



DOES MARKET REACT TO TAX REDUCTION NEWS? AN EMPIRICAL STUDY ON CORPORATE TAX REDUCTION OF BANGLADESH IN 2017-18

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Received 28 September 2019; accepted 27 November 2019

Abstract. *Purpose* – This study tries to investigate the capital market reaction to the corporate tax reduction announcement (37.5% from 40%) in Bangladesh for publicly listed Banking, Insurance and Financial Institutions of 2017-18.

Methodology – This study applied an event study approach to identify any significant average abnormal returns as well as cumulative average abnormal returns of all the publicly listed Banks, Insurances and Financial institutions around the announcement period.

Findings – Insignificant average abnormal return (AAR) experienced in case of Banking and Insurance industry on event day, except the financial institutions which have generated a statistically significant abnormal negative return on announcement day. The combined AAR of all three sectors has also generated statistically insignificant return around event windows which suggest that investors did not consider tax reduction news as valuable information for investment decision nor considering it as an essential factor of share value.

Limitation – The study did not consider any possible extraneous variable that could result in insignificant reactions.

Practical Implication – The findings of this research would considerably contribute to the financial and economic policy formulation while taken into consideration the possible impact of the policy over the capital market of Bangladesh.

Originality – This study makes a considerable input to the research in the area of taxes linked to the behavioural finance applying the unique variable of investor's reactions.

Keywords: tax reduction, corporate income tax, capital market, event study, abnormal return, cumulative abnormal return.

JEL Classification: G11, G14, G18.

Introduction

The key intention of this paper is to study the degree to which corporate tax rate deduction by 2.5 per cent for Banks, Insurance and FI's in national budget of Bangladesh 2018-19

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influence equity trading. The existing corporate tax policy applies 40% of the tax rate on publicly listed banks, insurance firms, and financial institutions, while non-listed entities functioning in similar industries are obligated to pay 42.5% of the levy. The primary objective of initiating this reduction in corporate tax is to allow a more competitive investment environment. The tax reduction in these sectors appears to provide an incentive for investors and corporations to increase profitability and capitalisation. If investors properly admit and interpret the link between the corporate tax reduction and the potential revenue return and risk vulnerability of banking, insurance and financial institutions, it should be displayed around the announcement period in their equity earnings. Proof on the instantaneous reaction of the tax rate changes on equity value will assist the researcher to comprehend how tax rates reduction affect investor's decision in equity investment while tax rate differentiation exists among industries. Adjustment or changes in the corporate tax rate may have noteworthy impact on the equity market and hence expected to be a vital aspect in the configuration of financial policy (Rigobon & Sack, 2003). However, small findings have come into light regarding the extent of the investor's reaction to the tax policy change in context of the developing market (Grammatikos & Yourougou, 1990). This study applies an event study technique based on the immediate changes in stock market returns to measure the reaction of tax reduction. The association linking tax policy and financial securities is one of the arguable issues in the finance and capital market research ever since (Modigliani & Miller, 1958) prominent research paper with reservations proved that corporate taxes have an influence on firms' value, the model have been extensively developed by integrating corporate taxation in analyzing the effect of tax rate revision on both firms and equity value. However, the findings are somehow contrasting. Brennan (1970), Cutler, Poterba, and Summers (1988), Elton and Gruber (1970), Litzenberger and Ramaswamy (1982) exhibited either hypothetical or Factual confirmation that corporate tax adjustment influence equity prices. On the opposite side of the tax and equity valuation debate (Black & Scholes, 1974; Miller & Scholes, 1982) argued that taxes are insignificant to equity values. In terms of the specific industry study (Grammatikos & Yourougou, 1990) investigate the consequence of the 1986 Tax Restructuring on banks' share and come up with the result that the tax reform did not negatively influence the banking sector. Cutler (1988), Downs and Tehranian (1988) respectively evaluate the consequential effect of the 1986 tax alteration and the 1981 Economic Recovery tax revision on equity value. Their findings exhibit that 1981 tax reform had no consequence on equity value whereas the outcome of the Tax Revision of 1986 on stock prices was indecisive (Alshammari, 2012).

Nevertheless, the significance of the tax rate on equity prices has been positively established by number of considerable studies such as, e.g. Ayers, Lefanowicz, and Robinson (2003), Blouin, Raedy, and Shackelford (2002), Dhaliwal, Li, and Trezevant (2003). Additionally, contemporary research endeavours try to identify whether the changes in tax rate has an influence on equity value such as, e.g. Stejskalová (2016), Wagner, Zeckhauser, and Ziegler (2018). Therefore the tax reduction effect on equity valuation and equity investment decision emerges as one of the contemporary issues to be investigated.

The outcome of this study exhibits that there is no significant abnormal return experienced in case of Banking and Insurance industry on event day, except the Financial institutions which have generated a statistically significant abnormal return on announcement day.

The combined abnormal return of all three sectors has also generated insignificant abnormal return. These empirical outcomes leave behind unanswered query regarding what the tax information proposed to the market, and whether the tax information was effectively adjusted in equity value. So, this can be argued with the reservation that, equity investors did not consider tax reduction news much worthy. Alternatively, it can be generalised with provision that corporate tax reduction does not significantly contribute to the value of the publicly traded equity which is non-conforming to the findings of Miller and Scholes (1982). However, here to be taken into consideration that the announcement event also has two drawbacks; it influenced predictions about several factors apart from corporate tax revision, and the specific tax policy that would be finally passed is not certainly known (Grammatikos & Yourougou, 1990).

This study contributes to the current tax-accounting research in several important ways. Whereas maximum of the investigations has dedicated to the developed nation such as USA or EU as identified by Forster (2005). This research article is one of the limited one delivering experimental proof for developing country like Bangladesh. Besides earlier capital market researchers have included tax application in the area of mergers and acquisition. For instance Hayn (1989) investigate market feedback around the acquisition period. The paper exhibited that both target and bidder market return associated with the announcement are motivated by tax aspects of the target firms. Other extensive studies explore the impact of capital gains taxes on share pricing. Such as Poterba and Weisbenner (2001) finds increased trading number and lower equity prices for IPO winners after being eligible for capital gains tax relief consistent with the findings of P. Brown, Ferguson, and Sherry (2010) in Australian context. This research is one of the considerable attempts to carry out asset pricing associated study of the tax reduction effect to a specific industry, however, as the magnitude of the capital market in Bangladesh stays lower compared to the other developed (CEIC, 2019). The probable impact of equity price movements on the Bangladeshi economy expected to be less influential compared to developed markets. Nevertheless, considering the prominence of the capital market in the financial ecosystem of Bangladesh is likely to expand notably in future, the effect of equity price movements on the economic and financial progress should also expand. The findings of this research would considerably contribute to the financial and economic policy formulation while taken into consideration the possible impact of the policy over the equity valuation, investor's reaction and as a whole over the capital market of Bangladesh.

