et al. 1993). These moneylenders can exploit interlinked credit and labor market transactions, for example, to charge very high interest rates without the risk of borrower default. This belief motivated government interventions in the credit market through the provision of subsidized loans by specialized public agricultural banks, credit cooperatives such as the Comilla model in Bangladesh, and many NGO programs focusing on credit for the poor. For pioneering microfinance programs in Bangladesh such as Grameen Bank and BRAC, a primary goal has always been to reduce, and ultimately eliminate, the dependence of rural poor households on moneylenders. As Muhammad Yunus states regarding the origin of the Grameen Bank: "(W)hen my list was done it had the names of 42 victims. The total amount they had borrowed was US $27. What a lesson this was to an economics professor who was teaching about billion-dollar economic plans. I could not think of anything better than offering this US $27 from my own pocket to get the victims out of the *clutches of the moneylenders*." (Yunus, 2009, p. 2, seventh Nelson Mandela Lecture. Emphasis added).

The entry of the MFIs into rural credit market was expected to reduce the reliance of the households on the moneylenders as they switched to the MFIs for their credit needs. By providing loans at a lower interest rate to the poor without any collateral, the MFIs were also expected to reduce the interest rate a moneylender could charge the borrowers.[4] A lower moneylender interest rate would provide a positive pecuniary externality and benefit those households who still need to take loans from the moneylenders after the entry of microcredit NGOs in a village. The argument that microfinance NGOs would both reduce the dependence of the poor on moneylenders and lower the interest rate was widely shared among policymakers and NGO practitioners in the early days of the microfinance movement. A number of theoretical analyses provided conceptual foundations for such an optimistic view - the models developed by Bell (1990) and McIntosh and Wydick (2005) illustrate this. One would thus expect that whether the spread of microfinance created effective competition for moneylenders or not would be a central focus of the burgeoning empirical literature on microfinance in the last two decades. It is rather surprising that there are only two studies that analyze the interactions between the MFIs and moneylenders.[5]

In a study on microcredit borrowers from Grameen Bank in the early 1980s, Hossain (1988) reports that, for households who own less than half acre land, and are also the target group of MFIs such as Grameen Bank, more than 90 percent of loans in 1982 were from informal sources including the moneylenders. This reliance on the informal

sources was observed in a context where there was a substantial expansion of formal bank branches for agricultural lending in rural Bangladesh in the 1970s and early 1980s.[6] It is well recognized in the literature that the expansion of rural development banks in the 1970s did little to create effective competition for the moneylenders, partly because they required collateral, and, more importantly, because the loans were largely captured by medium and large landowners (Hossain and Bayes, 2009).[7] The evidence on the interest rates charged by the moneylenders in the early 1980s is also consistent with the widely held perception regarding usurious moneylenders or Mohajons in Bangladesh. The estimates of moneylender interest rates in the early 1980s range from 50 per cent to more than 100 per cent. For example, a BIDS-IFPRI study based on a 1982 survey estimated an average interest rate of 125 per cent on the moneylender loans (Ahmed and Hossain, 1990). The analysis of Hossain (1988), however, does not deal with the effects of microfinance on the member households previously borrowing from the moneylenders in a village.

The discussion by Mahmud and Osmani (2016) shows that microfinance NGOs in Bangladesh expanded dramatically their presence in the rural credit market in Bangladesh in the 1980s and 1990s. How did this expansion of microfinance branches affect the nature of interactions between the poor households and moneylenders? The first study to analyze this question is Mallick (2012). He uses a 2002 cross-section data set on 156 villages from the baseline survey of the BRAC-TUP program in three districts in northern Bangladesh (Rangpur, Kurigram, and Nilphamari) and reports an average moneylender interest rate of 103 per cent, with the maximum of 240 per cent in a village. This is striking, given that the average moneylender interest rate reported two decades earlier (1982 survey) was only marginally higher.[8] The headline result from Mallick's analysis is that the villages with a higher microfinance coverage also had a higher moneylender interest rate, thus suggesting that a deepening of the microfinance market in a village, in fact, led to moneylenders charging higher interest rates. This conclusion holds especially in those villages where more loans are used for productive purposes. Mallick argues that the higher moneylender interest rates in a village is the result of a higher demand for informal loans by the households taking microloans for productive investment, as they need additional loans to achieve economies of scale. It is also argued that some MFI borrowers needed loans from the moneylenders to maintain rigid weekly repayment schedule. However, whether a higher moneylender interest rate reflects a higher demand by the borrowing households cannot be judged from an analysis of the moneylender interest rates alone. We need to look at both the price (interest rate) and quantity (number of borrowers and loan amount from the moneylenders). When a higher moneylender interest rate is primarily due to a rightward shift in the demand curve as argued by Mallick (2012), price and quantity move in the same direction: more households should borrow from the moneylenders and take larger loans, even though the interest rate is higher.

In a recent paper, Berg et al. (2020) deal with the issues raised above in the context of Mallick's analysis. For the analysis of the effects of microfinance penetration in a village, they use an exceptionally large village level data set collected by the Institute of Microfinance (InM) in northern Bangladesh.[9] The InM data set has some important advantages for exploring the questions raised by Mallick's (2012) analysis. The villages in the data set for moneylender interest rate analysis come from 12 upazilas in 3 districts in the same chronically poor areas in the northern part of Bangladesh as the BRAC-TUP survey used by Mallick (2012). This is important to ensure comparability of the results from the two studies. The fact that the sample used by Berg et al. (2020) consists of 793 villages allows them to check if the conclusion of a higher moneylender interest rate is robust, not specific to a small number of villages (89) analyzed by Mallick (2012).[10] To ensure robustness of the conclusions, they report estimates from a number of econometric approaches developed recently in the literature on program evaluation. In particular, they use the minimum-biased IPW estimator of Millimet and Tchernis (2013) and the heteroskedasticity based identification approach of Klein and Vella (2010). Their main finding is as follows: at low levels of coverage in a village, the impact of microfinance on moneylender interest rates is negligible, but when the MFI coverage is high enough, moneylender interest rates increase in a village. This nonlinear effect is intuitive, as one would not expect a substantial impact on moneylenders when only a few households get access to microcredit. A major worry about the above conclusion is whether it is driven by MFIs targeting relatively more productive villages for program placement. A plausible argument is as follows. MFIs place their programs in relatively productive villages to ensure high repayment rates. Moneylenders in more productive villages can also charge higher interest rates as the returns to household investment are higher; this assumes that the moneylenders enjoy market power and extract most of the surplus. This can give rise to a positive correlation between MFI coverage and moneylender interest rates in a village even when the entry of MFIs had no impact on the operation of the moneylenders. If this argument is correct, then the estimated impact of MFI coverage on moneylender interest rates should go down substantially when we control for productivity characteristics of villages in the regressions. The evidence presented by Berg et al. (2020) rejects this argument because the estimated impact of MFI coverage increases once we control for village productive potential.[11]

Interestingly, the estimates presented by Mallick (2012) also support this conclusion; the magnitude of the impact of MFI coverage on moneylender interest rates is either unchanged (see columns 1 and 2 in his Table 2) or increases (compare the first and second columns in his Table 3) once village productivity controls are included in a regression.

To understand whether taking loans from a microfinance program makes a household more likely to go to moneylenders for additional funds, Berg et al. (2020) take advantage of a high-quality panel data set collected by Mahabub Hossain covering a random sample of 62 villages from 62 districts (funded by IFPRI, IRRI, and BRAC).[12] The 2000 and 2007 rounds of the panel survey are used for the analysis, implying that most of the households are likely to be in the more flexible Grameen-II type contracts (see the discussion in the next section). The main advantage of panel data is that we can use household fixed effects to wipe off the unobserved time invariant determinants of a household's decision to take loans from a microcredit program. Perhaps the most salient of such unobserved factors is entrepreneurial ability of a borrower, which leads to an upward biased estimate of the program effect because the high ability borrowers self-select into the microcredit programs in such a case. Since the innate ability of a borrower does not change after becoming a MFI borrower, the household fixed effect purges the effects of higher ability of a borrower when comparing with non-borrowing households.[13] The focus of the analysis is on households that were not MFI members in 2000, but became members in between 2000 and 2007, and whether their demand for moneylender loans increased. They develop a difference-in-difference research design with alternative comparison groups. The first comparison group consists of the households that were not members of microfinance programs in either the 2000 or 2007 survey. The second comparison group, in addition, includes the dropout households that were MFI members in the 2000 round, but left the programs in 2007. Alexander-Tedeschi and Karlan (2009) emphasize that ignoring the dropouts may bias the estimated program effect. In addition to OLS, Berg et al. (2020) use the minimum-biased IPW of Millimet and Tchernis (2013) and a doubly robust IPWRA estimator of Wooldridge (2007) to estimate the difference-in-difference empirical model. The evidence from their empirical analysis shows that the likelihood of borrowing from moneylenders goes down dramatically by about 70 percent once a household joins a microcredit program. This contradicts the rightward demand shift as an explanation for the higher moneylender interest rate discussed by Mallick (2012). A natural question that comes to a reader's mind is then how to explain the twin findings of Berg et al. (2020) - (i) a higher moneylender interest rate and (ii) a lower demand for moneylender loans in villages with sufficiently high MFI coverage. The theoretical literature points to two possible explanations. First, Hoff and Stiglitz (1998) emphasize that fixed costs might be important in the administration of informal loans by moneylenders, for example, in acquiring information over the years about the potential borrowers in a village. When MFIs come to a village, many borrowers leave the moneylenders to join the microcredit programs, and the evidence discussed above suggests strongly that most of them do not take loans from the moneylender anymore.[14] This implies that the moneylender has to recoup the fixed costs from the few remaining borrowers by increasing the interest rate charged. A second explanation is based on cream-skimming, which affects the composition of the quality of the borrowers who are retained by the moneylenders after MFIs make significant inroads in a village. There is substantial evidence that the MFIs in Bangladesh exclude the poorest of the poor (or the ultra-poor) to ensure repayment (Emran et al., 2014). This implies that the pool of borrowers available to moneylenders consists of the riskier ultra-poor households. Moneylenders may need to increase the interest rate to compensate for the resulting higher risk of default for their total pool of loans.

The main takeaway from the discussion above is that MFIs in Bangladesh helped many poor households break free from the "clutches" of moneylenders, but they did not eliminate moneylenders from being present in the rural credit market. There are some households who still rely on the moneylenders, and they suffer a negative pecuniary externality as a result of the expansion of MFI programs in a village, because they end up paying higher interest rate for their loans from the moneylenders.

Does Microfinance Help the Poor Deal with Economic Shocks?

There is a substantial and mature literature in development economics that points out that informal credit transactions in rural areas of developing countries involve elements of an insurance contract with built-in flexibility in the repayment schedule. The role played by informal credit transactions among family and friends in coping with economic shocks has been noted in the literature by many authors.[15] In contrast, the standard microcredit programs following the initial group lending program of Grameen Bank, later dubbed as Grameen-I or Classic Grameen contract, are well-known for their weekly repayment and savings schedule and their emphasis on creating a culture of borrower

discipline. This emphasis on repayment culture was necessary in the early 1980s given the backdrop of widespread default on loans from public banks in Bangladesh.[16] It is argued by the critics of microfinance that the inflexible repayment makes it difficult for a borrower to cope with negative economic shocks. Most of the MFIs in Bangladesh require regular savings as part of the credit contract. There is a substantial literature that highlights the advantages of such savings schemes as commitment devices that help present-biased poor households build-up savings (Morduch, 2010).[17] However, if it is difficult to withdraw the savings when hit by a negative shock as was the case with Grameen-I model of microcredit, the savings are of little help during a flood, local famine, or health shocks.

The limitations of the classic Grameen-I model were laid bare by the 1998 flood in Bangladesh which affected a large proportion of microfinance members, and they were unable to maintain the repayment schedule. Most of the MFIs including Grameen Bank and BRAC did not enforce the repayment and commitment savings schedule, rescheduled the loans if necessary, and provided help with the recovery effort after the flood. The experience of the 1998 flood prompted a fundamental redesign of the classic Grameen loan contract by incorporating built-in flexibility, and Grameen-II was implemented by Grameen Bank between 2000-2002. Some of the important features of Grameen-II includes the option of taking a detour to a "flexi loan" when facing a negative economic shock where repayments are rescheduled, and flexibility in withdrawing savings (Rutherford, 2006). Grameen-II also explicitly disavowed group liability.[18] Following Grameen Bank, other microcredit NGOs introduced similar flexibility in their loan contracts in the 2000s.

Given the differences in the Grameen-I vs. Grameen-II models of credit contract, on a priori grounds, we would expect that the answer to the question posed for this subsection is likely to vary depending on whether the data come from before or after the redesign of the loan contracts. It is especially important to assess whether the borrowers under the Grameen-II contract are able to cope with economic shocks taking advantage of the design improvements in the loan product. Shoji (2010) looks at this issue in the context of 2004 flood in Bangladesh and finds that 39 per cent of the microcredit borrowers in the sample were able to reschedule their loans. He also finds that microfinance member households were less likely to skip meals during the flood period, and, especially the female members, enjoyed higher food security. However, the study is based on a small sample with only 289 households, and the conclusions may not be robust for the broader population.

Islam and Maitra (2012) provide an analysis of the effects of microcredit on a household's ability to cope with negative health shocks in Bangladesh. They use a panel data set of 2,694 households with three rounds in 1997/98, 1999/2000, and 2004/2005. The first two rounds of the data cover mostly borrowers in Grameen-I regime, while many of the borrowers in the 2004-2005 round are likely to be in Grameen-II type contracts. The estimates in their study thus refer to the effectiveness of a mix of Grameen-I and Grameen-II contracts. Their estimates suggest that microcredit helped households to cope better with health shocks; unlike other households without access to microcredit, they were able to weather an adverse health shock without selling their productive assets, especially livestock.[19]

In a recent paper, Berg and Emran (2020) analyze the question of coping ability from a different perspective; their focus is on whether microfinance is effective in ensuring food security during the seasonal famine known as Monga in Bangladesh. In agrarian economies, coping with the lean season is a challenge for many poor households because a lack of employment opportunities can create entitlement failures (Sen, 1981). Seasonal hunger takes on an especially stark form in the northern part of Bangladesh in the greater Rangpur region where the lean season can easily devolve into a near famine situation such that the poor resort to starvation and distress sale of assets (land and livestock) and labor. Their analysis is based on a large data set of 143,000 poor and ultra-poor households surveyed by InM and PKSF in 2006-2007 in three districts (Gaibandha, Lalmonirhat, and Nilphamari). We expect most of the borrowers to be in Grameen-II type contracts in 2006-2007, and thus the data is suitable for answering whether the redesign of the loan products after the 1998 flood was effective in dealing with seasonal adversities such as Monga.

The study develops an empirical strategy that exploits the fact that most of the MFIs try to exclude the poorest of the poor to minimize the risk of default. They find evidence that a household is much less likely to get microcredit if it owns less than 10 decimals of land which is consistent with the idea of screening out the ultra-poor from the microcredit programs.[20] The insight behind their research design is that the households owning marginally less than 10 decimal land are likely to be comparable to those who own marginally more than 10 decimal land, but their likelihood of getting microcredit are substantially different because of MFI screening. The fact that the survey included 143,000 households allowed the researchers to focus on a small interval of landownership (0.06 decimal-0.16 decimal) around the 10 decimal threshold, and their main estimation sample includes 24,132 households.[21]

The estimates reported by Berg and Emran (2020) show that the probability that a household has to survive on one meal a day during Monga declines by 22 percentage points when it becomes a member of microcredit program, and the probability of having three meals a day increases by 13 percentage points. In contrast, microcredit membership does not reduce the likelihood of distress sale of labor. However, the probability of short-term migration for work to nearby town declines once a household becomes the member of a microcredit program.[22] This implies that microcredit programs are not successful in dealing with the challenges of the spatial segmentation of labor markets, especially for the extreme poor. The above evidence suggests that the positive effects on food security discussed above reflect a combination of the following mechanisms. First, microcredit may help a household in generating income through home-based economic activities with credit, which is especially important when the labor market collapses during the lean season. Second, they can use the credit to buy food such as rice and lentils, which are nonperishable, at a lower price before the Monga so that they do not have to pay high prices during the lean season. Third, the costs of such food buffer stocks for consumption smoothing are much lower for a household borrowing from an MFI at a 16-30 per cent interest rate instead of moneylenders at a 100-125 per cent interest rate. Finally, as noted earlier, an important contribution of microcredit programs is its commitment savings, and Grameen-II type contracts made it much easier to withdraw such savings during negative shocks such the Monga period, thus encouraging this activity.

Endnotes

[1] Banerjee (2013) and Mahmud and Osmani (2016) provide excellent surveys of this literature from different perspectives. For a textbook treatment, see Armendariz and Morduch (2010).

[2] For a theoretical analysis of the implications of missing and imperfect labor market for microfinance movement, please see Emran, Morshed, and Stiglitz (2021). They emphasize that a focus on the interactions between missing labor and credit markets for the poor is crucial in understanding some of the major empirical puzzles in microfinance including low take-up rates in recent microcredit programs, difficulties in scaling up projects, and a modest impact on the income and consumption of borrowers but high repayment rates. The empirical literature in the last 20 years has largely ignored this interaction.

[3] An appreciation of the implications of multiple missing markets by the practitioners has been central to other rural development programs in Bangladesh. For example, the Comilla model of "Cooperative Capitalism" tried to fill in for the missing credit, inputs (fertilizer, pesticide, irrigation), and insurance (through group savings schemes) markets. See the discussion by Khan (1979) and Toufique (2017).

[4] Note that this widely shared belief implicitly assumes that the moneylenders hold market power and charge interest rates substantially higher than their costs of funds and loan administration. Some authors also argue that the high interest rates reflect the corresponding high risks of default in collateral free lending. However, the incidence of default is low in informal credit transactions (Banerjee, 2003).

[5] In his survey of the microfinance literature, Banerjee (2013) cites only one paper on the effects of microfinance on moneylenders. The recent literature survey of microfinance by Cai et al. (2021) for VoxDevLit does not even contain the word moneylenders.

[6] Estimates based on a 1982 survey by IFDC show that only 1.2 per cent of households with less than half acre land got loans from the public or private banks during the Boro season.

[7] If part of the subsidized loans from the public banks were used by landlords to expand their money lending operations, this would increase the supply of credit to landless poor borrowers. But the evidence suggests that such trickle-down effects were limited at best. Whether such on-lending by landlords would reduce moneylender interest rate is not clear. For a model where this effect can raise moneylender interest rate, see Hoff and Stiglitz (1998).

[8] Based on a survey of 143,400 households in the same region in Bangladesh in 2010/2011, Rabbani and Hasan (2021) report an estimate of 122 per cent average moneylender interest rate. In contrast, the average (effective) interest rate for MFI loans is 27 per cent.

[9] InM is now called Institute for Inclusive Finance.

[10] Mallick's main results are based on data from 89 villages (see Table 4 in his paper), while the simple OLS regressions without village controls use data from 106 villages. As noted earlier, there are 156 villages in total in the data set. There is a risk that a reader might discount the findings in Mallick (2012) as idiosyncratic because of the small number of villages.

[11] This also suggests that the location choices of the MFIs in Bangladesh are motivated more by poverty alleviation and target the relatively poorer villages. An analysis of the branch location choices of the two largest MFIs in Bangladesh (Grameen Bank and BRAC) by Salim (2013) shows that both poverty alleviation and repayment objective are important.

[12] Mahabub Hossain was a pioneer in collecting high quality household panel data in Bangladesh.

[13] Presumably non-borrower households chose not to participate in microcredit programs precisely because they have a low ability and are unable to generate enough returns to repay the loans. One might argue that household fixed effects do not take care of dynamic learning by doing. However, if microcredit enables a borrower to enhance her entrepreneurial and managerial skills through learning by doing, these should be counted as part of the program effect of the MFI credit interventions.

[14] One might argue that the demand for total moneylender loans might have increased if the loan size of the remaining borrowers is large enough. However, the estimates of Berg et al. (2020) suggest that total loan from moneylenders declined by 40 percent between 2000 and 2007.

[15] See Morduch (1995) and the remaining papers in the *Journal of Economic Perspectives* (Summer 1995) Symposium on Consumption Smoothing in Developing Countries.

[16] One of the most astute observers of the evolution of microcredit movement in Bangladesh, Wahiduddin Mahmud, suggests that the change in the norm of repayment is an important, but largely overlooked, achievement of microfinance in Bangladesh (based on personal discussion). In a recent paper, Osmani (2016) provides qualitative evidence supporting Mahmud's conjecture.

[17] Present-biased individuals are more impatient with regard to current trade-offs than with regard to future tradeoffs.

[18] Group liability and solidarity are of little help when all the group members are affected at the same time by a shock such as flood or seasonal famine.

[19] The recent analysis of Rabbani and Hasan (2021) suggests that moneylenders still play a role for the households facing unanticipated shocks, and that the most common in their data are health shocks. They suggest that the flexibility of moneylender loans in a crisis situation is the primary reason for this type of demand for moneylenders' loans. However, they do not analyze whether being an MFI member reduces this dependence on moneylenders. The flexibility in using the savings to deal with shocks in Grameen-II type contracts would be especially valuable in dealing with unanticipated idiosyncratic shocks such as health shock.

[20] Ten decimals is an important threshold in this regard because BRAC-TUP program defines a household as ultra-poor if it has less than 10 decimal land (along with other eligibility criteria). Many earlier studies on Bangladesh relied on 50 decimals (half acre) as the threshold for research design. But there is substantial evidence that the half acre eligibility rule was routinely violated by the MFI programs in Bangladesh. In the data set used by Berg and Emran (2020), the half-acre threshold does not have any explanatory power for microfinance membership.

[21] Most other available studies on the effects of microfinance in Bangladesh use the five-acre land ownership as a cut-off, thus those samples usually contain households in the range of 0–5-acre land ownership.

[22] This result is in contrast to Shonchoy (2015) who found that access to microcredit increases the likelihood of seasonal short-term migration in river island areas in Kurigram served by BRAC. His analysis is based on a survey of 290 households in 17 villages in 2006.

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Has Monetary Targeting Remained an Appropriate Strategy of Monetary Policy for Price Stability in Bangladesh?

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Abstract

This paper investigates some monetary relations and models to determine the appropriateness of a money-based monetary policy for Bangladesh's price stability. It considers broad money-demand function stability, the cointegral relation between broad money, real output, prices, interest rates, and exchange rates, and the linkage between broad money growth and the balance of payments under the *de facto* pegged exchange rate system. Monthly data from 1980M1 to 2019M7 is used to estimate these relations and models. Previous findings by the author (Hossain, 2015a) conclude that the monetary-targeting strategy of monetary policy is still suitable for Bangladesh in terms of monetary relations and model stability, while the country's monetary policy implementation is restricted under the *de facto* pegged exchange rate system. The empirical results of this paper, with updated monthly data, agree with those findings. However, this paper concludes that by maintaining the pegged exchange rate of Bangladesh taka against the US dollar, the central bank implemented an exchange rate policy that sacrifices the independence of monetary policy to achieve price stability. The resulting high, volatile, and persistent inflation affects economic growth and its stability.

Keywords: Monetary Targeting, Broad Money-Demand Function, Pegged Exchange Rate System, Monetary Policy, Price Stability.

Introduction

This paper sets out to show that to achieve stable economic growth and price stability, the central bank of Bangladesh, The Bangladesh Bank, should adopt a rule-based monetary policy strategy under a flexible exchange rate system.[1] However, the choice of appropriate monetary policy instruments is not obvious. Whether a monetary aggregate or short-term policy interest rate should be a monetary policy instrument depends on the stability of some monetary relations and models, including the stability of long-run money-demand relationships, and whether the monetary authority has effective control over monetary aggregates such as the monetary base. With respect to the choice of monetary policy strategy, whether it is a monetary targeting or an inflation targeting or a variant of these, it does not matter much which is used to achieve price stability, provided the country operates under a flexible exchange rate system, and there is no effective control over the money and capital markets.[2]

Throughout the 1970s, the inflation rate in Bangladesh remained high, volatile, and persistent. Inflation declined slowly, but significantly in the early 1980s, although the rate of inflation remained moderately high until the Bangladeshi economy was rapidly deregulated under various structural adjustment programs of the International Monetary Fund (IMF) and the World Bank in the early 1990s (Hossain, 1995). Since the late 1990s, the Bangladeshi economy has shifted to a higher growth path while experiencing a relatively high inflation rate of approximately 6% per annum. Since the 1980s, this highly volatile inflation performance has been associated with non-transparent and discretionary "monetary policy", which has little credibility. This paper highlights some weaknesses in the design and implementation of monetary policy and suggests that there is room for improvement within the framework of the existing monetary-targeting framework.

