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Profitability and Expanding Collection Period in Bangladesh

Sharif Nurul Ahkam, North South University, Bangladesh*
https://orcid.org/0000-0002-3377-215X

Khairul Alom, Northern University, Bangladesh

ABSTRACT

In this article, the authors investigate the relationship between profitability and receivables management of DSE listed non-financial firms in Bangladesh for the years 2000-2017. A cointegration model is used to examine the relationship between average collection period (ACP), return on assets (ROA), firm size, and debt ratio of firms. Impulse response analysis indicates that while the other variables quickly return to equilibrium, a shock to ACP or profitability seems to have a significant and durable impact on the relationship. A GMM model has also been used to estimate a regression that shows the impact of increasing ACP on profitability. The results strongly point to a cointegrating relationship and the critical role of receivables management on profitability. The article contributes to the existing literature by providing strong evidence that the average collection period is the most critical variable in addressing control of working capital management. However, this variable is the most difficult variable to manage, especially after there is an indication that it is worsening.

KEYWORDS

Average Collection Period, Stationarity, Cointegration, Generalized Method of Moments Regression, Working Capital

INTRODUCTION

This paper examines the relationship between receivables and profitability in the context of Bangladesh, a country rapidly growing and expected to be a significant force in the global economy. We often hear about lack of credit being a problem for new businesses and the failures of new entrepreneurs. The problem seems to have become more acute in recent years. The average collection period (ACP), a measure of receivables management efficiency, has increased by 100 days or more for many firms in Bangladesh (Ahkam et al., 2021). This appears to be common in developing countries and it impinges on cash flows, precipitating a need for more short-term financing. In this paper, we show that this trend of increasing receivables significantly impacts profitability. Based on what we are seeing in

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Bangladesh, India, and many emerging economies, receivables management is not getting adequate attention and continues to weaken.

A steady stream of research on working capital in recent years demonstrates the increasing recognition of working capital management. This is especially true for middle-income and emerging economies. Defined by the difference between current assets (accounts receivables, cash, and cash equivalents, inventories) and current liabilities (accounts payable, short-term debts), working capital measures are indicative of the financial strength of a firm. Given that the major components of working capital are receivables and inventory, it is difficult to separate a discussion of receivables from working capital. Proper management of short-term working capital is necessary for a firm's long-term value creation. Working capital ratios, such as inventory turnover and receivables turnover, have important consequences for successful working capital management. While some researchers have studied working capital as a composite of component variables (e.g., Ahkam & Alom, 2019), no investigation specifically focuses on receivables independently and looks at its impact on profitability. Unlike most papers on working capital, we intend to highlight receivables management in this paper, and we believe it is worth examining the issue given the reported problems with receivables in the emerging economies.

This article is organized as follows. We present a brief literature review in the section below. This is followed by a section discussing the data we have used and the methodology we have applied. In the subsequent section, we provide details of the specific model we applied in this paper. This section has three subsections covering a) specification of the cointegration model, b) panel causality specification and impulse response function, and c) specification of the GMM model. We then present a discussion of the results and conclude with a section addressing ways to better understand the issues examined in this article.

LITERATURE REVIEW

An effective working capital management policy requires determining the optimal level of current assets and current liabilities that a firm should hold for optimal operation. Such a policy will maintain an optimal level of working capital so that firms can avoid excessive investment in current assets and increase profitability (Şen, & Oruç, 2009). However, it is difficult to specify what is an optimal level of working capital structure, and conflicting evidence has been presented by researchers. Baños-Caballero et al. (2012, 2014) and Mun and Jang (2015) found that there is indeed an inverted U-shape relationship between a firm's value (and profitability) and working capital level. While this idea has gained wide acceptance, its validity is in question in the context of developing countries and emerging economies. Within a given industry, many firms may have a level of working capital that maximizes their profits or values; however, that does not necessarily mean that the same level is optimal for all firms. Firms on the left side of the curve's peak can, theoretically, improve performance by moving toward the peak, and firms on the right side of the peak can improve by moving left toward where the peak is. However, Ahkam et al. (2021) provided evidence that such movements do not improve performance. When a firm with very low ACP fails to improve profitability by relaxing receivable collections, that points to a difficult credit collection environment. Ahkam and Alom (2019) argued that benefits from any attempt to move toward the middle would be available only to the firms that are positioned to the extreme, either heavily overinvested in working capital or significantly underinvested in working capital.