The remainder of the study is progressing as follows. In Section 1, an overview of the prominent literature has been done, which has covered the findings and analysis of the tax implication on the investor's perception and equity value of the publicly traded corporations. Section 2 encompasses the development of research questions, hypothesis development. Methodology of the study is discussed in Section 3. The empirical result and analysis of corporate tax reduction news effect on the investor's reaction identified on the abnormal stock returns in the Banking, Insurance and Financial Institutions are discussed in Section four. Finally, the conclusive remarks, limitations and opportunities for further studies are conferred in last section.

1. Literature review

Even though there has been a significant number of prominent studies available on the association between the dividend and investment tax policy and market value of the stock but very few empirical researches has been carried out to identify the effect of corporate tax policy changes on stock price movement. This section of the paper will review some of those prominent papers and try to draw a research question & hypothesis.

Traditionally two methods have been used to identify the tax reform implication on the market value. The first method is “the cash flow method” where the after-tax income is analysed to evaluate the tax reform effect while sometimes integrating the reform-driven demand swing into the analysis. The key focus is to analyse the changes in the tax liabilities/payment on variation in the profitability of the firm. Although the cash flow method appropriately focuses on after-tax profits, it disregards several broad symmetrical effects. These limitations are emphasised in the “asset price model” which focuses on the variation in the value of current assets from the changes in tax rate and potential tax liabilities. The exclusive result on share price is however indefinite, based on specific modification of cost presumption. The “asset price model” actually presents cross-sectional anticipation regarding the reaction to tax policy news (Cutler, 1988). Tax rates are considered to be major determinants of share price movement that has been exhibited in several studies such as Sialm (2009), Baltagi, Li, and Li (2006), Whitworth and Rao (2010). These studies primarily tried to identify whether tax liability has any influence on the value of the share. Hence it seems to be the appropriate variable to analysis. Cutler (1988) in his study to identify the stock market response to the 1986 Tax Act (usually acknowledged as the second of two Reagan tax cuts) proposed a diverse conclusion regarding the effect of tax modification. Initially, there are very insignificant number of microeconomic determinants for the estimation of the asset price model of tax reform, although the re-estimation of the stock price due to the variable taxation on existing and new investment and the lower charge of existing depreciation allowances might proved to be practically significant. Consecutively, there is little confirmation of positive reaction to variation in cash flows, or major feedback to the tax reform news more broadly. The statistical test of both variances and covariance of abnormal returns constantly decline the assumption of big, instantaneous adjustment in share prices. Moreover, reasonable clarifications for the negligible changes might not be the result of the tax restructuring procedure. This finding exhibited an inefficient pricing of the market or inefficient market hypothesis. Relatively contemporary study by Michaely (1991) argued that alteration in macroeconomic determinants could not clarify most of the change in stock price; therefore, the small response to the tax news possibly will be the result of the general abnormality of share price resulted from economic fundamentals. Several prominent studies relating to corporate tax have shown a strong association between the tax liability and share price such as Hirshleifer, Lim, and Teoh (2004), Ryan and Taffler (2004) exhibited that declining of tax liability will result into a hike in share prices. Another study by Jolana Stejskalová (2017) not only concentrated on the alteration in tax rate but also on the news about the tax liability and its effect on the capital market.

The degree to which taxes imposed on investment influences the market value of shares is critical to corporate appraisal and taxation strategy and is an excellent topic of research in the field of accounting, finance and economics. However, the empirical pieces of literature propose contradictory hypothesis on how adjustment in tax charges on capital gain changes share prices. The empirical findings on capitalisation of capital gains tax theory such as M. H. Lang and Shackelford (2000) and Collins and Kemsley (2000) argued that stock prices would climb when anticipated capital gain taxes are decreased. While different perspective also prevails such as Klein (1999), M. H. Lang and Shackelford (2000) exhibited that by alleviating the lock-in consequence, tax reduction might reduce investors reservation value and decline share value. The tax-irrelevance hypothesis such as Miller and Scholes (1978) predicts that marginal shareholder is natural by the alteration in capital gains tax rate and therefore expect no changes in stock value. Lastly, Harris and Kemsley (1999) in their empirical testing of “dividend tax capitalisation hypothesis” rule out the chances that capital gains taxes could influence the stock prices by presuming that firm’s profit is fully disbursed to investors as dividends and overlook the probable capital gain appraisal consequence appear in secondary market transaction.

A notable number of contemporary practical researches on the consequence of capital gains taxes on share value are indecisive, for instance Amoako-Adu, Rashid and Stebbins (1992) exhibited that there is the very negligible amount of fluctuation in share price over dividend income while the Canadian government introduced the \$0.5 million exclusion from capital gain in early 90s. Though, the study conducted by M. H. Lang and Shackelford (2000) discovered that corporations with superior dividend generation ratio faced a less significant price reduction than small dividend-generating corporations while the exclusion was brought down to \$0.1 million afterwards in the early ’90s.

There have been persisting debates amongst financial market researchers regarding the powerful effect of the tax charges on corporate payouts on universal share value. Prominent studies by Elton and Gruber (1970) exhibited the ex-post payout day reactions of every day share prices as a fact that variable tax charges made shareholders to undervalued the taxable cash dividends compared to gains from price differences. The researchers also claimed that the general shareholder who desires to sell around the ex-post dividend date is unresponsive between offloading the shares on the ex-post and ex-ante dividend dates. In continuation to the prior study (Elton, Gruber, & Rentzler, 1984) observed ex-post payout day returns of a considerable number of firms listed in New York stock exchange found that the parentage of changes in stock price on ex-post dividend days is less than the amount of the payout. Researchers additionally discovered that the ‘payout-price change ratio’ is positively associated with the dividend yield. This is coherent with the tax clientele effect which states that shareholders in high marginal tax environment prefer to keep less dividend disbursing shares or the other way around. The researchers claimed based on their observation of yearly payout pattern that the implicit tax range descends almost steadily with increasing yield. However this research argument of Elton and Gruber (1970) regarding the explanation of ex-post dividend declaration day income has been challenged by several researchers, among them the prominent study of Grinblatt, Masulis, and Titman (1984) argued that anomalous post-dividend announcement day returns happen due to a number of non-tax factors, for instance

‘share dividends, stock splits, and tax free cash disbursement’. Therefore, the study tried to impose the probability that the relative return on shares of post-dividend day do not manifest general tax charges for investors, other than it could be associated to transaction expenses or due to a bigger abnormality on ex-disbursement day.

