

## Do Firms Smooth Their Dividends Over Time? Evidence from the *Johannesburg Stock Exchange*

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**ABSTRACT** This study examines dividend payout policies and the appropriateness of Lintner's dividend smoothing model on the Johannesburg Stock Exchange (JSE) listed firms. The ordinary least squares method is used to analyze the data using annual data from 1995 to 2011. The study found that the dividend smoothing model slightly overstates the payout ratio by two percent. The median long-run target payout ratio was found to be 40.76 percent compared to the actual payout ratio of 38.73 percent. The median speed of adjustment coefficient was 72.61 percent suggesting that firms partially adjust their dividends over time. The study concludes that despite the reduction in the number of dividend-paying firms in South Africa, the dividend smoothing model can be used to predict firms' target payout ratios. This has implications for equity investors who rely on dividends for achieving their investment objectives.

### INTRODUCTION

The dividend policy debate has continued to attract attention from both investors and scholars due to the large magnitude contributed by dividends to total equity returns. The microstructure of firms listed on organized stock exchanges, on the other hand, continues to change significantly from individual ownership to tax-exempt institutional investors (Hillier et al. 2012; Arkoet et al. 2014; Scott 2014), thus prompting the interrogation of the manner in which firms payout dividends. The ownership structure of firms impacts on the dividend policy especially in markets where the clientele effect holds (Viviers et al. 2013). The most common dividend policies are cash dividends and share repurchases, both of which have different tax implications and result in dividend tax clienteles (Dahquist et al. 2014). Both the cash dividends and share repurchases remain popular, with the latter becoming increasingly popular but not necessarily a substitute for cash dividends (Ramorwa 2011). The distribution policy component of corporate financial management has remained a topical issue in academic circles since the historic Miller and Modigliani's dividend irrelevancy theorem in 1961. Miller and Modigliani demonstrated how a firm's dividend policy is irrelevant in a frictionless market when a firm has a fixed capital investment. However, Lintner (1956) had initially illustrated that firms are at pains to distribute

their excess cash as dividends, and more so in achieving a long-term payout policy that is accelerated at a given speed of adjustment. Thus Lintner's dividend smoothing model has been at odds in challenging other dividend theorems and policies, such as dividend clienteles, the signaling theorem and the dividend irrelevancy theorem. Thus the dividend puzzle remains unsolved since the work of Lintner in 1956 (Firer et al. 2008; Firer and Viviers 2011; Al Ajmi and Abo Hussain 2011).

However, a survey by Brav et al. (2005) of 384 United States (U.S.) financial executives' views and decisions on dividend policy found that in spite of increased share repurchases in the U.S., executives believed in flexible dividend policies between stock repurchases and cash dividends. The major reason cited for increased share repurchases in the U.S. was the increasing earnings per share. The executives did not believe any clienteles exist for dividend-paying equities. Thus, evidence by Brav et al. (2005) places the executive perceptions at loggerheads with academic research that has orchestrated numerous theorems to explain firms' dividend policies. In South Africa, although there is a marked reduction in the number of firms paying dividends, 63 percent of listed firms still pay cash dividends as part of their distribution policy (Viviers et al. 2013). The question that arises then is whether the dividend-paying firms follow a target payout ratio, and if so, whether they subsequently smooth their dividends over time.

### Aim of the Study

This study seeks to empirically establish whether firms in South Africa smooth their dividends over time as suggested by Lintner (1956). The objectives are to:

- ♦ ascertain the extent to which firms in South Africa conform to the Lintner's dividend smoothing model; and
- ♦ test the validity of Lintner's dividend smoothing model in South Africa.

### Significance of the Study

The study provides an insight into the dividend payout policies with respect to firms smoothing their dividends over time. Dividends offer a return to stockholders, which is reciprocally taken as the firm's cost of equity. Firms could pay dividends to attract attention especially if the management feels the firm is undervalued (Hillier et al. 2012). Furthermore, firms paying dividends are generally believed to signal that the firm has operating cash flows that are higher than expected (Hillier et al. 2012; Cornett et al. 2011). This study, therefore, provides an insight into the extent to which firms in South Africa objectively endeavour to sustain dividends payments in line with Lintner's dividend smoothing model. The study further provides an impetus for both equity asset valuation techniques based on dividends, while enhancing the much needed literature on dividend policy in South Africa.

