

Application of the classical Payout Ratio Model and determination of the limitations of the Lintner Model demonstrated on the example of Komerční banka, PLC

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Abstract. Initial determination of the payout ratio should be an integral part of each company strategy; it is a cornerstone of a long-term operation of any company. The aim of this contribution is to analyse the possibilities of determining the payout ratio of the company using dividend models and to design the most optimal application of the dividend model, and to define the limitations for the application. The data required for the application of the dividend models are obtained from the annual reports of Komerční banka, PLC. for the years of 2006-2018. The obtained data are used to calculate the classical payout ratio model, and subsequently to determine the payout ratio according to the Lintner model. Using the method of comparison, the obtained results for the application of the pay ratio are contrasted. The classic payout ratio model coincided directly with the results of the payout ratios of Komerční banka, PLC. and therefore turned out to be optimal for the application. The Lintner model is considered in literature to be very well functioning. However, this research confirmed that the resulting values of payout ratios after the application of the Lintner model are unacceptable in the long run.

Keywords: dividend politics, payout ratio, company strategy, Lintner model, sustainability, comparison

1 Introduction

In the business sphere, current turbulent times demand in particular determination of a quality company strategy. Initial determination of the payout ratio therefore should be an integral part of each company strategy; it is a cornerstone of a long-term operation of any company [1-2]. There is no resource in the world that defines the ideal payout ratio. This value depends on the sector of business in which the particular company is located, and thus the results vary. It is therefore possible to determine decidedly, based on the payout ratio, the percentage of the profit that can be paid to the shareholders in dividends [3-4]. However, this apparently simple model is accompanied by a rather complex dividend policy, combined with a number of arguments and theories. Every company should aim to

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maintain a stable pay ratio in the long term, and thus manage the competitiveness of the external environment [5-6].

The payout ratio is also very important as an indicator that creates values for the use of other indicators in the area of dividend policy. The payout ratio also generally enters other dividend discount models. Thus, the pay ratio affects the Gordon's Growth Model, the Two-Stage Dividend Discount Model, or the H Model for growth assessment. The determination of the payout ratio also applies the so-called Lintner model, which contains primarily the aspect of time and thus creates values for the future.

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2 Literature review

Over the last five years, the issue of the pay ratio has been addressed by a number of global studies, bringing many findings. In particular, a number of entities that influence the determination of the pay ratio were identified. There are several hypotheses that explain the various factors affecting the pay ratio. ElBannan and Farooq [7] examined the influence of determinants of cross-sectional differences in stock price synchronization and dividend payments in the MENA region. He came to the results showing that both of these variables interact negatively. The higher asymmetry of information associated with companies that show high synchronicity leads to lower pay ratios. The lower asymmetry of information in companies with lower synchronicity leads to higher payout ratios. Mohd and Zaharudin [8], on contrary, examined the effect of dividend payments on the future growth of the company's revenues using panel data. They found a significant positive relationship between the payout ratio and the future growth of the company's revenues. In order to achieve a higher level of business growth, companies should pay fewer dividends to their shareholders. Bond et al. [9] came to different conclusions compared to this study. They examined whether dividend payout options are affected by the presence of a dividend reinvestment plan (DRIP), and concluded that companies paying dividends with DRIP tend to pay high dividends and maintain a stable payout policy. Sumail [10], who divided the effects into negative and positive, also addressed the relationship between the company at the level of corporate governance and the payout ratio. Among the positive influences on the determination of the pay ratio, he included the independence of the board of directors, the size of the board of directors, institutional ownership, the size of the company, and the profit before tax, while the duality of the CEO, ownership management, ownership concentration, and leverage (i.e. gearing) are related negatively to dividend payments. According to Susanti et al. [11], financial leverage and market risk, using the descriptive method, have a significant effect on the pay ratio.

