Did Foreign Firms in Bangladesh Pay Higher Dividend during Subprime Crisis? An Investigation

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***Abstract*—The purpose of this paper is to investigate whether foreign firms in Bangladesh paid higher dividend during subprime crisis. A balanced panel data set of fifty-five non-financial firms (nine foreign and 46 local) of Bangladesh for 10 (2002-2011) years from the Dhaka Stock Exchange is used for this study. The specified model has the cash dividend payout as the dependent variable and profitability, external shareholding, growth in GDP, and two dummy variables as explanatory variables. Newey-West estimator is used to estimate the regression equation. Profitability, external shareholding, GDP growth and the dummy variable for foreign firms turned out to be significant. In addition, stability test based on recursive estimation (recursive least squares) was used to visually check for structural break in recursive coefficient graphs which indicated no significant change in dividend payout pattern of foreign firms around subprime crisis.**

***Index Terms*—dividend payout, emerging economy, subprime crisis, Newey-West estimator, agency cost, asymmetric information theory.**

I. Introduction

The purpose of this paper is to investigate whether foreign firms in Bangladesh paid out higher dividends around the subprime crisis of 2007. The investigation is prompted by complaints found in the media that foreign firms have transferred large amounts from Bangladesh to their subsidiaries in other countries where the impact of the crisis was severe.

Evidence has been presented in the literature that firms in emerging countries follow dividend payout policy which is different from developed economies. A few factors have been clearly established as significant in the determination of the dividend payout policy of a firm. The most important of them is the profitability of the firm. Dividend payout also seems to be influenced by the degree of leverage of the firm. Other factors examined in the literature potentially influencing the dividend decision in the emerging markets include ownership concentration in a family or few hands, over reliance on short term funds, agency cost, information asymmetry, and clientele effects. We think that the investment opportunity set available to the firms may also be significant.

This paper is organized as follows. We present a brief literature review followed by identification of the variables shown in the literature to influence dividend decisions. This is followed by a discussion on the dividend payment pattern in Bangladesh and a discussion of our motivation for this study. Next, we specify the model we propose to test and specify the variables and proxies. This is followed by presentation of the results and associated discussion of the results. We present our concluding remarks at the end.

II. Literature Review

Since the publication of the dividend puzzle article by Fisher Black in 1976 [1], there had been numerous articles examining why firms pay dividend and what determines the payout ratio. Ample evidence has been provided that indicates that firm's capital structure; investment and dividend policy are interrelated. Higgins [2] derived the structural link between the firm's growth and its financing needs. Slow growing firms do not need as much cash flow to support its growth and can afford to pay out a greater proportion of its earnings. High growth firms have a greater need to finance their working capital and capital investment and must retain a higher proportion of their income. However, it still leaves unresolved the question why a firm should pay out the extra dividend since return in the form of capital gains is cheaper.

The seminal work in the dividend theory was advanced by Miller and Modigliani [3] billed as the dividend irrelevance hypothesis. Since then, a number of competing theories of dividend policy have emerged. Persistent dividend payment by firms indicates that there may be other factors in play. It has been argued that the presence of differential taxes makes dividend policies a relevant phenomenon (Litzenberg and Ramaswamy [4], Poterba *et al.* [5], Barclay [6]). Yet another explanation is the clientele hypothesis which contends that investors can be classified in client groups seeking high dividends and

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no dividends, perhaps because of tax issues or their cash flow needs (Pettit [7], Scholz [8], Allen *et al.* [9])

Two major theories addressing the dividend issue are the asymmetric information theory and the agency theory of dividends. According to asymmetric information theory, a consistent dividend payment history conveys information to the investors that the firm is assured of future free cash flows and hence is financially strong (Bhattacharya [10], Miller and Rock [11], Bali [12]). Inability of poor quality firms to match and maintain a consistent dividend policy, perhaps because of the uncertainty about the availability of future free cash flows conveys a negative message about the financial strength of these firms. Agency theory contends that dividend payment can reduce the costs associated with the agency relationship/conflict between managers and shareholders (Jensen [13], Easterbrook [14], Rozeff [15], Alli *et al.* [16]).

