

Earnings Per Share Versus Cash Flow Per Share as Predictor of Dividend; Evidence from Non Financial Sector of Pakistan

Muhammad ilyas¹ Dr. Mazhar Hussain¹ Aamir khan²
1. International Islamic University Islamabad (IIUI) Pakistan
2. Qurta University Peshawar Pakistan

Abstract

This research study has compared the relative predictive power of earnings and cash flow in order to find out the best predictor of dividend. This study has used panel data techniques and the data has been collected from the balance sheet analysis of 104 KSE-100 index non-financial companies. This study has employed a linear mixed effect model approach to investigate the main problem. The two models (earnings based model and cash flow based model) have been compared by using log likelihood estimator and Akaike information criteria (AIC). The results have shown that cash flow per share is a better predictor of dividend than earnings per share in term of log likelihood estimator and Akaike information criteria (AIC). The results have also concluded that both earnings per share and cash flow per share have a significant relationship with dividend. The study also finds out that all the control variables including firm's size (SIZE), leverage ratio (LR), market to book value (MBV) and liquidity ratio (LIQ) have a significant relationship with dividend.

Keywords: Earning per share (EPS), Cash flow per share (CFPS), Dividend, Linear mixed effect model, Log likelihood estimator, Akaike information Criteria (AIC) and KSE-100 index

1. Introduction

Dividend is the most debatable subject in corporate finance literature and according to (Black, 1976) "The harder we look at the dividend picture, the more it seems like a puzzle, with pieces that just don't fit together". Past studies on dividend has shown that both cash flow and earnings are important for dividend, however (Consler, Susan and Hevraneck, 2011) concluded that cash flow is a better predictor of dividend than earnings. In another study of Healy (1985) he concluded that it is easy for a manager to manipulate earning while cash flow is difficult to manipulate. Similarly Thomson (2013) stated that some time a company sell their products and services and the customers give the cash later, in such condition the net income of the company increases while cash flow remains unchanged because the customer did not pay the cash yet. So cash flow is considered to be the actual amount of cash that support different operations of a company.

The main purpose of this study is to find out that which one between earnings and cash flow is a better predictor of dividend. According to Jensen (1986) agency theory of free cash flow the firms uses their free cash flow as a source to pay dividend to eliminate the agency cost. Similarly Adelegan (2003) identified that cash flow is a significant factor of dividend in small sized, averagely geared and high growth firms. The dividend residual theory that has presented by Lintner (1956) concludes that a firm uses their retaining earnings as a source to pay dividend to their share holders after all future investment opportunities have completed. The previous literature has described that most of the studies linked earnings and dividend and conclude that earnings is a better predictor of dividend (Lintner, 1956) and (Koch and Sun 2004). However some of the studies also showed that cash flow is a better predictor of dividend (Bowen et al, 1986) and (Fama and French, 2001).

From company perspective, operating cash flow is the main source for paying cash dividend. If the company does not have sufficient operating cash flow then it would not be able to pay its dividend to share holders (Mirza and Afza 2014). Prospective investors should consider the best predictor of dividend and look forward to the future capability of a company to maintain a sound dividend policy. The study of (Mortimer and Page, 2012), concluded that there is a close relationship between dividend per share ratio and consumer price index (CPI). Considering the above study, it can be concluded that cash flow of a company also contributes to a country economy, because cash flow is a major source of dividend.

(Consler, Susan and Hevraneck, 2011) concluded that cash flow is considered to be a better predictor of dividend than earnings but their study is based on US firms which are operating in a developed capital market. The current study is based on Pakistani economy which is an emerging capital market that has different tax policies and rule regulations from that of the developed economies. Although a few studies in Pakistan have found both current earnings and cash flow as predictor of dividend (Ahmad and Javid, 2012) (Mirza and Afza, 2014), but still they did not identified that which one between cash flow and earnings is better in predicting dividend. So, the current study is the first study according to the best of my knowledge which has explored this subject matter.

2. Literature Review

The term dividend policy implies the management decisions about the size and timing of dividend payment to their share holders. The dividend policy is an important issue in corporate finance, because it is considered to be major cash out flow for a firm in the form of cash dividend. Since the middle of the last century many finance scholars worked on dividend policy in order to solve several issues with respect to dividend and they formulated different models and theories to explain dividend behaviour.

