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The Impacts of IPO Financing and Monetary Policy on Economic Growth in Bangladesh: Evidence from a Dynamic Assessment

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Abstract

Bangladesh is considered a fast-growing emerging economy and the new Asian tiger. The increasing need for capital funds in Bangladesh is largely met by banks, mainly due to the country's underdeveloped nature of the stock market. Bank financing is assumed to be influenced by monetary policies, particularly, by bank rates adopted each year by the central bank of Bangladesh. On the other hand, while some studies stress the need for strengthening the debt and equity securities markets to support Bangladesh's fast economic growth, debates swirl about whether or to what extent the stock market contributes to economic growth in the country. To address the understanding gap, in this paper, we examine the impact of capital financing through equity initial public offerings (IPO) and bank rate on the economic growth of Bangladesh. We use annual data from 1981 to 2019 and employ an autoregressive distributive lag (ARDL) framework to examine the long-run and short-run impacts of IPO financing and bank rate on GDP growth rate. Our findings suggest the existence of a long-run cointegrating relationship between IPO financing, bank rate, and GDP growth. We find that IPO financing does not have a significant long-run impact but shows only a one-period short-run positive impact on economic growth. On the other hand, bank rate shows a long-run negative and a one-period short-run positive impact on economic growth. Findings overall suggest that IPO financing does not significantly contribute to long-run economic growth while giving only a temporary boost. Further, increases in bank rate - as one would expect - depress economic growth in the long-run, while generating herd behavior immediately. Our findings stress the need for encouraging more quality IPO issuances, increasing the issuance size, and ensuring proper utilization of the funds by IPO issuers to make the capital market a key driver of economic growth.

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1. Introduction

Bangladesh is one of the fast-growing emerging economies globally and is considered the new Asian tiger. The country awaits successful LDC graduation in 2026 to become a middle-income country and pursues several strategic and long-term development plans, such as the Bangladesh Delta Plan (BDP) 2100, the Eighth Five Year Plan (Eighth FYP - July 2020 to June 2025), the Second Perspective Plan 2020, and the Sustainable Development Goals. While

these goals and plans are interrelated, a significantly large amount of investment is needed to pursue them. For example, the BDP Investment Plan alone to implement by 2100 consists of a total of 80 projects: 65 are physical projects and 15 are institutional and knowledge development projects at the first phase up to 2030 (GED, 2018). The total capital investment cost amounts to BDT 2,978 billion (US$37 billion) and all projects are to be within the next eight years. The economy as a whole, as estimated by the Eighth FYP, requires BDT about 6252 billion (US$73 billion) (GED, 2020). The private sector, alongside the government, has always been the major source of capital investments needed in Bangladesh. The Eighth FYP requires the private sector to contribute BDT 4673 billion (US$55 billion) investment - about 75% of the total BDT 6252 billion investment need. The total investment need for the BDP 2100 is about 2.5% of GDP per annum, (presently it is only 0.8% of GDP), out of which some 0.5% of GDP could be funded by the private sector.

The increasing need for capital in the private sector in Bangladesh is largely met by banks, mainly due to the country's underdeveloped nature of the stock market and volatile public trust. Bangladesh Bank data shows that credit growth in the banking sector is about 12% year-on-year basis over the last two years, which reflects the private sector's over-reliance on banks for long-term capital financing. While the capital market typically serves as the source for capital financing, the scenario is rather opposite in Bangladesh (BIS, 2019). Since the independence of the country, Banks serve as the main source of both working capital and long-term capital supplier to the private sector in Bangladesh. However, the capital market in Bangladesh is recently taking expanding in both its depth and breadth toward becoming a reliable source for capital financing (Bangladesh Bank, 2020). As of August 2021, the market capitalization of the Dhaka Stock Exchange – the main bourse of the country reaches about BDT 3808.46 billion 22.29% of GDP. According to the Bangladesh Securities and Exchange Commission data, a total of about BDT 123 billion have been raised from 1981 to 2020 by local and multinational companies through a total of 310 initial publicofferings.

However, the development of the capital market remains significantly short of expectations. The market capitalization to GDP ratio is well below of the peer countries, such as India 115% (4 June 2021) and Vietnam 90.3% (5 April 2021) (Kant, 2021; Nhan Dan, 2021), reflecting the significantly lower depth of the market.