The works cited above are mostly based on well-established capital markets of the world. Furthermore, the assumptions of separation of ownership and management, and raising capital externally through the capital markets may not be quite true in the emerging markets. In the emerging markets, family control of businesses is very common and bank financing, instead of capital market financing is prevalent.

III. Key Factors Affecting Dividend Decisions

A. Profitability

The factor that turns out to be significant time and again in the literature is the profitability of the firm. The firm's ability to generate high profit also enables it to pay high dividend. Lintner [17] presented evidence that the firm's net earnings is a critical element in dividend change decisions. This has been supported extensively in the literature (Han et al. [18], Fama and French [19]). The same appears to be true in the emerging markets (Adaoglu [20], Aivazian *et al.* [21], Mollah [22], Abor and Bopkin [23]).

B. Investment and Growth Opportunity

Higgins [2] delineates a direct link between the payout ratio of a firm with its growth. A firm can lower its payout ratio and reduce its dependence on external financing to fund its growth or increase its reliance on external financing for growth when it maintains a high payout ratio. If the firm is faced with high growth opportunity, the right thing would be to reduce its reliance on external funds since external funds are more expensive and in addition to that, it contributes to dilution and control issues. A company with low investment opportunities has no good reason to retain the profit. If it does, it may be tempted to invest in less profitable opportunities. Thus high dividend payout ratio is associated with avoidance of overinvestment and low growth opportunities (Jensen [13], Lang and Litzenberger [24]).

This particular factor provides us with an interesting opportunity to test its validity in Bangladesh. The recent rapid growth of the economy should have provided firms with greater growth opportunities, and if so, firms should have reduced its cash payout ratio to take advantage of the growth opportunities available to them. The importance of reducing payout becomes of more importance in view of the absence of a bond market and lack of capital available in the capital market. We are not sure whether we will find this negative relationship since high growth probably is also associated with higher profitability.

C. Size of Firm

Firm size has been shown in many studies to be a determining factor in setting the course of the firms' dividend policies (Lloyd *et al.* [25], Barclay *et al.* [26], Redding [27], Holder et al. [28], Fama and French [29]). A large firm is better able to raise funds from the capital market and hence does not have to rely on internally generated funds as much and can afford to pay higher dividends. Al-Najjar [30] reports positive relationship between firm size and payout ratio in Jordan. However, Aivazian *et al*. [21] suggest that this variable may not be significant in all countries.

D. Financial Constraints

High financial leverage may be associated with restrictions placed on the firm regarding the payment of dividends. Moreover, as Rozeff [15] pointed out, firms with high financial leverage are likely to have low payout ratios to control the transaction costs associated with raising external capital. This negative association has been borne out in many studies (Fazzari *et al.* [31], Jensen *et al*. [32], Agrawal and Jayaraman, [33], Gugler and Yurtoglu, [34]).

Aivazian *et al.* [21] point out that emerging market firms are more financially constrained and hence, more likely to have a low payout ratio. However, they also point out the case of Turkey where dividend payout ratio is 62 percent, which they felt that might have been accounted for by the institutional constraints placed on them requiring them to pay the larger of 50 percent, or 20 percent of paid-in-capital up to 75 percent of the earnings.

Bangladeshi firms rely on short-term bank financing since the option of relying on long-term debt is not open to them. Further, non-financial firms in Bangladesh also face a regulatory clause (since 2002) similar to one in Turkey that encourages firms to pay dividend of at least 20 percent of paid-in-capital which entitles them to 10 percent tax credit. Thus, while the short-term lenders to the firms will clearly prefer low payout, there is an incentive to achieve the 20 percent threshold after 2002. We are really not sure if this is important for dividend policies of non-financial firms in Bangladesh, and if it is, whether the data will reveal that. It may be pointed out that, for many listed firms, the face value per share (Taka 10 per share) is so small relative to its market value or net book value per share that it makes it easy for them to meet the requirement. Only new firms and perennially poorly performing firms are more likely to have a problem paying 20 percent of paid-in capital as dividend.