In 2005, the Bangladesh Bank eliminated any ambiguity in monetary policy by adopting a form of soft monetary targeting[3], and this strategy has been maintained under the *de facto* pegged exchange rate arrangement of the Taka with the US dollar.[4] The current operational approach is to reach the pre-set broad monetary target level, with the monetary base as the intermediate target. Assuming that the money multiplier remains unchanged, Bangladesh

Bank tries to maintain the target level of broad monetary aggregate through open market operations and other methods. Given an estimated value of the money multiplier, they use information about the expected growth in demand for broad money to estimate the expected level of the total amount of broad money that would generate price stability. Following the conventional money-demand function, the expected growth of money demand depends on the expected growth of real output and any changes in interest rates. Assuming that the broad money-demand function remains stable, the pre-set broad money growth rate acts as the key, if not the sole, determinant of the rate of inflation.

The remainder of this paper conducts empirical research on some monetary relations and models to determine the appropriateness of money-based monetary policy for Bangladesh's price stability. It considers (1) the stability of the broad money-demand function, (2) the presence of a cointegral relation between broad money, real output, price, interest rate, and exchange rate, (3) the linkage between broad money growth and the balance of payments under the *de facto* pegged exchange rate system. Unless otherwise stated, this paper uses monthly data from 1980M1 to 2019M7 to estimate these relations and models, mainly in the cointegration and error correction modelling approach. The data used for the empirical analysis of the paper are mainly drawn from various statistical publications of the Bangladesh Bank, the Bangladesh Bureau of Statistics, and the IMF. All tables and figures referred to in the paper have been placed in the appendix.

How Stable is the Broad Money-Demand Function in Bangladesh?

The contemporary debate on monetary policy focuses on the role of money in the design and implementation of monetary policy. Although money has the highest importance in money-based monetary policy strategies (such as monetary targeting), the role of money is still unclear in inflation targeting strategies, although the latter does not deny that inflation is a monetary phenomenon in the long run (Nelson, 2008). As part of investigating the appropriateness of Bangladesh's monetary targeting, this section examines whether the country's money-demand function has remained stable since the 1980s. Although annual data is usually used to investigate the stability of the money demand function, this paper uses monthly data, understanding that the stability of monetary relations such as the money demand function and the relationship between money and price should not be conditional on whether annual or monthly data are used for empirical validation (McCallum and Nelson, 2011). Also, although the *causal* relationship between money growth and inflation is not conditional on whether the money-demand function is stable, there are many reasons a stable money-demand function is useful for formulating a rule-based monetary policy within a monetary framework[5] (Duca and VanHoose, 2004).

Specification of the Broad Money-Demand Function

The following form of an open-economy broad money-demand function can be specified to estimate the desired level of money balances in Bangladesh using monthly data since the early 1980s:[6]

$$LRBM_t = \alpha_0 + \alpha_1 Ly_t + \alpha_2 LNIR_t + \alpha_3 LFIR_t + \alpha_4 LREER_t + u_t \qquad (1)$$

where LRBM is the log of real broad money balances (RBM)[7]; Ly is the log of real income (y)[8]; LNIR is the log of a representative domestic nominal interest rate[9], such as the deposit rate of interest (DRI); LFIR is the log of a representative foreign nominal interest rate, such as the US federal funds rate (USFFR); LREER is the log of a representative real exchange rate[10], such as the real effective exchange rate (REER); u is a stationary error-term with zero mean and constant variance such that it captures the net effect of those multiple variables which are excluded from the specification[11], and the αs are parameters to be estimated by an appropriate econometric technique.[12] Here follows a brief discussion on the plausible effects of the determinants of money demand in a general context.

In a particular model, the demand for real broad money balances increases as real income increases, while the demand for real broad money balances decreases as domestic interest rates or foreign interest rates, or both, increase. Since these interest rates represent the opportunity cost of holding money in the presence of interest-bearing financial assets, their coefficients are expected to carry a negative sign and should be statistically and economically significant.[13] In the expanded open-economy money-demand function, although the exchange rate is included as an independent determinant of money demand, it is not clear whether the nominal exchange rate or the real exchange rate should be used for estimation. Because of the availability of data, nominal exchange rates are usually used in this context. The real exchange rate is used in this paper because it exhibits considerable variability compared to the nominal exchange rate under the pegged exchange rate system. However, the effect of the real exchange rate on money

demand is still uncertain because currency appreciation has both positive and negative effects on money demand (Arango and Nadiri, 1981; Bahmani-Oskooee and Rhee, 1994). In the portfolio adjustment model, wealth holders maintain a balanced investment portfolio that includes domestic and foreign assets. When wealth-holders evaluate their asset portfolios based on the domestic currency, the appreciation of the currency may lower their money holding (Arango and Nadiri, 1981). When wealth-holders believe that domestic currency is still undervalued despite the recent appreciation, the appreciation of the domestic currency will have a positive impact on the money demand, so the domestic currency may appreciate further. Depending on whether the effect of domestic currency appreciation on money demand is positive or negative, the net impact of currency appreciation on money demand may be positive, negative, or insignificant (Cuddington, 1983; Bahmani-Oskooee and Rhee, 1994).

Model Estimation and Empirical Results

According to the recent literature, the ARDL approach is statistically suitable for estimating specific money-demand models.[14] Table 1 reports the empirical results obtained from the monthly data over the periods 1980M1-2019M7, 1990M1-2019M7, and 2000M1-2019M7.[15] They show that Bangladesh's broad money-demand behavior can be explained by a set of factors, including real income, domestic and foreign interest rates, and real effective exchange rates. The coefficient of real income is positive in the estimated model, and the estimated coefficient is significant at the 1% level. However, contrary to expectations, the real income elasticity of demand for real broad money balances is not significantly greater than one.[16] The coefficient of the deposit interest rate is positive, and the estimated coefficient is only significant at the 25% level. This finding is consistent with the literature on broad money demand in Bangladesh, where fixed deposit rates are positive. The share of fixed deposits in the broad money increases with the increase in deposit interest rates. The coefficient of the US interest rate used as a proxy for the foreign interest rate is negative, and the estimated coefficient is significant at the 1% level. This shows that Bangladesh's demand for broad money is sensitive to foreign interest rates.[17] Although capital flows are controlled by the authorities, the leakage of funds through unofficial channels has made domestic money holding sensitive to foreign interest rates.

Although the impact of real income and domestic and foreign interest rates on money demand is well understood, the impact of real exchange rates on money demand needs to be explained. In the estimated model, the coefficient of the real effective exchange rate is positive, and significant at the 5% level. This shows that the depreciation of the real effective exchange rate reduces Bangladesh's demand for real broad money balances.[18] One explanation for this is that a real depreciation of Bangladesh's currency has caused foreign assets to replace domestic assets. Contrarily, the appreciation of Bangladesh's currency triggers capital inflows, which represent the substitution of domestic assets for foreign assets. This finding is consistent with the thesis that exchange rate movement under a flexible exchange rate regime provides information on the sensitivity of money demand, representing currency substitution or asset substitution or both. As revealed by the estimated long-run and short-run models for several periods, the money-demand function behaves well in Bangladesh.[19]

Relation between Money, Real Output, Prices, Interest Rates and Exchange Rates

After determining Bangladesh's clear and stable broad money demand function, this section investigates whether there is a cointegral relationship between the country's money, real output, prices, interest rates, and exchange rates.[20] Existence of long-run relationships between money and other variables may be the foundation of a money-based strategy of monetary policy for price stability.

A Monetary Model of Inflation

Following the spirit of classical monetary theory, it is possible to derive a simple monetary model of inflation, showing the linkage between inflation and monetary growth, adjusted for economic growth and changes in interest rates. Consider the following money market equilibrium condition:

$$M/P = m^d (y, i) \qquad (2)$$

where M is the money stock, y is real income, P is the price level, and "i" is the nominal interest rate. This can be expressed as percentage change, showing a one-to-one relationship between money growth and inflation, adjusted according to economic growth and changes in interest rates, for example.

$$\pi = \lambda - \omega_1 g_y + \omega_2 \Delta i \quad (3)$$

where π is the inflation rate; λ is the money growth rate; g_y is the economic growth rate; ω_1 is the income elasticity of money demand; ω_2 is the semi-interest rate elasticity of broad money demand; Δ is the difference operator.

Equation (3) shows that inflation rises in proportion to the money growth rate and decreases with the economic growth rate. The negative impact of economic growth on the inflation rate reflects the positive impact of real income on money demand. Similarly, rising interest rates will reduce money demand and raise inflation.[21]

The benchmark monetary model of inflation, derived from equation (1) can be expanded for an open economy, where the money-demand function may include core variables, such as real income and domestic nominal interest rates, as well as some secondary variables, such as foreign interest rates and exchange rates, nominal or real. As mentioned above, the expanded money demand function can be expressed as: $M/P = m^d (y, i^d, i^f, ER)$, where i^d (i^f) is the domestic (foreign) interest rate, and ER is the exchange rate, nominal or real. After deploying this money-demand function, it is possible to derive an inflation model to study the relationship between inflation and money growth. The expanded model includes economic growth and changes in interest rates and exchange rates as additional variables.

Model Estimation and Results

As mentioned earlier, the enhanced version of the inflation model has been used to investigate the relationship between money, real output, price, and exchange rate. These variables establish cointegral relationships in the presence of domestic and foreign interest rates. They are stationary, within the cointegration and error correction modelling framework. For modelling, it is hypothesized that the log of the nominal money stock (log of the broad money LBM), the log of the consumer price index LCPI, the log of the industrial production index LIPI, and the log of the nominal exchange rate are qualified to establish a long-term equilibrium relation. This relationship may exist regardless of whether the money stock is endogenous under a fixed exchange rate system and whether the money-demand function is stable (McCallum and Nelson, 2011).

Table 2 reports the empirical results of the long-term relationship between money, real output, prices, interest rates, and exchange rates. The estimated F-statistics for several sample periods indicate that there is a long-term relationship between money and other variables in the specified model. As expected, the money coefficient in the price relationship is positive, and the coefficient is significant at the 1% level, regardless of the estimation period of the model.[22] In the associated dynamic model, the error correction term has a period of lag that is negative. The coefficient is significant at the 1% level, regardless of the estimation period. These results are consistent with the predictions of the monetary model of inflation, which shows that there is a long-term relationship between money and price and that there is a dynamic *causal* relationship between money growth and inflation.[23]

In the estimated model, the coefficient of industrial output, used as a proxy for real output, is negative. Regardless of the model's estimate, the coefficient is significant at the 1% level. One explanation for this finding is that an increase in output increases money demand, lowering the price level. In this interpretation of the relationship between money and price, it is assumed that the money supply is controlled by the monetary authority under the flexible exchange rate system, and that the money stock does not respond to an increase in real income. In the estimated model, another finding is that the depreciation of the domestic currency against the US dollar reduces the price level. This finding is inconsistent with the view that currency depreciation raises the price level. Similarly, the depreciated domestic currency remains associated with a decrease in the price level. Under a flexible exchange rate system, the currency exchange rate and price level correspond one-to-one. Both are determined by the interaction of money supply and money demand. A depreciated currency will have an impact on prices when the exchange rate is used as an instrument under a pegged exchange rate system. As mentioned above, the exchange rate of Bangladeshi *Taka* is not completely determined by the market, so changes in the exchange rate will have some impact on the price level.

Asymmetric Response of the Price Level to Monetary Expansion

A recent body of empirical literature suggests that the relationship between money and price may be asymmetric, and monetary expansion may have a different effect on the price level than the effect of monetary reduction on the price level. There may be similar asymmetric effects between the price level and real output, and between the price level and the exchange rate. To investigate whether this asymmetric impact of money and output on prices exists, a nonlinear ARDL model has been estimated. Table 3 reports the empirical results.

The estimated results obtained by the nonlinear ARDL approach show that the price-level elasticity of monetary expansion is significantly lower than the price-level elasticity of monetary reduction. This shows that, compared with the positive impact of monetary expansion on the price level, the monetary reduction is more effective in lowering prices. In addition, the impact of changes in industrial output on price levels is symmetric.

Exchange Rate Regime and Monetary Policy Independence

The empirical results in this paper support the two propositions outlined in Bangladesh's money-based monetary policy. Firstly, since the early 1980s, the broad money-demand function of Bangladesh's open economy has remained stable. Secondly, there is a long-term relationship between money, output, prices, interest rates, and exchange rates. These findings are consistent with a well-specified error correction model of inflation, which confirms the *causal* relationship between money growth and inflation, adjusted for economic growth. These findings can justify Bangladesh's money-based monetary policy, provided that the monetary authority can control the money supply. The rest of this section develops and validates the following theme – that under Bangladesh's *de facto* pegged exchange rate or managed-float exchange rate system, the money stock and its growth remain linked to the balance of payments. Therefore, even if the monetary authority exercises control over credit, interest rates, trade, and capital flows, it cannot control the growth rate of money used as an intermediate target.

Overseas Workers' Remittances, Ready-Made Garment Export Earnings, and Money Growth Volatility[24]

Approximately 80% of Bangladesh's export earnings of approximately US$40 billion comes from ready-made garments. Bangladesh also receives approximately US$15 billion in remittances from overseas workers each year. Since the 1980s, these sources of foreign exchange earnings have become significant. For example, the sum of overseas workers' remittances and ready-made garment export earnings, as a percentage of GDP, rose from less than 1% in the mid-1970s to 27% in 2019 (Table 4). As workers' remittances, garment export earnings fluctuate and respond to supply and demand shocks, they affect the balance of payments. This will be explained using the monetary survey framework developed by the IMF (Ouanes and Thakur, 1997).

Exchange Rate Arrangements and Money Creation

Under a fixed or pegged exchange rate system, the money supply is determined endogenously. To illustrate the money creation process, consider the following form of a money multiplier model:

$$M^s = mm \bullet MB = mm\ (DC + FR) \qquad (4)$$

where M^s is the money stock, mm is the money multiplier with an assumed value of 1, DC is domestic credit, and FR is the foreign exchange reserves expressed in domestic currency.[25] In this specification, the money base (MB) is estimated from the asset side of the central bank's balance sheet. Under the fixed exchange rate system, the monetary authority is always ready to use the preset exchange rate of domestic currency to foreign currency to buy and sell foreign currency to domestic currency. The exchange rate is considered to be fixed but can be adjusted as needed. Correspondingly, whenever there is pressure on the domestic currency exchange rate, the monetary authorities will buy or sell foreign currencies to ensure that the domestic currency exchange rate remains at a preset level. Foreign assets (reserves) are then adjusted according to the central bank's intervention in the foreign exchange market, while the money base adjusts according to the increase or decrease in foreign assets.[26] In monetary policy, a fixed domestic currency exchange rate means that unless the monetary authority has effective control over capital flows, the country has an exchange rate policy but no independent monetary policy. Under a floating exchange rate system, the monetary authority can determine the level of the money stock. Recall that MB = DC + FR. Assuming freely mobile capital flows, the balance of payments remains in equilibrium. This ensures that there are no major changes in foreign

exchange reserves, so ΔMB = ΔDC (that is, ΔFR ≅ 0). Unless the monetary authorities intervene in the foreign exchange market to stabilize any abnormal fluctuations in exchange rates, any changes in net foreign assets should be roughly zero. The linkage between the money stock and the balance of payments is therefore broken. The central bank regains control of the money stock and brings changes in it through open-market operations when needed. Under the flexible exchange rate system, the country gains monetary policy independence, which can achieve price stability.

Decomposition of Broad Money, Monetary Sterilization and Capital Mobility

This section breaks down the broad money-growth rate to investigate whether the Bangladesh Bank conducted sterilization of foreign assets for domestic assets. The purpose is to isolate the money stock from the development of the balance of payments. Under the monetary-targeting strategy, any sudden changes in the level of foreign assets require sterilization to maintain the money growth rate at a target rate roughly determined by the expected growth of real income or money demand.

According to the IMF's monetary survey, the broad money stock (M2) can be defined as the sum of net domestic assets (NDA) and net foreign assets (NFA):

$$M2_t = NDA_t + NFA_t \tag{5}$$

Net domestic assets can be expressed as the sum of net domestic credit to the government (NDC^g), net credit to the private sector (NDC^p), and other items net (OIN), such as:

$$NDA_t = NDC_t^g + NDC_t^p + OIN_t \tag{6}$$

The accumulation of the banking system's net foreign assets can be expressed as:

$$NFA_t = NFA_{t-1} + \left(EX_t^g - IM_t^g\right) + \left(EX_t^s - IM_t^s\right) + URT_t + NFKF_t + O_t \tag{7}$$

where EX_t^g is the merchandise export earnings, IM_t^g is the payment of merchandise imports, EX_t^s is the export earnings of services, IM_t^s is the payment of import services, URT_t is unrequited transfers, $NFKF_t$ is net foreign capital flows and O_t is the residual item. Net unrequited transfers can be divided further into:

$$URT_t = URT_t^p + URT_t^g \tag{8}$$

where URT_t^p is the unrequited transfers to the public, including overseas workers' remittances, and URT_t^g is the unrequited transfers to the government, mostly foreign aid and loans.

In balance of payments account for Bangladesh, ready-made garment export earnings appear under the merchandise trade, while overseas workers' remittances appear under income from abroad. However, workers' remittances can be included as they represent the receipts for labor services of Bangladeshi overseas workers. Because they appear in the balance of payments, sharp increases in ready-made garment export earnings, overseas workers' remittances or both increases the level of net foreign assets. An increase in foreign assets increases broad money stock unless it is sterilized, fully or partially.[27]

For statistical analysis, the broad money-growth rate can be broken down into the following major components:

$$\frac{\Delta M2}{M2} = \left(\frac{\Delta NFA}{NFA} \bullet \frac{NFA}{M2}\right) + \left(\frac{\Delta NDC^g}{NDC^g} \bullet \frac{NDC^g}{M2}\right) + \left(\frac{\Delta NDC^p}{NDC^p} \bullet \frac{NDC^p}{M2}\right) + \left(\frac{\Delta OIN}{OIN} \bullet \frac{OIN}{M2}\right)$$

or,

$$g^{M2} = S^{NFA} \bullet g^{NFA} + S^{NDC^g} \bullet g^{NDC^g} + S^{NDC^p} \bullet g^{NDC^p} + S^{OIN} \bullet g^{OIN} \tag{9}$$

In this equation, g^{M2} is the broad money-growth rate, which is the weighted average of the growth rates of its constituent components with the sum of weights equal to one:

$$S^{NFA} + S^{NDC^g} + S^{NDC^p} + S^{OIN} = 1 \quad (10)$$

The broad money-growth equation shows that, under a fixed or pegged exchange rate system, the volatility of broad money-growth remains linked to the balance-of-payments developments. The summary data in Table 4 shows the contribution of different components of broad money growth from 1975 to 2019. It can be seen that since the 1990s, the unstable growth of net foreign assets has increasingly dominated the determination of broad money-growth. The recent broad money-growth is mostly due to the accumulation of domestic assets. The growth of net foreign assets is mainly related to the growth of workers' remittances and export earnings from ready-made garments.

The reaction of the monetary authority to any rapid accumulation of foreign assets can be investigated by estimating the monetary authority's reaction function. It is also possible to estimate the balance of payments function to determine whether foreign capital flows are still sensitive to domestic monetary developments.[28] Based on the availability of data, these equations have been specified and estimated based on Bangladesh's annual data from 1976 to 2019.

Monetary Sterilization and Capital Mobility

Equation (5) shows that a sharp change in NDA, NFA, or both will lead to a sharp change in the broad money stock (M2). When the monetary authority aims to keep the level of money stock unchanged after the accumulation of foreign assets, it needs to undertake monetary operations to reduce the level of domestic assets. Many central banks conduct such sterilization operations when foreign capital flows in to avoid monetary expansion, which may cause inflationary pressures.[29] Whether the Bangladesh monetary authority conducts such sterilization operations can be determined by estimating a sterilization coefficient (α_1) in the following reaction function:

$$\Delta NDA_t = \alpha_0 + \alpha_1 \Delta NFA_t + X_1^{'}\mathrm{B} + u_{1t} \quad (11)$$

In this function, X_1 represents a set of explanatory variables, rather than net foreign assets, which influence the monetary authority to bring changes in net domestic assets. The sterilization coefficient is negative. When completely sterilized, the value of the coefficient should be equal to one ($\alpha_1 = -1$). Similarly, when there is no sterilization, the value of the sterilization coefficient should be zero ($\alpha_1 = 0$).

Although any major changes in domestic monetary conditions will affect capital inflows and outflows, and therefore the level of foreign exchange reserves, formula (10) is specified based on the assumption that capital flows are determined exogenously. Then it is possible to specify the balance of payments equation to estimate the offset coefficient (γ_1),[30] such that:

$$\Delta NFA_t = \gamma_0 + \gamma_1 \Delta NDA_t + \mathrm{X}_2^{'}\mathrm{B} + u_{2t} \quad (12)$$

The expected offset coefficient is negative. When there is perfect capital mobility, the value of this coefficient should be equal to one ($\gamma_1 = -1$). When capital mobility is imperfect or absent, the offset coefficient is expected to be zero ($\gamma_1 = 0$). For Bangladesh, the question is whether the Bangladesh Bank responds to developments in the balance of payments derived from workers' remittances and export earnings from ready-made garments.

Table 5 reports the estimated values of the sterilization and offset coefficients. In the monetary authority's reaction function, the sterilization coefficient (α_1) is positive. When the model uses some control variables for estimation, the coefficient is still significant.[31] This finding indicates that Bangladesh's monetary authorities did not carry out such monetary operations, which are required to reduce domestic net assets (sterilize) after the accumulation of foreign capital assets. Conversely, when foreign assets increase, the monetary authorities allow the expansion of domestic assets. Therefore, the magnitude of the increase in the money stock even exceeds the situation where there is no or partial sterilization. This shows that the monetary authorities are not taking their clear monetary targeting seriously. The monetary authorities seem to operate in a socio-political culture that encourages macroeconomic

populism. Therefore, the monetary authorities interpret the accumulation of foreign exchange reserves as a healthy development, allowing domestic assets to increase. This has led to the rapid expansion of bank credit or the relaxation of credit controls. In the estimated balance of payments equation (Table 5), the offset coefficient is not statistically different from zero. It appears that capital controls were effective such that, *ceteris paribus*, changes in net domestic assets did not bring significant changes in net foreign assets. An implication is that if the monetary authorities undertake sterilization and ensure capital controls, they can maintain control over monetary aggregates as required under monetary targeting. Although this gives monetary policy some potency under a fixed exchange rate system, this strategy of monetary policy cannot be sustained for price stability over the long run.

Table 6 reports the results of the VAR Granger-causality test between net foreign assets and net domestic assets from 1976 to 2019, as well as changes in ready-made garment export earnings plus overseas workers' remittances and broad money changes. The results in Tables 5 and 6 show that overseas workers' remittances and ready-made garment export earnings have a *causal* relationship with changes in the broad money supply.

The key message drawn from the above findings is that the pegged exchange rate system contradicts the concept of monetary policy independence, and monetary policy independence is the fundamental requirement for achieving and maintaining price stability. Whether monetary aggregates or interest rates should be used as a monetary policy instrument is considered a tactical issue. Therefore, whatever justification is given by the Bangladesh Bank for its exchange rate policy, the resulting loss of monetary-policy independence has weakened the credibility and effectiveness of monetary policy in achieving price stability.