As of 3 August 2021, the number of listed securities stands only 610 covering 352 equities, 37 mutual funds, 2 debentures, 8 corporate bonds, and 221 treasury bonds. The numbers reflect the smaller breadth of the market, as the market is heavily focused on equities. Furthermore, the number of companies issuing equities remains significantly low considering a life of forty years. The number of listed securities is significantly low compared to the number of firms registered with the RJSC. Currently, there are a total of 235,545 entities registered under the RJSC and among them, the number of public companies is 3,496, alongside 167,802 private companies, and 887 foreign companies (Begum, 2019).

Considering the overall development of the market, there have been concerns swirling around about the role of the capital market in the economic growth of the country. Particularly, when Bangladesh achieves an economic growth of over 7% for over a decade and requires an increasing amount of long-term capital supply, the question becomes significant among the economic policymakers and

regulators of the market. Considering the existing literature, studies generally suggest that stock market development, predomi- nantly proxied by market capitalization and indexes, encourages economic growth and vice versa (NASDAQ, 2014; Caporale et al., 2004; Enisan and Olufisayo, 2009; Pan and Mishra, 2018; Pradhan et al., 2020). Empirical evidence on the impacts of IPO financing on economic growth is scarce (e.g., Leung & Tang, 2013; Ho & Odhiambo, 2012), with completely absent in Bangladesh's context.

In an attempt to respond to the knowledge, in this paper, we examine the impact of capital financing through equity initial public offerings (IPO) on the economic growth of Bangladesh. As mentioned earlier, the country's economic growth is largely supported by the banking sector. Therefore, in evaluating the role of IPOs on economic growth, we consider bank rate as a variable since bank credit growth is assumed to be dependent on the monetary policy adopted by the Bangladesh Bank – the central bank of the country. We use annual data from 1981 to 2019 and employ an autoregressive distributive lag (ARDL) framework to examine the long-run and short-run impacts of IPO financing and bank rate on GDP growth rate. The paper has several literature and policy implications. First, the paper offers a response to the growing debate about the impact of capital supply through the stock market on the economic growth of Bangladesh over the last four decades. Second, the paper fulfills the literature gap and provides further research direction to understand the role of the capital market in the economic growth of Bangladesh. Third, the findings offer evidence on short and long-run impacts separately, which allows having a differentiated understanding of the immediate and overall impacts of IPO financing through the capital market. Finally, the findings offer a basis for the regulators, particularly, the BSEC on future policy design in making the capital market the main of long-term funding to support the country's faster economic growth and long-term development plans.

2. Literature review

As stated earlier, there is a good number of studies examining the relationship between stock market development and economic growth in different contexts and settings (e.g., a country or a panel of countries). In the existing literature, studies examining the contribution of capital supply through the primary market IPO financing to economic growth remain limited; while in a Bangladesh context, it remains unexplored. In the following discussion, a brief about the literature examining the link between stock market development and economic growth is presented, following by a review of the studies addressing the contribution of IPO financing to economic growth. Considering bank credit to be a key driver of economic growth in consideration to this research, a brief review on the impact of monetary policy on economic growth is also presented.

There is generally a positive relationship between stock market development and the economic growth of a country since there is a close interrelationship between the two (Samsi et al., 2019). It is because stock market development allows the mobilization of large private investments (Isimbabi, 1997). Arestis et al. (2001) find that both the stock market and the banking sector developments enhance the economic growth; however, banking sector development has more power in this case. Levine & Zervos (1998) show that although the size of the stock market is not linked to economic growth, stock market liquidity has a positive impact on economic growth, productivity improvements, and capital allocation. Samsi et al. (2019), in the context of the

financial crisis in the ASEAN-5 countries, find that shocks to the stock market are positively related to the real output and that the stock market particularly is a key driver of economic growth in Malaysia and Thailand. In a time-frame-dependent study, Levine & Zervos (1996) and Enisan & Olufisayo (2009) show that stock market development is positively associated with long-term economic growth. Hassan & Kalim (2017) suggest that stock market development and increased turnover have a significant and positive impact on the economic growth of low human developed countries. Caporale et al. (2004) suggest that a well-developed stock market can foster economic growth in the long run through faster capital accumulation and better resource allocation.

However, the overall impact of stock market development might depend on the type of asset classes interacting with the market. For example, Zhang & Wu (2012) suggest that stock market investment decisions and savings decisions together in the private sector affect the economic growth in China. Harvey (1989) finds that bond market variables (yield curve) can explain around 30% of the changes in economic growth, while the stock market variables can explain only 5%. There is also evidence of a non-significant impact of stock market development on economic growth. Nagaishi (1999) finds that stock market development has no significant impact on the economic growth in India.