Another vexing question is, Will more profitable companies have a more efficient working capital level (lean or a level with an ideal cushion), or is it the other way around? Deloof (2003) pointed out the plausibility of the relationship between profitability and working capital working both ways. Basically, this is an endogeneity issue that has not been examined extensively in the literature. A poorly performing firm may simply be forced into a situation where it cannot maintain a desirable level of working capital. Cointegration and DH Panel causality tests may be implemented to investigate the

presence of cointegrating behavior. Garcia-Teruel and Martinez-Solano (2007), Ahkam and Alom (2019), and Alom (2018), also recognized the likely presence of this two-way relationship. Lazaridis and Tryfonidis (2006) likewise concluded that operating performance will dictate to some extent how working capital is managed.

Researchers have directed significant attention to accounts receivable, especially the impact of trade credit, and accounts payable. Even though extending trade credit must be financed at a cost, the benefits may outweigh the cost. It is easy to associate trade credit with increased sales revenue (Brennan et al., 1988; Peterson & Rajan, 1997). Emery (1987) rightly pointed out that, in times of low demand, it helps to improve sales and that the return from trade credit is likely to be higher than the return from money market investment. However, at some point, the costs probably outweigh the benefits. Several papers have looked at the components of working capital and examined whether managing the variables comprising working capital contributes to profitability. For example, Lazaridis and Tryfonidis (2006) focused on the cash conversion cycle and suggested that keeping different components of working capital (accounts receivable, accounts payable, inventory) at an optimal level contributes to profitability. Filbeck and Krueger (2005) suggested that firms should be able to lower financing costs and increase funds available for expansion by minimizing funds invested in current assets.

There is growing evidence that the new firms in the emerging economies have trouble maintaining control over their receivables. On the current asset side, receivables may involve more difficult outside parties more, which inventory or other short-term assets may not. For many of the listed businesses in Bangladesh, the amount invested in receivables may not be by policy choice. Rather, they are forced investments, and a significant portion of it may never be converted into cash. This is not a unique problem in Bangladesh as one can discern from work by Sobeková Majková & Ključnikov, (2017), Rojas et al. (2017), and Tran et al. (2017), but the problem is not being adequately discussed in the literature. The critical role played by cash flow management in small firms has been highlighted by Opiela (2006). Hussein et al. (2012) examined data from Pakistani manufacturing firms for the period 2006-2010 and concluded that as firms invest less in current assets and finance less with current liabilities, their profitability increases. Afrifa (2016) and Afrifa and Tingbani (2018) argued that firms with limited cash flow should limit investment in accounts receivable and inventory. Clearly, inventory comes into discussion as a component of working capital. If optimizing is about maximizing profit or minimizing cost, we may certainly benefit from managing receivables effectively independent of an adjustment in inventory and other components of working capital. Many businesses acquire impaired "leverage" or "bargaining power" over customers as time progresses.

RESEARCH METHODOLOGY

The first question we ask is, Does profitability affect receivables or investment in receivables improve profitability? We want to look at the receivables part more specifically, as that seems to present an increasingly problematic aspect for businesses in the emerging economies. It is reasonable to postulate that a firm following a relaxed trade credit policy, allowing the receivables balance to remain high, can sell more and generate more profits. A profitable company with good access to short-term financing can afford to follow a relaxed credit policy and maximize sales. A cointegrated relationship is a reasonable specification. Therefore, the first null hypothesis is:

H_o1: Receivables and profitability are not cointegrated.

A cointegrated relationship between the total debt ratio (TDR) and receivables balance makes sense for the same reason. As the receivables balance swells, the receivables must be financed, and that leads to an increasing amount of total debt. It is also possible that when a firm gets access to new financing, it relaxes its credit policy leading to a higher receivables balance. A cursory look at raw

data gives us the impression that weaker companies are trying to increase their sales by extending credit to customers with poor credit score. As a result, the increased sales booked this way are not resulting in higher profitability as the profitability erodes through financing cost and bad debt.