Similar studies carried out by Barclay (1987) investigated the ex-post dividend declaration day reaction of universal share market value before the execution of the ‘federal income tax’. The study found that share price declines by the whole margin of the dividend on post-dividend period around the ex-ante tax phase which is constant with the tax-client theory. This outcome differs with the results of investigation applying more contemporary share price figures that undoubtedly proved that marginal shareholders are considered capital gain more valuable than dividend income. The study conducted by Getry, Kemsley, and Mayer (2003) to observe the stock price reactions to dividend taxation in context of ‘Real Estate Investment Trusts (REITs)’ found that market value of a corporation’s assets and its share price varies on firm-specific tax features. Their practical work encompasses around four hundred observations from nearly ninety firms covering the time frame of seven years while restraining the nontax determinants revealed that every unit of tax basis is linked to an added nine to twenty per cent of equity value. This result serves as a yardstick for measuring the effect of dividend taxes on equity value in more broader circumstances, where business taxes are measured, payout strategy is more flexible, and corporations can employ tax-preferential stock repurchases in replace of tax payable dividends. P. R. Brown, Clout, and Ferguson (2015) examined the market response to the preliminary declaration of the proposed resource Super profit tax (RSPT) and succeeding RSPT policy-associated declaration. They examined the market feedback of the 612 Australian large firms in material and energy sector by analyzing the daily stock prices during the time period of 2008 to 2010 and found that firms experienced negative cumulative abnormal return (CAAR) in response to the awaiting tax reform which might specifically aim at the profitable manufacturers in the materials and energy division.

Prior event studies conducted to exhibit the impact of the Tax reform on share values have not been predominantly effective in authenticating a strong market reaction. Such as Cutler (1988) in their research of the consequence of the ‘Tax Reform Act 1986’ on U.S. share value, discovered very negligible collective market response (correlation of 0.036 with a t-statistic value of 0.057) and established that news related to tax restructuring is undifferentiated from usual market anomaly. The researcher presented two possible clarifications regarding the minor response to tax restructuring news, firstly the probable events might have been highly expected, or secondly the tax adjustment is realised to be transitory hence not significant in a present worth perception. Another important research by Gadarowski, Meric, Welsh, and Meric (2007) studied the critical incidents related to Jobs and Growth Tax Relief Reconciliation Act of 2003 (JAGTRRA), exhibited several key propositions regarding the dividend appraisal and payout strategy. Analysing the abnormal yields for a significant number of sample corporations around the period between initial proposals of JAGTRRA to final enactment into law, they found that corporations with substantial dividend yield generate higher income around the time frame. The researchers clarified this as a verification that personal shareholders cannot freely evade dividend taxation, and they are the marginal stockholders of dividend-disbursing firms following

the events. These interpretations are constant with findings of Elton and Gruber (1970) regarding tax-clientele theory and the post marginal investor proposition studied by Boyd and Jagannathan (1994). This study also reveals that taxation on dividend also influences the manager's capability to control agency costs.

Additionally, researchers also exhibited that dividend disbursing corporation's experienced lower abnormal return compared to non-dividend disbursing entities. This outcome suggests that stockholders anticipate non-dividend disbursing corporations to react more strongly to a payout tax cut than dividend-disbursing entities, and this is coherent with the free cash flow proposition (Jensen, 1986; L. H. Lang & Litzenberger, 1989), and the findings of the practical investigation of business reactions to JAGTRRA by J. R. Brown, Liang, and Weisbenner (2004), Chetty and Saez (2005). A general assumption could be drawn from the findings of this study is that a significant tax reduction in dividend disbursement eventually made the dividend-paying firm's stock more lucrative to new investors enough so that they would become the fresh marginal shareholders in dividend disbursing shares. If the dividend tax deduction is unanticipated that might result dividend-paying shares to generate real inconsistent income. The logic behind this hypothesis is that the newer marginal shareholders appraise dividend disbursing share more than that of non-dividend disbursing shares resulted in unusual surge in value dividend stocks more than the old marginal investors, resulting in an unexpected rise in the market prices of dividend disbursing shares.

Several other studies have applied event study methodology to assess the capital market reaction towards the Tax reform acts of 1997 and 1998. Such as Blouin, Raedy, and Shackelford (2000) examined the share price response of The Internal Revenue Service Restructuring and Reform Act of 1998 (IRSRRRA) proposing decrease in the longstanding capital gains holding phase by applying research pattern that measures variances in stock price reaction of investors while limiting undiversified macroeconomic variables that influence all industrial segment. The study revealed that reducing the holding time initiated a forced selling that eventually pushes down stock market value. Generally, the findings in these studies are coherent with the special excise of capital gains influencing specific corporations' value. The outcomes suggest that share value reacts to changes in capital gain although stock price capitalised predicted capital gains levies. Strong empirical proofs have been exhibited by Wagner et al. (2018) that anticipation of a significant corporate tax reduction noticeably influenced the income return of the share. Especially, corporations having high-level effective tax charges and excessive outstanding tax burden had benefited, whereas firms having outstanding tax resources ensuing from carrying forward net operating losses had gone down. The study also identified that the capital market's response towards the foreign corporations was pessimistic, possibly exhibiting the anticipation of an adverse tax policy for overseas revenue.

There are several important variables which might have a significant influence in the capital market and can have the predictive characteristics of price variance of shares. The primary factors such as dividend policy, taxation policy, legislative frameworks, industrial output, etc. are considered to be the vital aspects in the anticipation of capital market variability (Balvers, Cosimano, & McDonald, 1990; Chan, Hamao, & Lakonishok, 1991). As far as the methods of identification of the market reaction are concerned, some study implied questionnaires based approaches like (Charoenrook, 2005), however, the predictive value seemed to be lower

in this method due to the high subjectivity and less reliability (Da, Engelberg, & Gao, 2014). Another method has been the application of proxy variables. In this case market response has been exhibited through the significant unusual/abnormal returns of the stock to specific events news (Mian & Sankaraguruswamy, 2012; Penman, 1987).

2. Research question and hypothesis development

The effective tax rate on publicly-traded and non-publicly traded Banks, Insurance and Financial Institutions has been proposed to reduce by 2.5% from the exiting tax charges on June 7th, 2018, in the budget proposal before parliament by finance minister of Bangladesh which shall be taken in effect from July 1st, 2019. This particular announcement should be taken as favourable information for the Banking, Insurance and NBFi industry so that we could anticipate a positive reaction from this industry. The main research question is to identify whether there is any significant stock price reaction to the tax reduction proposal.