E. Agency Issues

Agency theory advances the role of dividend as a way of mitigating agency cost (Rozeff [15], Easterbrook [14], Jensen *et al*. [32]). Cash payout reduces the amount of internally generated fund that can be used to fund new projects. This propels managers to seek external funds for growth which, in turn, subjects managers to the scrutiny of the capital markets. The firm's ability to fund new projects will depend on manager's taking actions to reduce agency cost via disclosing information which benefits outside shareholders. Thus, shareholders may have preference for those firms which have higher cash payout and more frequent interaction with the capital market as this shifts the monitoring cost to the capital market.

An alternative way of reducing agency cost may be accomplished by having debt as a source of capital where high cash payout is not necessary and the firm has to regularly make disclosure to lenders. This would be a difficult thing to test in Bangladesh. As stated before, Bangladeshi firms rely heavily on bank loans which are relatively of short term in nature. The quality of disclosures made by the borrowers are suspect as Bangladeshi commercial banks (especially government owned banks) have a reputation for being lax in due diligence. On top of that, there is not much of a separation between bankers and borrowers, the bankers also own many of these firms. However, we will use the proxies used in the literature to examine the extent of the impact of agency cost. One proxy used is the dispersion of ownership. The more disperse the ownership, the higher will be the demand for a high payout ratio to force more disclosures from management (Rozeff [15], Alli *et al.* [16]). A second proxy used in the literature is a proportion of inside ownership (Lloyd *et al.* [25], Jensen *et al*. [32], Holder *et al*. [28]). Higher is the proportion of inside ownership, less is the demand for high cash payout.

IV. Dividend Payout Pattern in Bangladesh

The sample firms display a history of high payout. There is strong pressure on management to declare and pay dividends and that is perhaps a reflection of strong agency issues in Bangladesh and a response to government's desire to make equity investment attractive. The following table will provide a general idea about the dividend payment pattern in Bangladesh. The dividend payout ratio in this table is computed as percent of previous year's profit paid out as dividend this year. The table reports cash dividend of only those firms that paid out dividends. We have eliminated the negative numbers resulting from dividend payment made when previous year's profit was negative. Extremely high payout ratios were also eliminated for year 2002, 2007 and 2010 columns years, but not for the average number for the economy for the longer time frame of 1995-2011. These averages are for the years the companies were listed and therefore, the averages of newer firms are based on fewer years. The last column may be viewed as the dividend payment pattern for the whole economy over the last 17 years ending in 2011. The table is intended for presenting a general picture of the market feature and there is no specific reason for choosing 2002, 2007, and 2010.

TABLE I. Dividend Payout Pattern in Bangladesh

Payout Ratio	2002	2007	2010	Average of 1995-2011
90% to above 100%	19	14	8	6
75% to 90%	7	11	6	7
50%-75%	7	10	6	18
30%-50%	17	7	7	16
Paid dividend but Less than 30%	6	6	13	10
Number of firms	40	50	56	57
Average	68%	75%	74%	60%

Table I shows that a vast majority of profitable companies pay out a large portion of their earnings as dividend. Only a few companies pay dividend that amounts to less than thirty percent of their income.

This table has added significance for our paper. We wish to test if there was a tendency to pay higher dividend payout around the year 2007, especially by foreign firms. For example, in a paper published in 2008 by the Center for Policy Dialogue [35], they reported that there was a 51.5 percent rise in foreign firms' profit repatriation. One cannot rule out the possibility that the tendency was already present when the subprime crisis unfolded. We will examine the data to see if the higher repatriation can be tied to subprime crisis time period.