We will examine the relationship between the tightness or looseness of the credit policy and the profitability of companies listed with the Dhaka Stock Exchange. A tight credit policy will allow for a small balance in receivables and a smaller value for the ACP. Cointegration results are often supplemented with DH Panel causality tests to confirm the endogeneity between variables in the model. We will conduct causality tests to determine the directionality of relationships and will follow with cointegration tests. The null and alternative hypotheses are generally shown in the DH Panel causality test results, and we expect to find cointegration.

We will proceed to run a GMM regression to determine the extent of the relationship between ACP and profitability. In the presence of endogeneity and heteroskedasticity, ordinary panel regression does not provide consistent and efficient results. Others have provided evidence of firm size to be a significant predictor of profitability. The connection between firm size and profitability is contradictory. In large economies, profitability is negatively associated with firm size while, in the smaller economies in recent years, smaller firms tend to be less profitable than large firms. To test the relationship between these two variables, we cannot specify a sign of the coefficient for the following null hypothesis:

H_o2: Firm size does not have any impact on profitability.

The TDR variable is likely to have a negative sign of the coefficient as a high ratio is likely to result in high financial cost. Therefore, the beta coefficient for TDR is likely to be negative, with the null hypothesis as follows:

H_o3: Total debt ratio will have zero or positive impact on profitability.

The GMM regression will factor in the endogeneity in the model and indicate the strength of relationships among the variables.

VARIABLES AND DATA

For this paper, we have compiled data from 2000 to 2017 for 63 nonbank, non-financial firms in Bangladesh and investigated the possible cointegrating relationship among working capital, capital structure, firm size, and profitability. Even though these firms are listed on the stock exchange, for all practical purposes they may be considered small and medium-sized firms. A 2018 *Financial Express* report indicates that the average size of the top 200 Chinese companies is 158 times larger than the average size of top 200 companies in Bangladesh (Aiyer, 2018). The average in India is 25 times greater; Thailand's average is 11 times bigger and Indonesia's is 9 times bigger. Based on 2020 *Financial Express* report, the largest is a telecom company with a capitalization of $3.58 billion, the second largest is an appliance manufacturer with $2.87 billion, and the 7th largest is a chemical company with $933 million (Barman, 2021). These firms are significantly different from big western companies in many respects. Lack of capital and a skeletal capital market forces most firms to rely on short term-debt and bank borrowings. The absence of a bond market forces firms to rely on bank borrowing to finance assets resulting in low (sometimes negative) working capital. Dependence on imports and exports and foreign currency restrictions impact the level of working capital, especially accounts receivable and inventory. Most customers are notorious in their efforts to lengthen the time of payment extending the ACP, and management is rarely effective in collecting dues in time. The

state of the working capital situation at any particular point in time is rarely reflective of an established working capital management policy.

The data are collected primarily from the annual reports submitted to the Dhaka Stock Exchange (DSE). Of the 63 companies in the data list, seven of them belong to the food sector, 18 in the pharmaceutical chemical sector, 18 in the textile sector, and the rest are in fuel and power, construction, and miscellaneous sectors. There were a few missing values that were filled with averaging the adjacent numbers from the same series. Only a few numbers were affected. As stated previously, we focus on the average collection period (ACP) as a significant contributing factor to profitability. Firm size is commonly used in this type of analysis as some research works have indicated that results vary based on firm size. We define the variables as follows:

y: Return on Assets (ROA): (Net Income/Total Assets)
x_1: Natural log of Total Assets (FS)
x_2: Total Debt Ratio (TD): Total External Debt/Total Assetsx_3: Average Collection Period (ACP): Receivables/Average daily sales. The average collection period has been converted into natural logs.

Average annual sales are computed as $(Sales_t + Sales_{t-1})/2$. This result has been divided by 365 to obtain daily sales. The descriptive statistics are provided below in Table 1.

Jarque-Bera statistics and the zero p-values allow us to assume that the distributions of all variables display significant departures from a normal distribution. There is truly no bond market for the long-term debt capital market in Bangladesh. Many companies do not have any long-term debt at all, and a few have term loans that are paid off in five years resulting in unstable long-term debt. Firms rely on short-term debt, and this reliance is becoming normal and permanent. We have used the return on assets (ROA) as the variable representing the measure of the profitability of the firm. For firm size (FS), we have used the natural log of total assets. We felt that our sample size was not large enough to test variations among industry groups. The ACP is the primary predictor variable in our model. We have used the natural logs of ACP as the predictor variable.