In efficient markets any significant tax restructuring news declaration would be reflected through the price response of associated industries (in case Banks, Insurances and NBFi's). Negative market price adjustments of stocks would expose the possibility of an adverse effect of the Tax reforms act on industries earning capacity and/or risk exposure. Conversely A positive response would entail that banking, insurances and NBFi were anticipated to significantly capitalise the tax reduction to enhance the profitability and shareholders wealth. The most usual investigation of the feedback to tax information is the analysis of the variation in cumulative stock prices. The cash flow theory assumes that decrease in tax charges/liabilities significantly affect/increase the firm's profitability. Thus, investors might interpret tax reduction news as a positive signal for the firm's management and their best interest. However, several prominent studies applying event study method to analyse the market reaction of tax news found inconsistent results. Such as positive association between tax news and stock prices have been exhibited by Baltagi et al. (2006), Edwards, Lang, Maydew, and Shackelford (2004), Howton and Howton (2006), Hu (1998), Lightner, Morrow, Ricketts, and Riley (2008), Umlauf (1993) whereas, Amromin, Harrison, and Sharpe (2008), Gallemore, Maydew, and Thornock (2014), Hanlon and Slemrod (2009), Hill, Kubick, Lockhart, and Wan (2013) found a negative association between tax news and the aggregate market value of the corporations. Moreover, no significant market reaction to tax news has been found by Amromin, Harrison, Liang, and Sharpe (2005). These inconsistencies guide to the following hypothesis.

Null Hypothesis:

H0: No significant market reaction is associated with tax reduction announcement.

Alternative Hypothesis:

H1: Significant market reaction is associated with the tax reduction announcement.

Note: proxy variable for the market reaction is the abnormal stock returns of Banking, Insurances and Financial Institutions associated with tax news.

3. Methodology

3.1. Event date:

As this paper intended to identify the possible market reaction from Banks, Insurances and Financial Industries towards the tax reduction announcement, 7th of June 2018, the budget presentation day in which the actual tax reduction proposal has been proposed by the finance minister was selected as an event date.

3.2. Data collection:

The paper has only considered the directly affected industries by the tax reform proposal. There are total 30 (thirty) publicly traded commercial banks, twenty-three financial institutions and forty-seven insurance companies were assumed to be directly influenced by the corporate tax reduction announcement. The total populations of 100 listed firms were considered for the event study. The daily stock price to calculate income return of individual firms as well as the daily returns of the market (DSEX index) from April 01 2017 to May 23, 2018 were collected from the DSE archive.

3.3. AAR and CAAR Measurement

To calculate the effect of tax reduction on share price, this paper investigated the surplus returns triggered by tax reduction news. The market model (Binder, 1998; MacKinlay, 1997) (see Equation (1)) has been used to calculate the expected returns (Usual return exclusive of the event consequence):

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it}. \quad (1)$$

Note: R_{it} is expected return, α_i means intercept, β_i is the Beta coefficient (slope), and R_{mt} is the market return.

$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it}$. In order to calculate the individual stock return as well as the market returns logarithmic form (see Equation (2)) was used:

$$R_t = \ln\left(\frac{P_t}{P_{t-1}}\right). \quad (2)$$

Note: R_t is individual stock return, P_t is current price, P_{t-1} is prior day price.

Two hundred and forty-five trading-day phases were considered to estimate the intercept and beta (slope) factor by applying the ordinary least squares regression of the stock return against the market index (DSEX) return. The estimation phase started 245 days preceding the budget day and continues up to the tenth day before the announcement.

If the declaration of tax reduction induced a strong positive response by the shareholder, the actual return will be considerably higher than the estimated return. It is a short term event study; the author thinks that in inefficient market the market reaction could be slower than expected; that is why ex-post 10 days event window has been considered. Abnormal returns (AR_{it}) were calculated for t-10 ex-event and t+10 post-event days by using the following formula (see Equation (3)) (Watts & Zimmerman, 1986). An extended event period

has been considered due to the probabilities that market could have projected the tax reform given the status of the economy at the point of the policy reform:

$$AR_{it} = R_{it} - (\alpha_i + \beta_i R_{mt})R_{it} - E(R_{it}). \tag{3}$$

The average abnormal return (AAR) is computed by averaging the individual event day’s abnormal returns of all the listed firms by applying the subsequent formula (see Equation (4)) to assess the statistical magnitude of deviation:

$$AAR_t = \frac{1}{Nt} \sum_{i=1}^N AR_{it}. \tag{4}$$

For a better analysis of the abnormality total event period is segregated into three different event windows such as t-10 to t-1 (prevent windows), t0 to t+1(event window) and t+2 to t+10 (post-event window) for which cumulative abnormal return has been calculated (see Equation (5)):

$$CAR_{(t1,t2)} = \sum_{t1}^{t2} AR_t. \tag{5}$$

Cumulative average abnormal return (CAAR) is calculated for each event windows by using the following formula (see Equation (6)):

$$CAAR_{(T1,T2)} = \frac{1}{N} \sum_{i=1}^N CAR_{it}. \tag{6}$$

3.4. Hypothesis testing

In this study T-test (Anderson & Darling, 1954; Savin, 1984) has been applied to test the proposition made earlier. A statistic of this type is widely exercised in earlier event studies such as Adnan, (2018), Adnan, Hossain, Adnan, and Hossain, (2016), Bessembinder and Zhang (2013), Dissanaikie (1994), Giaccotto and Sfiridis (1996). Average abnormal returns (AAR) and Cumulative AAR are computed and tested at 99% and 95% significance level. ARR and CAAR value more significant or less than 0 (zero) with statistical significance (T static value at 99% and 95% significance level) signify the positive or negative investor’s reaction towards the tax reform news (see Table 1). In both scenarios the alternative hypothesis will be proved. To test the hypothesis the following formula has been applied:

$$T_{CAR} = \frac{\sum CAAR_{it}}{\sigma CAR_{it} / \sqrt{n}}, \tag{7}$$

where: t = t-stat, CAR = cumulative abnormal return, σ = standard deviation of returns, n is number of observations.

Table 1. Decision rule of two-tailed test (Lind, Marchal, Wathen, & Waite, 2000)

Criteria	Decision
-t-table <= t-stat <=t-table	Cannot reject null hypothesis
t-stat < -t-table	Reject null hypothesis
t-stat > t-table	Reject null hypothesis

4. Results and findings

The most rational analysis of the responses to tax reform announcement is the change in cumulative share price. While the cash flow proposition expects a notable increase in share value from decline in tax rate, the assessment of asset price model is quite indecisive. The result and discussion section are segregated into four parts. In the first segment, market response from the Banking sector has been analysed, followed by the investor's reaction from the tax reduction announcement towards the Insurance sector. The third part is dedicated to analyse the Capital market reaction of Financial Institutions sector, and the last part analyses the combined market reaction of the three sectors to the tax news.