V. Dividend Payout around Subprime Crisis

No clear evidence of any negative effect of subprime crisis on Bangladesh has emerged. However, most firms in the western world suffered serious cash flow and liquidity crisis at that time and since the businesses in Bangladesh produced decent performance around that time, the Bangladesh subsidiaries of foreign firms might have become a source to supplement liquidity of the foreign affiliates of the multinational firms. At least, that was the accusation. If the accusation was true, we should see a spike in dividend payment by foreign firms around that time.

A. Data

We want to see how different dividend payout of emerging economies is from that of advanced economies. We suspect that pressure to pay higher dividend for foreign firms was very strong in Bangladesh, especially during subprime crisis period and onwards. We also want to examine further if the dividend payout ratio in Bangladesh has responded to improving growth opportunity Bangladesh has experienced in recent years. We have a unique opportunity to test if the firms are retaining more of their profits to fund growth, an opportunity which seemingly was absent before.

We will use data from 2002 to 2011 of non-financial firms and we could use only 55 firms listed in Dhaka

Stock Exchange that produced all the necessary data. Out of these 55 firms, 9 nine are foreign firms and rest 46 are local firms. The data were collected from the annual reports of these firms provided by the Exchange on CDs. We have consciously excluded the financial firms as they were required to boost their capital requirement which impacted their ability to pay cash dividend. In our sample mix, we have manufacturing companies, food producers, service firms, engineering firms, pharmaceutical and chemical companies and textile firms.

B. Methodology

The model we will attempt to estimate will have firm's earnings, dispersion of ownership, growth rate in GDP, and two dummy variables (one to indicate foreign firms and the other to indicate subprime crisis period) as the regressors. Firm size and debt ratio were found to be insignificant and were dropped from the equation. The specified model is as follows:

$$Y_{jt} = \beta_0 + \beta 1 X 1_{jt} + \beta 2 X 2_{jt} + \beta 3 X 3_{jt} + \beta 4 X 4_{jt} + \beta 5 X 5_{jt} + \varepsilon_{jt} \quad (1)$$

In the above equation, Y_{jt} is the cash dividend payout ratio for firm j in year t, $X1_{jt}$ is the return variable for firm j in year t, $X2_{jt}$ is the proxy for ownership dispersion for firm j in year t, $X3_{jt}$ is the GDP growth rate for firm j in year t; $X4_{jt}$ is the dummy variable to indicate firm type (foreign or local) for firm j in year t, and $X5_{jt}$ is the dummy variable to separate the subprime period (2008 and onwards from earlier period) for firm j in year t.

The error term ε_{jt} should be normally distributed with mean zero and standard deviation σ. The residuals should depict no serial correlation and heteroskedastic tendencies. We are working with panel data where we have 10 years of data for 55 non-financial firms. A fixed effect model is proposed. The pooled regression will have a total of 550 sets of observations. However, as one of our foreign firms got listed with the stock exchange later, we do not have 3 years of data from 2002 to 2004, giving us a data set of 547 observations.

Our use of GDP growth as the proxy for growth needs has not been very common in the literature. Use of this as the explanatory variable allows us to examine if the firms in general respond to the economic growth in the economy, rather than to the individual growth needs implied by growth in sales.

The choice of variables for dividend payout posed many challenges. After considering several alternatives, we settled on the formulation used by Aivazian *et al.* [21] and specified it as cash dividend divided by total assets since it avoids the negative numbers and unstable values at low earnings but captures the dividend payment behavior of the individual firms.

For *X1*, the return variable, we have used return on total assets. An alternative could have been using return on equity but the variable is not stable in Bangladesh as the equity figures have often been adjusted to reflect asset revaluation. Some firms had negative equity in the books in some of the years prior to the revaluation, may have had positive profit, but the return on equity figure would show up as a negative. A positive relationship is expected between return on assets and dividend payout.