We would like to point to the data summary for ACP since it points to the motivation of the paper. Note that the mean ACP is 53 days (about 1 month 3 weeks), and the median is 39 days (about

Table 1. Descriptive statistics

	ROA	TOT-DEBT-RATIO	FIRM_SIZE	ACP
Mean	0.044959	0.565776	20.69381	53.41151
Median	0.032360	0.553523	20.63181	38.99755
Maximum	0.479176	3.335492	25.46646	1432.110
Minimum	-0.652179	0.035862	16.31580	0.000000
Std. Dev.	0.071367	0.262941	1.354623	66.71477
Skewness	-0.686359	2.164458	0.146659	8.708066
Kurtosis	15.08841	17.83326	3.916251	164.2206
Jarque-Bera	6993.664	11281.66	43.73229	1242458.
Probability	0.000000	0.000000	0.000000	0.000000
Sum	50.98378	641.5896	23466.78	60568.65
Sum Sq. Dev.	5.770600	78.33334	2079.058	5042825.
Observations	1323	1323	1323	1323

1 and a half months). Therefore, in a vast majority of the cases, the firms are conducting mostly cash sales, pushing the ACP average down. We do not rule out the possibility that these firms rely mostly on cash sales because they became wiser from their bad experience of extending credit to customers with questionable credit quality. Based just on visual observation of the data for the low ACP firms, it appears that these firms had a much higher ACP earlier and permanently changed to a policy that results in a low ACP value. The firms showing up often with high ACP numbers seem to have ACP that has continued to increase. We suspect that these firms have lost control or have very little control over their receivable management. This is something we would like to investigate more in-depth, but that is a topic for a different paper.

We would also note that we have capped the ACP number to 500. We have three numbers that exceeded 1000, and this appears to be related to temporary operations closure for renovation. This is based on the belief that ACP numbers greater than 500 do not provide any additional information. Nevertheless, we also ran the numbers with the actual values (uncapped), and the results are not very different even though p-values are higher.

THE MODEL

The first step in testing the null of no cointegration is to compute the residuals from a specified cointegrating regression, which, in our case, takes the following form:

$$y_{i,t} = \alpha_i + \beta_{1i}x_{1i,t} + \beta_{2i}x_{2i,t} + \ldots + \beta_{ki}x_{ki,t} + \delta_{it} + \varepsilon_{i,t} \quad (1)$$

for t = 1,…..,T; i = 1, …, N, k = 1,….., K

where T refers to the number of observations over time (18 years), N refers to the number of firms in the panel (63 in our case), and K refers to the number of regressions variables (three in our case). Thus, for the purpose of this paper, we can restate the above equation as follows:

$$y_{i,t} = \alpha_i + \beta_{1i}x_{1i,t} + \beta_{2i}x_{2i,t} + \beta_{3i}x_{3i,t} + \delta_{it} + \varepsilon_{i,t} \quad (2)$$

for t = 1,…..,18; i = 1, …, 63, k = 1,….., 3

The variable names had been identified earlier in the Data and Variables section.

Panel Cointegration Analysis

Our primary cointegration test is based on Pedroni (2004). The key advantage of the Pedroni cointegration test over similar other tests is that it controls for size and heterogeneity, allowing for multiple regressors for the cointegration vector to vary across various sections of the panel. Pedroni (2004) provided seven panel cointegration statistics for seven tests. Four of these are based on the within-dimension tests, and the other three are based on the between-dimension or group statistics approach. The calculation of the Pedroni cointegration test statistics and critical values are available in Pedroni (1999).

We also conducted Johansen's (1988) tests of cointegration to confirm the presence of a cointegrating relationship revealed in Pedroni's test. This test also provides us with information about how many co-integrating relationships may be present in the panel data set.

Panel Causality Analysis and Impulse Response Functions

Once the respective variables are found to be co-integrated, we checked for Pairwise Dumitrescu-Hurlin (DH) Panel Causality to examine the short-run relationship between ROA and other variables. Such an exercise will provide an understanding of the interactions amongst the variables in the system and will shed light on the directions of the causality. While causality analysis does not prove absolute causality, this test does provide indications regarding how one variable at an early period is associated with the change in the value of another variable in the following period. The resulting equations are used in conjunction with Pairwise Dumitrescu-Hurlin (DH) Panel Causality tests. The next procedure in our analysis is examining the impulse response functions (IRFs) to obtain a more detailed perspective of the relationship.