Studies, particularly on the impact of primary market IPO financing, are rather limited. Leung & Tang (2013) suggest that IPO financing and the real estate market have a significant role in China's faster economic growth. Ake & Ognaligui, R. (2010) also find a significant and positive impact of IPO financing on economic growth for Cameroon. Obrimah, O. A. (2016) both VC and non-VC backed IPOs have a positive relationship with economic growth.

A limited number of available studies relating to Bangladesh use market capitalization, indexes, and turnover to measure the stock market development and its impact on economic growth. The findings however remain inconclusive. Banerjee et al. (2017) find no long-term significant relationship between the stock market development and economic growth in Bangladesh – a neighboring country with socio-economic characteristics similar to India. Jamil & Shazia (2013) find that capital market deepening has little to no impact on Bangladesh's economic growth. On the other hand, Al-Shams & Ashraf (2015) and Hossin & Islam (2019) suggest a significant and positive relationship between the stock market development and the economic growth of Bangladesh. No study is so far available examining the impact of IPO financing on economic growth in a Bangladesh context.

Alongside stock market development, bank credit is another driver of economic growth. Credit growth is a function of the interest rate in the market. Banks use bank rate as the key policy rate and monetary policy instrument to increase the money supply to the economy through the financial sector credit mechanism. As such, the bank rate has a significant role in fostering the economic growth of a country. Smith (1957) finds that interest rates, together with tax ange rates, have a significant role in enhancing economic growth. On the other hand, Brimmer (1969) and Bose, N. (2002) raising policy rates to neutralize rising inflation slow down the real output growth rate. Awdeh (2019) suggests that the use of monetary tools with contractionary measures depress economic growth in the long run, and monetary policy transmission channels through bank credit and capital play a constructive role in GDP growth. Contractionary measures, such as a

higher bank rate could depress the economy by reducing the money supply and loanable funds in the market. Hossain & Maitra (2020) and Tan et al. (2020) show a negative long-run impact of real interest rate increases on economic growth.

Few robust studies have examined the relationship in the context of Bangladesh. Hossain (2015) examines the relationship between monetary policy variables and the economic growth in Bangladesh. They find that a targeted monetary policy of real interest rates and inflation targeting can better predict economic growth in Bangladesh. Reducing bank rates increases the money supply to the economy through higher credit growth in the banking sector. Ahmed & Islam (2004) examine the relationship between bank lending rates, exch rates, and economic growth. The study finds a positive relationship between bank lending rates and the economic growth of Bangladesh, which occurs due to the availability of larger bank credit at a lower interest rate. Chowdhury (2019) finds a long-run relationship between monetary policy and macroeconomic variables in the Bangladesh context. Rahman et al. (2019) suggest that monetary policy has a significant impact mediating role in economic growth in Bangladesh. The literature overall suggests that monetary policy, particularly, bank rate has significant effectiveness in .

affecting economic growth through influencing the level of money supply and loanable funds in the market.

All considered, the available literature in the context of Bangladesh suggests a research gap in the context of the contribution of IPO financing to economic growth. Furthermore, economic growth is sensitive to bank rate - the key policy rate and monetary policy instrument, through the credit growth mechanism. This paper addresses the research gap by exploring the dynamic relationship between IPO financing, bank rate, and economic growth.

3. Methodology

The section details our variables, data, and method specifications to evaluate the impact of IPO financing and monetary policy on economic growth.

3.1 Variables and data

In an attempt to explore the dynamic long and short-run relationship between IPO financing monetary policy, and economic growth, we employ a dynamic autoregressive distributive lag (ARDL) framework proposed by Pesaran & Shin (1995). In addition, we employ Granger causality to explore the existence of short-run causality to support the ARDL results. We consider three key variables: real GDP growth rate as the measure of economic growth, and Bank rate as the proxy for monetary policy and the amount of IPO financing. We use GDP growth rate as the dependent variable, and Bank rate and IPO financing as the independent variables.

We consider data for about 39 years from 1981 to 2019, as was the latest available at the time of conducting this research (as of January 2021). Data on real GDP growth rate (measured in %) are collected from the World Bank's World Development Indicators database, annual data on Bank rate (measured in %)is obtained from the Bangladesh Bank economic time-series database, and the yearly total IPO financing (amount in Bangladesh Taka) data are collected from the Bangladesh Securities & Exchange Commission.