### Review of Literature

The firm's payout policy forms a third pillar of a firm's financial management decisions – the distribution decision. The investment and the financing decisions are the other two. The distribution decision takes several forms, but the most common are cash dividends and stock repurchases. Cash dividends are paid to stockholders on a pro rata basis, while stock repurchases entail a firm retiring some of its shares using cash. In the latter case, only stockholders who choose to sell will participate in the exercise. Cash dividends are very common and form an integral component of the investor's return on common equity (Toerien et al. 2014). Ogden et al. (2003) argue that a stock repurchase on the other hand simply reduces the firm's assets while

having no effect on the market price of the shares. The founding proponents of the dividend policy theories are Miller and Modigliani (1961) who proved that dividend policy is irrelevant in an ideal market as long as the firm's capital investment remained fixed. However, in the real world the dividend policy remains central to a firm's financial management as evidenced by the magnitude of its contribution to total equity returns (Cairns 2014; Toerien et al. 2014). Initiating dividends tends to increase shareholders' value, and as such, firms paying cash dividends positively impact on the investor's return (Mullins 1983; Baker and Powell 1999; Cairns 2014; Toerien et al. 2014). Consequently, investors have increasingly considered investment strategies that entail choosing shares that pay dividends (Cairn 2014). According to Cairn (2014: 4), dividends have contributed "to nearly a third of all returns from equities", hence prompting further research into the behaviour of firms' dividend policies.

On the other hand, some scholars show that the propensity of firms to pay dividends and the benefits associated with such payments have declined over time (Fama and French 2001; Viviers et al. 2013). Varied reasons have been provided for this trend, which include the 'substitution effect' between cash dividends and repurchases (Baker and Wurgler 2004; Jiang and Kim 2013), rising management share ownership schemes (Minnick and Rosenthal 2014), and the reduced reliance on dividends in corporate governance systems (Fama and French 2001). There has been an increase in share repurchases that is mainly attributable to the shareholders' tax lowering effect of share repurchases relative to cash dividends (Bagwell and Shoven 1989; Dahquist et al. 2014). However, research has produced mixed findings on the impact of repurchases on tax. For instance, Jagannathan et al. (2000) find that firms with volatile earnings have a tendency to repurchase shares while those with stable earnings pay cash dividends. Thus, firms with stable earnings would seek to smooth their dividends relative to earnings over time. Furthermore, firms that prefer share repurchases are usually younger and smaller than those that paid cash dividends (Grullon and Michaely 2002; Viviers et al. 2013).

However, studies like Rees (1996) for the United Kingdom (U.K.), Hackethal and Zdantchouk (2006) for Germany, and Hatakeda

and Isagawa (2004) for Japan, document that the share price response to share repurchases is the same for dividend payments and repurchases. The impact of dividend changes on share prices further examined by Conroy et al. (2000) in Japan, found it to be marginal compared to earnings surprises. Furthermore, a study by Ramorwa (2011) on 116 Johannesburg Stock Exchange (JSE) listed firms from 2002 to 2009, finds that South African firms preferred share repurchases to cash dividends although a positive relationship between dividends and share repurchases was established.

The impact of a cash dividend on the firm's overall equity management is pivotal to the shareholder-manager conflict management. Cash dividends tend to reduce the amount of internal equity available, increase the likelihood of a new equity issue, and increase the firm's leverage in case of a geared firm (Ogden et al. 2003). Thus firms, according to Ogden et al. (2003), pay highly volatile dividends over time in line with the residual dividend payout policy. The residual dividend policy asserts that firms should only pay dividends if the firm has excess cash after the investment needs, leverage concerns and the cost of potential new issues have been taken into account (Hillier et al. 2012). Relatedly, the study by Dewenter and Warther (1998) found that U.S. firms experienced agency conflicts that affected firms' dividend policies when compared to Japanese firms. Thus the payout policies in corporate finance pose a wide spectrum of concerns ranging from agency conflicts to share valuation.

Despite the documented shortcomings of paying cash dividends, Lintner (1956) provides some contrasting arguments in their favour. Thus, according to Lintner, firms tend to smooth their dividends relative to earnings over time. Lintner's model has been tested in most developed markets, but the ever changing payout strategies across stock markets make research in the area a niche. One such test conducted by Fama and Babiak (1968) used annual data on 392 major industrial firms between 1946 and 1964. They observe that these firms had average long-run payout ratios and speed of adjustments of 0.521 and 0.317, respectively. Another study, by Ogden et al. (2003), tests the model on the Dow Jones Industrial Average 27 non-financial firms and finds medians of 0.06, 0.51 and 0.44 for the speed of adjustment, long-run target payout ra-

tio, and the actual payout ratio, respectively. A study conducted by Wolmarans (2003) on 97 JSE listed firms found that the Lintner's model did not have a very good fit largely due to the small sample size used in the study. However, the study included both non-financial and financial firms and considered only a short period of seven years. Grullion et al. (2011) further argue that the propensity to payout has not decreased over the years, prompting a further investigation into the dividend debate. It has, however, been observed that firms have a tendency of not increasing dividends although they are likely to stop such payments following a shock in information asymmetry (Hail et al. 2014). There is no consensus on the behaviour of firms' payout policies in the literature, and the validation of Lintner's dividend smoothing model could thus contribute immensely to the dividend payout discourse.