Summary, Policy Implications, and Concluding Remarks

This paper uses monthly data from 1980M1 to 2019M7 to investigate some monetary relations and models to determine whether monetary targeting is still an appropriate strategy for Bangladesh's monetary policy. The main finding of the paper is that since the early 1980s, the broad money-demand function of the country's open economy has remained stable. Another finding is that there is a long-run relationship between broad money, real output, prices, interest rates, and exchange rates. Finally, the paper uses annual data from 1976 to 2019 to demonstrate how the Central Bank of Bangladesh lost control of broad money growth because of the massive inflow of workers' remittances and ready-made garment export earnings under a *de facto* pegged *Taka* to the US dollar exchange rate.[32] Hossain (2015a, 2015b, 2020) has shown that the lack of control over broad money growth has led to high, volatile, and persistent inflation in Bangladesh. Because of the inflexibility of nominal interest rates and exchange rates, high, volatile and persistent inflation have exacerbated financial repression, and affected savings, investment, and economic growth through real interest rates and exchange rate channels. This raises the question whether the Bangladesh Bank should continue to implement a monetary targeting system under a more flexible exchange rate system, or switch to inflation targeting or adopt a variant of these such as inflation targeting with monetary aggregate as the policy instrument in a low-inflation environment.

Although this paper does not investigate the appropriateness of inflation targeting as an alternative monetary policy to Bangladesh's monetary targeting, there are reasons to believe that interest rates cannot be used as a monetary policy instrument in the country's repressed financial system. The deployment of "very" short-term policy rates under the inflation targeting makes the money-growth rates fluctuate. The resulting inflationary volatility creates economic uncertainty and hinders economic growth (Ball, 1992; Friedman, 1977; Hossain, 2015a, 2015b). Therefore, a money-based monetary policy is still appropriate, and there may be arguments in favor of a strict form of monetary targeting or an inflation targeting that uses money as a monetary policy instrument.

While acknowledging the role of money in implementing monetary policy, it is important to note that when the central bank does not have price stability commitments and responsibilities, neither monetary targeting nor inflation targeting can achieve price stability in an uncertain environment. One way to restore policy credibility is to publicly announce that the money growth rate will remain stable over time under a monetary targeting system.[33] Such announcements, if repeated and credible, will prevent central banks from following "monetary activism", especially as a monetary adaptation to shocks and/or monetary stimulus. Finally, some institutional reforms will improve the implementation of monetary policy. These should include adopting a flexible exchange rate system, setting the primary objectives of monetary policy, such as price stability, which can be endorsed by the government, and improving the prudential regulation and supervision of the financial system under a regulatory authority that is not directly controlled by the central bank. When monetary policy is implemented within such an institutional framework, the rule-based monetary policy will maintain price stability in a low-inflation environment when the policy interest rate approaches zero.[34]

Endnotes

[1] High, volatile, and persistent inflation hinders economic growth and exacerbates poverty and income inequality (Bruno and Easterly, 1998; Easterly and Fischer, 2001; Hossain, 2015b, 2015c). Because of structural rigidity and friction, inflation and inflation volatility distort the operation of goods and financial markets. The ensuing financial repression can affect savings, investment, and economic growth (Fry, 1995).

[2] The suitability of monetary targeting or inflation targeting or their derivatives in Bangladesh depends on various economic, social, and institutional factors. Since Bangladesh chooses monetary targeting as its monetary policy strategy, this paper explores whether the money-based monetary policy strategy remains appropriate in the country.

[3] The Bangladesh Bank adopted a monetary targeting system in 2005 (Bangladesh Bank, 2005, 2006). Currently, the Bangladesh Bank uses the monetary base as an intermediate target. Among other objectives, the Bangladesh Bank's goal is to achieve an annual inflation target of 5.5%.

[4] Although the monetary authority gives the impression that the exchange rate of the currency is managed, rather than pegged or fixed, the exchange rate of *Taka* is still pegged to the US dollar. An adjustable pegged exchange rate system is expected to promote foreign trade and may avoid inflationary spirals and financial crises caused by depreciation (Islam, 2002). Calvo and Reinhart (2002) believe that the currency exchange rates of many developing countries are fixed due to fear of floating.

[5] There are many reasons academia remains interested in the money-demand function stability. Firstly, a stable money-demand function is considered the basis for a monetary model of inflation, which establishes one or more cointegral relations between money, output, prices, interest rates, and exchange rates. The cointegral relation between money and price leads to a dynamic relationship between money growth and inflation. Secondly, a stable money-demand function is considered the analytical basis for forecasting inflation using current, past, and future money growth information. Thirdly, when a stable money-demand function underwrites a *causal* link between money and nominal expenditure, a rule-based monetary policy may increase the credibility of controlling inflation (Friedman, 1956, 1971). Finally, in the absence of a stable money-demand function, any short-term link between money growth and inflation may be episodic and unstable.

[6] When wealth-holders hold domestic and foreign assets, the conventional money demand function may not explain money demand behavior. Therefore, foreign interest rates and exchange rates appear to be additional determinants of money demand. Contemporary literature focuses on the stability of the money-demand function because the open economy still faces domestic and external shocks and operates in an uncertain environment. For a detailed discussion, see Friedman and Hahn (1990), Friedman and Woodford (2011), and Benati, Lucas Jr., Nicolini, and Weber (2016).

[7] The real broad money balance is defined as the broad money stock deflated by the Consumer Price Index.

[8] This paper uses the log of the Industrial Production Index (LIPI) as a proxy for the Gross Domestic Product at constant prices (Ly). In the expanded money-demand function, wealth is included as an additional determinant of money demand. When this variable is excluded, the coefficient of real income may be biased because income and wealth are closely related. Statistically, this may cause autocorrelation and heteroscedasticity problems. The existence of autocorrelation and heteroscedasticity makes the coefficients inefficient, although they remain unbiased and consistent when the sample size is large.

[9] Bae and de Jong (2005) reviewed the literature on the appropriateness of money demand relations with logarithms of nominal interest rates when there is a possibility of liquidity traps.

[10] Although there is no preferred choice between the nominal exchange rate and the real exchange rate as a determinant of money demand, this paper believes that the real exchange rate is more appropriate. The reason is as follows. The appreciation of the real exchange rate affects trade and capital flows. This may influence the monetary authorities to take measures to depreciate the real exchange rate to the extent necessary to avoid misalignment of the real exchange rate.

[11] In recent literature, economic uncertainty is considered to be an important determinant of money demand, although economic uncertainty can have positive and negative effects on money demand (Atta-Mensah, 2004; Bahmani-Oskooee and Xi, 2014).

[12] Cointegration and error correction approach are a framework widely used to investigate the relationship between money, real output, prices, interest rates, and exchange rates.

[13] In the broad money-demand function, when the share of fixed deposits in the broad money remains high and increases with the rise of the time deposit interest rate, the coefficient of the time deposit interest rate can be positive.

[14] ARDL approach for estimating long-term relationships between non-stationary variables (dependent variables) and non-stationary and stationary regressors are less restrictive (Pesaran, Shin, and Smith, 2001). The recent money-demand literature shows that this co-integration approach can be deployed to obtain robust results when the sample size is small. Since the money-demand

function is specified in real form and the money supply is expressed in nominal form, there will be no identification problems when estimating the money-demand function (Laidler, 1993; Bae and de Jong, 2005).

[15] Unless otherwise stated, the empirical analysis excludes low-quality data from the 1970s, when the Bangladeshi economy fell into crisis. To evaluate the robustness of the results, the model is estimated for several sub-sample periods. The results obtained using the most recent data are like the results obtained for the entire sample period, or even better.

[16] This finding should be used with caution because the industrial production index is a poor proxy for real GDP. When estimated using annual data, the income elasticity of demand for real broad money balances is greater than one (Hossain, 2006, 2012).

[17] Although capital flows through official channels are still severely restricted in Bangladesh, they are not effective in controlling capital outflows through unofficial channels. Existing media reports indicate that, in the past few decades, Bangladesh has experienced large-scale capital flow (Dewan, 2015).

[18] In the real exchange rate series deployed in this study, an increase in the real exchange rate value represents a currency depreciation.

[19] Unlike the estimated model of the complete sample period, the estimated model of the shorter period 2000M1-2019M7 does not have the problems of autocorrelation and heteroscedasticity. Except for the CUSUM and CUSUMSQ tests, this paper does not use any criteria to determine the structural changes of parameter values, which may capture the instability of the money demand function. Enders (2010) explains why the CUSUM and CUSUMSQ tests determine whether the money-demand function is stable.

[20] In the long run, as long as the monetary neutrality condition holds, the nominal interest rate remains unchanged for monetary expansion.

[21] This is counterintuitive to the proposition that rising interest rates reduce the inflation rate by reducing demand. Under the inflation targeting system, an increase in policy interest rates represents an increase in real interest rates. The rise in real interest rates reduces demand and thus prices. To change the real interest rate, the nominal policy interest rate increases more than the increase in the expected inflation rate.

[22] Contrary to its expected value, the coefficient value is less than one.

[23] From an analytical point of view, because economic growth is stationary and the mean and variance are defined, the growth of money demand is predictable. Monetary growth rules can be regarded as a forward-looking monetary policy approach aimed at keeping inflation low, stable and predictable.

[24] This section draws on some materials from Hossain (2015a).

[25] That is, FR = $FR^{\$} \bullet$NER where NER is the exchange rate of domestic currency per unit of foreign currency ($).

[26] For simplicity, the concepts of foreign assets and foreign exchange reserves are used synonymously.

[27] Generally, $\Delta NFA = CAB + \Delta FI = -\Delta RES$ where CAB is the current account balance, ΔFI is the change in the net foreign assets of non-bank entities or non-monetary financial flows and ΔRES is the change in net foreign assets of the banking system or monetary and financial flows. Current account surplus refers to the increase in net official or private claims on non-residents or reserve assets acquired by monetary authorities.

[28] For the specifications of these models, see Rajan and Gopalan (2015) and Kamas (1986).

[29] A sharp increase in the money supply may create inflationary pressure, which may raise interest rates, putting pressure on the exchange rate.

[30] Under a fixed exchange rate system, an increase in domestic monetary assets leads to a decrease in net foreign assets provided that there is perfect capital mobility and domestic and foreign assets are perfect substitutes. This makes monetary policy impotent in the sense that the monetary authorities cannot bring changes in the returns on domestic assets without setting off capital flows which cannot be sterilized except for a shorter period. The specified balance of payments equation follows the monetarist tradition under the monetary approach to balance of payments. Within such a model, the offset coefficient measures the sensitivity of net foreign assets to an increase in net domestic assets, say due to an increase in the level of domestic credit. Although the expected offset coefficient value is expected to be minus one, the coefficient value could be "very small" algebrically or not statistically different from zero when there are capital controls and domestic and foreign assets are not perfect substitutes. In case of Bangladesh, as there are capital controls, the offset coefficient value may not therefore be statistically different from zero.

[31] When the model estimates the period 1976-2016 and 1980-2019, the coefficient is significant. As the CUSUM and CUSUMSQ residual tests show, the estimation model for the short period from 1980 to 2019 is stable.

[32] Regarding the empirical results of this paper, caution is warranted. The overall results of this study mainly use monthly and updated data, which are consistent with the results obtained by Hossain (2015a) using shorter-period annual data. Although this

reflects some strengths of this paper, some results in this paper have weaknesses because of one or more seemingly unimportant statistical issues. It is expected that further studies using more recent data will provide more robust results.

[33] The steady money-growth rule does not require it to be implemented mechanically. Although the prescription is that the money-growth rate should remain stable in the medium term, it does not rule out some changes in the money-growth rate to adapt to any major changes in the speed of money circulation. Since the velocity of money is characterised by a stationary variable, it remains well-defined with constant mean and variance.

[34] The zero lower bound represents the condition that the nominal interest rate is close to zero. As part of its monetary policy actions, the central bank cannot reduce interest rates to zero or "negative". Although interest rates have therefore become an unusable monetary policy instrument, money can still be used as an instrument because it affects the exchange rate and therefore aggregate demand. This monetary policy channel has been proven in quantitative easing experiments in Japan, the United States, and the European Union (McCallum, 2000; Mishkin, 2018).

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Appendix: Figures and Tables

Table 1: The ARDL Estimates of the Coefficients of the Broad Money-Demand Function in Bangladesh

Regressor	Selected Model: ARDL (2, 4, 3, 1, 1) (Maximum lag = 2; restricted constant; no trend)	Selected Model: ARDL (2, 0, 0, 0, 2) (Maximum lag = 2; restricted constant; no trend)	Selected Model: ARDL (1, 0, 0, 0, 2) (Maximum lag = 2; restricted constant; no trend)
Dependent Variable: LRBM			
Panel A: Long-Run Coefficients of the Broad Money-Demand Function			
	1980M1-2019M7 Number of observations: 475	1990M1-2019M7 Number of observations: 355	2000M1-2019M7 Number of observations: 235
Intercept	7.81*** (4.88)	7.52*** (6.18)	10.62*** (8.97)
LIPI	1.00*** (12.73)	1.03*** (17.09)	0.88*** (14.63)
LDRI	3.08 (1.39)	0.96 (0.58)	3.81** (2.12)
LUSFFR	-6.47*** (3.55)	-5.12*** (2.86)	-3.22*** (2.86)
LREER	0.88*** (2.59)	0.81*** (2.94)	0.07 (0.32)
ARDL Bounds test F-statistic (k=4)	37.03***	39.21***	22.49***
Panel B: Short-Run Coefficients of the Broad Money-Demand Function (Error-Correction Regression)			
ΔLRBM(-1)	-0.20*** (4.64)	-0.16*** (3.24)	
ΔLIPI	0.03*** (2.66)		
ΔLIPI(-1)	0.03*** (2.49)		
ΔLREER	0.31*** (6.31)	0.14*** (3.01)	0.06 (1.41)
ΔLREER (-1)		0.09* (1.85)	0.01** (2.10)
Seasonal Dummies (not reported)			
CointEq(-1)	-0.02*** (14.99)	-0.03*** (15.45)	-0.04*** (11.75)
Panel C: Diagnostic Statistics			
Adjusted R^2	0.57	0.56	0.54
Standard error of the regression	0.017	0.012	0.010
LM(12) test for serial correlation	F(12,441) = 8.34 [prob. 0.00]	F(12,323) = 6.61 [prob. 0.00]	F(12,204) = 5.22 [prob. 0.00]
Normality test (The Jarque-Bera statistic)	79.66 [prob. 0.00]	7.18 [prob. 0.00]	4.87 [prob. 0.06]
Heteroscedasticity test	F(21,453) = 6.73 [prob. 0.00]	F(19,355) = 2.69 [prob.0.49]	F(18,216) = 1.47 [prob. 0.10]
CUSUM	Stable	Stable	Stable
CUSUMSQ	Stable	Stable	Stable

Notes: The model is selected based on the Akaike Information Criterion (AIC)

(a) The numbers in parentheses ( ) and brackets [ ] are absolute t-ratios and probability values, unless defined otherwise.

(b) The lower and upper critical values of the F-statistic (finite sample) at the 1% significance level for k (number of regressors) = 4 are 3.60 and 4.79.

(c) The LM is the Lagrange Multiplier test statistic for twelve-order serial correlation.

(d) *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

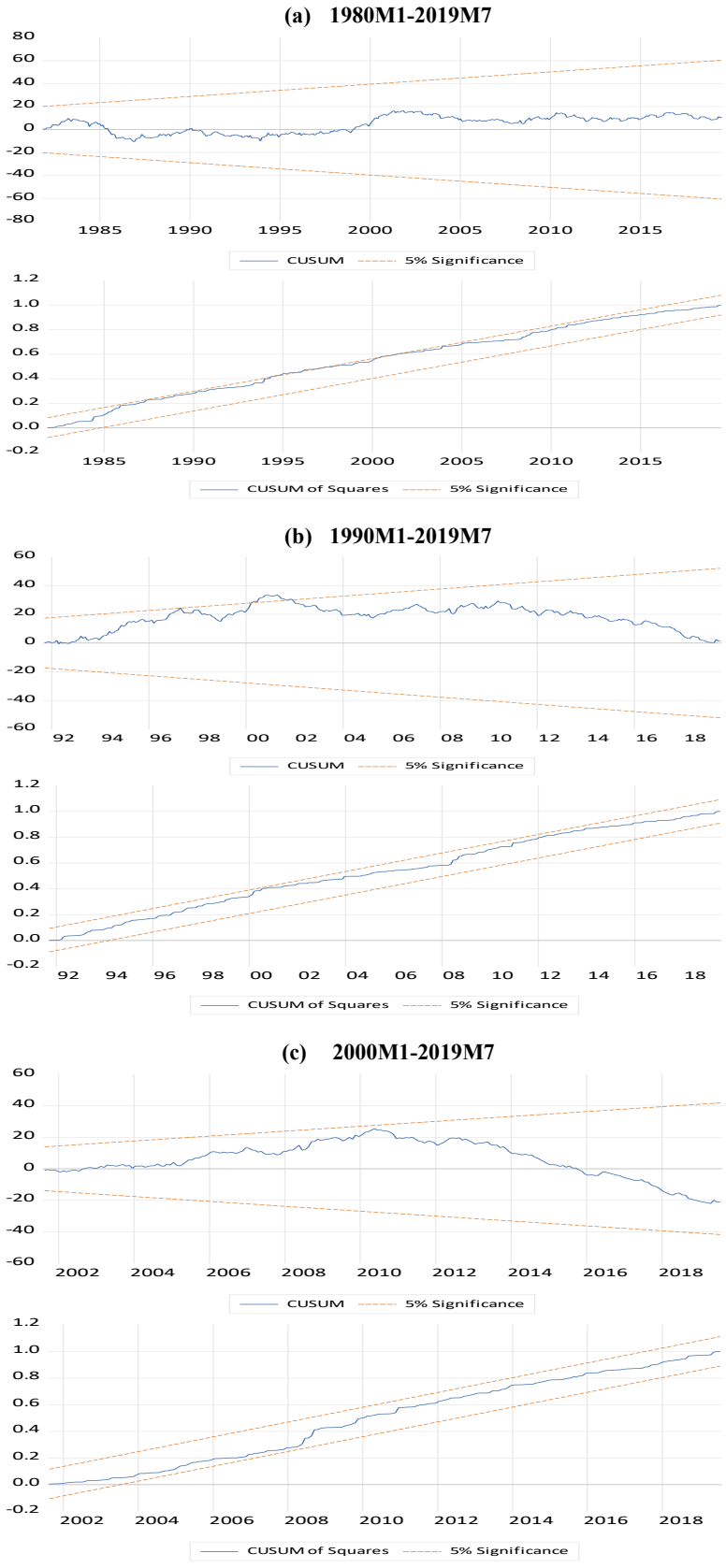

Figure 1: The CUSUM and CUSUMSQ of Residuals for Testing Stability of the Broad Money-Demand Function

Table 2: The ARDL Estimates of the Coefficients of the Price Level Function in Bangladesh

Regressor	Selected Model: ARDL (2, 0, 0, 0) (Maximum lag = 2; restricted constant; no trend)	Selected Model: ARDL (2, 2, 0, 0) (Maximum lag = 2; restricted constant; no trend)	Selected Model: ARDL (2, 0, 0, 0) (Maximum lag = 2; restricted constant; no trend
Dependent Variable: LCPI			
Panel A: Long-Run Coefficients of the Price Level Function			
	1980M1-2019M7 Number of observations: 475	1990M1-2019M7 Number of observations: 355	2000M1-2019M7 Number of observations: 235
Intercept	-1.46*** (7.14)	-1.12** (2.80)	-1.19*** (4.31)
LBM	0.58*** (7.75)	0.52*** (7.47)	0.42*** (14.14)
LIPI	-0.18** (2.16)	-0.09 (0.83)	0.05 (1.06)
LNER	-0.32*** (2.01)	-0.28** (2.18)	-0.10*** (0.97)
ARDL bounds test F-statistic (k=3)	6.21***	3.12*	5.72***
Panel B: Short-Run Coefficients of the Price Level Function (Error-Correction Regression)			
ΔLCPI(-1)	0.21*** (4.65)	0.31*** (6.03)	0.33*** (5.59)
ΔLCPI(-2)	-0.19*** (4.44)		
ΔLBM		-0.06** (2.00)	
ΔLBM(-1)		-0.06* (1.63)	
Seasonal dummies (not reported)			
CointEq(-1)	-0.04*** (5.59)	-0.05*** (3.97)	-0.11*** (5.40)
Panel C: Diagnostic Statistics			
Adjusted R^2	0.21	0.27	0.48
Standard error of the regression	0.009	0.007	0.006
LM(12) test for serial correlation	F(12,445) = 3.78 [prob. 0.00]	F(12,324) = 2.70 [prob. 0.00]	F(12,206) = 5.10 [prob. 0.00]
Normality test (The Jarque-Bera F-statistic)	194.68 [prob. 0.00]	160.50 [prob. 0.00]	149.65 [prob. 0.00]
Heteroscedasticity test	F(17,457) = 3.52 [prob. 0.00]	F(18,336) = 1.04 [prob.0.42]	F(16,218) = 1.04 [prob. 0.42]
CUSUM	Stable	Stable	Stable
CUSUMSQ	Stable	Stable	Stable

Notes: The model is selected based on the Akaike Information Criterion (AIC).

(a) The numbers in parentheses ( ) and brackets [ ] are absolute t-ratios and probability values, unless defined otherwise.

(b) The lower and upper critical values of the F-statistic (finite sample) at the 1% significance level for k (number of regressors) =3 are 3.7 and 4.7.

(c) LM(12) is the Lagrange Multiplier test statistic for twelve-order serial correlation.