4.1. Market response of banking sector to tax news

Industry-oriented examinations of events analysis are performed on the entire industry. This is because demand swing from the tax rate changes would probably be concerted on industry segments as well as entities within the industry might be quite analogous to assess general industry behaviour (Shleifer, 2000). The analysis of the banking sector's reaction to the tax news generally explores that the news of corporate tax reduction did not considerably influence market price of the banking stocks. Table two and Figure 1 exhibits the average abnormal return (AAR) of the banking stocks for the ten ex-event days and post-event days of the actual event date (altogether twenty days phase). The overall pre-event abnormal stock returns of the banking companies are contrary to the tax news although most of the negative returns are statistically insignificant. Out of the ten ex-event dates six dates have generated negative returns for instances day -10, -9, -7, -6, -3 and -2 of which day -9 and day -3 have been statically significant. The actual tax announcement event day (0) has also resulted statistically insignificant positive ARR. Within the pre-event phase, only day -1 and -8 have generated statistically positive return. Overall the pre-event returns are very inconsistent proving negative probabilities of any prior public policy information leakage about tax reduction.

The post-event phase has also shown a negative response towards the tax reduction news verified by the significant negative ARR on post-event dates. Among the 10 post-event days the next three days have resulted positive ARR but statistically insignificant. Conversely day 6 and day 7 have shown statistically significant negative ARR reflecting the view that shareholders are not considering the tax reduction news important.

The outcomes are constant with two perspective about the market's point of view regarding tax reform. However, none of the prospective looks very credible. Initially, the events that have taken into consideration possibly have not affected the views of shareholders. Such as, the continuous dialogues with the interest groups by finance minister regarding the tax reform before the budget proposal might have made market participants sure about the tax reduction, or the significance of the tax reduction has decreased to the investors due to the other direct financial benefits provided to the concerned sector (Shane & Stock, 2006).

The cumulative average abnormal return (CAAR) has also been calculated for 3 separate event windows which has been presented in Table 3. Both the pre-event (t_{-1} to t_{-10}) and the post-event window (t_2 to t_{10}) have generated a statistically insignificant negative return (CAAR) representing investor's negative reaction to the event news.

Table 2. Capital market response to corporate tax reform-banking sector (authors calculation)

Days	AAR	T stat	5%	1%	P-value	Decision	H0/H1 Status
-10	-0.0103	(1.804)	(+/-)1.96	(+/-)2.58	0.071	The result is not significant at $p < 0.05$.	H0 accept
-9	-0.0124	(2.103)	(+/-)1.96	(+/-)2.58	0.035	The result is significant at $p < 0.05$ (insignificant @ 1%)	H0 reject (@5%)
-8	0.0099	3.462	(+/-)1.96	(+/-)2.58	0.001	The result is significant at $p < 0.05$	H0 reject
-7	-0.0009	(0.425)	(+/-)1.96	(+/-)2.58	0.672	The result is not significant at $p < 0.05$	H0 accept
-6	-0.0041	(1.593)	(+/-)1.96	(+/-)2.58	0.997	The result is not significant at $p < 0.05$	H0 accept
-5	0.0066	1.505	(+/-)1.96	(+/-)2.58	0.132	The result is not significant at $p < 0.05$	H0 accept
-4	0.0037	0.815	(+/-)1.96	(+/-)2.58	0.415	The result is not significant at $p < 0.05$	H0 accept
-3	-0.0119	(4.720)	(+/-)1.96	(+/-)2.58	0.000	The result is significant at $p < 0.05$	H0 reject
-2	-0.0018	(0.678)	(+/-)1.96	(+/-)2.58	0.498	The result is not significant at $p < 0.05$	H0 accept
-1	0.0156	5.225	(+/-)1.96	(+/-)2.58	0.000	The result is significant at $p < 0.05$	H0 reject
0	0.0010	0.555	(+/-)1.96	(+/-)2.58	0.579	The result is not significant at $p < 0.05$	H0 accept
1	0.0006	0.268	(+/-)1.96	(+/-)2.58	0.789	The result is not significant at $p < 0.05$	H0 accept
2	0.0000	0.019	(+/-)1.96	(+/-)2.58	0.985	The result is not significant at $p < 0.05$	H0 accept
3	-0.0033	(1.316)	(+/-)1.96	(+/-)2.58	0.189	The result is not significant at $p < 0.05$	H0 accept
4	-0.0035	(1.252)	(+/-)1.96	(+/-)2.58	0.211	The result is not significant at $p < 0.05$	H0 accept
5	-0.0029	(1.219)	(+/-)1.96	(+/-)2.58	0.223	The result is not significant at $p < 0.05$	H0 accept
6	-0.0052	(1.962)	(+/-)1.96	(+/-)2.58	0.050	The result is significant at $p < 0.05$	H0 reject
7	-0.0056	(1.988)	(+/-)1.96	(+/-)2.58	0.047	The result is significant at $p < 0.05$	H0 reject
8	0.0000	0.007	(+/-)1.96	(+/-)2.58	0.995	The result is not significant at $p < 0.05$	H0 accept
9	0.0035	1.241	(+/-)1.96	(+/-)2.58	0.215	The result is not significant at $p < 0.05$	H0 accept
10	0.0010	0.446	(+/-)1.96	(+/-)2.58	0.656	The result is not significant at $p < 0.05$	H0 accept

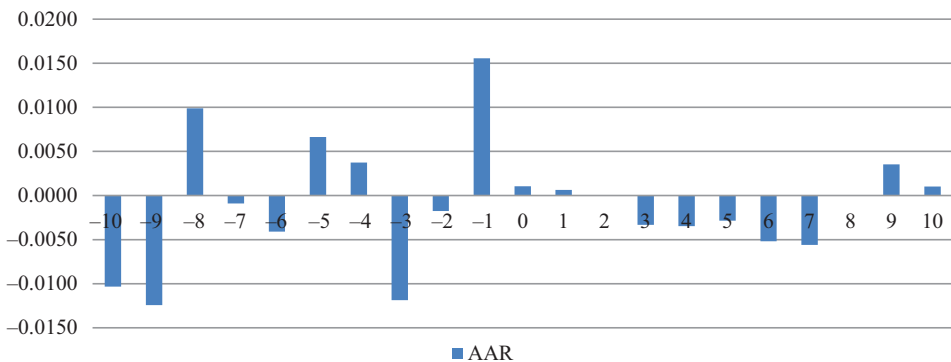


Figure 1. Average abnormal return (banks)

Table 3. Cumulative average abnormal return-bank (authors calculation)

Cumulative average abnormal return (bank)							
EVENT WINDOW	CAAR	T Stat	5%	1%	P-value	Decision	H0/H1
(-10, -1) Ex- Event	-0.00558	-0.59	(+/-)1.96	(+/-)2.58	0.555	The result is <i>not</i> significant at $p < 0.05$	H0 accept
(0, +1) Event	0.00166	0.501	(+/-)1.96	(+/-)2.58	0.616	The result is <i>not</i> significant at $p < 0.05$	H0 accept
(+2, +10) Post- Event	-0.01571	-1.959	(+/-)1.96	(+/-)2.58	0.988	The result is <i>not</i> significant at $p < 0.01$	H0 accept

Moreover, it has been exhibited from the financial disclosures made by 30 publicly traded banks to Dhaka Stock Exchange (DSE) that 18 banks among 30 have experienced negative growth in their earnings (EPS) in January–September 2018 financial period compared to that of prior year that has been reported just after the tax reduction has been applied. The result is inconsistent with the cash flow assumption (Lang & Litzenberger, 1989; Lehn & Poulsen, 1989) although other 12 banks achieved a positive growth rate. Additionally several negative predictions and assumptions from several capital market researchers regarding the no impact of tax reduction to investors as well as market liquidity have also influenced negative market return and response.