GMM Regression Specification

Finally, we conduct the GMM regression to see how the explanatory variables explain the dependent variable. The GMM regression allows us to obtain efficient coefficients in the presence of endogeneity and autocorrelation present in the data. In a panel data set, the basic GMM equation is specified as

$$y_{i,t} = \alpha_i + \beta_{1i} x_{1i,t} + \beta_{2i} x_{2i,t} + \ldots + \beta_{ki} x_{ki,t} + \delta_{it} + \varepsilon_{i,t} \quad (3)$$

for t = 1,…..,T; i = 1, …, N, k = 1,….., K

where T refers to the number of observations over time (18 years), N refers to the number of firms (63) in the panel, and K refers to the number of regressions variables (three in our case). The δ_{it} corrects for endogeneity in the variables.

For the purpose of this paper, we have balanced panel data and we can restate the above equation as follows:

$$y_{i,t} = \alpha_i + \beta_{1i} x_{1i,t} + \beta_{2i} x_{2i,t} + \beta_{3i} x_{3i,t} + \delta_{it} + \varepsilon_{i,t} \quad (4)$$

for t = 1,…..,18; i = 1, …, 63, k = 1,….., 3, y = Return on Assets (ROA), x_1= Total Debt Ratio (TDR), x_2= Firm Size (FS), and x_3 = Average Collection Period (ACP)

Equation 4 above examines whether ROA is influenced by the ACP and the other independent variables. If credit rules are relaxed, receivables will go up, resulting in higher ACP. If this results in higher profit that more than offsets increased cost, we should get a positive coefficient. However, we feel that, in our data, the high ACP numbers are suggesting that the firms are stuck with slow paying customers for too long and/or booking sales on credit at very easy conditions that is resulting in higher financing and bad debt costs which are not made up by increased sales. That is why we expect a negative coefficient for ACP on the belief that high receivables resulting in high ACP is impinging on the profitability of the company.

RESULTS

Cointegration Tests

The unit root test results are provided in Table 2 below. The tests indicate that the data are stationery at level and with first difference according to the widely used LLC- t test, IPS-W stat, and ADF Fisher χ^2 test.

Table 2. Panel unit root test results

Method	ROA	TOTDEBT RATIO	FIRM_SIZE	ACP
LLC-t*				
Level	-4.311(0.00)**	-2.809(0.00)**	-0.246(0.40)	-4.904(0.00)**
First difference	-13.90(0.00)**	-12.83(0.00)**	-7.027(0.00)**	-15.76(0.00)**
IPS-W-stat				
Level	-5.691(0.00)**	-1.863(0.03)**	6.455(1.00)	-4.026(0.03)**
First difference	-16.14(0.00)**	-12.72(0.00)**	-9.282(0.00)**	-14.79(0.00)**
ADF-Fisher Chi-square				
Level	-5.283(0.00)**	-1.800(0.03)**	6.865(1.00)	-4.076(0.00)**
First difference	-14.96(0.00)**	-12.683(0.00)**	-9.596(0.00)**	-13.99(0.00)**

Note. LLC, IPS, ADF-Fisher examine the null hypothesis of non-stationarity, and ** indicates statistical significance at the 5% level. Probabilities for Fisher-type tests were computed by using an asymptotic $\chi 2$ distribution. All other tests assume asymptotic normality. The lag length is selected using the Modified Schwarz Information Criteria. All variables are in natural logarithms (LN).

Pedroni's cointegration tests are based on the residuals of the first stage estimate of cointegration, and the results are provided in Table 3 below. The top four tests are based on panel statistics, typically referred to as within dimension statistics, and the lower three tests are between dimension or group statistics. These statistics are more comprehensive generalizations of Phillip-Perrone rho and t statistics (Tests 2, 3, 5, and 6) and Augmented Dickey-Fuller t statistics (Tests 4 and 7) (Pedroni 1999). The first test is right-sided, and all the others are left-sided; high negative values point to a significant cointegrating relationship. The first test is generally thought to have low power. Of the seven tests, four of the tests have zero p-values and indicate the presence of a cointegrating relationship.