(d) *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

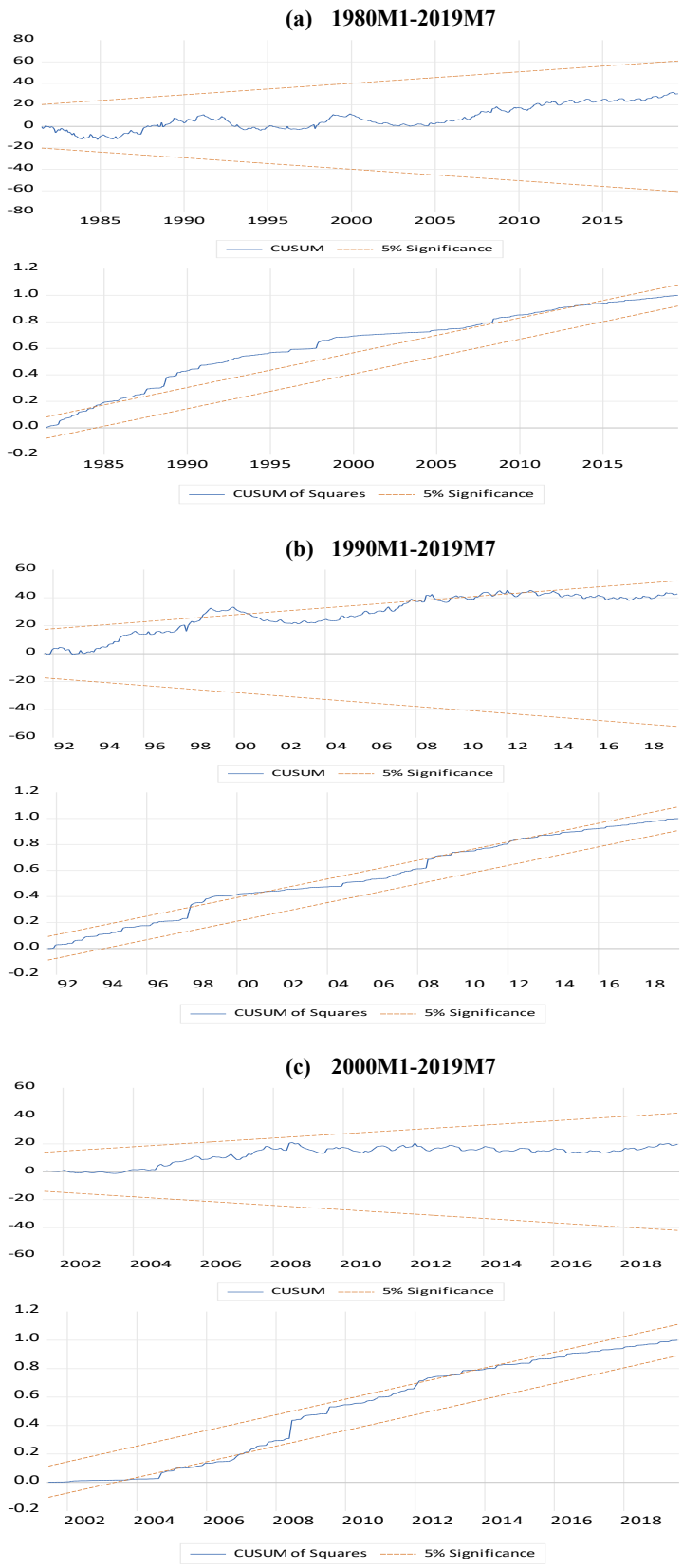

Figure 2: The CUSUM and CUSUMSQ of Residual Tests for Stability of the Price-Level Function

Table 3: The NARDL Estimates of the Coefficients of the Price-Level Function in Bangladesh

Regressor	Selected Model: ARDL (2,0,2,0,0,0) (Maximum lag = 4; restricted constant; no trend	Selected Model: ARDL (3,1,0,0,0,0) (Maximum lag = 4; restricted constant; no trend)	Selected Model: ARDL (3,0,0,0,0,0) (Maximum lag = 4; restricted constant; no trend)
Dependent Variable: LCPI			
Panel A: Long-Run Coefficients of the Price Level Function			
	1973M1-2019M7 Number of observations: 559	1980M1-2019M7 Number of observations: 475	1990M1-2019M7 Number of observations: 355
Intercept	4.00*** (5.17)	2.83*** (7.05)	3.27*** (9.60)
LBM_POS	0.75*** (4.59)	0.60*** (7.28)	0.45*** (5.05)
LBM_NEG	1.07*** (2.61)	0.81*** (3.53)	0.93*** (4.24)
LIPI_POS	-0.60*** (2.45)	-0.22*** (1.79)	-0.06 (0.52)
LIPI_NEG	-0.68*** (2.94)	-0.22*** (1.38)	-0.09 (0.72)
LNER	-0.80*** (2.42)	-0.14 (0.73)	-0.16 (0.90)
ARDL Bounds test F-statistic, k=5	10.28***	5.91***	2.10
Panel B: Short-Run Coefficients of the Price Level Function (Error-Correction Regression)			
ΔLCPI(-1)	0.26*** (6.47)	0.22*** (4.92)	0.33*** (4.92)
ΔLCPI(-2)	-0.19*** (4.44)	-0.20*** (4.55)	-0.14*** (4.55)
ΔLBM_POS		-0.08*** (3.20)	
ΔLBM_NEG	-0.13** (2.09)		
ΔLBM_NEG(-1)	-0.22*** (3.62)		
Seasonal dummies (not reported)			
CointEq(-1)	-0.03*** (8.53)	-0.04*** (6.47)	-0.05*** (3.87)
Panel C: Diagnostic Statistics			
Adjusted R^2	0.99	0.22	0.29
Standard error of the regression	0.01	0.01	0.01
LM(12) test for serial correlation	F(12,526) = 1.49 [prob. 0.12]	F(12,442) = 2.59 [prob. 0.01]	F(12,323) = 3.10 [prob. 0.00]
Normality test (The Jarque-Bera F-statistic)	825.14 [prob. 0.00]	214.57 [prob. 0.00]	141.1 [prob. 0.00]
Heteroscedasticity test	F(20,538) = 3.52 [prob. 0.00]	F(20,454) = 3.12 [prob.0.42]	F(19,335) = 1.16 [prob. 0.29]
CUSUM	Stable	Stable	Stable
CUSUMSQ	Unstable	Unstable	Stable

Notes: The model is selected based on the Akaike Information Criterion (AIC).

(a) The numbers in parentheses ( ) and brackets [ ] are absolute t-ratios and probability values, unless defined otherwise.

(b) The lower and upper critical values of the F-statistic (finite sample) at the 1% significance level for k (number of regressors) =5 are 3.4 and 4.6.

(c) LM(12) is the Lagrange Multiplier test statistic for twelve-order serial correlation.

(d) *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

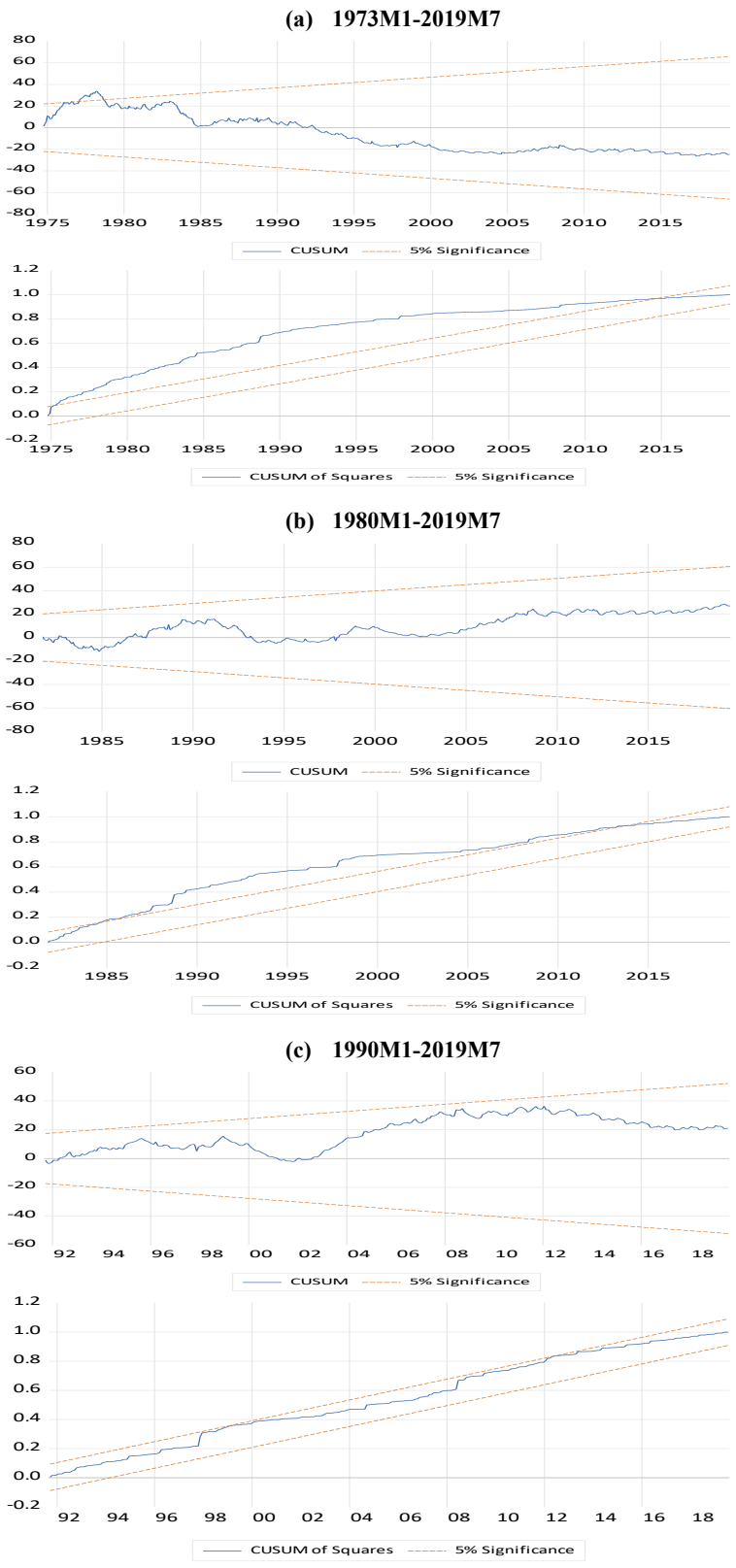

Figure 3: The CUSUM and CUSUMSQ of residual tests for stability of the price-level function, as obtained by the NARDL estimation technique

Table 4: Historical decomposition of broad money growth, Bangladesh, 1975-2019

(Percent change)	1975-1979	1980-1984	1985-1989	1990-1994	1995-1999	2000-2004	2005-2009	2010-2014	2015	2016	2017	2018	2019
Growth rate of broad money stock	17.7	25.4	17.9	13.8	11.9	15.5	17.8	22.1	11.6	16.1	-1.8	9.2	4.6
Weighted growth rate of net foreign assets	1.4	-2.5	0.8	6.0	-1.2	2.1	3.3	4.8	3.7	4.9	3.2	-0.2	0.1
Weighted growth rate of net domestic assets	16.3	27.9	17.1	7.8	13.1	13.4	14.5	17.3	8.0	11.2	-5.0	9.5	4.5
Weighted growth rate of claims on the government and public sector	13.5	13.8	2.7	3.2	3.5	3.3	4.4	2.7	-0.4	0.4	-1.5	-0.1	0.2
Weighted growth rate of claims on the private sector	7.1	18.0	14.2	6.5	13.6	10.1	13.1	14.0	8.4	10.8	10.2	12.9	5.7
Weighted growth rate of claims on net others	-4.3	-3.9	0.2	-1.9	-4.1	-0.1	-3.0	-2.2	-0.7	-1.7	-2.2	-3.4	-1.4
(Percentage share of broad money growth)													
Net foreign assets	135.5	-40.2	6.0	46.4	-17.7	13.8	18.4	21.7	31.4	30.6	-183.0	-2.4	2.0
Net domestic assets	-35.5	140.2	94.0	53.6	117.7	86.2	81.6	78.3	68.6	69.4	283.0	102.4	98.0
Weighted growth rate of claims on the government and public sector	6.0	43.2	13.7	47.9	27.8	22.9	30.1	16.0	-5.2	3.4	30.2	-0.5	5.5
Weighted growth rate of claims on the private sector	43.2	69.9	82.1	88.4	107.4	78.1	91.5	85.5	105.2	96.6	-202.4	136.7	126.7
Weighted growth rate of claims on net others	50.8	-13.1	3.3	-36.3	-35.3	-0.9	-21.6	-8.9	-9.1	-14.9	44.8	-36.2	-32.2

Memorandum items (% of GDP)	**1975-1979**	**1980-1984**	**1985-1989**	**1990-1994**	**1995-1999**	**2000-2004**	**2005-2009**	**2010-2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Readymade garments export earnings		0.2	1.1	3.4	7.0	9.4	11.2	13.2	13.1	12.6	11.2	10.8	7.5
Overseas workers' remittances	0.7	2.2	2.5	2.7	3.2	4.9	7.5	9.0	7.9	6.7	5.1	5.3	3.8
Readymade garments export earnings plus overseas workers' remittances	0.7	2.2	3.6	6.1	10.3	14.2	18.8	22.2	20.9	19.3	16.2	16.0	11.3
M2, Billion Taka	18.60	52.43	145.42	287.35	515.33	1,014.47	2,183.36	5,444.26	8,907.55	10,344.16	10,160.76	11,099.78	11,605.72
NFA, Billion Taka	1.05	-3.68	3.67	42.45	72.96	108.32	313.86	979.91	1,892.29	2,331.36	2,666.97	2,644.07	2,654.41
NDA, Billion Taka	17.55	56.11	141.75	244.90	442.36	906.15	1,869.50	4,464.35	7,015.27	8,012.80	7,493.79	8,455.71	8,951.31
GDP at current prices, Billion Taka	131.55	372.55	722.57	1,182.34	1,838.83	2,794.77	5,473.20	10,622.34	15,158.00	17,328.60	19,758.20	22,504.80	25,361.80
GDP at current prices, Billion US dollar	11.16	20.49	25.17	33.15	43.79	52.04	83.46	143.25	195.03	223.09	252.46	284.44	308.91

Source: **Author's computation based on data drawn from Bangladesh Bank's *Economic Trends*, various issues**
Note: **Weights are the shares of foreign or domestic assets in broad money stock (M2)**

Table 5: Changes in NDA, NFA, BM and Garment-Export Earnings plus Overseas Workers' Remittance-Flow Regression Results

A. Regression Results: 1976-2019

Dependent variable	ΔNDA/GDP	ΔNFA/GDP	ΔBM/GDP
	1976-2019	1976-2019	1976-2019
Intercept	1480.18*** (5.26)	451.33*** (1.78)	63.07*** (2.52)
$\Delta NDA/GDP_{t-1}$		0.04 (0.32)	
$\Delta NFA/GDP_{t-1}$	0.31 (1.38)		
$\Delta BM/GDP_{t-1}$			0.34** (2.07)
$RGREM/GDP_{t-1}$			0.97*** (2.43)
$REER_{t-1}$	-11.20** (3.72)	-3.18** (1.38)	-0.48*** (2.32)
INF_{t-1}	9.86** (2.33)	-1.58** (0.57)	0.42* (1.75)
ED/GDP_{t-1}	-10.48** (3.24)	-4.25** (1.66)	-0.33* (1.26)
Adjusted R^2	0.30	0.16	0.74
DW statistic	2.29	1.47	
Dh			0.34

Notes:

(a) The numbers in parentheses ( ) and brackets [ ] are absolute t-ratios, unless defined otherwise.

(b) *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

(c) NFA is net foreign assets, NDA is net domestic assets, BM is broad money, RGREM/GDP is the sum of readymade garment export earnings plus workers' remittance flows as a percentage of GDP; INF is CPI inflation, REER is the real effective exchange rate, and ED/GDP is external debt as a percentage of GDP.

B. Regression Results: 1976-2016

Dependent variable	ΔNDA/GDP	ΔNFA/GDP	ΔBM/GDP
	1976-2016	1976-2016	1976-2016
Intercept	1151.7*** (6.39)	637.99*** (2.39)	45.02** (2.18)
$\Delta NDA/GDP_{t-1}$		-0.05 (0.34)	
$\Delta NFA/GDP_{t-1}$	0.50*** (2.86)		
$\Delta BM/GDP_{t-1}$			0.28* (1.83)
$RGREM/GDP_{t-1}$			1.28*** (3.60)
$REER_{t-1}$	-5.02** (3.14)	-4.72** (2.55)	-0.17 (1.18)
ED/GDP_{t-1}	-13.53** (5.18)	-5.73** (1.82)	-0.44* (1.89)
Adjusted R^2	0.51	0.18	0.82
DW statistic	1.99	1.40	
Dh			0.00

Note: As for Table 4 note c.

C. Regression Results: 1976-2019; 1980-2019

Dependent variable	ΔNDA/GDP	ΔNFA/GDP	ΔBM/GDP
	1976-2019	1980-2019	1980-2019
Intercept	1151.7*** (6.39)	637.99*** (2.39)	77.70** (2.47)
$\Delta NDA/GDP_{t-1}$		-0.05 (0.34)	
$\Delta NFA/GDP_{t-1}$	0.50*** (2.86)		
$\Delta BM/GDP_{t-1}$			0.39* (2.36)
$RGREM/GDP_{t-1}$			0.91** (2.09)
$REER_{t-1}$	-5.02** (3.14)	-4.72** (2.55)	0.64 (2.46)
ED/GDP_{t-1}	-13.53** (5.18)	-5.73** (1.82)	-0.34* (1.18)
Adjusted R^2	0.51	0.18	0.75
DW statistic	1.99	1.40	
Dh			0.00

Note: As for Table 4 note c.

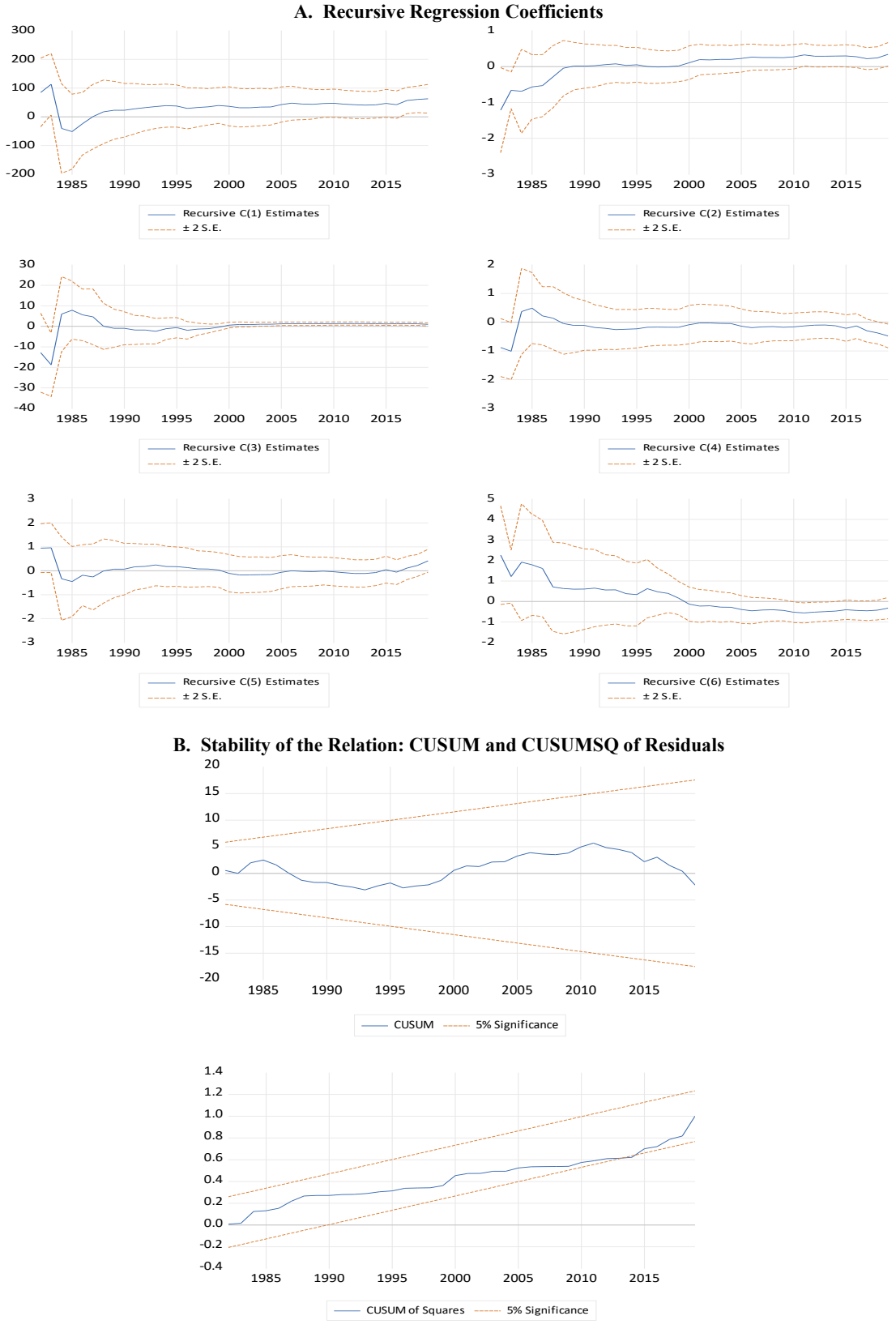

Figure 4: Recursive regression results for ΔBM/GDP and stability of the broad money-change relation, 1976-2019 (Variables: Intercept, $\Delta BM/GDP_{t-1}$, $RGREM/GDP_{t-1}$, $REER_{t-1}$, CPI INF_{t-1}, ED/GDP_{t-1})

Table 6: The Granger-Causality between Changes in Net Domestic Assets and Net Foreign Assets and between Changes in Broad Money and Ready-Made Garment Export Earnings plus Workers' Remittances, Bangladesh, 1975-2010; 1975-2019

Hypotheses	**Lag Order (NOB)**	**F-statistic (p-value)**	**Lag Order (NOB)**	**F-statistic (p-value)**
Unadjusted Sample	**1975-2010**		**1975-2019**	
Any change in net foreign assets as a share of GDP (ΔNFA/GDP) does not Granger-cause any change in net domestic assets as a share of GDP (ΔNDA/GDP)	1* (44) 2 (43) 5 (40)	11.45* (0.00) 7.59* (0.00) 1.09 (0.39)	1* (44) 2 (43) 5 (40)	3.32 (0.08) 0.55 (0.58) 1.84 (0.14)
Any change in net domestic assets as a share of GDP (ΔNDA/GDP) does not Granger-cause any change in net foreign assets as a share of GDP (ΔNFA/GDP)	1* (44) 2 (43) 5 (40)	2.13 (0.15) 0.97 (0.39) 2.23 (0.09)	1* (44) 2 (43) 5 (40)	4.58*(0.04) 3.03 (0.06) 2.20 (0.08)
Unadjusted Sample	**1975-2010**		**1975-2019**	
Readymade garment-export earnings and workers' remittances as a share of GDP (RMGREM) do not Granger-cause any change in broad money as a share of GDP (ΔM2/GDP)	1* (44) 2 (43) 5 (40)	13.86* (0.00) 5.92* (0.00) 1.09 (0.40)	1* (44) 2 (43) 5 (40)	7.61* (0.00) 3.47* (0.00) 5.39 (0.00)
Any change in broad money as a share of GDP (ΔM2/GDP) does not Granger-cause readymade garment export earnings and workers' remittances as a share of GDP (RMGREM)	1* (44) 2 (43) 5 (40)	2.21 (0.15) 2.33 (0.12) 1.77 (0.16)	1* (44) 2 (43) 5 (40)	0.09 (0.77) 0.26 (0.77) 2.22 (0.08)

Notes:
(1) The optimal order of lag (*) is determined by the Schwarz Information Criterion.
(2) NOB is the number of observations.
(3) A statistically significant coefficient at 1% or 5% level is represented by *.

Factors Influencing Sales Performance in SME and Micro-Enterprises in the Wholesale and Retail Trade Sector of Bangladesh

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Abstract

This research explores the determinants of the sales performance of small and medium enterprises (SMEs) and micro-enterprises (also called "mudi dokan") in the wholesale and retail trade sector of Bangladesh. The factors included in the research relate to the entrepreneur and the business operation itself, i.e., both personal factors as well business-related factors. The study draws on a survey of 2,100 merchants and finds that business related factors have greater impact on sales than personal factors. In particular, important factors include use of internet, location of enterprise, entrepreneurial traits, and education of the owner. The research also provides policy recommendations and identifies some avenues for future research on credit and access to finance.

Keywords: Micro-enterprises, Personal and business factors, Entrepreneurial trait, SME performance

Introduction

Bangladesh is characterised by large growing population, low natural resource base, and is prone to frequent disruptions due to natural disasters such as flood, cyclone, river erosion, and drought. It ranks among the highest in terms of the total number of disasters over the last 30 years (Sapir, Hargitt, and Hoyois, 2004). Despite these challenges, its economy has been growing successfully at over 5% a year, and it is in the process of graduating out of the category of the least developed countries (Khatun, 2018). One of the key drivers of this growth has been services sector, and particularly the wholesale and retail trade sector. Begum and Abdin (2015) argue that SMEs in Bangladesh are significantly contributing to poverty alleviation, employment creation, and therefore need policy support such as a government led SME-cluster to realize their full potential.

According to recent statistics, wholesale, and retail trade sector accounts for nearly 14% of GDP in Bangladesh (Growth of wholesale, 2018). This sector is dominated by SMEs, and particularly micro-enterprises. There are currently 8 million SMEs with 90% in the service sector (Bakht and Basher, 2015). These SMEs are considered to be the "engine of growth" and provide opportunities for self-employment in the rural economy, act an additional income source for farming households, and absorb people shifting out of agriculture into the service sector. However, cross-country analysis shows that nearly 50% of such SMEs do not survive beyond five years (Burns, 2016). Therefore, it is of interest to various stakeholders to understand factors that contribute to the success of these enterprises in this sector, which is also known as the Fast-Moving Consumer Goods (FMCG) market. In Bengali, they are typically called "mudi dokan".

Research Questions

The purpose of this research is to assesses which factors contribute to the success, as measured by average monthly sales, of SMEs operating in the wholesale and retail trade sector of Bangladesh. These include explanatory variables that relate to the entrepreneur and the business operation itself (Thibault, 2002). We consider 11 variables, classified into two sets of underlying factors: personal and business related. The variables are chosen from existing literature on small businesses. Personal factors refer to variables that relate to the owner, namely age, literacy, hours worked per week, similarity to previous work, business dependency, and use of a business plan. Entrepreneurial traits, which are critical for the success of the enterprise, are also included. Business related factors include variables that refer to the enterprise itself, such as location, age of business, business structure, formal financing, and use of technology.