4.1. Market response of financial institution sector to tax news

The investor's reaction from Financial Institutions market due to the tax reform proposal is presented in Table 4 and Figure 2. The empirical result shows an inconsistent investors response to the corporate tax reduction news for Financial Institutions. Within ex-event phase day 4, 5 and 6 have generated positive ARR which are statistically significant. However, day 3 generated a negative statistically significant ARR. Overall the pre-event phase has generated negative returns. Among the ten observed dates six ex-event days have got negative ARR. Although the announcement day has resulted significant positive ARR, it has been followed by a significant negative ARR on day three in post-event period. Among the observed ten post-event date, seven days have resulted negative ARR.

The empirical findings of the Ex-event days point out that the very immediate phase of before and after the announcement (such as days +/-1 and +/-2) there has been no quick reaction from the investors but significant positive market response has been observed about five days before the budget announcement which indicates a keen market anticipation of the tax reform proposal which is found to be evident by a careful investigation of news and articles published in newspaper around the budget announcement period. However the post-announcement effect was slightly negative suggesting a quick market adjustment. In general the overall announcement period ARR found to be very inconsistent and difficult to predict and explain.

Table 4. Market response of financial sector to tax news source (authors calculation)

Day	AAR	TSTAT	P-value	Decision	H0/H1
-10	-0.0040	-1.5495	0.1339	The result is <i>not</i> significant at $p < 0.05$.	H0 accept
-9	-0.0043	-1.1880	0.2497	The result is <i>not</i> significant at $p < 0.05$.	H0 accept
-8	0.0010	0.75019	0.3433	The result is <i>not</i> significant at $p < 0.05$.	H0 accept
-7	-0.0061	-1.7704	0.0640	The result is <i>not</i> significant at $p < 0.05$.	H0 accept
-6	0.0046	2.06571	0.0253	The result is significant at $p < 0.05$ (Not significant @ 1%)	H0 reject (@5%)
-5	0.0092	2.90942	0.0057	The result is significant at $p < 0.05$	H0 reject
-4	0.0037	2.16281	0.0274	The result is significant at $p < 0.05$ (Not significant @ 1%)	H0 reject (@5%)
-3	-0.0065	-2.3276	0.0287	The result is significant at $p < 0.05$ (Not significant @ 1%)	H0 reject (@5%)
-2	-0.0063	-1.4309	0.2539	The result is <i>not</i> significant at $p < 0.05$.	H0 accept
-1	-0.0043	-1.3626	0.2509	The result is <i>not</i> significant at $p < 0.05$.	H0 accept
0	0.0118	2.60141	0.0101	The result is significant at $p < 0.05$ (Not significant @ 1%)	H0 reject (@5%)
1	-0.0015	-0.5560	0.6094	The result is <i>not</i> significant at $p < 0.05$.	H0 accept
2	-0.0011	-0.3391	0.6936	The result is <i>not</i> significant at $p < 0.05$.	H0 accept
3	-0.0052	-2.1887	0.0253	The result is significant at $p < 0.05$ (Not significant @ 1%)	H0 reject (@5%)
4	0.00146	0.53148	0.6108	The result is <i>not</i> significant at $p < 0.05$.	H0 accept
5	-0.0026	-0.8202	0.7331	The result is <i>not</i> significant at $p < 0.05$.	H0 accept
6	-0.0003	-0.1136	0.9689	The result is <i>not</i> significant at $p < 0.05$.	H0 accept
7	-0.0014	-0.5316	0.2928	The result is <i>not</i> significant at $p < 0.05$.	H0 accept
8	0.04571	7.90930	0.0000	The result is significant at $p < 0.05$	H0 reject
9	0.01021	1.42987	0.9923	The result is <i>not</i> significant at $p < 0.05$.	H0 accept
10	-0.0057	-0.7897	0.4255	The result is <i>not</i> significant at $p < 0.05$.	H0 accept

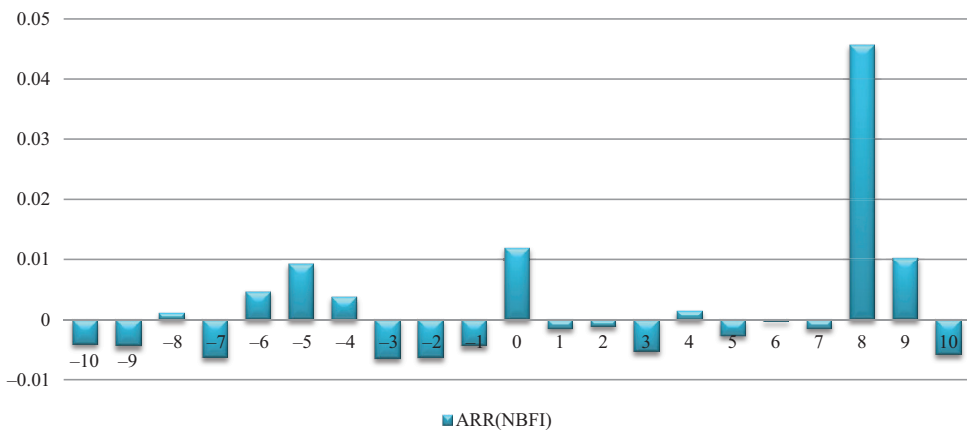


Figure 2. AAR (financial institutions)

Table 5. CAAR-Financial institutions (authors calculation)

EVENT WINDOW	CAAR	TSTAT	P-value	Decision	H0/H1
(-10, -1) Ex Event	-0.01209	-1.75598	0.1476	The result is not significant at $p < 0.05$	H0 accept
(0, +1) Event	0.00903	2.18509	0.0286	The result is significant at $p < 0.05$ but not significant at $p < 0.01$	H0 Reject
(+2, +10) Post-event	0.03989	3.26867	0.0029	The result is significant at $p < 0.05/0.01$	H0 Reject

The cumulative abnormal return (exhibited in Table 5) indicated that the CAAR value of pre-event window (-1 to -10) generated a statistically negative return. However, the event phases (0 to +1) and 9+2 to +10) generated significant positive CAAR indicating that investors treated tax reduction proposal as good news. Therefore, null hypothesis can be rejected in case of financial institutions sector. The findings are consistent with the findings of Auerbach (2018), Brooks, Godfrey, Hillenbrand, & Money (2016), Wren-Lewis (2016).