The results confirm the presence of a cointegrating relationship with Johansen's (1988) Fisher Panel test. In both cases, the null hypothesis of no cointegration is rejected. Johansen's test, presented in Table 4 below, indicates that there are four significant cointegrating relationships present in the

Table 3. Pedroni residual cointegration test results

Alternative hypothesis: common AR coefs. (within-dimension)				
	Statistic	**Weighted**		
		Prob.	**Statistic**	**Prob.**
Panel v-Statistic	-1.201974	0.8853	-4.137846	1.0000
Panel rho-Statistic	1.308654	0.9047	2.948416	0.9984
Panel PP-Statistic	-11.60042	0.0000	-8.803833	0.0000
Panel ADF-Statistic	-3.690549	0.0001	-5.630971	0.0000
Alternative hypothesis: individual AR coefs. (between-dimension)				
	Statistic	**Prob.**		
Group rho-Statistic	5.466436	1.0000		
Group PP-Statistic	-10.06035	0.0000		
Group ADF-Statistic	-4.220917	0.0000		

Note. Under the null tests, all variables are distributed normal (0, 1).

Table 4. Panel cointegration results of Johansen's Fisher test

Unrestricted Cointegration Rank Test (Trace and Maximum eigenvalue)				
Hypothesized	**Fisher Stat.***	**Prob.**	**Fisher Stat.***	**Prob.**
No. of CE(s)	**(from trace test)**		**(from max-eigen test)**	
None	1241.	0.0000	911.7	0.0000
At most 1	515.7	0.0000	359.4	0.0000
At most 2	281.0	0.0000	236.5	0.0000
At most 3	222.7	0.0000	222.7	0.0000

Note. * Probabilities are computed using asymptotic χ^2 distribution.

data set. The results indicate the presence of a strong cointegrating relationship among the variables, which is not very surprising.

Causality Test

Pairwise Demitrescu-Hurlin (DH) Panel Non-Causality Test is employed to investigate short-run dynamic relationships. Such an exercise will provide an understanding of the interactions amongst the variables in the system and sheds light on the directions of the causality. The DH causality test results are presented in Table 5 below.

The null hypothesis in each case is non-causality, and the p-values indicate that in all cases, we reject the non-causality hypothesis. The very small p-value in the first pair provide the support that ROA may be strongly influenced the TDR, but we cannot rule out TDR impacting ROA either as it may help improve sales. Similarly, the association between ROA and ACP appears to be strong and bidirectional. Particularly interesting is the relationship between ACP and TDR. It raises the plausibility that one variable is feeding the other variable. Higher ACP precipitated the need for increased borrowing and increased borrowing allows the firm to wait longer for payment from the customers. The bidirectional relationships between firm size and ACP and also between firm size and TDR are indicated.

Table 5. Dumitrescu-Hurlin panel causality test (Period of 2000-2017)

Null Hypothesis	W-Stat.	Zbar-Stat.	Prob.
TOTDEBTRATIO does not homogeneously cause ROA	1.82396	2.77328	0.0055
ROA does not homogeneously cause TOTDEBTRATIO	2.93452	7.45905	0.0014
ACP does not homogeneously cause ROA	2.07040	3.81310	0.0001
ROA does not homogeneously cause ACP	2.55906	5.87489	0.0009
FIRM_SIZE does not homogeneously cause ROA	2.09841	3.93127	0.0005
ROA does not homogeneously cause FIRM_SIZE	3.25148	8.79637	0.0000
ACP does not homogeneously cause TOTDEBTRATIO	1.91506	3.15767	0.0016
TOTDEBTRATIO does not homogeneously cause ACP	3.58923	10.2214	0.0000
FIRM_SIZE does not homogeneously cause TOTDEBTRATIO	2.45519	5.43661	0.0008
TOTDEBTRATIO does not homogeneously cause FIRM_SIZE	1.92169	3.18565	0.0014
FIRM_SIZE does not homogeneously cause ACP	2.73091	6.59996	0.0011
ACP does not homogeneously cause FIRM_SIZE	2.54002	5.79456	0.0009

Impulse Response Function

We proceed to examine the impulse response function (IRF) to gain a better perspective of the relationship. We have conducted impulse response functions, and some of the figures are presented in Figure 1. We have reported only the response of ROA responding to two standard deviation innovation in the variables used in the model. The figures indicate that two standard deviation innovation in ROA itself leads to improvement in the future ROA values. The response of ROA to TDR appears to be small but permanent.