The key research questions for this paper are:

- What personal factors affect the performance of SMEs?
- What business related factors affect the performance of SMEs?
- What personal and business-related factors jointly affect the performance of SMEs?

The following section reviews the literature and provides definitions of variables used in the paper.

Literature Review

A number of studies have been carried out to understand the factors that impact SME performance in Bangladesh. Hossain and Asheq (2019) explore the role of entrepreneurial orientation on SME performance. Their study focuses exclusively on Dhaka and has a sample size of less than 200 SMEs. Uddin and Bose (2013) study SME performance in Khulna region and identify business plans, channels of distribution, management skills, and government support as statistically significant factors affecting SME performance. Their factor analysis study is limited to surveying 195 SMEs. Rahaman et al. (2021) survey 180 SMEs in Dhaka city using non-probabilistic sampling, and identify factors such as risk-taking, innovativeness, and proactiveness as having statistically significant impacts on SME performance. They also note that there is paucity of research in Bangladesh with respect to SME performance.

Aghaei and Sokhanvar (2020) utilize the Microdata Library of the World Bank to undertake a study on SME performance in Bangladesh. They utilize econometric analysis over a sample size of 1,076 SMEs, mostly located in urban areas. Their investigation focuses on business continuation and survivability and finds that there is robust relationship between the intention to continue and innovation, informality, and risk attitudes.

Islam et al. (2011) carry out a study that is similar to this paper, noting the personal and business factors that affect SME performance in Bangladesh. However, their sample size is small (less than 100 SMEs), and the research focuses only on major urban SME clusters. The study finds that a composite index of SME characteristics has no impact on performance, while a composite index of entrepreneurs' characteristics did have a significant impact.

Our paper is noteworthy because it focuses on rural and peri-urban areas across Bangladesh, rather than urban clusters. Furthermore, the sample size for our research is over 2,000 enterprises and is larger/more representative compared to the studies cited above. Finally, our study focuses more on micro and small enterprises, whereas traditionally most studies have tended to focus on small and medium size manufacturing/processing/handicraft enterprises. The following section outlines the key variables and the justification for incorporating them into this research.

Research Variables

The theoretical foundation of this paper draws on Thibault (2002), who carried out a similar study focusing on SME performance in Canada. Thibault looked into impact of various personal and business-related factors on sales performance among SMEs in Canada. Islam et al. (2011) undertook a similar study on SMEs and focused on parameters related to SME and entrepreneurial characteristics. However, their study specifically examined value chains such as food and allied products, textiles and apparels, engineering, and fabricated metal products etc. rather than FMCG micro-merchants. Below we provide a summary and discussion of the key variables used.

Monthly Sales

In our research, self-reported monthly sales data is taken to be a measure of performance and is a dependent variable. The literature indicates that businesses are often reluctant to share sensitive financial information; however, this is not the case for micro-enterprises operating in Bangladesh. Stranger (1998) and Thibault (2002) both used sales as a performance measure as it is the most reported performance measure and understood by all respondents. However, many studies in Bangladesh have used self-reported Likert-based questions to measure SME performance (Islam et al., 2011; Hossain and Asheq, 2019; Rahaman et al., 2021). While both sales data and five-point Likert-based questions are self-reported, sales data provide greater range and is easier for entrepreneurs to recall and are more accurate than subjective assessments of business performance.

Education

Education and literacy are likely to play key roles in the overall performance of a business enterprise. Entrepreneurs with better education are likely to generate greater net income (Heck et al., 1995). Saleem (2017) finds that socio-economic factors such as education, skills, and age are important determinants of SME performance. In this paper, the ability to read a newspaper in Bangla has been taken as an indicator of functional literacy.

Age of Entrepreneur

The age of the entrepreneur can be an important factor, as it may be the case that older business owners are likely to be more committed to their enterprises than those who may be either planning to shift to other types of employment or use other employment as a contingency. Older owners may also have access to higher social capital and network, making their business more resilient to shocks. Orser and Foster (1992) found that business owners who were over 40 years of age are likely to have greater income than those below 40 years of age. In this study, self-reported age (in years) is taken to be an independent variable. Islam et al. (2011) have also utilized age as a key independent variable.

Business Dependency

According to Thibault (2002), entrepreneurs who are dependent solely on their enterprise for their livelihood are likely to be more committed, determined, and entrepreneurially oriented (EO), thus directly enhancing the performance of the enterprise. In our study, the entrepreneur is business dependent if the sole source of household income is from the retail business. Hossain and Asheq (2019) also identify entrepreneurial orientation (EO) as a key factor impacting SME performance in the boutique sector of Dhaka.

Previous Relevant Experience

In a study of 2,713 SMEs within the European Union, Soriano and Castrogiovanni (2012) found that both profitability and productivity are positively related to industry-specific knowledge possessed by the owner prior to starting up the SME. In line with this, we look into whether the respondents had previous experience with running a micro-enterprise retail business. Hossain and Asheq (2019) also include prior experience in their hierarchical regression analysis but find it to be not significant. Islam et al. (2011) also identify prior experience as critical for business success, using proxies to capture this, and incorporate them in their SME and entrepreneurs' characteristics composite indicators.

Days Worked

Orser and Foster (1992) demonstrate that businesses that operate on a full-time basis are generally more successful than those that operate part time. In this study, the number of days the business is operational is taken as a proxy for days worked by the owner. None of the studies on Bangladesh that are cited above have used this variable, and the variable is likely to be correlated with entrepreneurial orientation such as proactivity and commitment (Hossain and Asheq, 2019).

Business Planning

Research has found a positive correlation between the use of a written plan and SME performance (Soldressen et al., 1998). According to Thibault (2002), this is a business-related factor; however, in line with Sidik (2012), the existence of a business plan may be considered an important dimension of entrepreneurial trait; having a business plan shows foresight, dedication, and the ability to collate information to formulate future course of action. In Bangladesh, it is impossible to find micro-merchants with a written business plan, as these are mostly informal. Therefore, the practice of written records for transactions is taken as a proxy for entrepreneurial trait, which is also a personal factor. Uddin and Bose (2013) identified business planning as a key factor influencing business success of SMEs.

Financing

Various studies have shown that access to finance, particularly access to formal credit, is a major constraint for SMEs (Beck and Demirguc-Kunt, 2006). Inadequate financing is one of the predominant causes of failure and bankruptcy for SMEs (Bradley, 2000). In Bangladesh, the majority of the micro-enterprises do not have access to formal credit; fewer than ten per cent of SMEs have access to institutional finance from formal banks or microcredit institutions (Khandker et al., 2013). We consider such availability of credit to be a business-related factor. Qamruzzaman and Jianguo (2019), in their macro-economic study on SMEs, identify financing as a necessary but not a sufficient condition to spur SME development in Bangladesh.

Technology (ICT)

SME competitiveness can be significantly improved through the adoption of new technologies, particularly information and communication technologies (Morgan et al., 2006). ICT tools can be deployed to streamline processes and generate data that can be leveraged to take additional services, such as use of digital platforms or e-wallets. These can be an easy way to develop a transaction history which can then later be used to secure formal credit. Rahaman et al. (2021) identify technology adoption and innovation as affecting the business performance of SMEs. However, the impact of ICT on SME performance is not always clear, and some studies have shown that ICT automatically does not enhance SMEs' performance, unless the technology is integrated with business operations (Azam, 2015). For this study, the usage of internet is taken to be an indicator for the ICT variable.

Age of Business

Like the age of the owner, it is likely that as age of a small business increases, its performance may also increase. Orser and Foster (1992) found that businesses that earn more were also the ones that were older. In our study, the age of business in months (some of the businesses were less than one year old) is taken to be an independent variable. Rahaman et al. (2021) also include the age of a business as a key determinant of business performance.

Geographic Location

The location of a business can be critical to its survival (Bradley, 2000). While location specific effects can be more vital for some industries than for others, for the purpose of the present study, the focus is primarily on the urban/rural divide, i.e., whether the presence of SMEs in rural areas has a direct impact on sales performance. Orser and Foster (1992) found that SMEs located in urban areas, on average, had greater profit than those in rural locations. Begum and Abdin (2015) identify the clustering of SMEs as a key factor influencing their performance. Other micro-studies focused mostly on urban and peri-urban areas. Our study covers urban, peri-urban, and rural areas, and hence a comparative analysis is possible.

Business Structure

Businesses can be registered formally under sole proprietorships, partnerships, or corporations. For this study, we exclude corporations from our sample. From the perspective of limited liability, corporations are likely to be the better option (Thibault, 2002), but because this alternative is not available in Bangladesh for SMEs, it is not relevant for our study. Instead, what is applicable is that fact that many micro-enterprises in the rural sector are run as a family enterprise rather than as sole proprietorships or partnerships. There may be both positive and negative aspects to this - having the enterprise run by the family may increase the likelihood of securing collective family funds, thus

enhancing the ability of the SME to withstand shock. Also, multiple owners may bring in different skill sets and access to various social and network capital, which can be leveraged to enhance SME performance. However, there may be negative implications as well. These may be a coordination failure regarding decisions or operations when the SME is jointly owned, as well as a lack of formalization regarding management and responsibilities. The present study investigates the difference between formal sole proprietorship and partnerships as opposed to the more informal family ownership.

In the aforesaid section, not all variables from Thibault (2002) were selected. These include gender and number of workers employed, because the findings of this study show us that in Bangladesh over 98% of retail shops are owned by males and 94% do not have paid employees. According to UNCDF (2018), over 1.9 million people are involved in the micro-merchant segment of the retail sector in Bangladesh. Of these people, women account for little less than 95,000, and the majority serve as unpaid family labor, i.e., less than 5% of workers. Paid employment is less than 75,000 workers or under 4% of workers.

The next section investigates the overall conceptual framework for the study, methodology, data, and the hypothesis.

Theoretical Framework and Hypotheses

As mentioned earlier, the paper augments the framework developed by Thibault (2002) and applies it to the context of small and micro-enterprises in the wholesale and retail trade sector of Bangladesh. Thibault's model and variables are adaptable to the Bangladeshi context, and various other studies have used similar variables. The following figure illustrates this conceptual model.

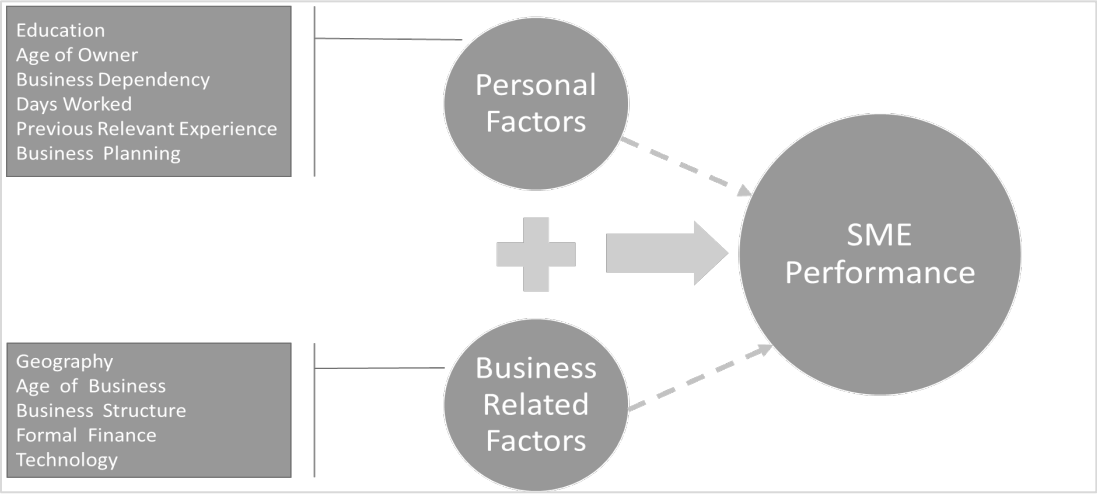

Figure 1: Conceptual Framework
Source: Adapted from Thibault (2002)

Each of the personal and business-related factors depend on other variables and therefore affect performance individually and jointly. Table 1 provides the summary of each of the hypotheses and the next section explains the research design and data collection method

Table 1: Key Hypotheses

FACTOR	VARIABLE	HYPOTHESIS
PERSONAL FACTOR	Education	H1: The higher the level of education/literacy of the owner, the greater the sales generated
	Age of Owner	H2: The greater the age of the owner, the greater the sales generated
	Business Dependency	H3: The more dependent the owner is on income from business operations, the greater the sales generated
	Days Worked	H4: The greater the number of days worked in the business, the greater the sales generated
	Previous Relevant Experience	H5: The greater the degree of similarity to previous work experience of the owner, the greater the sales generated
	Business Planning	H6: The greater the effort invested by the owner on business planning, the greater the sales generated
BUSINESS FACTOR	Geography	H7: The more urban the SME, the greater the sales generated
	Age of Business Month	H8: The greater the age of the business, the greater the sales generated
	Business Structure	H9: Businesses that are partnership or sole proprietorship generate greater sales
	Formal Finance	H10: The greater the amount of formal financing, the greater the sales generated
	Technology	H11: The greater the use of technology/internet, the greater the sales generated

Source: Adapted from Thibault (2002)

Research Method and Design

Our study is based on a reduced form dataset of a survey conducted by Orquest under the Micro Merchant Landscape Assessment funded by Merchants Development Driving Rural Markets (MDDRM) SHIFT SAARC project of United Nation Capital Development Fund (UNCDF).[1]

Sampling

The study covered both urban and rural area, excluding metropolitan divisional towns. Samples were drawn from the *mohallah* (neighborhood) and village levels in urban and rural areas, respectively. The urban and rural ratio of the sample distribution roughly followed the population distribution and was 25:75. The nationwide survey was conducted among 2,100 small/micro retail merchants. A stratified random sampling technique was used, covering all seven administrative divisions. Population proportional to size (PPS) method was applied for the selection of primary sampling units (PSUs) within each division – *mohallahs* and villages. In the selected PSUs, target merchants were identified and interviewed from the nearest cluster of retail outlets through a snowballing method; five merchants were interviewed in a selected PSU.

Research Design

The following two regression equations were drawn. Table 2 explains the variables and how they are measured.

Personal Factor equation:

$$Sales\_y_i = c + \beta_{1i}Edu_i + \beta_{2i}AgeO_i + \beta_{3i}BusDep_i + \beta_{4i}DaysW_i + \beta_{5i}PrevExp_i + \beta_{6i}BusPlan_i \quad (1)$$

Business Factor equation:

$$Sales\_y_i = c + \beta_{1i}Geo_i + \beta_{2i}AgeB_i + \beta_{3i}BusStruc_i + \beta_{4i}FormalFin_i + \beta_{5i}Tech_i \quad (2)$$

Table 2: Variable Description

Construct	***Indicator***	***Variable Name***	***Definition***
Dependent Variable	Monthly Sales	$Sales\_y$	Self-reported monthly sales figure
Personal Factors	Education	Edu	Ability to read a Bangla newspaper: Yes = 1; No = 0
	Age of Owner	$AgeO$	Age of the owner in number of years
	Business Dependency	$BusDep$	Sole source of household income is from MM business: Yes = 1; No = 0
	Days Worked	$DaysW$	Number of days working in MM business
	Previous Relevant Experience	$PrevExp$	The previous occupation of the respondent: Another MM business = 1; Others = 0
	Business Planning	$BusPlan$	Keeps written record of some/all sales = 1; No written record of sales = 0
Business Factors	Geography	Geo	Urban = 1; Rural = 0
	Age of Business	$AgeB$	Age of the business in number of months
	Business Structure	$BusStruc$	Single proprietorship and partnership = 1; Family business = 0
	Formal Finance	$FormalFin$	Access to finance from formal providers (e.g., MFIs and Banks) = 1; Access to informal financial source = 0
	Technology	$Tech$	Uses internet (WiFi or others) = 1; No internet = 0

Ordinary least squares (OLS) was used to estimate both equations. The second step entailed estimating a third regression equation using only those variables which were found to be significant in the first two equations (1 and 2); any of the variables that had significance levels exceeding 0.10 (rounded to two decimal places) was removed from future analysis. The next section discusses the findings from the analysis.

Data Analysis and Interpretation

In the first step we run two separate OLS models using equation 1 and 2 above. The third model only includes those variables with significance level below 0.10. Table 3 shows the outcome of the regression analysis.

From the table below we see that most of the personal factors are not statistically significant,[2] whereas almost all business-related factors appear to be significant. The F-statistics for all three models is significant at the 1% level, implying that the overall model specifications are affirmed by the data.

The signs of the coefficients are mostly in agreement with the various hypotheses posited in Table 1. We find that education, planning, urban location, age of the business, and internet connectivity are all positively correlated with higher sales. However, in case of the age of the owner, we see a negative correlation i.e., a higher age implies lower sales. This contradicts our hypothesis, and the explanation may be that younger entrepreneurs are more educated, entrepreneurially oriented, leverage technology more, and are therefore performing better. A simple correlation between Education (Edu) and Age of Owner (AgeO) was found to be significant and negative (-0.24***), implying that they are indeed negatively correlated. However, the magnitude of impact of age seems to be minimal. This needs to be further explored in future research.

In the case of business structure, there is ambiguity regarding its impact on sales. It seems that from our analysis, enterprises which are family owned perform better than those which are owned by sole-proprietorships and partnerships. Further research needs to be undertaken to ascertain what pathways trigger this impact, although some were suggested in the previous section.

Some likely variables were also found to be statistically insignificant; for instance, we see that business dependency, although having positive impact on sales, was marginally significant at 11% level (just above the 10%

threshold) and hence was not included. The same applies to previous experience, which was marginally significant at 15% level.

Access to formal financial resources turned out insignificant with the negative sign. This is an interesting finding as much research have shown that credit constraint is a critical problem for SMEs and micro-enterprises. To understand the finding, Table 4 was developed which shows the number of respondents not taking loan, taking informal credit, securing credit from MFI, and securing credit from banks.

Table 3: Regression Analysis

Dependent Variable: Sales Y				
	Variable	Model 1	Model 2	Model 3
	const	64,269.50 (0.38)	106,301***(0.00)	89,475.7***(0.00)
Personal Factors	*Edu*	23,670.70*** (0.00)		20,641.5*** (0.00)
	AgeO	−331.10** (0.05)		−441.21** (0.02)
	BusDep	6,316.14 (0.11)		
	DaysW	3,771.22 (0.72)		
	PrevExp	6,831.54 (0.16)		
	BusPlan	13,799.1*** (0.01)		12,067.7** (0.03)
Business Related Factors	*Geo*		11,830.40*** (0.01)	12,683.8*** (0.01)
	AgeB		97.18*** (0.00)	116.98*** (0.00)
	BusStruc		−11,674.10** (0.02)	−8,348.78* (0.10)
	FormalFin		−3,573.81 (0.37)	
	Tech		23,592.4*** (0.00)	18,376.8*** (0.00)
Regression Statistics	*P-value (F)*	*0.00*	*0.00*	*0.00*
	F(stat)	*6.40*	*11.90*	*12.87*

Table 4: Sales and Credit

	No Credit	**Informal Credit**	**MFI Credit**	**Bank Credit**
N	810	243	878	169
%	39%	12%	42%	8%
CORRELATION WITH SALES	0.05**	-0.03	-0.07***	0.08***

From the above table we can see there are nuances that needs to be explored. For instance, taking no credit is positively correlated with sales, which may imply that healthy performing SMEs do not take or need loans. At the same time, microfinance institution (MFI) and bank credit, while significant, have different signs. This may be because micro-credit loans are mostly taken to address sudden shocks or to pay suppliers, since MFIs have weekly scheduled repayment. On the other hand, bank loans, which are larger in volume and take longer to secure, may be for the expansion of the business or investment spending. These need to be further explored in future research.

Conclusion

The exploratory study presented in this paper assesses the impact of personal and business-related factors on the sales performance of SME and micro-enterprises in the wholesale and retail trade sector of Bangladesh. Using a reduced form dataset from both urban and rural areas, the regression analysis yielded some interesting results, such as the primacy of business-related factors over personal factors. It was found that experience and skills, in terms of education and utilization of technology, have a statistically significant impact on business performance. Younger entrepreneurs are likely to be digitally savvy and can innovate faster. Another finding was the importance of business planning in generating sales, which is in line with Uddin and Bose (2013).

Development projects or the government can focus on developing one-stop digital portals for providing business development services to these types of merchants at a relatively low cost. Also, private sector provision of business development services remains underdeveloped in Bangladesh. Fintech and other tech companies could further expand their service to micro-merchants, targeting them with appropriate products such as digital bookkeeping, inventory management, and similar tools. Formalization and digitization can also facilitate merchants to take credit from banks as opposed to higher cost microfinance or wholesaler-based value chain finance.

In addition, some avenues for future research were also identified, particularly regarding access to finance and credit. There needs to be greater understanding about how credit is used for meeting any liquidity crunch or business expansion. The use of internet was also found to have a significant and positive impact on sales of enterprises, and there may be an opportunity in Bangladesh for the promotion and growth of digital business services, including digital financial services and mobile financial services. It is hoped that, in future, more detailed research will be conducted regarding micro-merchants and their business performance, given their increasing importance and contribution to Bangladesh's economy. An important extension of this research would be to consider sectors beyond the FMCG sector and include merchants in the agriculture value chain.

Endnotes

[1] The MDDRM component is funded under the EU PRISM project. The survey was carried out in January and February of 2018. The publicly available data can be retrieved from https://www.microentrepreneursasia.com/dataset_details/4.

[2] For regression and statistical analysis, gretl software was used; gretl is an open-source statistical package developed by Allin Cottrell, Wake Forest University and Riccardo "Jack" Lucchetti, Università Politecnica delle Marche.

Disclaimer

The authors' institutional affiliation is provided for identification purposes only. Views expressed are solely those of the author. The standard disclaimers apply.

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Developing English Pronunciation Among Students in Bangladeshi Universities: The Use of Segmental Elements

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Abstract

This study focuses on the proper uses of segmental elements of English pronunciation and compares theoretical knowledge and practical uses of segmental elements among tertiary students in Bangladeshi universities. The research is both qualitative and quantitative in nature, and is a combination of explorative, descriptive, and explanatory research**.** The study uses a questionnaire survey, diagnostic test, and Focus Group Discussion (FGD) as primary data collection instruments. The findings show that there remains a lack of motivation and negligence in the practical uses of segmental elements of English pronunciation while teaching in the universities in Bangladesh. Thus, mispronunciation by learners has become very common because their pronunciations tend to follow the spelling of English words. The absence of some English sounds (vowel and consonant) in the Bangla language also leads to pronunciation errors. The study recommends roles for teachers, learners, syllabus designers, and other stakeholders in developing effective pronunciation, leading to effective communication.

Keywords: Segmental English, English pronunciation, tertiary level.

Introduction

Every language is founded on its smallest linguistic units called sounds, and these sounds make up syllables; syllables form words; and words form sentences, which in turn form speech. So, sounds are the core elements for any language, and shape the pronunciation of words. These sounds are also known as segmental elements and can be realized with consonant or vowel segments of words. It is not possible to know the appropriate pronunciation of an English word without knowing its sound system. Mirzaei et al. (2015, p. 57) have rightly noted "knowing a second or foreign language is not possible without knowing its sound system." For example, in the case of the Bangla language, certain elements of English pronunciation are absent, and some are different. As is the case for anyone learning a new language, the pronunciation of Bengali learners is influenced by their mother tongue, the pronunciation of their teachers, and local dialects spoken by the learner. "It is also impossible to disregard the effect of the first language sound system on the pronunciation of sounds of the second. The more these effects disappear, the more native like the learner's sound" (Mirzaei, 2015, p. 58). Moreover, English language learners in Bangladesh do not get a supportive

environment to practice pronunciations in their institutions, as well as in their everyday conversations, and therefore remain weak in their ability to speak English.