The payout ratio also enters other dividend discount models, which have been the subject of a number of studies. Ahroum and Achchabse [12] intended to create a new model. The model integrates one of the key factors in the expansion of joint ventures, which is the dividend payment ratio, the impact of dividend payments on the price structure, duration and convexity of the market. They found that the higher the payout ratio, the lower the price, duration and convexity of the market. Dzidic and Orsag [13] applied Lintner's model to a sample of customary law and civil law countries. Research has shown that dividend smoothing is spread worldwide, but common law countries have a significantly higher percentage of companies that smooth dividends at a significance level of 1%. This issue was extended by Fernau and Hirsch [14], who created a guide to future dividend smoothing research using the meta-regression analysis of the Lintner model. Hanousek and Tresl [15] deepened the existing research on the findings of overall

characteristics of payments in private companies. They examined the payout behaviour, and the way in which private company shareholders' payouts were smoothed in four Central European countries, concluding that the Lintner model indicated a shift over time to a higher target payout ratio and the absence of payout payments for private companies. After the financial crisis, higher payout ratios are set, and there is also a shift away from the smoothing of payments for investors. Kilincarslan [16] also shows the negative impact of the global financial crisis and the tendency to adjust dividends immediately in response to changes in earnings in the first years of the period concerned. He says that despite the credit crunch and earnings volatility, British companies set high payout ratios. Andres et al. [17] analysed Lintner's model for both dividends and total payouts. The results prove a contradiction with the hypothesis that dividends and share repurchases are perfect substitutes. In contrast, Fliers [18] used Lintner's model to examine the relation between financial flexibility and smoothing of dividends. He concluded that the financial flexibility, measured by the unused debt capacity of the company and the costs of adjusting the capital structure, is an important aspect for companies in determining the policy of dividend smoothing. The financial flexibility of a company is at least an important factor in understanding the differences in dividend smoothing behaviour. Significant findings were provided by Ranajee, Pathak and Saxena [19], who identified the determinants of setting the payout ratio, and examined the consistency of dividends over time (stable, crisis, and recovery) in a multivariate regression framework. They supplemented the literature with changing trends and factors contributing to the payment of dividends by companies. Badruzaman and Kusmayadia [20] added to the current research the effect of the dividend payout ratio on the share price of LQ45 joint stock companies on the Indonesian stock exchange Efurs Efek with the use of descriptive analysis. They concluded that the share price is significantly affected by the dividend payment ratio. Ernayani and Robiyanto [21] obtained empirical results regarding the effects of investment return, cash ratio, and credit risk indicator on the payout ratio. The results showed that the investment return has a significant and partially positive impact on the payout ratio; the credit risk indicator has a significant and negative impact on the payout ratio, and the cash ratio has no significant impact on the payout ratio.

The research of the last five years focused mainly on the determinants influencing the pay ratio, and the determination of the pay ratio using the Lintner model or its innovations. It would therefore be appropriate to supplement the current literature with other models for determining the payout ratio. To determine the payout ratio, a large number of studies is inclined to determine the Payout Ratio based on the Lintner model. This is a very suitable model and it can be applied to a wide range of companies.

3 Data and Methods

The data required for the application of the dividend models were obtained from the annual reports of Komerční banka, PLC. for the years of 2006-2018 [22]. The annual reports are published on the bank's official website. Subsequently, selected statistical indicators were calculated using the MS Excel program within the period of 2006-2018.

Table 1. Basic descriptive statistics

Variable	Median	Standard deviation	Mean	Dispersion
Dividends per share in individual years	180.00	88.63	179.85	8510.8
Net earnings per share (EPS) in individual years	295.30	107.32	260.8	12477.36
Net profit for the year (in millions of CZK)	12,424	2,035.94	12,219.92	4,490,449
Dividends paid per year (in millions of CZK)	12,954	1,906.15	12,414.15	3,936,180

Source: Komerční banka [22].

The first part of the specification of the payout ratio determination analysis is based on the classical model, which according to Rejnuš looks as follows [23]:

$$\text{Payout ratio} = \text{Dividends per share} / \text{Net earnings per share (EPS)} \quad (1)$$

The second part of the specification of the payout ratio analysis is based on the Lintner model, which according to Strnad provides the following formula [24]:

$$D_{it} = r_i * E_{it}, \quad (2)$$

where D_{it} is the size of the dividend paid in year t ,
 E_{it} is the company's profit in year t ,
 r_i is the targeted pay ratio.