For *X2*, we had several alternatives available to us as the measure of dispersion. We have chosen to use the proportion of shares held by institutions and the proportion of shares held by the general public as the variable representing agency issue. The data were obtained from the Dhaka Stock Exchange website. We have used the latest data on this variable making a simplifying assumption that the values won't change significantly from year to year. Thus the same ratio has been used for a firm for all ten years. A positive relationship is expected between the proportion of external ownership and dividend payout.

For *X3*, we used GDP growth rate figures obtained from Trading Economics website (http://www.tradingeconomics.com). The values are the same for all firms each year. We postulate that we will see a negative relationship between the GDP growth rate and dividend payout as the firm must conserve more of its profits to support its growth efforts.

In Bangladesh, the pressure to pay dividend is very strong, so much so that we have found 13 companies in our initial list of 100 companies paying out more than 100 percent of their earnings as dividends over the last 12 years. It is certainly interesting that they do that and we are mystified as to their decision to do so. We suspect that it is a response to the pressure they feel to pay dividend and the payment of dividend helps them keep at least some of the shareholders with them, who otherwise would desert them.

For *X4*, we have used a dummy variable with a value of 1 for foreign firms and 0 for domestic firms. A positive relationship is expected indicating higher dividend payout by foreign firms.

For *X5*, we have used another dummy variable with a value of 1 for years 2008-2011 for all foreign firms to examine if there was a structural break around the subprime crisis period and onward, and a value of 0 for all local firms for the whole data period and for the foreign firms for the earlier data period. We should see a positive relationship indicating higher dividend payout on and after 2008 by foreign firms.

C. Model Estimate

Our initial estimate was based on least square estimates (OLS) and the initial results indicated potential presence of serial correlation and heteroskedasticity even though it was not so clear from the plot of the residuals. This prompted us to switch to Newey-West estimation method which corrects for serial correlation. It has the added benefit of eliminating heteroskedasticity problem. In Table II, we present the estimate obtained for the full model as shown in (1).

In the obtained estimate the return on assets variable is strongly significant and is consistent with previous results reported in the literature. The external share ownership variable is significant at 5% level but has the opposite sign of what we initially postulated. This is

actually reasonable. While the institutional ownership and the general public like to have dividend, the result indicate that they will still choose to invest in stocks with growth potentials. All stocks in the sample have consistent history of paying dividend, only occasionally missing dividend. Investing in the high growth low dividend paying stocks is really not sacrificing dividend, the dividend payout ratio is still large, it is just not at the top of the ranks. The signs are not consistent with our initial postulates and it is probably just a reflection of the institutional and structural differences in Bangladesh.

TABLE II. MODEL ESTIMATE OF THE FULL MODEL

Variable	Co-efficient	Std. Error	t-statistics	P-Value
Constant	0.047951	0.010810	4.435626	0.0000
Return on Assets	0.317749	0.053385	5.952080	0.0000
External Share Ownership	-0.000210	8.31E-05	-2.529322	0.0117
GDP Growth Rate	-0.004776	0.001618	-2.951330	0.0033
Dummy_For (Foreign/Local)	0.022580	0.007651	2.951322	0.0033
Dummy_SP (Sub-prime crisis period for foreign firms)	0.013918	0.013394	1.039167	0.2992
R-squared:	0.475351	Standard Error of Regression:		0.032650
Adjusted R-Squared:	0.470502	Mean of Dependent Variable:		0.031908
F-statistic:	98.03293	Durbin-Watson stat:		2.122253

The GDP growth rate is found to be significant with the expected negative sign of the coefficient. That means firms are paying lower dividend and retaining higher level of profits to take advantage of the growth opportunities available.

The dummy variable to separate foreign firms from local firms has been found to be strongly significant with a positive relationship. This means foreign firms tend to pay higher dividend compared to local firms which is in accordance with our expectation.

The dummy variable to separate subprime crisis period from normal period has been found to be insignificant with negative relationship. This means foreign firms actually paid lower dividend in the subprime crisis period. This is inconsistent with the accusations of foreign firms paying higher dividend around the subprime crisis period.