The response of ROA to FS seems to be positive and lasting, but we cannot rule out that it is insignificant. We are not surprised by this as the variations in the firm sizes among the listed companies in DSE are not that great. The response of ROA to ACP, however, appears to be negative in the long-run, and it does not return to normal even though the upper band is almost touching the zero-impulse line.

GMM Regression Results

Given the endogeneity in the model, we obtain the first differenced GMM regression to see how the explanatory variables impact profitability. The results are given in Table 6 below. We are not surprised by the insignificant coefficient for firm size because, as we stated before, the variation in the firm sizes in our relatively small sample of firms is not that great. This is consistent with the impulse response function we saw. Neither are we surprised by the strong negative coefficient of ACP. This clearly indicates that liberal trade credit policy is not benefiting the firms at all. Looking back at the impulse response functions, there is no indication that the firms return to normal profitability from a shock in the ACP. We think that the firms are getting trapped by their customers with high ACP,

Figure 1. Impulse response function

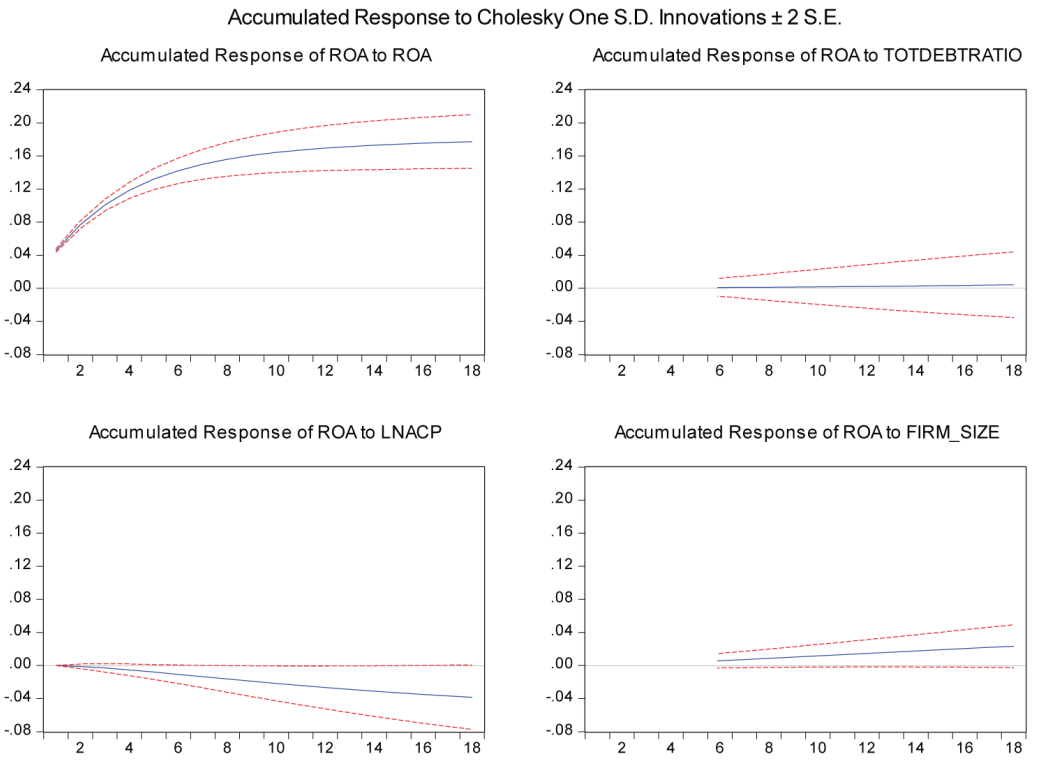

Table 6. GMM regression results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TOTDEBTRATIO	-0.082405	0.010294	-8.005286	0.0000
FIRM_SIZE	0.000886	0.003601	0.246126	0.8056
ACP	-0.016261	0.002014	-8.074506	0.0000
C	0.127254	0.074967	1.697462	0.0899
J-statistic 73.65(0.000)				

and they have been unable to extricate them from it. We speculate that those who did switch from a relaxed credit policy to a more stringent policy will not go back. The strong negative coefficient of the TDR also clearly paints a picture that over-reliance on external financing his hurting the profitability of the firms.