The data for the application of both models are obtained from the annual reports of Komerční banka, PLC. for the years of 2006-2018 [22]. The obtained data are used to calculate the classical payout ratio model, and subsequently to determine the payout ratio according to the Lintner model. Using the method of comparison, the obtained results for the application of the pay ratio are contrasted. The differences are displayed graphically. The obtained results are further compared with the procedure of Komerční banka, PLC. Afterwards, the optimal application of the dividend model is determined. The conclusion defines the limitations for the application of the models.

4 Results and Discussion

With the use of the classical model for determining the pay ratio, according to Rejnuš [17], Table 2 shows the values of dividends per share and net earnings per share, as well as the resulting values of the determined pay ratio in individual years.

Table 2. Determination of the payout ratio using the classical model

Year	Variable		
	Dividends per share	Net earnings per share	Payout ratio (%)
2018	51	78.61	64.88
2017	47	79.05	59.46
2016	40	72.48	55.19
2015	310	337.8	91.77
2014	310	343.8	90.17
2013	230	331.68	69.34
2012	230	369.44	62.26
2011	160	249.97	64.01
2010	270	351.2	76.88
2009	180	289.99	62.07
2008	180	348.7	51.62
2007	180	295.3	60.95
2006	150	242.5	61.86

Source: Own processing.

Table No. 3 shows the values of variables and the values of the resulting payout ratio using the Lintner model according to Strnad [24].

Table 3. Determination of the payout ratio using the Lintner model

Year	Variable		Payout ratio (%)
	Net earnings (in millions CZK)	Dividends paid per year (in millions CZK)	
2018	15,238	14,846	97.43
2017	14,914	14,930	100.11
2016	14,119	13,688	96.95
2015	12,424	12,758	102.69
2014	12,768	12,954	101.46
2013	13,123	12,528	95.47
2012	12,249	13,954	113.92
2011	7,951	9,475	119.17
2010	12,035	13,330	110.76
2009	10,369	11,007	106.15
2008	13,233	13,161	99.46
2007	11,225	9,605	85.57
2006	9,211	9,148	99.32

Source: Own processing.

The Figure 1 shows significantly different results of determining the payout ratio using these two different models.

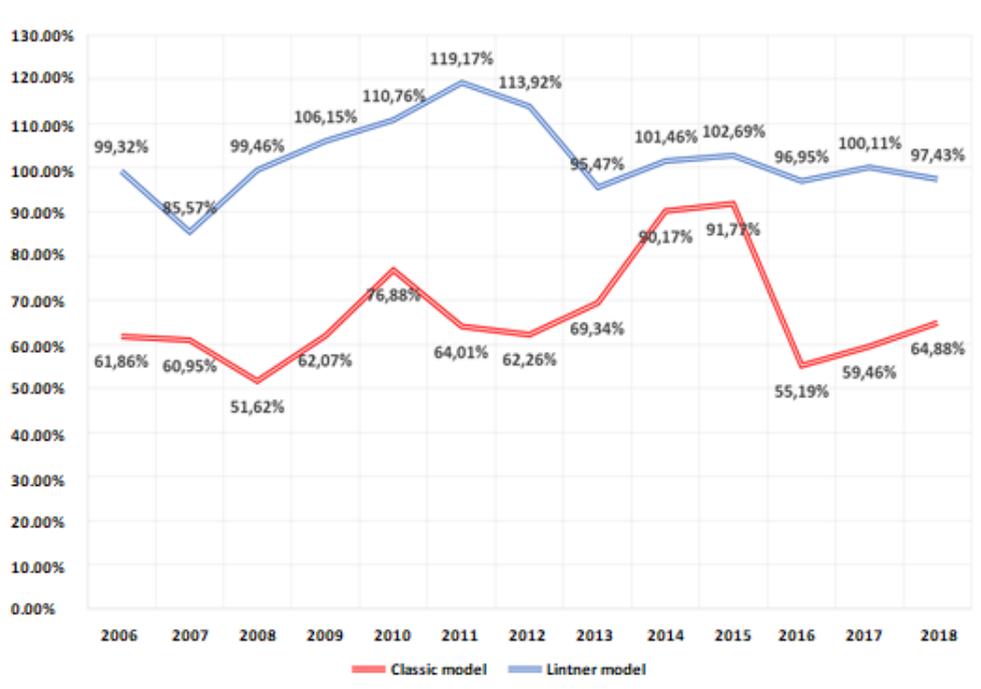


Fig. 1. Comparison of the results of the payout ratio determination

Source: Own processing.