However, we re-estimated the equation with the subprime dummy dropped from our initial model. The results are presented in Table III on the next page.

As we see, we do not lose any significant explanatory power from this more parsimonious specification. GDP growth is still significant now. As Bangladesh GDP has grown, firms have retained more of their profits possibly to finance their growth. We also see that firms with higher earnings can support a high dividend payout ratio just as had been found in many other papers. The negative relationship between external share-ownership and dividend payout is not consistent with agency theory but seems quite plausible to us in the economic space of Bangladesh. In fact, it may be seen as the external owners imposing a discipline against paying too much dividend. Dummy variable isolating foreign firms remain significant, indicating foreign firms following a relatively high cash payout ratio.

TABLE III. MODEL ESTIMATE OF THEREVISED MODEL

Variable	Co-efficient	Std. Error	t-statistics	P-Value
Constant	0.045809	0.010490	4.366789	0.0000
Return on Assets	0.328568	0.053469	6.145000	0.0000
External Share-Ownership	-0.000212	8.28E-05	-2.557065	0.0108
GDP Growth Rate	-0.004479	0.001546	-2.896768	0.0039
Dummy_For (Foreign/Local)	0.027236	0.007621	3.574021	0.0004
R-squared:	0.471846	Standard Error of Regression:		0.032729
Adjusted R-Squared:	0.467948	Mean of Dependent Variable:		0.031908
F-statistic:	121.0539	Durbin-Watson stat:		2.113566

In order to visually check for structural break, we present in the following a set of figures for recursive estimation of coefficients and the constant. As seen on the figures, there is no sign of significant stability break. To check if the foreign firms responded to the subprime crisis, we should see a structural break after year 2007 (after 330th observation) with spike for the residuals. There is no evidence of it in the figures.