For this study, we conducted a survey to find the roles of theoretical knowledge of segmental elements among students, and their ability to use them in English pronunciation. By analyzing the audio recordings of the respondents of the survey questionnaire, we examined how the respondents apply these theoretical tools to their English speech production and compared participants' English pronunciation of words, idioms, and phrases with English pronunciation as instructed in the dictionaries. Using Speech Analyser, we compared the sound intensity of the respondents' utterances with those elements of British standard speech through waveforms. Also, we conducted Focus Group Discussions (FGD), and obtained direct opinions of the respondents regarding teaching, learning, and practicing standard English pronunciation on their university campuses, and collected information on the roles played by the institutions and the teachers. This study makes recommendations on how Bengali learners can apply the elements of English pronunciation in their speech effectively.

Background of the Study

Even after 12 years of learning academic English, most tertiary level students are unable to acquire segmental elements of English pronunciation. For example, they do not use Received Pronunciation (RP), as there is little or no provision for learning pronunciation in the primary, secondary, and higher secondary curriculum in Bangladesh. Since the independence of the country in 1971, there has been little or no emphasis on listening and pronunciation in the teaching of the English language. Maniruzzaman (2012, cited in Rahman 2014) has explored the pedagogy of pronunciation in Bangladesh and identified the following reasons that contributed to the exclusion of pronunciation in the syllabus and curriculum at primary, secondary, and tertiary levels:

- Syllabus designers are ignorant of the significance of teaching pronunciation;
- Syllabus designers are uninformed about the needs of the students;
- Syllabus designers do not have training and expertise in designing syllabus for teaching pronunciation; and
- Academics coming from a literature stream might have willfully ignored teaching of pronunciation as not being important.

Harmer (2001) emphasizes that the first thing that native speakers notice during a conversation is pronunciation. Grammar and vocabulary are important elements of language and can be of less use if the speakers cannot pronounce those elements or words accurately. Communicative efficiency can be guaranteed by correct pronunciation. Pronunciation is an essential part of communication and without correct pronunciation, nobody should claim that he/she knows the English language fully.

Theoretical Aspects of English Pronunciation in Bangladesh

In Bangladeshi universities, English departments offer *English Phonetics and Phonology* courses at undergraduate and graduate levels that are loaded with theoretical aspects, i.e., speech organs, and the places and manners of the articulations of 44 sounds. These contain distinctive features of vowels and consonants, consonants and vowels of different languages, allophones and phonemes, stress, intonation, rhythm, Daniel Jones's Theory, Prague School Phonology, Sapir's Theory, Bloomfield and the Post Bloomfieldians, Prosodic Analysis, Distinctive Features Theory, Generative Phonology, and so on. Teachers who have in-depth theoretical knowledge make themselves busy with completing their syllabus and making learners understand all theoretical aspects. They do not get enough time to teach students practical aspects of the language, let alone practicing in the classroom, despite the availability of modern facilities and online resources. Hai and Ball (1961, p. 2) note that "a native speaker of a language acquires the habit of pronouncing each sound through constant exercises of the organs of speech in his or her childhood. The organs of speech of a native speaker get set in particular fashion in relation to the sounds of his or her language." Without sufficient practice of sounds, it cannot be expected that theoretical knowledge alone will develop learners' English pronunciation. As students are evaluated only through written examinations, they do not have any incentive to develop the elements of correct pronunciations practically. As a result, students receive a lot of theoretical knowledge, but never learn to apply this when speaking.

Students who are not in English departments rarely receive classes on English phonemes in functional English or business communication classes. English departments offer courses in *English Phonetics and Phonology* for BA Honors and MA in English Language Teaching (ELT), addressing theoretical aspects of pronunciation. Most teachers do not provide appropriate activities in the class to practice pronunciation (Alam, 2006). According to 97% of teachers, sufficient logistical support is unavailable to teach pronunciation (Abedin, 2010-2011). There are some expert ELT teachers in Bangladesh, most of whom are involved in designing syllabi for *English Phonetics and Phonology* courses. They prioritize theoretical aspects, and the syllabus design and class teachers develop evaluation systems based on written examinations. We found one or two class tests on presentation and speaking, but there was no concentration on English pronunciation. Students were found to give importance to lessons that were likely to be on examinations and neglect English pronunciation. Due to the lack of teaching strategies or techniques for teaching pronunciation, the majority of English as a Foreign Language (EFL) teachers simply avoid pronunciation instructions and bypass these (Maniruzzaman, 2008). Howlader (2010) reveals that 80% of teachers need training on teaching pronunciation.

Practical Aspects of English Pronunciation

From the 1940s to the 1960s, pronunciation was regarded as an important component of English language teaching curricula both in the audio-lingual methodology developed in the US and the British System of Situational Language Teaching (Morley, 1991). Along with correct grammar, the accuracy of pronunciation was given a high priority in both these systems. From the late 1960s to 1980s, English language teaching changed radically. Plenty of questions were raised about pronunciation in the English as a Second Language (ESL) curriculum. There were questions about the importance of pronunciation as an instructional focus, questions about whether or not it could be taught directly at all, and questions about whether it could be learnt at all under direct instruction. As a result, very little new materials on pronunciation appeared. Teachers and learners were demotivated, and pronunciation lost its appeal. Morley (ibid.) mentioned that from 1980s to the 1990s there was a growing interest in revisiting the pronunciation component of the ESL curriculum for adults and young adults. An important part of this movement was pronunciation development in several Education Support Professional areas that were academic or occupational in nature. Pronunciation is an inbuilt aspect of a word. Pronunciation is the identity of a word, so it demands exact articulation. If it is executed in the wrong way, it loses its uniqueness and changes its meaning, thus creating an unintelligible message among communicators.

Expectations versus Practices of Teaching Segmental Elements at Tertiary Level

Most public and private universities in Bangladesh offer the aforementioned course *Introduction to Phonetics and Phonology*/*English Phonetics and Phonology* for one semester/trimester as part of the BA (Honors) in English / MA in ELT. These courses do not emphasize the theoretical aspects of segmental elements. In previous research, it was found that phonetic transcriptions are also not taught. So, the students are deprived from practical uses of segmental elements of English pronunciation in their speech. Alam (2006), Khan (2007), and Maniruzzaman (2008) hold that most EFL teachers do not know useful strategies or techniques and do not provide any effective pronunciation activity in classrooms. Mumeneen (2011) confirms that no private or public university of Bangladesh offers any course in English pronunciation at undergraduate level.

Barriers to Developing English Pronunciation in Bangladesh

In most cases, Bangladeshi learners start learning the English language by imitating the pronunciation of their teachers, who are themselves influenced by their local dialects in their speech. They do not receive formal instruction or training in English pronunciation. In a similar way, they continue to practice speaking English without making the necessary corrections. Consequently, as some segmental elements of English pronunciations are unique and absent from the Bangla language, learners frequently mispronounce or substitute the near equivalent sounds when uttering English. Rivers (1968) opines that every foreign-language teacher should understand the principles of articulatory phonetics so that she/he can explain the particular difficulties one faces while transferring sounds from one language to the other.

Bengali learners start learning the English language by familiarizing themselves with the sounds of individual alphabets first, instead of knowing the sounds in the language. Then, they start memorizing words which are pronounced based on their spelling. In schools, students never become familiar with the Received Pronunciation (RP) sounds of English through IPA (International Phonetic Association) symbols in dictionaries. Wahiduzzaman (2017) highlights the problems that non-native speakers face in producing correct pronunciation, which they experience from the early days of their language learning.

Research Questions

Our research considers three major questions. These are:

a) How does the tertiary or post-secondary education system in Bangladesh emphasize the practical use of segmental elements of English pronunciation in English language teaching and learning contexts?
b) Are there any difficulties that post-secondary students in Bangladesh face while practicing segmental elements of English pronunciation? If yes, what are those difficulties and to what extent do students experience them?
c) What remedial academic measures can be taken to ensure the effective use of segmental elements of English pronunciation at the tertiary level in Bangladesh?

Review of Literature

For this study, the researchers considered Received Pronunciation (RP) to be the standard for identifying learners' conditions of English pronunciation. According to the Collins COBUILD Advanced English Dictionary, RP is a way of pronouncing British English that is often considered to be the standard accent. According to the British Council (n. d.), RP refers to an accent in English regarded by many people as a "standard" accent. Also, it has been called "the Queen's English" or "BBC English." In the past, RP had a high status in the UK, indicating the prestige of an educated speaker, and RP became transferred to EFL over time. It has been used as a model for pronunciation in countries formerly colonized by the British.

Segmental elements are the smallest functional contrastive linguistic units which can be divided and can bring about a change of meaning. These are the parts of vocalic effects which are realized in the form of vowel and consonant sounds. In English, these sounds are divided into two categories – vowel sounds (20) and consonant sounds (24). According to the Oxford Advanced Learner's Dictionary, the 20 English vowel sounds are divided into two categories:

a) Monophthongs: these are single pure vowel sounds. In English language, there are 12 monophthongs – / I, U, e, &, Q, @, V, i:, u:, O:, 3:, A:/ (Roach, 2009) and
b) Diphthongs: these are the combination of two pure vowel sounds which glide from one vowel to another vowel. A diphthong is pronounced like a single sound. In English language, there are 8 diphthongs – /eI, aI, OI, I@, e@, U@, @U, aU/ (Roach, 2009).

According to Hai and Ball (1961), in Bangla language, there are 32 vowel sounds – 7 pure vowels, 7 nasal vowels and 18 diphthongs. Hai (1967) mentions 7 pure vowels, 7 nasal vowels, and 31 diphthongs – in total, 45 vowels. Morshed and Kalam (1972, pp. 24, 32-35) has identified 7 pure vowels, 7 nasal vowels, and 29 diphthongs – in total 43 vowels in the standard Bangla language. All 18 diphthongs are common in Hai's list. From Morshed's list of diphthongs, 'iO (ইঅ), e-e (এ‡য়), a-a (আয়v)' sounds are absent in the list of Hai. Therefore, the extra 3 diphthongs will be added to the list of Hai and in total, there are 34 (31+3) Bangla diphthongs, as shown below:

a) 7 pure vowels: / i(ই), e(এ), &(এ্যv), a(আ), O(অ), o(ও), u(উ)/
b) 7 nasal vowels: / i~(ইঁ), e~(এঁ), &~(এ্যঁv), a~(আঁ), O~(অঁ), o~(ওঁ), u~(উঁ)/
c) 34 diphthongs: /i-i (ইই), iu (ইউ), ia (ইয়v&), ie (ই‡য়), io (ইও), iO (ইঅ), ei (এই), eo (এও), eu (এউ), ea (এয়v&), ey (এয়), e-e (এ‡য়), &o (এ্যvও), &y (এ্যvয়), &a (এ্যvয়v&), ai (আই), ao (আও), au (আউ), ay (আয়), a-a (আয়v), Oo (অও), Oy (অয়), Oa (অয়v&), o-o (ও ও), ou (ওউ / ঔ), oi (ওই / ঐ), oy (ওয়), oa (ওয়v&), oe (ওু‍য়), ui (উই), u-u (উউ&), ue (উ‡য়), ua (উয়v&), uo (উ‡য়v)/

(Five more different diphthongs in Hai's list from Morshed are: /ey (এয়), &a (এ্যvয়v&), o-o (ও ও), oe (ওু‍য়), u-u (উউ&)/)

The above shows us that there are 48 (14+34) vowel sounds in the Bangla language, or 28 more vowel sounds than there are in English. For English vowels, the phonemic difference is marked by long and short vowel sounds, which changes the meaning of words. On the other hand, in Bangla vowels, there is no provision for long and short sounds for phonemic difference. The phonemic difference is realized through the nasalization of the same vowel sounds. In English vowels, there are no nasal vowel sounds. According to Hai and Ball, "Bangla vowels, however, have one peculiarity that English vowels do not possess. All Bangla vowels can be nasalized, independently of any nasal consonant. This nasalization can sometimes produce a difference in meaning" (1961, p. 10).

English consonant sounds are – / p, b, t, d, k, g, f, v, T, D, tS, dZ, s, z, S, Z, m, n, N, l, r, h, j, w/. Theses sounds create some interruption in our vocal organ. These are divided into two parts (Roach, 2009):

a) 15 voiced – /b, d, g, v, D, dZ, z, Z, m, n, N, l, r, j, w/ and
b) 9 voiceless – /p, t, k, f, T, tS, s, S, h/.

Voiced sounds are produced with the vibration of the vocal cords and voiceless sounds are produced without the vibration of the vocal cords. Each consonant is separate from its cognate sound and others in terms of place of articulation, voice quality, force quality, and duration in pronunciation (Catford, 1988; Roach, 2009; Jones, 2006).

Different linguists and researchers have presented Bangla consonants in different ways. According to Hai and Ball (1961), there are 30 consonant sounds in Bangla: 20 plosives – (ľ/k/, Ł/kh/, ł/g/, Ł/gh/, Ń/c/, ń/ch/, Ņ/j/, ņ/jh/, ň/†/, ʼn/†h/, Ŋ/∂/, ŋ/∂h/, ō/t/, Ŏ/th/, ŏ/d/, Ő/dh/, Ŕ/p/, d/ph/, Ÿ/b/, Ŗ/bh/), 3 nasals – (g/m/, b/n/, ł,s/ŋ/), 4 fricatives – (ś/ʃ/, ŝ/s/, Ş/h/, ř/r/), 1 lateral – (Ś/l/), and 2 approximants – (q/y/, ৩q/w/).

Hai (1967) has classified 32 consonant sounds: 20 plosives – (ľ/k/, Ł/kh/, ł/g/, Ł/gh/, Ń/c/, ń/ch/, Ņ/j/, ņ/jh/, ň/t/, ʼn/th/, Ŋ/d/, ŋ/dh/, ō/t0/, Ŏ/t0h/, ŏ/d0/, Ő/d0h/, Ŕ/p/,। ধ। dh/, Ÿ/b/, Ŗ/bh/), 3 nasals – (g/m/, b/n/, ł,s/ŋ/), 1 lateral – (Ś/l/), 1 trill – (ř/r/), 2 flapped – (ş/ɾ/, Ţ/ɾh/), 3 fricatives – (ś/ʃ/, ŝ/s/, Ş/h/), and 2 approximants – (q/y/, ৩q/w/).

In Bangla, there are some sounds that differ according to their places of articulation, but they are heard as similar sounds, i. e. the three – /k, l, m/ sounds are different in places of articulation but their sounds are the same and so they are represented with the single sound (ś/ʃ/). Also, the two – /R, h/ sounds are different in their places of articulation but represent the same sound which is (Ņ/j/). Therefore, regarding this issue of homophonous sound of the different phonemes in Bangla, we consider the 32 consonant sounds that the Hai's model has presented (Hai, 1967).

Based on the research of Rahman (2014), pronunciation skills are connected to factors of age, background in learning pronunciation, aptitude, learner attitude and motivation, and native language. He points out that it might be difficult to achieve native-like pronunciation by the adult learners due to the effect of lateralization. Regarding the second factor, i. e. background of the learners, he argues that some speakers might have habitual or systematic phonological errors. Besides, motivation also determines success or failure in achieving phonological skills. Finally, learners' native language skills may interfere negatively in attaining good pronunciation skills in their second language learning.

Howlader's (2010) findings have suggested that 80% of teachers think that teaching pronunciation is significantly useful. Sixty per cent of teachers in that study reported that they fully used Communication Language Teaching (CLT) in teaching pronunciation, whereas 30% reported that they partially employed CLT to teach pronunciation. Further, 75% of teachers believe that RP (Received Pronunciation) or GA (General American) should be taught in the classroom. Ninety-five per cent of teachers believed that mutual intelligibility and comprehensibility should be emphasized, 90% of teachers thought that computer technology may be useful in teaching pronunciation, and 80% of teachers said that teachers need training on teaching pronunciation.
Hai and Ball (1961) have shown a comparative analysis between the sound structures of English and Bangla. They find that there are both similarities and dissimilarities between segmental elements of these two languages. They claim that Bangla speakers equate the 4 English sounds /@, V, 3:, A:/ with the simple Bangla sound /A/. They also mention that English /I@/, /e@/, and /U@/ diphthongs are not heard in Bangla.

Rahman (2008) identified that some difficulties were encountered by Bangla speaking learners of English. Firstly, Bangla speakers find it difficult to articulate English words maintaining exact vowel lengths; secondly, they cannot differentiate between English pure vowels and diphthongs; thirdly, they tend to follow spelling of English words to pronounce them. Imam et al. (2015) claimed that Bangladeshi learners cannot differentiate the distinction

between long and short vowels of English. Two vowels (/@U, 3:/) are absent from the standard Bangla vowel phoneme list. Bangla speakers tend to pronounce /h/ sound in these words – *where, what, which, when, why;* in Standard English it is not pronounced (Hai and Ball, 1961). Zaman (2008) suggested that in the pronunciation of Bangla speaking EFL learners, /f/ sound becomes /ph/ sounds; /v/ sound becomes /bh/ sounds; /tS/ sound becomes /s/ sound; /dZ/ sound becomes /z/ sound; /z/ sound becomes /dZ/ sound; /Z/ sound becomes /z/ or /dZ/ sound; /T/ (voiceless dental fricative) sound becomes /D/ (voiced dental fricative) sound; and /@/ sound becomes /&/, /V/ sounds. Abedin (2010-2011) found that 81% of students are uninformed about the concept of standard pronunciation. In addition, 91% of teachers and 76% of students said that regional accent influences English accent. Apart from this, 97% of teachers reported that sufficient logistical support is unavailable to teach pronunciation. Uddin and Monjur (2015) confirm that most of the teachers (90%) and students (80%) think that their regional accent has an influence on their English accent.

Li (2016) maintains that although English has become more disseminated globally and the importance of pedagogies for English has increased, the teaching of pronunciation has not received enough attention, especially in English education in Asian countries. According to Li (2016), once native Chinese students are affected by a negative transfer of their mother tongue, they may not be able to make themselves understood, and this may very likely contribute to their unintelligibility and incomprehensibility. Native Chinese speakers mistakenly say "You are lice" when attempting to say, "You are nice". Thus, it is essential to enforce the regular practice of some phonemes which can be subject to a negative transfer of native Chinese speakers in learning English. According to Watson (2002), consonants such as /p/-/b/ or /f/-v/ appear to be problematic for Arab speakers who are learning English. This occurs due to the absence of /p/, /v/, and /tʃ/ in the Arabic language.

We have explained above that there are substantially more sounds in Bangla than English. In addition, there are some missing sounds (/z, Z, j, @, 3:, i:, u:, A:, O:, I@, e@, U@/) and some sounds that are different from English in terms of the places or manners of articulation (/p, t, k, f, v, T, tS, dZ, r/). Generally long sounds and diphthongs make strong syllables and take stress marks (") in English, which are pronounced with more force and take more time than other weak syllables formed by short sounds. This can be seen in the examples of the words "regard" - /rI"gA:d/ and "invite" - /In"vaIt/. Sometimes, changing the stress pattern can change the meaning of the word, e.g., absent (adj) - /"&bs@nt/, absent (v) - /&b"sent/. Strong and weak syllables make a rhythmic (high-low) tone in pronunciation (Roach, 2009). English is a "stress-timed language" (Hai, 1967, p. 243). Unlike English, there is no option of short or long sounds in Bangla, and all diphthongs are formed by two identical long sounds, e.g. / ai (আই)/, and also two identical sounds, e.g. /a-a (আয়&v)/, which make equally strong and lengthy syllables and take equal time to pronounce except for expressing any certain emotions. In short, there is no option for stressed/strong and unstressed/weak syllable. Although the Bengalis sometimes employ stress to express emotion, that does not change the meaning as it does in English, rendering Bangla a "stressless language" (Hai 1967, p. 243). Bangla is a syllable timed language or language whose syllables take approximately equal amounts of time to pronounce (British Council, n. d.).

Some English consonants have redundant elements (/p^h, k^h, t^h/), which add a native flavor to the speaking, but make no change of meaning, as it is phonetic, not phonemic. In Bangla, there are no redundant elements as Bangla is a phonemic language, i.e. it has the sounds /p, ph/, /k, kh/, and /t, th/. The accent used for British English is classed as non-rhotic – the phoneme /r/ is not usually pronounced except when a vowel follows it. In the Bangla language, there are three types of /r/ sounds in comparison with the RP. The symbol "i(/r/)" is like the RP /r/ sound and the other symbols "ş(/ɾ/)" and "Ţ(/ɾh/)" are similar to the flap of the rhotic /r/ sound. This difference in English is phonetic, but phonemic in Bangla. So in Bangla, unlike in English, there is a difference in meaning when the sound changes from non-rhotic to rhotic or rhotic to non-rhotic. Consequently, these missing English sounds and the different and equally long Bangla sounds strongly influence the Bengali learners of English and create different pronunciations or lead to the mispronunciation of English words.

Research Methodology

Research Design and Nature

Our study employed a survey questionnaire to measure the theoretical and background knowledge of learners, role of teachers, role of institutions, and environmental issues regarding teaching, learning, and practicing segmental elements of English pronunciation by tertiary level students. The study employed a diagnostic test method to measure the strength and weakness of learners in using segmental elements of English pronunciation. There was also a Focused Group Discussion (FGD) to have an overall discussion with the respondents. The data obtained was interpreted in descriptive, statistical, and quantitative ways. The study used tables, diagrams, waveforms, and logical interpretation as data presentation tools. This research is both qualitative and quantitative in nature, following a mixed method approach. It is a combination of explorative, descriptive, and explanatory research**.**

Study Sample

Samples were taken randomly from both undergraduate and graduate students in three public universities and four private universities. A total of 373 respondents took part actively in the questionnaire survey. Among them, 100 respondents took part in the audio recordings for the diagnostic test. The number of the sample population was as follows:

Table 1: Respondents for Diagnostic Test from Total Sample

Faculty/Program/ Department	**Total Respondents**	**Took the Diagnostic Test**
Arts Faculty	50	20
Science Faculty	132	20
Commerce Faculty	53	20
English Department	87	20
MBA Program	51	20

To get the respondents' direct opinions about the present status of English pronunciation, the researchers arranged two Focused Group Discussion (FGD) – FGD-1 at a public university and FGD-2 at a private university in Dhaka. Both FGDs were moderated by the researchers and there were five participants in each. The participants were from three faculties (Science, Arts, and Commerce), English Department, and MBA Program, with two representatives from each.

Data Analysis

A questionnaire was developed for survey, and included reading materials (words, phrases, and idioms), audio recorder, and a responsive voice. JavaScript (JS) and check lists (for observation) were used for diagnostic test; some selected questions and audio recorders were used for the FGDs as data collection instruments.

Editing, coding, data entry, and multivariate analysis stages were used to analyze the collected data. The category of data analysis was mostly descriptive, with the use of some statistical and quantitative tools.

To analyze the survey data, researchers used the SPSS software, Microsoft Excel, and Percentage. For analyzing the audio data, Speech Analyser 3.0.1, responsive voice, JS, Windows media player, VLC media player, headphones, and soft copies of the E-E dictionaries were used. Also, the researchers used check lists to code the audio speeches into written format (phonetic transcriptions).

Speech Analyser (v. 3.0.1) is a computer program for acoustic analysis of speech sounds. It is developed and powered by a particular Language Technology called *SIL Language technology.* The researchers have used this speech analyzer to produce waveforms of the respondents' audio speeches. A waveform is a two-dimensional graphical representation of a sound. The two dimensions in a waveform display are time and intensity. In this paper (and in most of the literature), the vertical dimension is intensity, and the horizontal dimension is time (Mannell, 2018).

ResponsiveVoice, JS is an online based UK English text to speech solution. The researchers used this software to code the reading materials (words, phrases, and idioms) used in the research into standard UK English speech (audio). These audio formats of the UK English were used to produce waveforms by using speech analyzer to compare it with those of the respondents.

Discussion and Findings

Discussion on Survey Report

The survey informed the researchers about students' motivation, interest, and experience about learning English pronunciation (EP). It also focused on environmental support for their language development.