2.1 Dividend Theories

The first model of dividend payment was introduced by Lintner (1956) which argued that current earning and preceding dividend level are the main determinants of changes in dividend. He further concluded that current earnings are the only factor that can bring change in yearly dividend payment with a target payout ratio. Since the study of Lintner (1956), many researchers investigated this topic and theories have been presented by the researches related to the issue of dividend policy. Miller and Modigliani (1961) presented their dividend irrelevance theory which states that under the perfect market and zero taxes the dividend of a firm does not affect the value of a company. They further explained that the dividend is solely depending on the earning capacity of the firms and the risk associated to the investment.

Another theory of divided policy is relevance theory which opposes the dividend irrelevance theory. Gordon (1963) supported the theory that dividend is relevant to the value of the company. In other words increasing dividend has a positive impact on the company's market value. Lintner (1956) and Gordon (1959) introduced the dividend residual theory. This theory states that dividend is only paid out from the retained earnings, after all future investment opportunities have been financed. This theory also states that instead of expecting short term pay out, investors prefer more to future earnings of the company (Mjaco, 2000). So, the company pays a small percentage of their profits as dividend if it has many investment opportunities in future and it will pay a high percentage of profit as dividend if it has small investment opportunities.

Another theory presented by Jensen (1986) is free cash flow theory that argues that there is a direct link between agency cost and free cash flow. In order to prevent the manager to invest in unprofitable investment or to prevent from unnecessary investment, the principal (share holders) have to incur some supervision cost. So in such condition, companies have to use their free cash flow as source to overcome the agency conflict between share holders and managers and also to eliminate the agency cost.

2.2 Empirical Studies

As the agency theory of free cash flow presented by Jensen (1986) has explained that cash flow is the main source of dividend, while dividend residual theory said that dividend is paid from retained earnings. So, the above theories provide a sound foundation for this study. There are mixed results regarding the comparison between earnings and cash flow as predictor of dividend. There are few past studies, which did not find significant link between cash flow and dividend changes (Fama & Blahnik 1968), (Hagerm & Huefner 1980) and (Simons 1994). They concluded that historical cost is comparatively a better predictor than cash flow and cash flow is insignificant predictor of dividend changes. However their finding was not able to conclusively exclude the impact of cash flow in changes dividend because they used income plus depreciation as a proxy for cash flow which cannot be used for liquidity and it can only be used for describing profitability. The first successful study regarding the link between cash flow and dividend was conducted by Bowen et al (1986) in which he found that cash flow has higher significant predictive power than current earnings in predicting dividend changes. After that most of the current studies support the results of Bowen (1986) studies. Al-Najjar & Belghitar (2012) have used a sample of 432 UK firms in order to test the relationship between and dividend policy. The results have described that operating cash flow is better than earnings and firms gives more importance to cash flows in setting dividend policy.. (Conslor, Susan & Hevraneck, 2011) have used a sample of 1902 dividend paying companies from CRSP and Compustat data. They used a selected model fit criteria in order to compare the predictive ability of earnings and cash flow in predicting dividend. The results found that cash flow is a better predictor of dividend than earnings. The study of Healy (1985) also proved that cash flow is superior to earnings as a predictor of dividend. On the basis of the above literature, the first hypothesis of the study has been developed which is;

H1: Cash flow per share is better than earning per share in predicting dividend.

There is an extensive literature on the relationship between earnings and dividend. The long term sustainable growth of a company's dividend depends on how well their earnings are growing. The companies with a sustainable earning growth have the capacity to offer a higher payout ratio to its share holders than companies with inconsistent EPS growth rates (Plaehn, 2014). Fama & French, (2001) found profitability as one characteristic that can affect a firm's decision to pay cash dividends. They states that cash dividend can be terminated due to negative earnings. So their study clearly indicates an association between cash dividend and earnings. McCann and Olson, (1994) further provided some detailed evidence about the link between earnings