3.2 Specification of model and estimation method

We use a time-series autoregressive distributed lag model (ARDL)-based framework proposed by Pesaran and Shin (1995) to explore the dynamic long-run and short-run relationship between IPO

financing (IPO), Bank rate (BR), and GDP growth rate (EG). The primary motivation for using the ARDL framework is that it can explore the long-run cointegrating relationship between the variables of interest a can separately produce the long-run and short-run relationships, even if the included variables are in a mixed-order of integrations (I(0) and I(1)). At the second stage, to explore short-run causality between the variables, we employ Granger causality to be tested to explore the direction of the causal relationships. To begin with a general relationship between IPO, BR, and EG, the following base linear equations can be considered:

$$EG = \beta_1 + \beta_2 LN(IPO_t) + \beta_3 BR_t + \varepsilon_{t_1} \text{----} (1)$$

Where, β1 is constant, β2 and β3 are coefficients, and εt1 is error term. The variable IPO is used in the logarithmic transformation to reduce the potential adverse variations and large value biases associated with the data. The reformulations of equation (1) using the ARDL framework are explained in the following sections.

3.3 The ARDL approach

There are some advantages of using ARDL technique over the other cointegration techniques (Duasa, 2007) (i) ARDL method uses only a single reduced form equation (Pesaran & Shin, 1995) whereas, other conventional methods of cointegration estimate the long-run effects within a context of systems of equations; (ii) the technique can be used even if the data is integrated of order I(0) or I(1) or mixed, provided that no variable is integrated of order 2 or I(2); (iii) the technique can estimate both long-run and short-run impacts simultaneously without losing any information; (iv) ARDL approach offers better consistency than others (e.g., Johansen and Juselius, 1990) when the sample size is small (Narayan, 2004); (v) serial correlation and endogeneity can be handled by enough number of lags in the ARDL model (Pesaran & Shin, 1999); and (vi) the technique permits the use of different optimal lags for different variables in the same model, which is not permitted with the other standard techniques (Duasa, 2007).

The paper uses five steps of the ARDL approach to cointegration and impact estimations. First, we check for necessary diagnostics to ensure the model specified is free from different potential biases, i.e., serial correlation, heteroskedasticity, and normality. Second, we check for the stationarity of all three variables - IPO, BR, and EG - to ensure that the variables are either I(0) or I(1), and none of them are I(2). Third, we select the optimal lag order for each variable included in the ARDL equations. ARDL model implementation can automatically choose the optimal lag length based on a standard criterion, i.e., Akaike's information criterion (AIC). Fourth, we estimate the ARDL F-bounds test using the optimal lags to test the existence of a long-run cointegrating relationship between the variables in the model. Finally, based on the cointegration test results, the long-run and short-run models are estimated to explore the impacts of IPO and BR on EG. Furthermore, we run dignostic tests to check for data normality, heteroskedasticity, serial correlation, and estimated parameter stability.

Equation (1) can be reformulated in the following ARDL form to examine the long-run and short-run relationshipbetween IPO, BR, and EG; where ∞1, ∞2, and ∞3 are short-run and ∞4, ∞5, and ∞6 are long-run coefficients to be estimated, m and k is lag order for the independent variables, n is the lag order for the dependent variable, and ☒t denotes the error term.

$$\Delta EG = \infty_0 + \sum_{i=1}^{n} \infty_1 \Delta EG_{t-1} + \sum_{i=1}^{m} \infty_2 \Delta LNIPO_{t-1} + \sum_{i=1}^{k} \infty_3 \Delta BR_{t-1} + \infty_4 EG_{t-1} + \infty_5 LNIPO_{t-1} + \infty_6 BR_{t-1} + \varepsilon_t \text{ - - - - - } (2)$$

In equation (2), the long-run impact is estimated by

$$EG = \alpha_0 + \sum_{i=1}^{n} \infty_4 \ \Delta EG_{t-1} + \sum_{i=1}^{m} \infty_5 \Delta LNIPO_{t-1} + \sum_{i=1}^{k} \infty_6 \Delta ABR_t + \mathcal{E}_t \text{ ------- } (2.1)$$

and the short-run impact is estimated by

$$\Delta EG = \infty_0 + \sum_{i=1}^{n} \infty_1 \Delta EG_{t-1} + \sum_{i=1}^{m} \infty_2 \Delta LNIPO_{t-1} + \sum_{i=1}^{k} \infty_3 \Delta BR_{t-1} + \lambda ect_{t-1} + \mathcal{E}_t$$

Here, ectt-1 is one-period error correction term, λ is the coefficient of measuring the speed of adjustment to stabilize the disequilibrium in the model in the long run. A higher magnitude of λ indicates a higher speed of adjustment in the short run and a negative sign of λ is expected as it confirms a stable relationship between the variables that returns to the equilibrium in the long run (Coekley et al., 2004).