DISCUSSION

The data we have used are representative of firms in smaller economies with firm sizes relatively small from a western standpoint. It is likely that similar behavior will be observed in other smaller economies, and the results are likely to match small and family businesses in the emerging economies. While more research needs to be done, our results indicate the need to manage receivables in a way that the ACP does not explode to very high numbers. High ACP values are very clearly associated with low profitability. Chronically increasing ACP seems to be a fairly common phenomenon in the smaller economies and emerging economies. The evidence presented for the worsening trend in the ACP is something researchers should address further to enhance our understanding of the dynamic nature of receivables, especially in the new and emerging economies. High ACP leads to greater reliance on external financing, which at some point completely wipes out the debt capacity of firms; as a result, they can no longer finance production for the next cycle. Much of the tight credit and unavailability of credit problems in the emerging economies may be alleviated if we rather focus on making sure that receivables are under control. The results strongly suggest that instead of focusing on working capital as a whole, the firms may derive significant benefits by independently closely monitoring their receivables.

As a matter of fact, we think that an inability to control the ACP by a firm will negatively impact its inventory of raw materials. Increasing ACP is probably indicative of several deep-seated problems with the firm. These firms are getting trapped by customers in search of new sales, and the difficulty of booking sales is simply because these firms are having difficulty competing with others in the field. They are losing out either in terms of brand image, quality of the product, and/or a weak sales force. We also suspect that these firms are also deficient in the stock of human capital. These are the firms that are not very open to seeking consultancy or an evaluation of their business performance. There is certainly more research to do, especially to investigate what is causing the relentless increase in receivables and ACP.

Theoretically, at least those firms with very little credit sales should benefit as the margin on new sales should be greater than the incremental cost of financing the extra receivables. However, we suspect that some of these firms had quite a bit of bad experience with liberal credit policy, they tightened up, and they are not open to loosening credit again. While this is speculation at this point, we plan to investigate this further. The situation is exacerbated further by a wide-spread belief that one can get away without paying. Bangladesh has one of the highest non-performing loans (NPL) held by banks. Banks are reluctant to write off defaults because that reflects badly on profitability.

People often complain that political pressure also contributes to increasing NPL and increasing ACP. It will be worthwhile to examine this further.

Governments currently are going to great lengths to support small businesses, entrepreneurs, and women-owned businesses. It will not hurt if they evaluate the creditworthiness of their customers. It will also be worthwhile for banks, financial institutions, and the government to institute policies that encourage payments of due amounts in a reasonable time frame. A little moral persuasion should also be helpful. However, there may be truth to the allegation that defaulters are powerful people in the society and the political arena.

The limitations of this study include the questionable quality of the data. We have taken extreme care in developing the database, but issues of earnings management and the tendency to keep uncollectible receivables in the books as collectible remain a major problem that inflates ACP. There are three observations with very high ACP resulting from temporary suspension of production activities, but we do not feel that they have significantly impacted the results.

We strongly encourage researchers and policy makers to pay greater attention to the upward trend in ACP. Governing bodies may consider mandating the length of ACP, forcing the buyers to pay within a specified time frame, and mandating the firms supplying trade credits to move receivables from the books to uncollectible debt account.

CONFLICTS OF INTEREST

We wish to confirm that there are no known conflicts of interest associated with this publication and there has been no significant financial support for this work that could have influenced its outcome.

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Sharif Nurul Ahkam is a professor of Finance at the School of Business and Economics, of North South University, Bangladesh. He earned a DBA from Kent State University, USA. His research interest includes corporate finance, investment, entrepreneurship, international finance, capital budgeting, etc.

Khairul Alom is an Assistant Professor of Financial, Department of Business Administration, Northern University Bangladesh. Mr. Khairul Alom has more than 20 international journal publications in Scopus indexed journals. His research interest sheds light on the areas of theory of firm, corporate finance, financial development and governance, fin-tech, and economic growth.