and dividend. Their study supported the dividend payment hypothesis regardless of the perfection of the capital markets. Another study which supported the relationship between earnings and dividend was conducted by (Koch & Sun 2004) who concluded that any dividend changes are due to previous changes in earnings. Which shows that the decision to increase or decrease dividend solely depend on the amount of earnings. Similarly Waweru, et al. (2012) provided the empirical evidence that dividend can be used as a signals for a firm's future earnings prospects. They further explained their results that they found no company with a negative EPS that increases dividends. Charitou, et al. (2010) used a sample of US firms in their study and concluded that the information content of current and future dividend varies depending on the pattern of current earnings, past earnings and dividend payment records. They argued that dividend would be reduced if the firm experienced a persistent decline in the past earnings pattern. The above discussion on the relationship between earnings and dividend leads to the second hypothesis of the study which is;

H2: Earnings per share have a positive and significant relationship with dividend.

Gairatjon (2012) made an attempt to examine the relationship between different company's factors and dividend payout ratios. The finding of the study indicates that free cash flow, growth and risk have a significant relationship with large size company's dividend payout ratio. While medium size companies dividend payout ratio have a significant relationship with free cash flow, risk, leverage and size. According to Baard (2007) there is a significant positive relationship between operating cash flow and dividend changes. Similarly, Afza (2010) also found that the amount of dividend that a firm pay to its share holders depends on its operating cash flow. Stephanus (2008) investigated the relationship between dividend changes and cash flow in South Africa. He found a positive link between cash flow and changes in dividend. He also identified a significant positive relationship between dividend changes and earnings after taxes and a significant negative relationship between previous year dividend yield and dividend changes. Adelegan (2003) has used data of 63 Nigerian companies in order to check his hypothesis that whether cash is a better predictor of dividend changes. The result of his study has shown that cash flow is a significant determinant of dividend in small sized firms that uses average amount of leverage. Similarly cash flow is a significant predictor of dividend in both high growth firms and low growth firms. On the basis of the above literature regarding the association between cash flow and dividend, the third hypothesis of the study has been developed which is;

H3: Cash flow per share has a positive and significant relationship with dividend.

3. Methodology of the Study

This study followed a quantitative research method with a deductive approach. This study is based on two theories, which are Agency theory of free cash flow, and dividend residual theory. The sample of the study is based on 104 companies form non-financial sector of Pakistan for a period (2007-2013). Secondary and balanced panel data has been used in this study. Linear mixed effect model has been applied for data analysis. This is a comparative study in which the relative predictive ability of both earnings and cash flow has been identified. Two statistical techniques have been applied to measure the relative predictive ability of earnings and cash flow, which are maximum log likelihood estimator (MLE) and Akaiki Information criteria (AIC). The higher the maximum log likelihood estimator (MLE), the higher will be the predictive ability of a variable while lower the value of the Akaiki information criteria (AIC) shows a high predictive ability of the variable. In this study earning per share (EPS) and cash flow per share (CFPS) have been used as independent variables, dividend has been used as dependent variable and leverage ratio (LR), Firm's size (SIZE), Liquidity ratio (LIQ) and market to book value (MBV) have been used as control variables. The data has been collected from balance sheet analysis of non-financial sector companies of Karachi stock exchange (KSE). The data of market price has been collected from KSE website.

3.1 Variables of the study

The following table shows the measurements of dependent variables, independent variables and control variables.

Table: 1 Variables and their measurement

| Variables | Measurement |
|------------------------------|--|
| Dependent Variable | |
| Dividend | Dividend per share (DPS) = Total amount of dividend ÷ Total numbers of shares outstanding. |
| Independent Variables | |
| Earnings per share (EPS) | Net income (after tax) ÷ Total number of common shares outstanding (Mubin et al, 2014). |
| Cash flow per share (CFPS) | Operating cash flow ÷ Total number of share outstanding (Liu et al., 2007) and (Consler, Susan and Hevraneck, 2011) |
| Control variables | |
| Firm size | Firm size is calculated by taking natural log of total assets of a firm (Consler et al 2011). |
| Market to book value (MBV) | Average market price per share ÷ book value per share (Consler, Susan & Hevraneck, 2011) |
| Liquidity ratio (LIQ) | Liquidity ratio = Cash and cash equivalent ÷ Total number of share outstanding (Badu, 2013) and (Consler, Susan & Hevraneck, 2011) |