Table 2: Comparative Table for Survey Report

Faculty/Department	% of sample students (SS) who want to learn EP	% of SS who had an idea of what EP is about	% of SS who were motivated to learn EP	% of SS who learnt EP	% of SS who received theoretical knowledge of segmental elements of EP	Environmental support for practicing correct EP (%)
All respondents	96.5	70	44.5	36.2	13	Positive – 25.2 Negative – 74.8
Arts Faculty	100	56	50	14	14	Positive – 12 Negative – 88
Commerce Faculty	94.7	79.5	47.7	43.2	4.5	Positive – 30.3 Negative – 69.7
Science Faculty	100	49.1	18.9	35.8	6.6	Positive –9.4 Negative – 90.6
English Department	95.4	89.7	73.6	37.9	36.75	Positive – 36.8 Negative – 63.2
MBA Program	96.1	47.1	7.8	37.3	0	Positive – 21.6 Negative – 78.4

Table 2 above shows that 96.5% of respondents had an interest in learning English Pronunciation (EP) for effective communication. About a third of them (36.2% of all respondents) had the opportunity to do so, 70% had an idea of what EP is about, and 44.5% were motivated to learn EP. Only 13% learned EP using knowledge of segmental elements of EP. They happened to be graduating in English literature and/or language. In practicing correct EP, the majority of participants (74.8%) thought that the environment was not supportive for them. This confirms the findings of Abedin (2010-2011) that 81% of students are uninformed regarding any concepts associated with pronunciation. Table 2 also shows that only 13% of students had knowledge and skills of using segmental elements, which meant that 87% did not have it.

Discussion on Audios of Words, Phrases, and Idioms

Table 3 shows the comparative study of "words" and "phrases and idioms" uttered by students.

Table 3: Segmental Elements of English Pronunciation (Part 1)

Faculty/Department	Content	Mean percentage of similar to RP	Mean percentage of correct aspiration	Mean percentage of /r/ prominence
All respondents	Words	32.5	35.6	79.4
	Phrases and idioms	15.8	18	83.5
Arts Faculty	Words	27.5	34	68
	Phrases and idioms	10	13.3	90
Commerce Faculty	Words	35.5	32	91
	Phrases and idioms	18	26.7	82.5
Science Faculty	Words	37	52	78
	Phrases and idioms	16	33.3	52.5
English Department	Words	37	38	74
	Phrases and idioms	16	6.7	97.5
MBA Program	Words	25.5	22	86
	Phrases and idioms	19	10	95

Respondents' efforts to pronounce words, phrases, and idioms accurately is presented, with the accuracy level determined by the proximity of the students' pronunciation to the RP Standard (the pronunciation given with IPA symbols in standard dictionaries) for "words" and "phrases and idioms". Respondents correctly pronounced 32.5% of words and 15.8% of phrases and idioms. Good performance was found among the students of Science Faculty and English Department, i.e., they recorded as speaking correctly at 37% for words and 16% for phrases and idioms. The weakest performance was found among the MBA students, with 25.5% for words and 19% for phrases and idioms. The table shows that these students had very little idea regarding the use of segmental elements.

Students' practical application of accuracy (similar to RP Standard) was found reduced from "words" to "phrases and idioms". The reduction rates were:

Table 4: Reduction Rates from "Words" to "Phrases and Idioms"

"Words" to "Phrases and Idioms" Reduction Rates	**Respondents**
(32.5 - 15.8)% = 16.7%	All respondents
(27.5 - 10)% = 17.5%	Arts Faculty
(35.5 - 18)% = 17.5%	Commerce Faculty
(37 - 16)% = 21%	Science Faculty
(37 - 16)% = 21%	English Department
(25.5 - 19)% = 6.5%	MBA Program

The highest reduction rate of 21% was found among the Commerce and Science students, and the lowest was found among the MBA students. It disclosed that the participants' practical performances regarding proper uses of segmental elements of English pronunciation are 50% less appropriate than "words" to "phrases and idioms", except for the MBA students. These results reflect that the learners did not have the proper knowledge of IPA symbols given in dictionaries as they failed to use these elements correctly.

Students' performance with respect to aspiration accuracy (similar to the RP Standard) regarding "words" to "phrase and idioms" were also reduced. The reduction rates were 17.6% for the students of all respondents, 20.67% for Arts Faculty, 5.33% for Commerce Faculty, 18.67% for Science Faculty, 31.34% for English Department, and 12% for the MBA Program. It reflected learners' lower performance in applying aspiration while pronouncing two or more words at a time. These results reflect that the learners did not know the rules of proper aspiration.

It was also found that the /r/ sound was strongly prominent in students' speech from "words" to "phrases and idioms". However, a reverse application (from "phrases and idioms" to "words") of /r/ prominence was found among the Commerce and Science Faculty students. These results reflect the students' lack of practical knowledge of using the /r/ sound.

Table 5: Segmental Elements of English Pronunciation (Part 2)

	Most frequently mispronounced monophthongs	Less frequently mispronounced monophthongs	Most frequently mispronounced diphthongs	Less frequently mispronounced diphthongs	Most frequently mispronounced consonants
All respondents	/A:, 3:, u:/ /@/	/i:, O:/ /I, U, e, Q/	/@U, U@, eI/	/I@/	/v, tS, dZ, S, Z, j/ /jU@/
	Mean Percentage of the correct long vowels	Mean percentage of the correct short vowels	Mean percentage of the correct diphthongs	Mean percentage of the correct consonants	
	34	36.4	59.25	36.67	

Table 5 demonstrates the information regarding the most frequently mispronounced and less frequently mispronounced vowel and consonant sounds and the mean percentages of the correct vowel and consonant sounds. The most frequently mispronounced long vowel sounds in pronunciation were /A:, 3:, u:/ sounds and less frequently mispronounced long vowel sounds in their pronunciation were /i:, O:/ sounds. The most frequently mispronounced short vowel sound in their pronunciation was /@/ sound and comparatively less frequently mispronounced short vowel sounds in their pronunciation were /I, U, e, Q/ sounds. So, the problems with the application of sound length and missing sounds in speaking were marked. This affirms the findings of Hai and Ball (1961), Rahman (2008), and Imam et al. (2015) that Bangladeshi learners cannot maintain and differentiate vowel length in their English pronunciation, indicating their lack of awareness of the practical uses of English phonemes.

The most frequently mispronounced diphthongs in their pronunciation were /@U, U@, eI/ sounds and the comparatively less frequently mispronounced diphthong was /I@/ sound. In most cases, they pronounced the initial sounds of these diphthongs and omitted the last sounds; in addition, some of them substituted those initial sounds, i.e., /O:/ sound for /@U/ sound, /U, u:/ sounds for /U@/ sound, /e/ sound for /eI/ sound, and /I, i:/ sounds for /I@/ sound. The participants could pronounce the /ai, OI, I@, e@/ sounds but most of them pronounced these sounds as two portions separately; this meant that they gave a short break between the two sounds instead of gliding between them. Hai and Ball (1961) claimed that Bangladeshi learners pronounce the first part of the diphthongs and ignore the end part, thereby failing to glide in the pronunciation of these words.

Compared to the vowel sounds, the learners had fewer problems in pronouncing consonant sounds. The participants could pronounce two-thirds of the total consonant sounds properly but the remainder of the consonant sounds were not pronounced correctly, and the problems varied depending on their local language/dialect. The most frequently mistaken consonant sounds in their pronunciation were the /v, tS, dZ, S, Z, j/ sounds. Almost all learners failed to pronounce the combined /jU@/ sounds. In most cases, the respondents tried to substitute similar sounds from their own language instead of the correct ones. We found that the respondents substituted different sounds for a single sound as well.

Measuring Segmental Elements

Among the waveforms (graphical pictures) shown below, the first one in all categories is the British English (BrE) sound, and the remaining five graphical pictures are sounds from the participants. From all categories of the respondents, random selections of waveforms were made for five participants' voice recordings. Only some of the compared waveforms (graphical pictures) are presented below. All of the following displayed waveforms of the segmental elements are for words. The words selected were limited to monosyllabic and disyllabic ones.

Comparative Waveforms of British English and Participants' English for Words

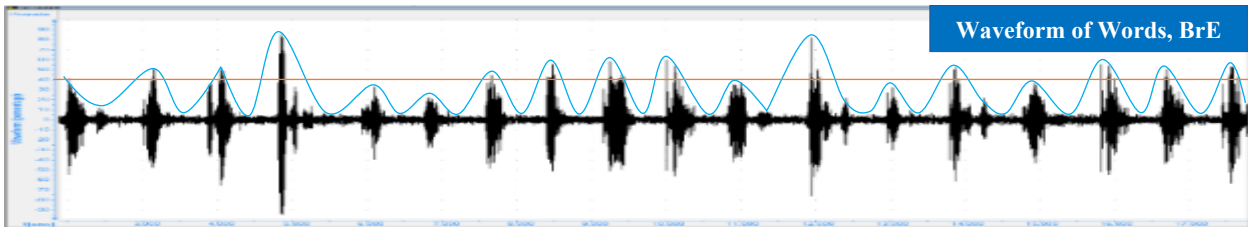

Figure 1: Waveform of British English (BrE) for words

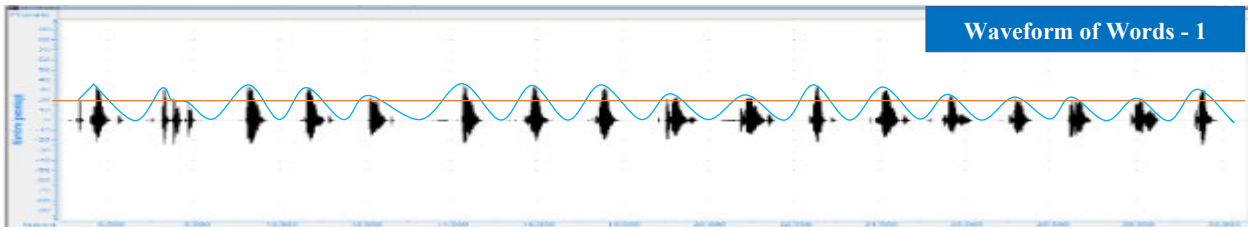

Figure 2: Waveform of the respondent-1 for words

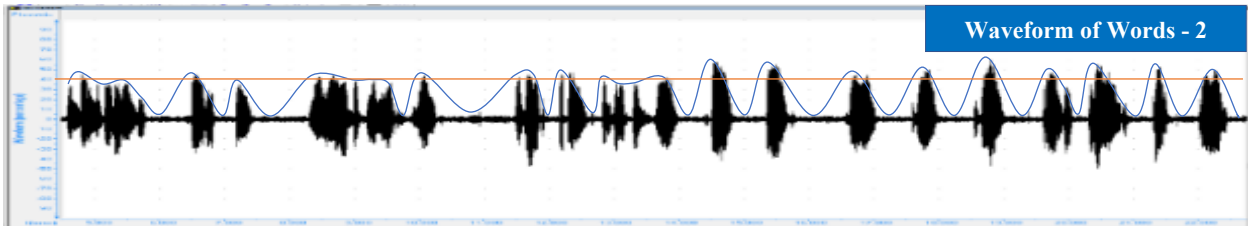

Figure 3: Waveform of the respondent-2 for words

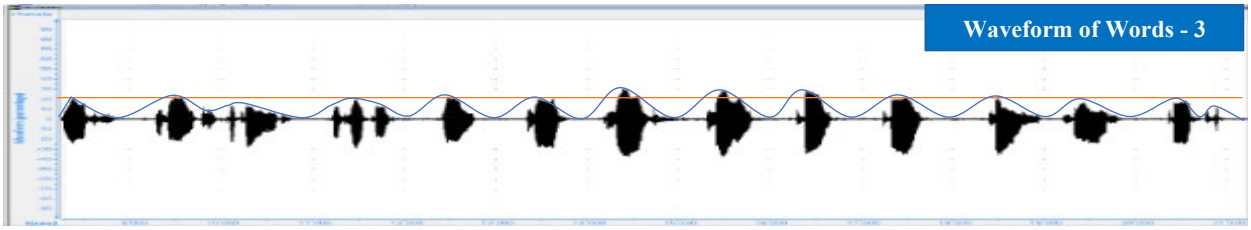

Figure 4: Waveform of the respondent-3 for words

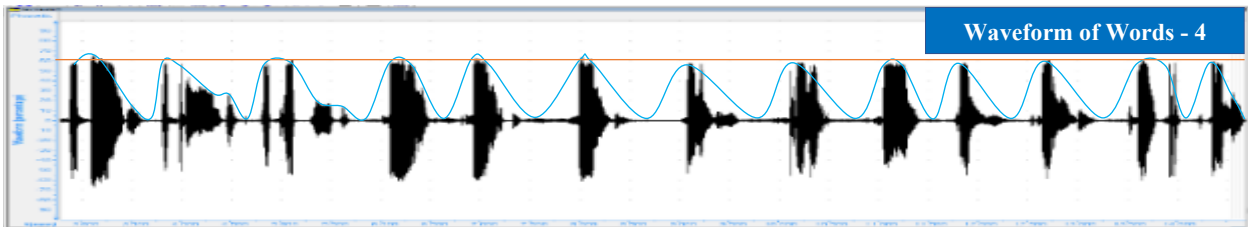

Figure 5: Waveform of the respondent-4 for words

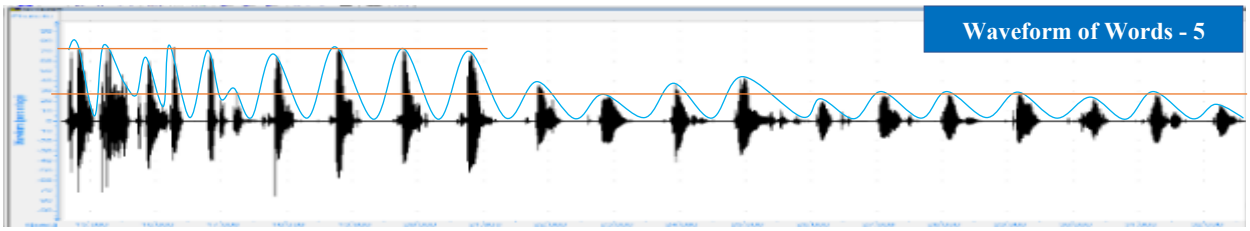

Figure 6: Waveform of the respondent-5 for words

Comparative Waveforms of British English and Participants' English for Phrases and Idioms

All the following displayed waveforms of the segmental elements are for the phrases and idioms.

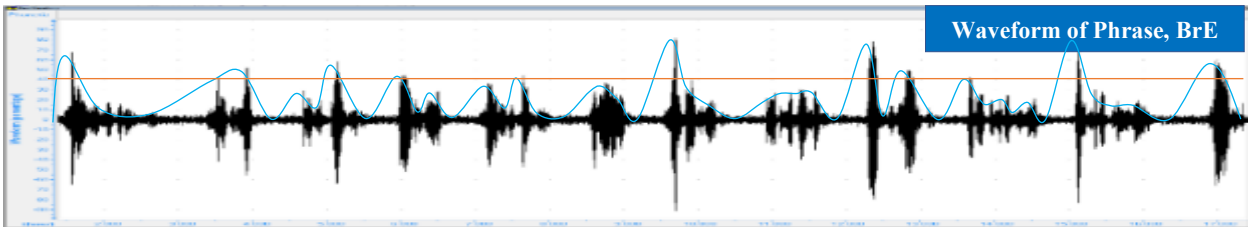

Figure 7: Waveform of BrE for phrases and idioms

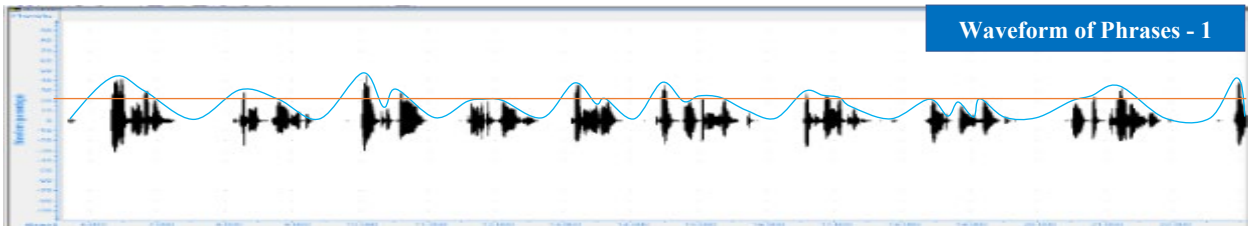

Figure 8: Waveform of the respondent-1 for phrases and idioms

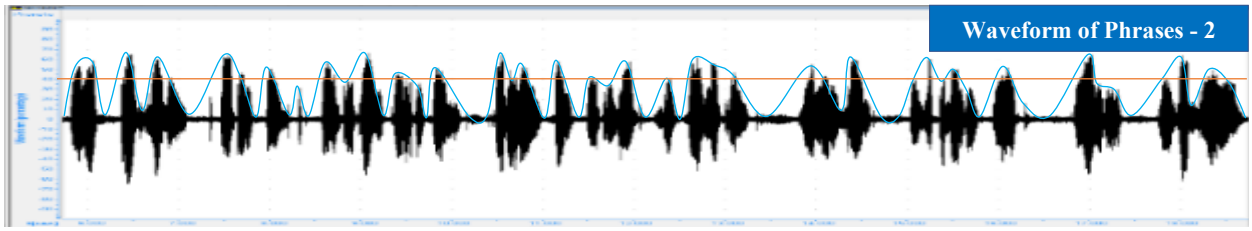

Figure 9: Waveform of the respondent-2 for phrases and idioms

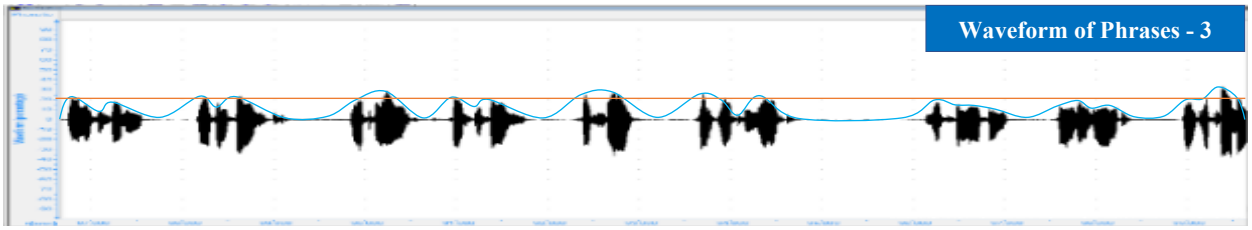

Figure 10: Waveform of the respondent-3 for phrases and idioms

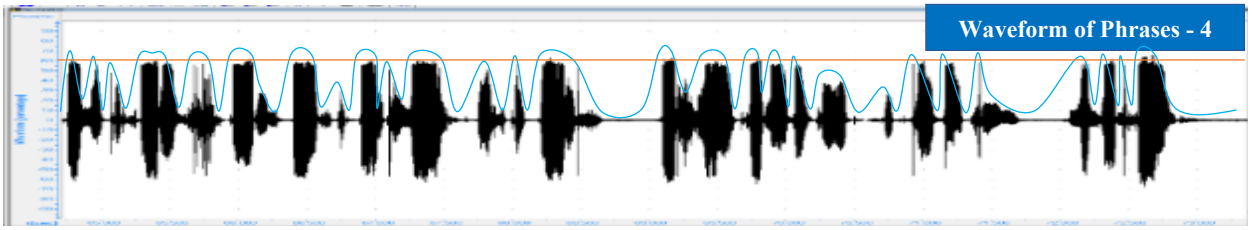

Figure 11: Waveform of the respondent-4 for phrases and idioms

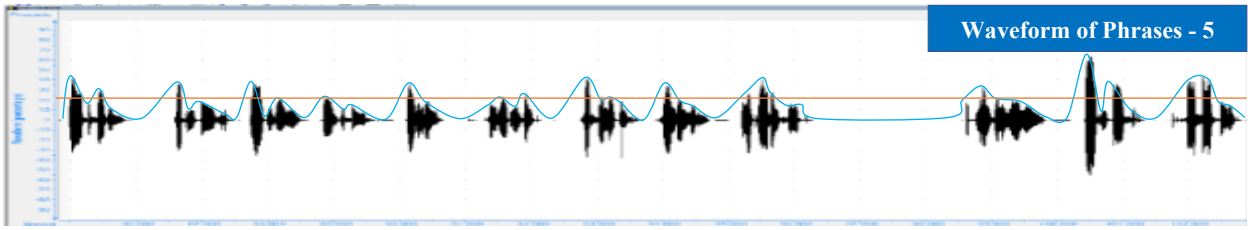

Figure 12: Waveform of the respondent-5 for phrases and idioms

Critical Analysis of Comparative Waveforms of British English and Participants' English

The analysis of the above waveforms is shown in Table 6. Specifically, we can see the comparative sound intensity of pronouncing segmental elements in English words, phrases, and idioms. The percentages, whether high or average in intensity, when pronouncing sounds in words, phrases, and idioms are shown below.

Table 6: The Intensity of Pronouncing Sounds in English

Audio materials	Result of BrE	Result of Respondent-1	Result of Respondent-2	Result of Respondent-3	Result of Respondent-4	Result of Respondent-5
Words	Max – 90% Ave – 40%	Max – 40% Ave – 20%	Max – 60% Ave – 40%	Max –30% Ave – 20%	Max – 60% Ave – 60%	Max – 70% Ave – 25%
Phrases and idioms	Max – 80% Ave – 30%	Max – 40% Ave – 20%	Max – 65% Ave – 40%	Max – 30% Ave – 20%	Max – 60% Ave – 60%	Max – 60% Ave – 20%

The above wave pictures and Table 6 indicate that in the pronunciation of BrE for words, phrases, and idioms, the differences between the high peak and the average peak of sound intensity were nearly 50%. However, for Respondent-1, the difference is 20%; for Respondent-2, the difference is 20% to 25%; for Respondent-3, the difference is only 10%; for Respondent-4, there is no difference, and for Respondent-5, the difference is 40% to 45%. Only in the case of Respondent-5, the difference is comparable to the BrE standard. But the noticeable matter can be seen in Figure 6. The initial portion of the pronunciation of the words was equally high without any significant difference, and the last and large portion was equally low without major difference.

Table 6 and the display of the waveforms demonstrate that there was a substantial difference between the sound intensity of Standard British English (RP) and the participants of the Bengali learners. It reveals that the intensity and quality of the sound in pronunciation for Bengali learners were lower than British English standard. Again, the small or lack of distance or equal intensity between the high peak and the average peak of utterances (observed in the waveforms) does not reflect significant similarities or nearly similar rhythm when comparted with the rhythm of RP. This indicates that the influence of the speaking pattern of (Bangla) syllable-timed language is strongly present. Therefore, the inability to practically execute practices of English segmental elements and influence of mother tongue were reflected prominently in the English pronunciation of those surveyed.

Discussion on Report from FGD

When asked about the number of vowel and consonant sounds in English, most participants answered incorrectly except for a few studying English literature and/or language, who could distinguish all 20 vowels and 24 consonants, but failed to recognize all 44 phonemes even though phoneme-chart was shown. This reveals that the 44 sounds were not taught in their academic English language classes, although this was supposed to have occurred. Regarding the motivation of their teachers for improving students' English pronunciation, most students answered negatively. However, they said they imitated the pronunciations of teachers, elders, and seniors. One or two students tried to develop pronunciation initially with the help of teachers as well as beyond academic institutions and online sources but could not practice this properly due to the absence of a supportive environment. There were no resources or inspiration provided in academic classrooms, or their campus to practicing proper English pronunciation. Despite having interest in developing their pronunciation, students did not get proper academic or environmental support and guidance to do so.

Findings

The first finding of the study, shown in Table 1, indicates that 96.5% of students at tertiary level have a keen interest in attaining good pronunciation and that 80% of teachers think they need training to teach correct pronunciation; in recent years, a positive attitude has been developed among Bengali students and teachers with respect to English pronunciation.

The other findings of the study are listed below:

- Bengali students mostly start developing their English pronunciation from an early stage of life at schools, then, at colleges and universities without following the segmental elements. In most cases, they subconsciously substitute the lateral similar Bangla sounds for the exact ones, and their pronunciations do not attain the RP Standard.