## DATA AND RESEARCH DESIGN

### Data and Sources

The data were obtained from the McGregor BFA Library Database. Forty-five JSE listed firms were sampled. The data were sourced raw and cleaned by removing firms that do not meet the criteria of this study. The data were carefully cleaned as the chosen database usually has inconsistencies (Viviers et al. 2013). Only non-financial firms that have been paying dividends during the period 1995 to 2011 inclusive were selected as a sample for this study. Financial and public utility firms were excluded from the study due to the nature of the operations (Fama and Babiak 1968; Fahlenbrach and Stulz 2009; Florackis et al. 2009). As it was expected that some firms would not pay dividends in certain years within the study period, such firms were included and a dividend of *zero* was recorded for such years. To qualify for sample selection, a firm must have paid a dividend in 1995 and demonstrated a trend in such payments until 2011. A firm that paid dividends in 1995 and subsequent years and then stopped for more than two consecutive years was excluded from the study to avoid inconsistencies (Wolmarans 2003). Moreover, firms that maintained constant dividends for a period exceeding two years were excluded from the sample. Of the 441 firms that were listed on the JSE at the time of this research, only 45

met the criteria for this study. The study used selected ratios based on standardized financial statements. The key ratios used are the dividend per share (DPS), earnings per share (EPS), and the retention ratio for each firm in the sample. The payout ratio was obtained by subtracting the retention ratio from 1. The period of investigation was seventeen years based on annual observations for the selected firms. Increasing the period under investigation would have further reduced the sample size, hence the selected period.

### Research Design

This study employs the Lintner (1956) model for the co-dynamics of a company's earnings and dividends as given in equation (i).

$$DPS_t - DPS_{t-1} = \Delta DPS_t = p (\pi \times EPS_t - DPS_{t-1}) \quad (i)$$

where  $DPS_t$  is the dividend per share,  $EPS_t$  is the firm's earnings per share,  $\pi$  is the firm's long-run target payout ratio and  $p$  is the speed of adjustment coefficient.

Re-expressed, equation (i) may be written as:

$$\left[ \frac{DPS_t - DPS_{t-1}}{DPS_{t-1}} \right] = -p + p \left[ \frac{\pi \times EPS_t}{DPS_{t-1}} \right] \quad (ii)$$

Equation (ii) shows that the percentage change in a firm's dividends depends on the current dividends relative to the previous year's dividend and the parameters  $\delta$  and  $\pi$ . If  $\pi = 1$ , the firm's dividends will always amount to the fraction  $\rho$  of current earnings. Whenever  $\rho < 1$ , the firm only partially adjusts its dividends to deviations of current earnings from the trend. Further, if a firm has no current earnings, dividends would fall by a percentage of  $-\tilde{\pi}$ . Whenever  $\pi \times EARN_t < DPS_{t-1}$ , future dividends would fall. The firm's dividends would remain unchanged if  $\pi \times EPS_t = DPS_{t-1}$ , and if  $\pi \times EPS_t > DPS_{t-1}$ , dividends would rise (Ogden et al. 2003).

Thus from equation (ii) an ordinary least squares (OLS) regression equation is derived in which the dependent variable is a percentage of the firm's dividends,  $-\tilde{\pi}$  is the intercept,  $[EPS_t / DPS_{t-1}]$  is the independent variable, and  $\pi \times \rho$  is the slope coefficient. The regression equation may further be expressed as:

$$\left( \frac{DPS_t}{DPS_{t-1}} \right) = (1-\rho) + \rho\pi \left( \frac{EPS_t}{DPS_{t-1}} \right) \quad (iii)$$

where  $\tilde{\pi}$  is the speed of adjustment parameter,  $\pi$  is the target long-term payout ratio and  $\varepsilon_t$  is the error term.

Upon estimating  $p$  and  $\pi$  parameters for each firm, medians of both parameters and the adjusted R square are ascertained for the sample. The estimated  $\pi$  parameter is then compared to the actual payout ratio for each firm. Descriptive statistics will then be used to analyze the results.

## RESULTS AND DISCUSSION

The data were subjected to thorough cleaning to determine the model output based on a sample of 45 non-financial firms listed on the JSE. Table 1, provides a summary of the results.