3.2 Econometrics model

$$DPS_{ij} = \beta_0 + \beta_1 CFPS_{it} + \varepsilon_{it} \quad (1a)$$

$$DPS_{ij} = \beta_0 + \beta_1 CFPS_{it} + \beta_2 \log(TA)_{it} + \beta_3 LR_{it} + \beta_4 MBV_{it} + \beta_5 LIQ_{it} + \varepsilon_{it} \quad (1b)$$

$i = 1; \dots, N; t = 1; \dots, n_i$

$$DPS_{ij} = \beta_0 + \beta_1 EPS_{it} + \varepsilon_{it} \quad (2a)$$

$$DPS_{ij} = \beta_0 + \beta_1 EPS_{it} + \beta_2 \log(TA)_{it} + \beta_3 LR_{it} + \beta_4 MBV_{it} + \beta_5 LIQ_{it} + \varepsilon_{it} \quad (2b)$$

Where,

- DPS = Dividend per share,
- β_0 : The intercept of the model,
- EPS= Earnings per shares,
- CFPS= Cash flows per share
- Log (TA) = Log of total assets of the firms,
- LR= Leverage ratio,
- MBV= Market to book value

Where i is the numbers of firms and t is the measurement occasion

4. Results and Discussions

Before analyzing the data it is important to check the quality of data that has been used in this study. For this purpose panel unit root test and variance inflation analysis (VIF) test have applied on the data. The results show that P value for all our dependent and independent variables is less than (0.05), which means that (Levin lin and chu, 2002) unit root test is significant for all the variables of this study, so the data is stationary. The overall Variance inflation factors (VIF) values of the model 1b and

4.1 Linear Mixed effect Model

In order to test the relative predictive power of cash flow and earnings this study has applied a linear mixed effect model of (Pinheiro and Bates, 2000) and (Consler, Susan and Hevraneck, 2011) to both earning based model and cash flow based model. Equations (1a) and (1b) present linear mixed effects models for and earnings per share (EPS) and dividend per share (DPS) while equation (2a) and equation (2b) present linear mixed effects models for cash flow per share (CFPS) and dividend per share (DPS).

Table: 2 Linear mixed effect model (without control variable)

| | Coef | Z | p-value |
|----------------|----------|---------------|---------|
| CFPS** | .2327972 | 15.84 | 0.000 |
| CONS | .3567552 | 2.12 | 0.034 |
| Log likelihood | -2100 | Prob > chi2 | 0.000 |
| AIC | 4202 | Wald chi2 (1) | 250.93 |

[Significant at 1% p value **, significant at 5% p value *]

Table: 3 Linear mixed effect model of cash flow model (with control variable)

| | Coef | Z | p> [z] |
|----------------|----------|---------------|--------|
| CFPS** | .1632214 | 10.35 | 0.000 |
| SIZE* | .2155248 | 2.21 | 0.027 |
| LR** | 1.807700 | 2.48 | 0.013 |
| MBV* | .0096620 | 3.20 | 0.001 |
| LIQ** | .6251293 | 8.65 | 0.000 |
| CONS | -4.45041 | -2.82 | 0.005 |
| Log likelihood | -2054 | Wald chi2 (5) | 383 |
| AIC | 4118 | Prob > chi2 | 0.000 |

[Significant at 1% p value **, significant at 5% p value *]

As both the cash flow based model and earnings based model are nested, so they can be compared by using log likelihood estimator and Akaike information criteria (AIC). The Akaike information criteria (AIC) value can be calculated by the following formula.

$$AIC = -2 * \log \text{likelihood} + 2 * \text{Number of parameters}$$

The model with higher log likelihood value and lower akaike information criteria (AIC) value is considered to be the best fit model. The table 2 shows that the log likelihood value for cash flow model (without control variables) is -2100 and AIC value is 4202. Similarly, according to table 3 the log likelihood value for cash flow based model (with control variables) is -2054 and akaike information criteria (AIC) value is 4118.