3.4 ARDL Bounds Test

ARDL bounds test is conducted using the Unrestricted Constant and No Trend case to estimate the cointegration for each of the three equations (2). The Bounds F statistic is used to test the joint significance of optimally-lagged level variables coefficients to examine the cointegrating relationship among the variables (Pesaran et al., 2001). The null hypothesis of the bounds tests for each of the equations (2), is $\infty_4 = \infty_5 = \infty_6 = 0$. Narayan (2005) argues that the critical values in Pesaran et al. (2001) are more appropriate for a large sample size; therefore, in addition to Pesaran et al. (2001), we also compare the significance of the F statistics with the critical values from Narayan (2005) which is more consisten for small sample size (30-80). There are lower bound (FL) and upper bound (FU) critical values. If the F stat > FU, there is cointegration among the variables but if F stat< FL no cointegration exists. When falls between the lower and the upper bounds, the cointegration relationship remains inconclusive (Narayan, 2005).

3.5 Data description

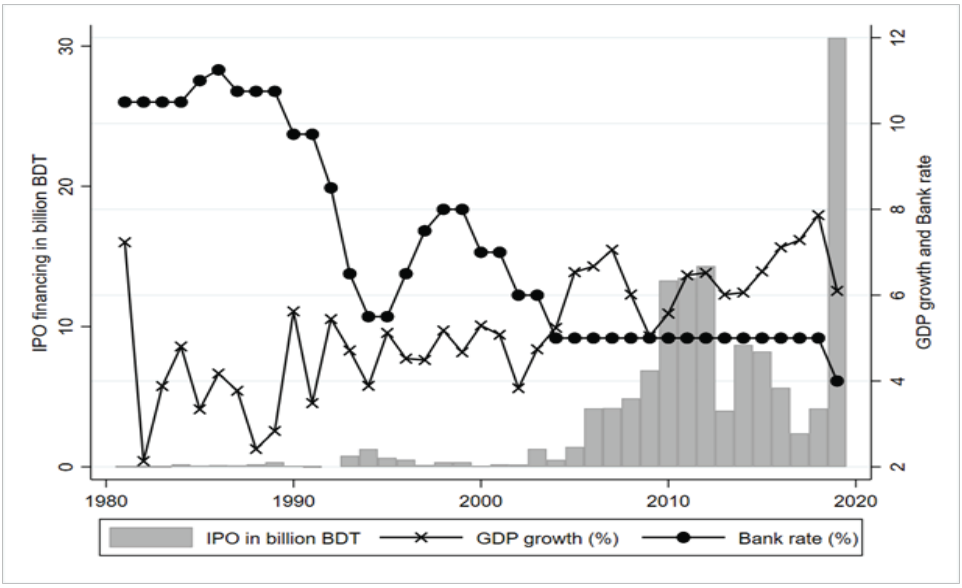
Table 1 reports the descriptive statistics of the variables considered. Figure 1 presents the patterns of the data series over the 39 years for IPO financing, Bank rate, and Economic growth. The maximum IPO financing in a year has been only BDT 30 billion, which reflects the potential of the capital market in absorbing a large number and size of IPOs. No data were available for 1992, reflecting the zero for the minimum IPO financing. Bangladesh achieved an average of 5.2% over the 39 years, which rose to 7.9% in 2018 – about four times high from 2.1% in 1982. The average policy rate used by the monetary policy over the period is 7.1%, with the highest 11.3% in 1986 and the lowest in history at 4% in 2019.