- The Bangla language is a more vowel and consonant loaded language than English. These vowels and consonants substantially superimpose speakers' English pronunciation and shape their pronunciation to sound like their mother tongue (syllable-timed), in addition to the influence of local dialects.

- Bengali learners have very poor and scattered knowledge about the uses of segmental elements, insufficient practice, and lack of motivation to learn this at tertiary education level. They mostly tend to pronounce words based on spelling and deploy their own style, which does not match the RP Standard or pronunciation given with IPA symbols.

- Bengali students remain unfamiliar with the uses of segmental elements of English pronunciation from the early stage of their lives. Influence of their local languages was found prominently reflected in their English speaking.

- Almost all (96.5%) of learners at tertiary level have positive attitude towards learning correct English pronunciation for better communication, conveying proper meaning in conversation, building confidence, and obtaining better jobs or opportunities for higher studies in other countries but they lack sufficient guidance, scope, and support from their curricula, teachers, institutions, and other aspects of their lives.

- Of the students surveyed, 30.3% claimed that they had basic theoretical knowledge of segmental elements at the tertiary level but only 14.25% of the students could demonstrate this.

- Most students remain unfamiliar with the RP Standard or IPA symbols given in the dictionaries.

- The tertiary level educational environment was found to be favorable to only 25.5% of students for practicing correct English pronunciation.

- Learners had fewer problems in pronouncing diphthongs than monophthongs, and compared to vowel sounds, students had fewer problems pronouncing consonant sounds.

- The most frequently mispronounced long vowels were /A:, 3:, u:/ sounds and the comparatively less frequently mispronounced long sounds were /i:, O:/ sounds. In most cases, the participants failed to identify where these long sounds occur in pronunciation.

- /@/ (Schwa) sound was the most frequently mispronounced short vowel and comparatively less mistaken short vowels were /I, U, e, Q/ sounds. For all surveyed, the learners substituted /&/ sound for /@/ sound in the initial position of this sound. In the middle and final positions, they made it long, and made it sound similar to the /V/ sound. While pronouncing /I, U, e, Q/ sounds, the respondents made them unnecessarily long.

- /@U, U@, eI/ vowels were the most frequently mispronounced diphthongs and the comparatively less mistaken diphthong was /I@/ sound. The participants substituted /O:/ sound for /@U/ sound, /U, u:/ sounds for /U@/ sound, /e/ sound for /eI/ sound, and /I, i:/ sounds for /I@/ sound.

- The most frequently mispronounced consonant sounds were the /v, tS, dZ, S, Z, j/ sounds. Almost all learners failed to pronounce the combined /jU@/ sound in the words.

- In the Bangla language, the /i:, u:, A:, 3:, O:, @/, /I@, e@, U@/ vowel sounds are absent, creating problems for Bengali learners to pronounce these sounds.

- In most cases, students substituted other lateral equivalent sounds from their language for the exact ones. In the case of vowel sounds, this substituted percentage range was 50% to 100%, and for consonant sounds this range was 40% to 100%.

- Within words, the learners' correct uses of aspiration were 35.6%, and they were reduced up to 18% in pronouncing phrases and idioms.

- The /r/ sound seemed strongly prominent and increased from "words" to "phrases and idioms" with an intensity of 79.4% in words, and 83.5% in phrases and idioms.

Recommendations

Learners need more knowledge, practice, and practical application in communication. In teaching and learning of segmental elements of correct English pronunciation, the belief needs to be established among students that speaking English is interesting, fun, and necessary, rather than a source of humiliation. The following recommendations may be made for the concerned stakeholders:

Developing Segmental Elements

The number of segmental elements in English pronunciation is limited to 44. For developing these inseparable elements of English pronunciation, instructors can teach them by creating engaging methods, using real objects, and comparing them with the related Bangla phonemes in an interactive way so that the learners can distinguish, realize, and visualize the sounds.

Course Curriculum

The design of curriculum may put more emphasis on improving students' English pronunciation as these students have a strong interest in learning correct English pronunciation. Teachers involved in curriculum designing should be flexible and incorporate practical exercises to develop students' pronunciation skills.

Examination System

In the examination of English, there should be scope for testing listening and speaking skills with marks for good pronunciation, moving away from only written examination. Students always give importance to examinations; therefore, listening and speaking options in the examination can motivate the learners to better develop correct English pronunciation.

The Role of Teachers

Teachers should educate students to such a level in using segmental elements so that they can find and apply the pronunciation of the words written in the dictionaries using IPA. Teachers should teach learners that the English language is phonetic, or sound based, not phonemic or spelling based so that they are aware of the importance of using segmental elements of English pronunciation while speaking.

In the classroom, teachers should emphasize practical uses of segmental elements of English pronunciation and encourage learners to follow correct uses of segmental elements of English pronunciation in the classroom for good communication. To encourage students, teachers may allocate a portion of class test scores for good English pronunciation for oral presentations. Teachers may make a list of learners' mispronounced words and ensure that they practice correct pronunciation in class.

Teachers should also use modern technologies such as soft copies of English dictionaries, online dictionaries, and other resources in the classroom, and encourage students to use correct pronunciation outside classroom through practicing English when they speak with friends and others.

The Role of Students

The tertiary level students are adults, and therefore they should be more practical, conscious, concerned, and enthusiastic to overcome their problematic areas of English pronunciation. Students should also practice correct pronunciation and sounds outside classroom.

Environmental Issues

As correcting English pronunciation is a continuous and long process, the concerned authorities should create enough opportunities and a favorable environment for students to practice this on a regular basis.

Conclusion

This study has analyzed the theoretical knowledge and observed practical use of segmental elements of English pronunciation by tertiary level students in Bangladesh through an assessment of their overall performance regarding these elements. The study specifically showed comparative results of pronouncing segmental elements of English pronunciation by presenting established standards and comparing those to the present status of learners in Bangladeshi universities. It discussed teachers' roles in teaching, institutions' roles in designing syllabi, influence of local dialects, environmental issues, and learners' attitude towards learning and practicing segmental elements of English pronunciation. It also discussed problems found and the difficulties that learners face in using appropriate features of segmental elements of English pronunciation. Finally, the article discussed several recommended actions that could be taken by different stakeholders involved in this process.

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Book Review

Markets, Morals and Development: Rethinking Economics from a Developing Country Perspective

Wahiduddin Mahmud

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An academic discipline needs to be dynamic to be viable. In recent times, a rethink about the corpus of economics has been underway. Following the 2008 financial crisis, the need for macroeconomic models to go beyond the current DSGE (Dynamic Stochastic General Equilibrium) models has become pronounced, so much so that alternative schools of thought and associated institution building (INET, for example) are rapidly gaining prominence. Within microeconomics, establishment of causality as a methodological issue has become dominant. After the initial euphoric adoption of RCTs (Randomized Controlled Trials) as the gold standard, questions are now being raised about the appropriateness of this method in a variety of circumstances. On the educational side, the popularity of economics as a (sole) major has declined, with students globally preferring to take economics as a minor or combining it with another major. There is also occasional discussion in the media about dropping economics from the roster of Nobel prizes. Thus, the discipline of economics is being rethought across a variety of fronts. This book may be considered part of this rethinking.

It is a short book, consisting of an Introduction and five additional chapters. The chapters are based on public lectures given by the author in Bangladesh over a six-year period starting in 2016. Two have been published as journal articles in Bangladesh and India. In these lectures, the author has drawn on his expertise as a professor of economics, a researcher, and a policymaker/policy advisor.

Because of the disparate nature of these lectures, there is no clear central theme in the book. Rather, the lectures emphasize three, occasionally overlapping perspectives – economic modeling can be useful in understanding otherwise impenetrable topics; economic theory needs to be upgraded to be more globally attractive/relevant; and the concept of a "social business" serves as an example of the need to augment the traditional tools of economics.

Chapter two is the longest chapter in the book. In it, the author tries to convince a general audience how economic theories can be used to make headway in understanding many real-world phenomena. Economists have some important lenses. They use the notion of causality, economic models, and economic logic (as opposed to instinctive thinking). They employ the concepts of absolute vs. comparative advantage, sunk cost, time-inconsistency, national income identities and Keynesian models, markets, and institutions – and the related ones of information asymmetry, including the notion of lemons and moral hazard. Appropriate use of these concepts can help explain unorthodox situations in the developing world such as specialized cases of the cobweb model in the agricultural sector, overcrowding of micro-enterprises and the problems related to scaling up, unforeseen effects of poverty and market interventions. At the least, these concepts help set up a common platform for discussion. However, the author does not stop at simply trying to convince the audience of the usefulness of economics. He weaves into the discussion the need for economics itself to extend its reach to adjust to special circumstances found in the developing world.

In chapter three, the author takes a close look at the ethical basis of economic theory and practice. His purpose is to review and rethink economics in light of ethical considerations. With appropriate examples, he questions whether the profit motive alone can be used to explain the workings of *all* kinds of markets. He also questions, again with relevant examples, whether all self-seeking transactions are necessarily welfare enhancing for society as a whole. As such, he is questioning the viability of the "Invisible Hand" in all circumstances.

According to the author, some areas of economics are in urgent need of the incorporation of ethical concepts. These are: welfare economics and policymaking – in which value judgements are relegated to the background; income inequality – where there is a strong case for considering other motives; evaluating the workings of a modern financial system and the design of government spending – where the presence of myriad actors and broad-based effects on society render the current framework inadequate. He also criticizes the sole use of money as a measure of value.

In chapter four, titled Institutions, Morality, Norms and Development, the focus is once again on the deficiencies of the current state of economics (as in the earlier chapter), but with an emphasis on the lack of institutions and norms in the economics toolkit. He argues that taking institutions into account would make for a better explanation of observed phenomena, help design more effective policies, lead to a better understanding of cooperative behavior, help devise better measurements of development, and improve our understanding of the process of governance.

While the other chapters were devoted to examining economic concepts and their applications to actual situations, chapter five focuses on Amartya Sen's ideas regarding "development" in the context of Bangladesh. Sen is well known for his special approach to evaluating "economic development" and both Sen and Mahmud (separately) have done extensive work in this area, as shown by the number of citations in the chapter.

Sen has lavishly praised Bangladesh's achievements in terms of his favored development metrics. Mahmud, elaborating on these gains, explains how Bangladesh has been able to carve out its homegrown strategy for achieving these gains by using NGOs, and points out upcoming difficulties for Bangladesh in continuing with these gains. Extrapolating from Sen's ideas, Mahmud also develops the role of "public reasoning" as a check-and-balance system in explaining Bangladesh's achievements, despite the absence of traditional governance mechanisms. In my opinion, after chapter two, this is perhaps the most valuable chapter for a general audience in developing countries, since it combines exposition of innovative concepts in economics and concrete examples in the context of a single developing country.

In chapter six, the main purpose is to explore if and how the idea of a "social business" (SB) can be reconciled with mainstream economic thinking. Following up on the characteristics of a SB exposited by the originator of the concept, the Bangladeshi Nobel laureate Professor Yunus, the author explores the various types of businesses that fit the required characteristics, providing examples of each type from Bangladesh in particular, and South Asia in general. The main lesson here is that there is no unique profile of a SB. He laments the lack of interest on the part of both proponents of the SB concept and academic economists in reconciling these types of businesses with economic theory. He then puts forward some thoughts on two possible methods of reconciliation. One, based on the welfare economics literature, envisages the social business as a means for "internalizing" the externalities within its business model. The second approach suggests combining the use of shadow prices, and social costs and benefits, with the maximization of net social returns in understanding the workings of and evaluating a SB. The author acknowledges the difficulty of designing such businesses and suggests a case-by-case approach rather than any universal standard yardstick of market efficiency with which to evaluate a SB. He also points out some pitfalls and risks in coming up with a technical framework grounded in economic theory in understanding and evaluating SBs.

The reader is impressed by the wide range of topics that is covered in this short book, without sacrificing depth. The exposition is excellent, the examples suitably appropriate, and the mastery of the issues discussed complete. Only a person with the wide range of experience as an educator, researcher, and policymaker as the author could have written this book.

My minor quibbles have to do mainly with the setup of the book. A list of the lectures with the dates and type of audience would have helped better understand the progression of the ideas. For the discussion in chapter five, it may be argued that in addition to the NGOs, remittances and mobile technology have played a deeper role in hastening development in Bangladesh than is considered in the chapter. Finally, a concluding chapter would have helped bring the different strands together.

What remains now is to put the book in context. Where does the book fit in in relation to the rethinking mentioned above, as well as in the title of the book? A central theme, of sorts, does emerge from the book: to remain relevant and useful on a global level, the discipline of economics needs to pay attention to the experience of the developing countries. Ways have to be figured out to incorporate the lessons learned into its framework, and to not write these off as exceptions to the rules. In a globalized world, and with the "periphery" becoming increasingly close to the "center", continuing to do so risks making economics irrelevant for many. This is not to minimize the technical issues involved in augmenting the toolset of economics. But, the brightest minds of the profession, wherever they may be located globally, need to be encouraged to work in these directions. As in other disciplines, such as mathematics,

physics, and biology, perhaps computational power in the form of simulation techniques can be brought to bear in solving analytically intractable problems. While simulation is increasingly being used in the empirical portions of DSGE models, its use in theoretical modeling is still not accepted in economics as unquestionably as in other disciplines.

In short, in a world that now emphasizes “inclusiveness”, the discipline of economics needs to become more inclusive, in the broadest sense of the term.

Book Review

Untranquil Recollections: Nation Building in Post-Liberation Bangladesh

Rehman Sobhan

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The Insulation of the Technocrat and the Power of the Politician

Rehman Sobhan returned to an independent Bangladesh on December 31, 1971, after spending nine challenging, yet exhilarating, months taking the cause of Bangladesh to cities around the world. The story of that endeavor, and that of his life and work leading to the momentous nine months of Bangladesh's war of independence, is told eloquently in the first volume of his memoirs, *Untranquil Recollections: Years of Fulfillment*. That volume ends on the day Sobhan returned to an independent Bangladesh.

The second volume, *Untranquil Recollections: Nation Building in Post-Liberation Bangladesh*, picks up the thread from there. In his inimitable prose, Rehman Sobhan talks about the optimism he felt as he woke up for the first time in independent Bangladesh: "I awoke on a cold New Year morning of 1972 with sunshine streaming through my windows, suffused with a sense of well-being and optimism. I was home in a liberated Bangladesh after nine months of tension and uncertainty where I had traversed the world as a soldier of Bangladesh with no expectation that I would arrive at journey's end any time soon." Four years later, he was to leave Bangladesh under very different circumstances. The second volume of his memoires covers this phase of his life - from January 1, 1972, to December 31, 1975 – a phase that "began in hope but ended in darkness".

In this volume, Rehman Sobhan provides a very candid account of his experience working in the first government of Bangladesh, as Member of the Planning Commission with the rank of state minister and endowed with power that technocrats rarely enjoy. In this riveting book, Sobhan describes the working of the Commission and its relationship with the rest of government, at both institutional and individual levels. While others, such as Nurul Islam, have written on the subject in some detail, Sobhan's level of candor gives this account a different flavor, adding considerable value on top of earlier writings.

The 14 chapters of the book deal, *inter-alia,* with the setting up and working of the Planning Commission, the political economy of policy making, the challenges of delivering the five-year plan, the improvement of the performance of nationalized industries, and aid diplomacy and Indo-Bangladesh relations. The book was largely written during 1976-1978, when events were fresh in his mind, but the author has added a more recently written retrospective chapter at the end.

Sobhan's account of economic planning and management during that fateful period is valuable from at least two perspectives. First, it provides a deep understanding of an important period in the nation's history, particularly some important economic policy issues that the new government had to grapple with. Second, it provides rich insights into some perennial issues of economic management, including the dynamics between technocrats, politicians, and bureaucrats, and the challenges faced by the more proactive actors in government who work with a missionary zeal, as they confront a system unwilling to move at the same pace. This short review cannot do justice to all the important topics covered by the book. Given the paucity of space, it will focus on the second theme.

The book contributes to an understanding of Bangabandhu Sheikh Mujibur Rahman, Tajuddin Ahmed, other members of the cabinet, and the rest of the regime. Understanding Bangabandhu is an important agenda, and a project that needs to be rescued from the clutches of apologists and opportunists. Rehman Sobhan provides much food for thought in this regard, providing some answers, and raising some questions. He does the same with Tajuddin Ahmed, and some of the information he provides may go against conventional wisdom. The book also enhances our understanding of how the Planning Commission operated and the personalities involved. Sobhan's candid account of his colleagues, the leading players in the Commission, their different personalities, approaches, and ideologies, as well as the interactions among them, is indeed very valuable.

The members of the Planning Commission, appointed personally by Prime Minister Sheikh Mujibur Rahman, were asked to work out the details of the socialist economy that the political leadership aspired to. The socialist model was to be tailored to the reality of Bangladesh, not imported from abroad, and the planners were expected to delineate its main contours. That would be a challenging task in any context; it was even more so in a war-ravaged country with urgent need for relief and rehabilitation, a provincial administration that had to transform overnight to a national administration, a political leadership with very little administrative and policy making experience, and the building of important institutions, such as the Planning Commission, almost from scratch. Sobhan summarizes the challenge: "Serving in such a government was the equivalent of participating in a massive social experiment where from top to bottom we were all engaged in the task of learning our job by doing it."

On top of this, the Commission sought, and was granted, considerable authority to coordinate the work of various ministries. The Commission successfully argued that the policies of different ministries needed to be aligned with each other, and with the overarching goals of the government, and that projects undertaken by the ministries had to be consistent with such policies. This is true of all governments; it was even more so in the heavily resource-constrained situation of that time. As is clear from the book, this powerful role turned out to be a double-edged knife for the Commission.

The responsibility to work out the details of a socialist economy was a daunting one for at least two reasons. The government lacked knowledge of how socialist regimes worked in practice, including the variations in approach across different countries in the socialist world. The Prime Minister had prior exposure to the system in China - his book on the China trip in the 1950s reveals its impact on his thinking – and this was supplemented by short visits to some socialist countries after he became Prime Minister, such as Yugoslavia. Most other members of his cabinet lacked even this exposure. Bangabandhu had a genuine commitment to improving the conditions of the common people of Bangladesh, and his belief in some form of socialism was derived from this fundamental premise. But he had to rely on others to flesh out the details. He delegated this task to the planners, whom he respected for their erudition, commitment, and integrity. However, the commitment of the Prime Minister and his planners was not necessarily matched by that of the regime overall.

The planners needed political guidance to carry out this daunting task. The Prime Minister was too preoccupied with many challenges of leading a country in a turbulent environment. The planners thus expected the Finance and Planning Minister, Tajuddin Ahmed, to step up to the plate. He was not only the Chairman of the Planning Commission in the first year of its existence (later, the Prime Minister himself assumed that position), but was perceived by the planners "to be the torch bearer for the agenda of social transformation which had been incorporated in the 1970 election manifesto of the AL." He was thus expected to play an important role in advising the Commission on how to operationalize the government's professed commitment to socialism. Such a role of the planning minister was vital since that the planners were outsiders in the system, who "now found themselves invested with a political challenge of exceptional complexity for which they had no previous training."

It appears that Tajuddin Ahmed did not quite live up to that expectation. In some of the most candid and revealing pages of this volume, Rehman Sobhan talks about his disappointment at the lack of pro-active guidance from Tajuddin Ahmed on how to navigate the politics of establishing a socialist system. The Deputy Chairman, Professor Nurul Islam, had regular meetings with Tajuddin Ahmed, but usually at his own initiative. Documents sent up to the latter by the Commission often received detailed and insightful feedback, which was indeed valuable. Sobhan writes about the "incisive mind and mature political perspective" of Tajuddin Ahmed, which was very educational for the planners.

However, such feedback usually came only when the planners asked for it. Professor Sobhan's account gives the impression that Tajuddin Ahmed did not proactively convene meetings of the Commission or alert the planners about the goings on at the political level. The political and ideological guidance badly needed by a group of academics, who had suddenly been thrust into important positions in a highly politicized government, was not forthcoming. "As

a result," Sobhan writes, "the initiative for seeking policy guidelines or political directives rested with the deputy chairman and members."

Tajuddin Ahmed also appears to have disappointed the planners during cabinet meetings. There was an expectation that since the finance and planning portfolios were both under him, disagreements between the two ministries (including the Planning Commission) would be resolved prior to cabinet meetings. This expectation was often unfulfilled so that "one had the paradoxical situation of two ministries under the same minister engaged in gladiatorial contest before the bemused Cabinet with the minister making an independent intervention not necessarily committed to either side."

Tajuddin Ahmed may have had a high regard for the planners, but with his sharp political antennas he should have realized that leaving everything to a group of non-political technocrats was a risky proposition in a politically charged environment. Tajuddin Ahmed's behavior is puzzling given his reputation as a conscientious and meticulous person. Did he believe that the Prime Minister himself was going to guide the Planning Commission and that he should not intervene? Or did he believe that since the Deputy Chairman had been given the rank of a minister, the latter may resent pro-active guidance from a minister and prefer that ministerial advice is provided only when asked for? These questions, potentially of interest to many, are not explored by Rehman Sobhan. Perhaps he felt that this would become a speculative exercise, something that he wanted to avoid.

The authority given to the Planning Commission to coordinate policy across ministries and to vet projects proposed by the ministries did not go down well with the ministries. Both the political and the bureaucratic leadership in the ministries felt this was an encroachment on their jurisdiction. That the planners were outsiders to the system contributed to the feeling that this was a group of arrogant upstarts usurping the turf of others. The planners could have counteracted this by building relationships with the ministers and senior bureaucrats. It appears that the Planning Commission was disinclined to invest in such relationship-building perhaps because its leading members, including Rehman Sobhan, enjoyed close relations with the Prime Minister. Having had the ear of the Prime Minister and convinced that they were on the right side of history, there was a "take it or leave it" attitude, as Rehman Sobhan admits.

This raises some questions that are not answered in the book. Was the Prime Minister comfortable with the planners' unwillingness to build relations or did he expect them to navigate, on their own, the "murky byways of party politics"? He had introduced a disruption in the system by inducting a group of academics, politically tested but with no prior experience in government, and giving them enormous responsibility, and considerable power and prestige. This is not how things were done in the Pakistan era and was new to the bureaucrats. The granting of such power to a small group of technocrats may have also come as a surprise to the politicians. Did the Prime Minister think through the ramifications of such a disruptive act?

It seems that he may not have done such prior thinking. So, it is useful to analyze how he reacted when all these dynamics - political, administrative, and personal - unfolded. We get some glimpses of this in Rehman Sobhan's writing. However, Sobhan could have gone deeper into the subject and addressed questions such as the following: did the dynamics surprise (or even shock) Bangabandhu and he did not quite know how to deal with these, or is it that he anticipated these dynamics but, when these materialized, he struggled to address these, partly because he was overwhelmed by many other issues?

It appears that at some point Rehman Sobhan and his colleagues started realizing that their relationship with the Prime Minister was no longer as close as it used to be, or that he was not providing them the level of support they had expected. It appears that, even then, the planners did not change gear and start developing relationships with other players in government. If so, was it on some grounds of principle, or is it that the planning commission leadership was arrogant or egoistic by nature and thus found it difficult to build bridges? Is it that, having spent much of their career till then fighting constant battles with the Pakistani establishment, the planners were locked in a battle-hardened mode? There is not enough self-reflection on these questions by Professor Sobhan.

As mentioned at the outset, paucity of space has precluded a full-scale review of Rehman Sobhan's enormously rich and insightful book. This review has chosen to focus on one important issue, i.e., the political challenges faced by technocrats who are brought into government from outside, and the critical need for them to build their own relationships within government without the top leadership always batting for them. The planners perhaps enjoyed the power given to them but were unwilling to play the complex game of negotiation, compromise, and maneuvering, which successful execution of power requires. It seems that the balance they sought between the insulation of the technocrat and the power of the politician proved elusive at the end.

Nonetheless, what Rehman Sobhan and his colleagues at the Planning Commission achieved in terms of dealing with the urgent tasks of relief and rehabilitation, establishing the mechanisms of economic management, articulating a long-term vision through the first five-year plan prepared in record time, negotiating aid, and steering the nationalized industries, is a testimony to the dedication, integrity, and hard work of these intrepid economists.

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