**Table 1: Summary of results**

	<i>Median</i>
Speed of adjustment ( $\tilde{\pi}$ ) (percent)	72.61
Target long-run payout ratio ( $\delta$ )(percent)	40.76
Actual payout ratio (P)(percent)	38.73
Adjusted R square (percent)	57.90

*Source:* Author's findings

The median speed of adjustment coefficient ( $\rho$ ) of 72.61 percent is ascertained and suggests that firms adjust their dividends at 72.61 percent over time. The median  $\rho < 1$ , implies that firms only partially adjust their dividends to deviations of current earnings from the trend. Of the firms sampled, 89 percent have  $\rho < 1$ , suggesting that these firms partially adjust their dividends in line with Lintner's model. The median target long-run payout ratio ( $\pi$ ) of 40.76 percent suggests that according to the model, firms listed on the JSE smooth their dividends and strive to meet a cash distribution ratio of 40.76 percent. This ratio is slightly higher than the median actual payout ratio (P) of 38.73 percent. Thus the dividend smoothing model over-estimates the target long-run payout ratio by 2 percent. The median adjusted R square of 57.90 percent supports the results obtained for the speed of adjustment and the long-run payout ratio. However, the values for these parameters vary widely as shown in Table 2.

**Table 2: Parameter ranges**

	<i>Minimum</i>	<i>Maximum</i>
Speed of adjustment (P)	-0.5762	1.4262
Target long-run payout ratio ( $\delta$ )	-1.6077	1.7865
Actual payout ratio (P)	0.0399	0.9503
Adjusted R square	-0.0666	0.9501

*Source:* Author's findings

The speed of adjustment starts from as low as negative 57.62 percent with the maximum value being 142.62 percent. A negative value for the speed of adjustment obtained from Lintner's model, suggests that the firm's dividend policy leads to declining cash distribution over time. This is also similar to a negative target long-run payout ratio of 160.77 percent shown in the second row of Table 2. Like the speed of adjustment, the target long-run payout ratio exceeds 1 for some firms, suggesting that these firms grow their dividends at a more rapid rate than an average firm listed on the exchange. In contrast to findings from Lintner's model, the actual payout ratio ranges from 4 percent to 95 percent compared to the target long-run payout range of between negative 160.77 percent and 178.65 percent. Similarly, the adjusted R square values range from negative 6.66 percent to 95.03 percent. However, in most instances (55 percent of the firms sampled) the adjusted R square is high, showing the data fit Lintner's dividend smoothing model. This confirms the findings by Viviers et al. (2011).

Despite contrasting evidence obtained above, the majority of firms sampled have their actual payout ratios within 5 percent of Lintner's estimation, as shown in Table 3.

In Table 3, 44 percent of the sampled firms have their actual payout ratios lying within a 5 percent range of the target long-run payout ratios obtained using Lintner's model. The percentage of firms within the 10 percent range is even higher at 53 percent, suggesting that Lintner's model attempts to accurately estimate the firm's target long-run payout ratios. Of the firms sampled, 36 percent fall outside the 15 percent range of Lintner's model estimations, with the balance of 64 percent lying within a 15 percent range. These findings suggest that Lintner's dividend smoothing model may indeed fit the JSE listed firms, in contradiction to Wolmarans'

(2003) findings that Lintner's model does not explain the payout policies on the JSE. However, the study confirms the findings by Viviers et al. (2013) that firms work towards a target payout ratio over time.

## CONCLUSION

The study sought to establish whether firms smooth their dividends over time using a sample of 45 JSE non-financial firms with dividend history spanning 1995 to 2011. All 45 firms used in the study did not constantly pay the same dividend for over two consecutive periods, in order to accurately apply the dividend smoothing model. The ordinary least squares regression method was used to ascertain the relationship between change in dividend and the payout ratio for each individual firm. The results obtained in this study support the dividend smoothing proposition that firms smooth their dividends over time using a given speed of adjustment coefficient and a target long-run payout ratio. A median target payout ratio of 40.76 percent was established, which compares favourably to the actual payout ratio of 38.73 percent for the sample. However, the ranges for all the parameters used in this analysis were found to be too wide with varying adjusted R square. To support the dividend smoothing model, the study also found that 53 percent of the sampled firms had their actual payout ratios lying within 10 percent of the target long-run payout ratios. Although there are several theories that explain dividend policy, Lintner's dividend smoothing model is a valid alternative, particularly in the long-run analysis of distribution policies in South Africa. Therefore, dividend-based equity valuation techniques may equally provide near accurate cost of equity for South African firms as these tend to smooth their dividends over time.

**Table 3: Distribution of payout ratios**

	<i>Within 5% of actual payout</i>	<i>Within 6 and 10% of actual payout</i>	<i>Within 11% and 15% of actual payout</i>	<i>Exceeds 15% of actual payout</i>
Number of firms	20	4	5	16
Percentage of total	44	9	11	36
Cumulative percentage	44	53	64	100

*Source:* Author's findings

### RECOMMENDATIONS FOR FURTHER RESEARCH

This study used a sample of 45 non-financial listed firms over a 17-year period. Due to the lack of sufficient data on dividend payment history for most JSE listed firms, a study of a bigger sample should be considered in future research. Another area of study could be the behavioural aspects of institutional investors to changes in dividend payouts.

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