Table 1: Descriptive statistics

Variable	No. of Observations	Mean	Std. Deviation	Min	Max
IPO financing (in million BDT)	38	3430	6000	0	30600
lnIPO	39	20.3	2.2	15.0	24.1
GDP growth rate (%)	39	5.2	1.4	2.1	7.9
Bank rate (%)	39	7.1	2.4	4.0	11.3

Source: authors' calculation

Figure 1: Patterns of IPO financing, Bank rate, and Economic growth



Source: authors' developed

Figure 1 shows that IPO financing significantly increased since the middle of the 2000-2010 decade, with the highest in 2019. The patterns however remain fluctuating, perhaps reflecting that the pattern of capital supply to the economy through the primary market is rather inconsistent. The pattern also indicates that the market makers and regulators during this period perhaps lacked a vision for transforming the market into a key source of capital supply to support the economy's growth and development. Bank rate consistently declines over the 39 years, with a stable rate of around 5% from 2004 to 2018. Bangladesh has demonstrated significant improvement in economic growth, as starting at a near-zero GDP growth in 1982, it has achieved an average of above 6% growth since the middle of the 2000-2010 decade. The exceptional growth record has made the country as one of the fast-growing emerging economies in the world.

Table 2: Results for normality, serial correlation, and heteroscedasticity tests

Test	EG	LNIPO	BR
Normality (Adj chi2(2)) *Skewness and kurtosis tests for normality*	0.79	1.33	1.98
Serial correlation (Chi-square) *Breusch-Godfrey LM Test*		0.147	
Heterosk adisticity (Chi-square) *Breusch-Pagan-Godfrey Test*		0.63	

Note: significance at 1%: ***; 5%: ** and 10%: *
Source: authors' calculation

3.6 Testing for normality, serial correlation, and heteroskedasticity

We run Breusch-Pagan/Cook-Weisberg test for heteroskedasticity and find a statistically non-significant Chi-square value of 0.63. It confirms that no existence of heteroskedasticity problem in the data series used. We also run the Breusch-Godfrey LM Test to check the existence of serial correlation, and a non-significant Chi-square value confirms the non-existence of serial correlation in the model specified.

Furthermore, we run the Skewness and kurtosis tests for normality for each of the variables included in our model, and we find that for none of the variables the adjusted Chi2 value is statistically significant, reflecting that data for each variable is normally distributed. Having confirmed the consistency of the data series, we proceed to analyze them.

4. Results and discussion

We first discuss the unit root test results, check cointegration among the variables using the F-bounds test, obtain the optimal lag length, and then present the main ARDL estimation results.

4.1 Test of stationarity (unit root)

The prerequisite of conducting the ARDL bounds test and ARDL estimation is that the variables must be either I (0) or I(2) or mix. To confirm this, stationarity tests are carried out using an Augmented Dickey-Fuller (ADF) test. The results in Table 2 shows that all two variables (LNIPO and BR) are non-stationary at level, as the tests cannot reject the null of unit root (non-stationarity) on level data. However, at first differences of each variable, the test rejects the null, which means all variables are stationary at first difference. The tests under both 'Constant' and 'Constant and Trend' assumptions yield the same result. EG is stationary across all forms of the test. Therefore, the ADF test results confirm that the variables are integrated of order 1, i.e., I(1), which satisfies the prior condition to run the ARDL bounds test and estimations.

Table 2: Augmented Dickey-Fuller test for stationarity

Variable	Level		First Difference	
	Intercept	Intercept and Trend	Intercept	Intercept and Trend
LN IPO	-0.365	-2.246	-5.131***	-5.072***
BR	-0.874	-1.699	-3.751**	-3.681**
EG	-3.479***	-8.458***	-11.070***	-10.726***

*Null Hypothesis: series contains unit root; significance at 1%: ***; 5%: ** and 10%: **

Source: authors' calculation

4.2 ARDL cointegration test and choosing the optimal lag length

As the ADF test confirms that all three variables are I(1) and none of them are I(2), the ARDL cointegration can now be performed. Table 3 reports the ARDL bounds test results for the ARDL equations (4), (5), and (6) on the existence of a cointegrating relationship among the variables.

Table 3: ARDL cointegration test (F bounds test) and optimal lag length results

Variable	LNIPO	BR	EG
Optimal AIC Lag	3	2	2
Unrestricted Constant and No Trend			
F Stat		F = 6.672 (t = -4.390)***	

*Significance at 1%: ***; 5%: ** and 10%: *; Null: No cointegration*

Source: authors' calculation

Table 3 presents two important information: one, the optimal lag order produced by the AIC criteria and two, the F bounds test statsitics which confirms the existence of conitegrating relationship among the variables. Based on AIC, a lag order of (3, 2, 2) is chosen as optimal for equation (2), where lag 3 applies to LNIPO and 2 applies to BR and EG each. We run the F bounds test under the optimal lag length setting to confirm the existence of a long-run relationship among the variables. We find the F value to be statistically significant at 1% level, where confirms the existence of a long-run relationship among the variables as the null of no cointegration can be rejected at 1% level. As a long-run relationship is confirmed, we proceed to run the full ARDL estimation using the optimal lag lengths to explore the impact of LNIPO and BR on EG.