While using two different models for determining the payout ratio of Komerční banka, PLC., it turned out that the Lintner model leads to the determination of much higher payout ratios compared to the classical model. In 2011 and 2012, this is a difference of up to 50%. After applying the Lintner model, some of the resulting pay ratios are higher than 100%. This would mean that Komerční banka, PLC. pays more in the dividends than it earns. These results are therefore undesirable. The biggest correspondence in the values of the payout ratio using the different models is recorded in 2014 and 2015. The values of the payout ratio differ in these years by about 10%. In comparison with the procedure of Komerční banka, PLC., the results are completely identical to the application of the classical model for determining the payout ratio according to Rejnuš [23]. Komerční banka, PLC. thus shows its willingness to share its revenues with shareholders in individual years. From the obtained results follows the optimal application of the payout ratio according to the classical model by Rejnuš [23]. Apart from the years 2014 and 2015, Komerční banka, PLC. reported generally stable values of payout ratios.

Thus, when choosing a payout strategy, all companies should take into account that the Lintner model leads to the determination of higher target payout ratios in the long term, as confirmed by this research and other authors. It is not possible to determine exactly the ideal value of the pay ratio, as there are certain limitations in determining the payout ratio. Businesses should pay particular attention to the pay ratio values that are close to, or above, 100%. These fixed pay ratios are unsustainable in the long run, as companies would pay more in dividends than they earn. As a rule, companies should return part of the earned money to the company. The payout ratio shows a reflection of the company's dividend policy, which should be a strategic decision of the company's management. The determination of this indicator is also necessary for the entry into other subsequent indicators. A general recommendation for all companies is the application of more than one model to determine the target payout ratio, and to compare the results. In this way, the

determination of undesirable payout ratios can be reduced. The literature states that the Lintner model is a very well-functioning model. However, this research refuted this claim, as the model showed long-term unacceptable results. It is therefore desirable to apply several models to determine the pay ratio, and to make a comparison based on the results. Subsequently, it is necessary to define the undesirable results and to obtain the optimal model.

5 Conclusion

This research expands the existing knowledge on setting the target payout ratio. The aim of this research was to analyse the possibilities of determining the payout ratio of the company using dividend models, to design the most optimal application of the dividend model, and to define the limitations for the application. The goal was met. Achieving the goal consisted mainly in the application of the Lintner model and the classical model of determining the payout ratio on the example of Komerční banka, PLC. The data for the application of these models were obtained from the annual reports of Komerční banka, PLC. for the period of 2006-2018. Different payout ratios were found for individual years. These results were compared, with different values of target payout ratios. The classic payout ratio model coincided directly with the results of the payout ratios of Komerční banka, PLC. and therefore turned out to be optimal for the application.

However, certain limitations for the application are also related to the determination of the target payout ratio. Lintner's model yielded undesirable results, which indicated certain final values of the payout ratio higher than 100%. These results would thus be unsustainable in the long run, as the company would pay more in dividends than it earns. Hanousek and Tresl [9] also concluded that Lintner's model indicates a shift over time to a higher target payout ratio and the absence of payment smoothing. When choosing the application, companies should choose several models for determining the payout ratio and compare them based on the results obtained. Thus, companies can avoid undesirable payout targets.

It is the Lintner model that is considered in literature to be very well functioning. However, this research confirmed that the resulting values of payout ratios after the application of the Lintner model are unacceptable in the long run. In general, it is therefore appropriate to first apply several models and compare the results. Based on this, the most optimal model for determining the payout ratio can be obtained.

The research of the last five years has mostly focused on determinants influencing the payout ratio and the determination of the payout ratio using the Lintner model or its innovations. Further scientific interest should therefore be directed primarily at deepening the application of other models for determining the payout ratio. Furthermore, it would be appropriate to examine in detail the limitations of the Lintner model on a wider sample of companies.

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