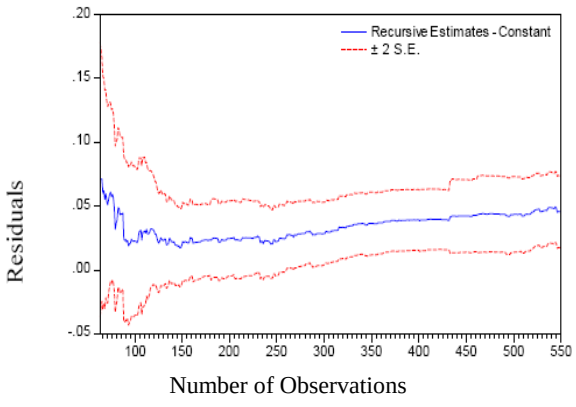

Figure 1. Recursive Estimates of Constant

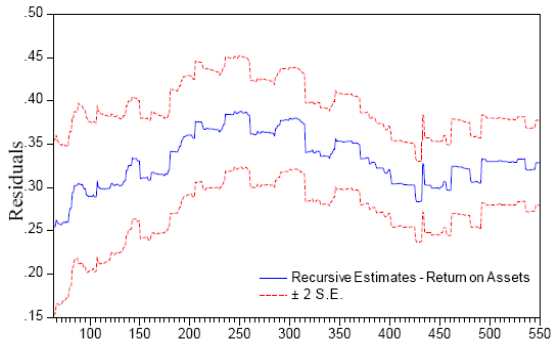

Figure 2. Recursive estimates of return on assets

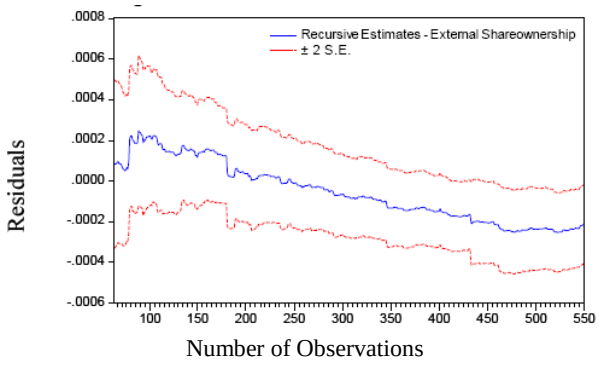

Figure 3. Recursive estimates of external shareholding

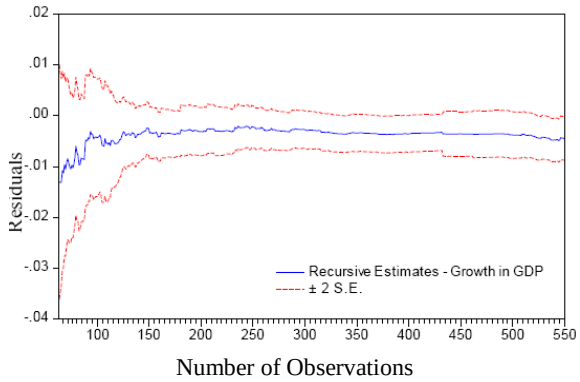

Figure 4. Recursive estimates of gdp growth rate

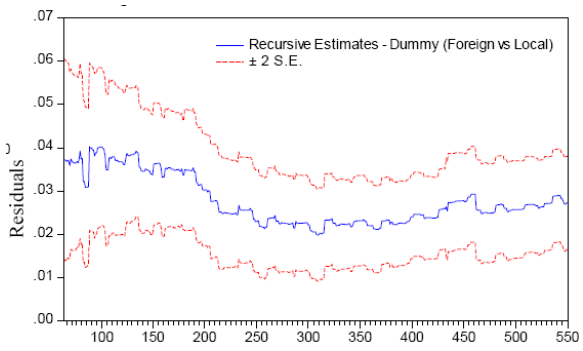

Figure 5. Recursive estimates of dummy (foreign vs local)

VI. Conclusion

We have used panel data technique applying Newey-West estimator to estimate a model specified to examine the relationship between dividend payout of Bangladeshi firms (both foreign and local) with return on assets, proportion of external shareholding, GDP growth, two dummy variables (one to distinguish foreign firms from local firms and the other to distinguish subprime crisis period from usual period only for foreign firms. Response to return on assets is consistent with results widely reported in the literature. Thus, in Bangladesh also, firms with stronger return on assets can pursue and sustain a policy of high dividend payout.

Our result about the relationship we postulated between the ratio of external ownership of firms and dividend payout is found to be significant at 5% level but with a sign contrary to our initial expectation. However, we are more inclined to think that our initial specification of a positive relationship was incorrect. We reach this conclusion based on the high dividend payout ratio prevailing in the country. It makes sense for shareholders to pursue investments in companies that have high payout and still retain enough profit to support growth. A firm that pays out nearly all of its profits as dividends is less attractive to these investors. The indication provided by our estimate is that firms with very high payout ratio, such as those presented in the top two rows of data in Table I are penalized by the investors.

We have found GDP growth rate to be statistically significant with the expected negative sign. We would like to suggest that Bangladesh started growing rapidly only in recent years and the impact of high growth on firm policies has not been fully manifested yet. We will venture to advance the theory that the emerging markets, in response to improving growth expectations will retain more of the profits to support growth until a point where the dividend payout ratio will settle at a lower range. However, we do not think that dividend payment will go out of fashion in the emerging economies any time soon and we will not see any pattern comparable to what had been presented by Fama and French [29].

Positive coefficient of the dummy variable for foreign firms suggests that foreign firms tend to pay higher dividend compared to local firms as we have expected. We have found no evidence to support the contention that foreign firms increased dividend payout around the subprime crisis period. We have to keep in mind that we have a small sample and we have only listed companies in the data. Foreign firms unlisted with the Exchanges may actually have paid out more dividends to themselves which we are unable to detect from our data set.

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