4.3 Long-run impact of IPO financing and Bank rate on Economic growth

Table 5 shows the results of the estimated impacts of LNIPO and BR on EG. Results show that LNIPO does not have a significant long-run impact on EG, although the estimated coefficient is positive in sign. The result suggests that IPO financing in Bangladesh has no significant contribution to the economic growth of the country. Although statistically insignificant, the sign of the estimated coefficient is encouraging as it indicates a likely positive impact of IPO financing on economic growth. On the other hand, we find a significant and negative long-run impact of BR on EG. The result suggests that increases in bank rates in the long reduces economic growth. In other words, the pursuit of a contractionary monetary policy period reduces economic growth in Bangladesh. It is consistent with the expectation since a higher bank rate would lead to increases in the market interest rates and the reduction of the money supply to the economy, which in turn would cause a reduction in the availability of loanable funds in the market while raising the cost of fund (Chowdhury, 2019). The outcome would be reduced credit disbursements and growth in the market, leading to a contraction in investment, production, incomes, and

Table 5: ARDL estimation results of the long-run impacts

Variable	Coefficient	Standard errors	P-values
BR	-0.322**	0.121	0.015
lnIPO	0.237	0.150	0.131
Value of error-correction term (ec): -0.999 (0.228)***			

*Significance at 1%: ***; 5%: ** and 10%: **

Source: authors' calculation

expenditures resulting in a slowdown of the country's GDP growth (Ahmed & Islam, 2004).

4.4 Short-run impact of IPO financing and Bank rate on Economic growth

Table 6 reports the estimated short-run impact of LNIPO and BR on EG. Results suggest that LNIPO has a one-period significant and positive impact on EG in the short run; however, the impact is weakly significant at 10%. In other words, there is weak evidence that IPO financing in a year has a significant and positive impact on economic growth after one year. Although weakly significant, the result is intuitively meaningful since financing raised through the IPOs would take a certain time lag to have an effect. It is because after an equity-issuing firm raises funds through an IPO in a year, it will take time to actually invests and inject the funds into its targeted economic projects and activities (e.g., Balancing, Modernization, Rehabilitation, and Expansion or Greenfield projects) (Ake & Ognaligui, 2010). Once the investment projects or activities are completed, it would contribute to increases in production, employment, and income in the economy, leading to a positive contribution to GDP growth (Leung & Tang, 2013). Our results indicate that it could take about one year (from the year of actual financing) to see the transmission of the impact of IPO financing on economic growth. Combined with the long-run results, our findings suggest that while IPO financing could have some immediate growth-enhancing effects, its overall effects are not significant over the 39 years

Table 6: ARDL estimation results of the short-run impacts

Variable	Coefficient	Standard errors	P -values
EG (D1)	0.458*	0.245	0.076
BR (D1)	-0.153	0.343	0.661
BR (LD1)	0.721*	0.370	0.066
lnIPO (D1)	-0.072	0.192	0.711
lnIPO (LD1)	-0.215	0.183	0.254
lnIPO (LD2)	0.386*	0.186	0.051
Constant	2.564	3.835	0.511
R -squared	0.626		
Adjusted R -squared	0.458		
Log likelihood	-27.978		

*Significance at 1% = ***; 5% = ** and 10% = *; in time-series ARDL estimation, D1 indicates level or zero lag, LD2 indicates one-period lag, and so on;*
Source: authors' calculation.