Table: 4 Linear mixed effect model (without control variables)

| | Coef | Z | p> [z] |
|----------------|----------|---------------|--------|
| EPS** | .0243762 | 10.74 | 0.000 |
| CONS | .38877 | 2.10 | 0.036 |
| Log likelihood | -2160 | Prob > chi2 | 0.000 |
| AIC | 4322 | Wald chi2 (1) | 115 |

[Significant at 1% p value **, significant at 5% p value *]

Table: 5 Linear mixed effect model (with control variables)

| | Coef | Z | p> [z] |
|----------------|----------|---------------|--------|
| EPS** | .0132482 | 5.73 | 0.000 |
| SIZE* | .2163397 | 2.12 | 0.034 |
| LR** | 2.475021 | 3.34 | 0.001 |
| MBV* | .0016292 | 2.47 | 0.013 |
| LIQ** | .8128265 | 11.19 | 0.000 |
| CONS | -4.83736 | -2.93 | 0.003 |
| Log likelihood | -2093 | Wald chi2 (5) | 284 |
| AIC | 4196 | Prob > chi2 | 0.000 |

[Significant at 1% p value **, significant at 5% p value *]

Table 4 shows that log likelihood value for earning based model (without control variables) is -2160 and AIC value is 4322. Table 5 shows that log likelihood value for earnings based model (with control variables) is -2093 while AIC value is 4196. The result shows that log likelihood value of cash flow based model is greater than earnings based model. Similarly the Akaike information criteria (AIC) value of cash flow based model is smaller than earnings based model in both without control variables model and with control variables model. It indicated that the cash flow model is the best fitted model. So it can be concluded that cash flow more accurately predicts the dividend than earnings, so the results supported the main hypothesis of this study which is; “Cash flow per share is better than earnings per share in predicting dividend”. The results of this study are according to the previous study of Consler, Susan and Hevraneck (2011) who concluded that cash flow is a better predictor than earnings. This study also supported the arguments of (Healy, 1985) that cash flow is better than earnings because manager can easily manipulate earnings for their self benefit.

The result shows a positive and significant association between cash flow per share (CFPS) and dividend per share (DPS). So the second hypothesis; “Cash flow per share has a positive and significant

relationship with dividend” has been accepted. The results are in line with the previous study of (Mirza and Afza, 2014) and (Ahamd and Javid, 2012) who concluded that cash flow is a major determinant of dividend in context of Pakistan. The results supported the agency theory of Jensen (1986), who found that management of firms pays high dividend to their share holders if they have high reserve of free cash flow, so that the agency conflict is reduced.

The linear mixed effect model results also displayed a positive and significant relationship between the earnings per share (EPS) and dividend per share (DPS). So, it can be concluded that firms with high earnings have the ability to pay high dividend. In other words dividend would be reduced if the firm experienced a persistent decline in the past earnings pattern Charitou, et al (2010). The result supported the third hypothesis of the study which is; “*earnings per share have a positive and significant relationship with dividend*”. The results also supported the residual theory of dividend (Lintner, 1956) which states that retained earnings can be used as a source to pay dividend after all future investment opportunity has been financed. All the control variables which have been used in the study have shown a significant relationship with dividend. It indicates that both earnings and cash flows are important predictors of dividend in context of Pakistan non financial sector. However the predictor ability of cash flow is higher than the earnings. In another words the cash flow is a better predictor of dividend than earnings.

5. Conclusion

This study investigated to compare the relative predictive power of cash flow and earnings and to find that whether cash flow is better than earning in predicting dividend. Panel data has been used in this study, because panel data is more efficient and has less collinearity. The data has been collected from balance sheet analysis of KSE 100 index for 7 year (2007-2013). The sample includes 104 companies from textile sector, energy sector, pharmaceutical sector and cement sector. Similarly, all the control variables; firm’s size, leverage ratio (LR), market to book value (MBV) and liquidity ratio (LIQ) have a significant positive relationship with dividend per share (DPS). The results of the linear mixed effect model has identified that cash flow per share is relatively a better predictor of dividend than earnings per share. So the first hypothesis of the study has been accepted. The results supported the previous study of Consler, Susan and Hevraneck (2011) and (Healy, 1985). The results also have shown that cash flow per share (CFPS) and earnings per share (EPS) have a significant positive relationship with dividend per share (DPS), which means that the second and third hypothesis have been accepted. The results supported the previous study of (Essa et al, 2012), (Afza 2014) and (Consler, Susan and Hevraneck, 2011). The results also supported the free cash flow hypothesis of (Jenson, 1986) and dividend residual theory of (Lintner, 1956). From the above discussion it can be concluded that although both cash flow and earnings are significant predictors of dividend but still cash flow is relatively a better predictor of dividend than earnings in context of non financial sector of Pakistan. Future study should be undertaken to do comparative analysis among various economies and to find out a better predictor of dividend. Future studies should also use different proxies for cash flow and earnings to check wither the superiority of cash flow over earnings remain the same.