4.2. Market response of insurance sector to tax news

The average abnormal return (ARR) of the insurance sector, responding to the corporate tax reduction news has been presented in Table 6 and Figure 3. The result exhibits that there has been a statistically insignificant response from the insurance firms towards the tax reform news. Nine days out of the ten ex-event days of the announcement have generated insignificant negative returns suggesting that investors did not anticipate any tax reduction proposal for insurance sector or there was no e-event information leakage.

Table 6. Market response of insurance sector to tax news (authors calculation)

Day	ARR	TSTAT	P-value	Decision	H0/H1
-10	-0.00187	-0.417	0.6766	The result is not significant at $p < 0.05$	H0 accept
-9	0.00110	0.2712	0.7862	The result is not significant at $p < 0.05$	H0 accept
-8	-0.00025	-0.0837	0.9338	The result is not significant at $p < 0.05$	H0 accept
-7	-0.00229	-0.8035	0.4219	The result is not significant at $p < 0.05$	H0 accept
-6	-0.00520	-1.5635	0.1180	The result is not significant at $p < 0.05$	H0 accept
-5	-0.00417	-1.1517	0.2497	The result is not significant at $p < 0.05$	H0 accept
-4	-0.00551	-1.6603	0.0969	The result is not significant at $p < 0.05$	H0 accept
-3	-0.00134	-0.4680	0.6397	The result is not significant at $p < 0.05$	H0 accept
-2	-0.00425	-1.4103	0.1585	The result is not significant at $p < 0.05$	H0 accept
-1	-0.00220	-0.7521	0.4520	The result is not significant at $p < 0.05$	H0 accept
0	-0.00057	-0.1591	0.8736	The result is not significant at $p < 0.05$	H0 accept
1	2.56143	0.00692	0.9944	The result is not significant at $p < 0.05$	H0 accept
2	0.00282	0.82041	0.4119	The result is not significant at $p < 0.05$	H0 accept
3	0.01010	2.74640	0.0060	The result is significant at $p < 0.05/0.01$	H0 reject
4	0.00288	0.89072	0.3730	The result is not significant at $p < 0.05$	H0 accept
5	-0.00640	-2.0719	0.0383	The result is significant at $p < 0.05$ but not significant @ $p < 0.01$	H0 Reject
6	-0.00198	-0.5521	0.5809	The result is not significant at $p < 0.05$	H0 accept
7	-0.00496	-1.3879	0.1654	The result is not significant at $p < 0.05$	H0 accept
8	0.002313	0.72376	0.4692	The result is not significant at $p < 0.05$	H0 accept
9	-0.00628	-1.7070	0.0878	The result is not significant at $p < 0.05$	H0 accept
10	0.001739	0.57398	0.5660	The result is not significant at $p < 0.05$	H0 accept

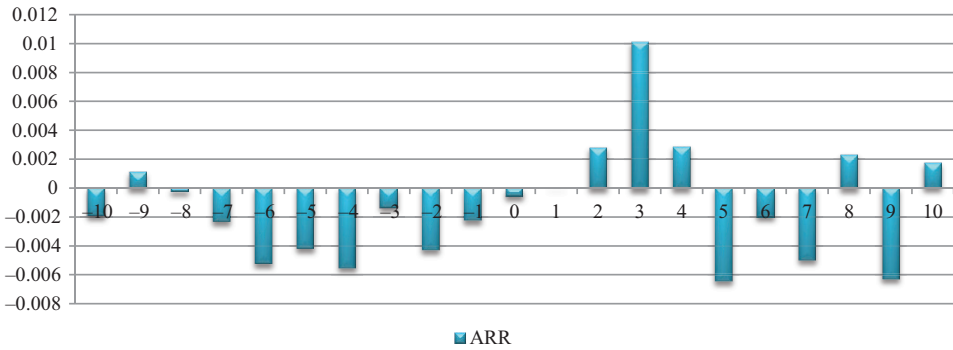


Figure 3. ARR (insurance sector)

The actual event day also generated insignificant negative return. However the day three in post-event period have generated significant positive return followed by significant negative return on day five which are random. Overall the post-event reaction from insurance sector was positive, i.e. six out 10 post-event days have generated insignificant positive return. It can be generalised that is insurance firms did not consider the tax reduction proposal significantly affecting the investment returns as well as firms value. Nevertheless, the full effect of the proposal was not wholly apparent until the final approval of the proposal on July 1st 2018.

Table 7. CAAR-insurance sector (authors calculation)

EVENT WINDOW	CAAR	TSTAT	P-value	Decision	H0/H1
(-10, -1) Ex Event	-0.0260	-3.91397	0.000091	The result is significant at $p < 0.05/0.01$	H0 Reject
(0, +1) Event	-0.00055	-0.10988	0.91320	The result is not significant at $p < 0.05$	H0 accept
(+2, +10) Post-event	0.00022	0.028447	0.97734	The result is not significant at $p < 0.05$	H0 accept

Overall, the cumulative investor’s and market response to corporate tax reduction announcement for insurance sector was insignificant demonstrating that the markets did not anticipate that the tax reduction would bring any positive impact on insurance sector. The CAAR value of three different event windows showed (see Table 7) that apart from the event ten days phase with significant negative return event window phase and post-event phase generate insignificant market response.

4.3. Market response of all three sectors combined to tax news

The combined market reaction from the three tax policy benefited sectors has been shown in Table 8 and Figure 4. It has been exhibited from the presentations that the combined sectoral return to tax reduction news has been very negligible.