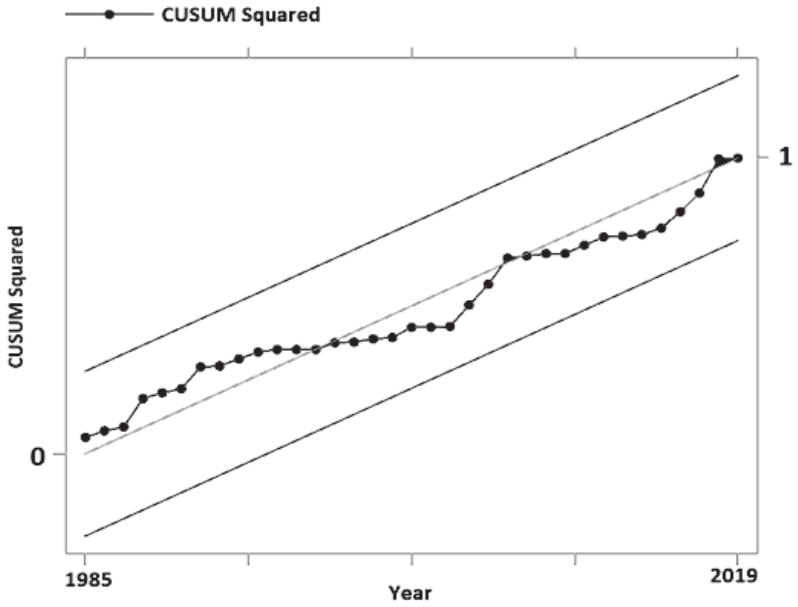
considered in this regard.

Similar to IPO financing, BR shows a weakly significant and positive impact on EG; however, at level or zero lag. The result suggests whenever the bank rate is increased in a year, in the same year it has a positive impact on economic growth. It could happen due to the 'herd behavior' shown by individuals, i.e., individual decisions are driven by group behavior (Bose, 2002). Herd behavior is a behavior where individuals act collectively without any centralized direction, often following the actions of each other(Awdeh, 2019). An announcement of the monetary policy statement (MPS) on 1 July and immediate actual bank rate increases in the new fiscal year (1 July to 30 June for Bangladesh) raises market interest rate expectations for the year and encourages people to borrow immediately after the announcement to avoid an increased cost of financing in the future. The herding behavior of people eventually raises the market interest rates quicker than what was initially expected, depressing future demand for loanable funds (Hossain & Maitra, 2020). Combining the long-run impacts of BR on EG, we can derive that the actual increases in bank rates and the herding behavior - in combination - raises the interest rates in the market in the long run, which in turn slows down economic growth through a reduced money supply and credit growth as explained earlier.

4.5 Checking for parameter stability

Figure 2 shows the cumulative sum control square (CUSUM-Square) chart. The test, which uses the sum of squared recursive residuals, helps to detect random movements (those that do not necessarily come from a structural change in coefficients) in the estimated parameters, as suggested by Brown, Durbin, Evans (1975). As the plot in Figure 2 lies within the 95% critical bounds, they confirm the stability of the estimated coefficients.

Figure 2: CUSUM squared control chart



Source: author developed

5.0 Conclusion

Bangladesh has demonstrated a record of unprecedented economic growth in the last decade and is considered one of the fast-growing emerging economies in the world. The long-term economic growth and investment plans of Bangladesh's government require a significant amount of capital mobilization through the financial sector. While the economy is largely dependent on the banking sector, the capital market's naïve development raises concerns about its role in supporting the economy's development. In this paper, we evaluate the impact of capital financing through IPOs on the economic growth of Bangladesh, while factoring in the role of monetary policy, i.e., bank rate. We find that funds supplied through the stock market (primary market or IPOs) remain an insignificant contributor to economic growth enhancement in the long run. However, we find some immediate positive impact of IPO financing on economic growth after one year of an IPO funding is actually raised. While increases in bank rates depress long-term growth, it shows an immediate growth-enhancing effect, possibly through herd behavior. The findings stress the need for encouraging more quality IPO issuances in order to make it a key driver of faster economic growth that Bangladesh aims to achieve in the next few decades.

Our findings have several policy implications. The evidence that IPO financing through the stock market has no long-run significant and positive effect on economic growth questions the development and contribution of the market over the last 40 years. Any effect it has is transitory and weak. This finding is opposite to what people expect in reality and is consistent with the fact the stock market capitalization in Bangladesh remains as low compared to its peer countries. There could be several reasons why a long-run effect could be non-existent for over four decades considered in this research. First, funds acquired have not been utilized and invested appropriately by the firms issuing equities; second, the actual volume of funds remains low compared to what needs to be fed to the faster economic growth; and third, the number of equity listings is significantly low - 352 listed equities to date compared to the 167,802 private companies and 887 foreign companies registered with the RJSC in Bangladesh. In consideration of this reality, our findings call the BSEC for policy actions in increasing the number of good quality company listings, increasing the volume of funds mobilized, and ensuring that firms appropriately invest and utilize the funds raised through strict monitoring and surveillance mechanism.

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