References

- Adelegan, O.J., (2003). An Empirical Analysis of the Relationship between Cash Flow and Dividend Changes in Nigeria. *Blackwell Publishing Ltd*.
- Al-Najjar, B., & Belghitar, Y. (2012). The information content of cash flows in the context of dividend smoothing. *Economic Issues*, 17 (2), 57-70.
- Amidu, M., & Abor, J. (2006). Determinants of dividend payout ratios in Ghana. *The Journal of Risk Finance*, 7(2), 136-145.
- Bhattacharya, S., (1979). Imperfect information, dividend policy and the bird in the hand fallacy. *Journal of Economics*, 10(1), 259–70.
- Bowen, R., M, Burgstahler, D., and Daley, L., A. (1986). Evidence on the relationships between earnings and various measures of cash flow, *The Accounting Review*, 61(4), 713-725.
- Charitou, A., Lambertides, N., & Theodoulou, D. (2010). The Effect of Past Earnings and Dividend Patterns on the Information Content of Dividends When Earnings Are Reduced. *A journal of accounting, finance and business studies*, 46(2), 153-187
- Consler, J., Lepak, G.M., & Havranek, S.F. (2011). "Earnings per share versus cash flow per share as predictor of dividends per share". *Managerial Finance*, 37(5), 482 – 488
- Essa, M.S., Hameedat, M.M., Altaraireh, J.A., & Abdelhadi, M. (2012). A Worthy Factors Affecting Dividend Policy Decision An empirical study on industrial corporations in Amman stock exchange. *Inter Disciplinary Journal of contemporary research in Business*, 4(5), 614-622
- Gairatjon, G.H. (2012). Determinants of Dividend Payout Ratios A Study of Swedish Large and Medium Caps. *Umea School of Business and Economics*.
- Gordon, M.J. (1959). Dividend, earnings and stock price. *The review of Economics and Statistics*, 41(2), 99-105

- Healy, P. (1985). The effect of bonus schemes on accounting decisions. *Journal of Accounting and Economics*, 7(3), 85–107.
- Jensen, M. (1986). Agency cost free cash flow, corporate finance, and takeovers. *American Economic Review*, 76, 323-329.
- Kuch, A.S., & Sun, A.X. (2004). Dividend changes and The Persistent of past Earnings changes. *The journal of Finance*, 5(12), 2093-2116.
- Lintner, J. (1956). Distribution of income of corporation among dividend, retained earnings and taxes. *American Economic Review*, 46(2), 97-113
- Miller, M., & Modigliani, F. (1961). Dividend Policy, Growth, and the Valuation of Shares. *The Journal of Business*, 34 (4), 411-433.
- Mirza, H.H., & Afza, T. (2014). Impact of Corporate Cash Flows on Dividend Payouts: Evidence from South Asia. *Middle-East Journal of Scientific Research*, 19 (4), 472-478
- Sakamoto, Y., Ishiguro, M., Kitagawa, G., (1986). Akaike Information Statistics. KTK Scientific Publishers/D. Reidel Publishing, Tokyo/Dordrecht.
- Stephanus, B.,R. (2008). An Empirical Analysis of the Relationship between Operating Cash Flows and Dividend Changes in South Africa. *African Development Review*, 15(1), 170-182.
- Waweru, K.M., Pokhariyal, G.P., & Mwaura, M.F. (2012). The Signalling Hypothesis: Evidence from Nairobi stock exchange. *Journal of Business Studies Quarterly*, 3(4), 105-118