Table 8. Market response of all 3 sectors to tax news (authors calculation)

Days	ARR	TSTAT	P-value	Decision	H0/H1
-10	-0.00488	-1.74972	0.0802	The result is not significant at $p < 0.05$	H0 accept
-9	-0.00418	-1.50146	0.1333	The result is not significant at $p < 0.05$	H0 accept
-8	0.003151	1.787967	0.0737	The result is not significant at $p < 0.05$	H0 accept
-7	-0.00283	-1.67845	0.0933	The result is not significant at $p < 0.05$	H0 accept
-6	-0.00254	-1.37289	0.1700	The result is not significant at $p < 0.05$	H0 accept
-5	0.002076	0.888337	0.3743	The result is not significant at $p < 0.05$	H0 accept
-4	-0.00061	-0.28378	0.7771	The result is not significant at $p < 0.05$	H0 accept
-3	-0.00561	-3.2519	0.0011	<i>The result is significant at $p < 0.05/0.01$</i>	<i>H0 Reject</i>
-2	-0.00364	-1.94209	0.0521	The result is not significant at $p < 0.05$	H0 accept
-1	0.002805	1.426619	0.1536	The result is not significant at $p < 0.05$	H0 accept
0	0.002746	1.302686	0.1927	The result is not significant at $p < 0.05$	H0 accept
1	-0.00012	-0.05989	0.9529	The result is not significant at $p < 0.05$	H0 accept
2	0.001047	0.548591	0.5833	The result is not significant at $p < 0.05$	H0 accept
3	0.002529	1.215102	0.2243	The result is not significant at $p < 0.05$	H0 accept
4	0.000133	0.074469	0.9406	The result is not significant at $p < 0.05$	H0 accept
5	-0.00409	-2.35065	0.0187	<i>The result is significant at $p < 0.05$ but not @ 1%</i>	<i>H0 Reject</i>
6	-0.00251	-1.27151	0.2037	The result is not significant at $p < 0.05$	H0 accept
7	-0.00461	-2.36008	0.0182	<i>The result is significant at $p < 0.05$ but not @ 1%</i>	<i>H0 Reject</i>
8	0.011169	3.824435	0.0001	<i>The result is significant at $p < 0.05$</i>	<i>H0 Reject</i>
9	0.000318	0.122648	0.9024	The result is not significant at $p < 0.05$	H0 accept
10	-0.00021	-0.09292	0.9266	The result is not significant at $p < 0.05$	H0 accept

This result provides evidence that capital markets respond negatively in most of the event days before the tax reduction announcement (7 out of 10 ex-event days), even though only single ex-event day generate statistically significant negative return. The same situation prevailed in the post-announcement period. The only eighth day after the announcement generated statistically positive significant return, which can be considered as a random outcome. Therefore, the analysis does not find any signs of a firm's tax rate on share price reactions. The findings are very consistent with the study (Cutler, 1988) on the effect of 1986 tax reform act of US on stock price, exhibited a very negligible collective quantitative reaction from market in response to tax reform and finally argued that tax reform news is hardly distinguishable from usual market fluctuations.

The CAAR value of three different event windows has been presented in Table 9 suggests that ex-event window of (-10 to -1) generates significant negative market return whereas after the announcement there has been a positive response from the market but not statistically significant. That proves that investors did not consider tax reduction news as significantly affecting stock value.

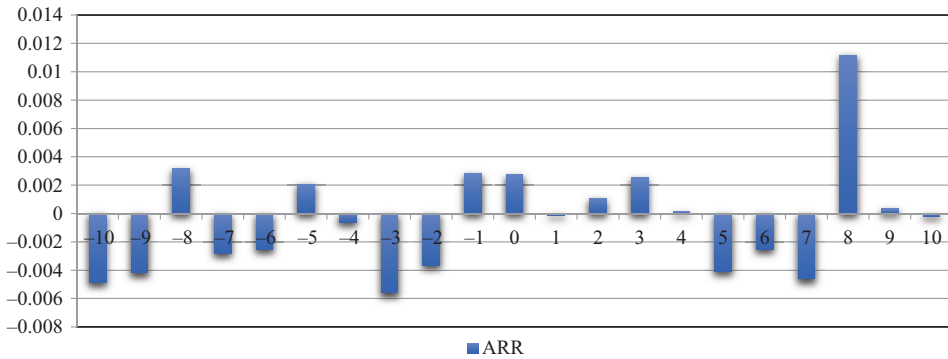


Figure 4. (AAR 3 sectors)

Table 9. CAAR-all 3 sectors (authors calculation)

Event window	CAAR	TSTAT	P-value	Decision	H0/H1
(-10, -1) Ex Event	-0.0162	-3.58	0.00391	The result is significant at $p < 0.05/0.01$	H0 Reject
(0, +1) Event	0.00262	0.9681	0.39293	The result is not significant at $p < 0.05$	H0 accept
(+2, +10) Post-event	0.00376	0.6813	0.49625	The result is not significant at $p < 0.05$	H0 accept

Conclusions

This study analyses the investor’s responses towards the corporate tax reduction proposal (from 40% to 3705%) for the Banking, Insurance and Financial Institution sectors of Bangladesh in financial year 2017-18. The stock return of twenty days around the event date of 100 publicly listed firms in three segments of industry namely Banking, Insurance and Financial institution are considered for the study. Event study methodology has been used to identify any statistically significant average abnormal return (AAR) around the ten pre and ten post-event days as well as the cumulative average abnormal return (CAAR) of three different event windows. The results of the investigation exhibited no significant price movement around the event period more generally. As far as the Banking industry concern, the average abnormal returns around the announcement dates are not statistically considerable. However, there was significant abnormal return incurred just the day before the announcement suggesting there could have been an information leakage or positive expectation of the investors from the budget announcement. Although there have been a consistent negative returns followed by the positive return on day -0 till day 5 including the event day. The cumulative average abnormal return (CAAR) of banking industry of three event windows also shows that there is no significant market response to the tax reduction news. The similar market response has also been observed by analysing the average abnormal return from stocks of insurance firms around the announcement period. There were no statistically considerable AAR and CAAR

values associated to the announcement windows. The market response from the financial institutions to the tax news has been different from the other two industry of observation. There has been a significant positive market response to the tax reduction news from the sector exhibited through statistically significant positive CAAR value in event (0 to +1) and post-event (+2 to 10) windows. However the combined market reaction of all three sectors predicted to be benefited from tax reduction shows insignificant market response.

Reasonable justification for this inconsequential reaction could be the inefficient valuation of the tax news by the market. Additionally, market response to economic news such as tax reduction usually depends on the tax knowledge of the investors. Whereas institutional shareholders are usually well up to date regarding the tax policies and updates, marginal shareholders have limited access to tax updates; therefore, tax policy enforced market response could be delayed.

This research is one of the valuable efforts to take out asset pricing related analysis of the tax reduction consequence to a specific industry. However, as the enormity of the capital market in Bangladesh stays lower in comparison to the other first world countries, the likely effect of share price changes on the local economy predictable to be inferior compared to established markets. Nevertheless, taking into account the fact that the eminence of the capital market in the financial ecosystem of Bangladesh is likely to increase remarkably in future, the consequences of equity return on the economic and financial growth should also inflate. The outcome of this study would significantly contribute to the financial and economic policy formulation while taken into consideration the possible impact of the policy over the equity valuation, investor's reaction and as a whole over the capital market of Bangladesh.

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