

# THE DYNAMIC OF VALUES IN LITHUANIAN STOCK MARKET FROM YEARS 2010 TO 2020

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**Abstract.** Lithuanian stock market still lacks of attention from big investments despite its merger with Latvian and Estonian stock markets. Now all three markets are part of NASDAQ stock exchange group and making new steps to be more attractive. And the main attraction for investors is growing value of their portfolios. The main article's purpose is estimation of change in value of Lithuanian stock market in past 10 years from 2010 till 2020 by using Present Value calculations. The results show positive growth of portfolios by at least for 50% per last 10 years with inflation taken into account. Such growth was assured by cash flows received from dividends and stock prices on ex-dividend day of 2020. The advancers of Lithuanian stock market are Telia Lietuva, Ignitis and Apranga. These companies apply generous dividend policy and it made impact to growth of their value from 100% to 200%. Few companies showed negative growth of their Present Value during last decade. As a rule, such companies have poor dividend history, i.e. the amount of paid dividends was small or equal to zero. At last, COVID-19 has made the negative impact on all stock markets and Present Value ratios calculated in this article.

**Keywords:** stock market, NASDAQ OMX Baltic, Present Value.

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## INTRODUCTION

Mostly, the Lithuanian stock market is analyzed together with Latvian and Estonian stock markets as a part of joint Baltic stock market. Main reason of this is that all three Baltic countries belong to NASDAQ OMX Baltic market. The joint market was introduced in order to increase the trading volumes and market liquidity. Together the stock markets of three Baltic countries reflected in OMX Baltic Benchmark GI index. Separately, Lithuania stock market belongs to OMX Vilnius index, Latvia to OMX Riga and Estonia to OMX Tallinn. Worth to mention, due occupation of Soviet Union, Baltic countries didn't develop stock markets and now they are in chasing position compare to more developed stock markets. Also, Baltic stock market has some specific problems. D. Klimasauskiene and V. Moscinskiene (1998) indentified that Lithuanian stock market shows weak form of efficiency. It was confirmed after 4 years by V. Kvedaras and O. Basdevant (2002) in investigation of all three Baltic stock markets. Lithuania and Estonia had weak form of efficiency. Meanwhile, Latvia had strong inefficiency in their stock market. But later, K. Kiete and G. Uloza (2005) found first sights of efficiency in Lithuania stock market after they measured daily trade data from 2001 till 2004. Meanwhile, Latvian stock market suggested a semi strong inefficiency. Authors have noticed that both countries markets reacted inefficiently on announcements of earnings, i.e. this phenomena was recognized as overreaction. In one of latest studies V. Alekneviciene et al. (2018) concluded that Estonian stock market was the most efficient and Latvian – the least efficient. The reason of this is low liquidity. V. Deltuvaite (2015) confirmed it with her study. Author concluded that global integration in Baltic stock market is very low. Latvian stock market is more isolated at the global level than Lithuania and Estonia.

On the one hand, low liquidity shows small interest from worldwide investors. On the other hand, worldwide events affect Baltic stock market. R. Rudzkis and R. Valkaviciene (2014) revealed that global stock exchange indicators have a significant impact on Baltic stock market. EUR/USD exchange rate, money supply, the price of gold and oil influence the price of companies in Baltic countries. D. Pilinkus (2010), P. Dubinskas and S. Stunguriene (2010) researched correlations between Baltic stock and macroeconomic indexes: GDP; inflation rate; unemployment rate; state debt; export and import. Relationship between these indexes and Baltic market index is very high in long time period.

When we are talking about economical activity of Baltic companies, we should count political relationship with non-EU neighbor countries. In 2013 20% of Lithuanian export was directed towards Russia. Latvia's part was 16% and Estonia's – 11,4%. In 2014 Russia banned import of meat, fish, vegetables and milk products from EU. It affected economic of all three Baltic countries. Lithuania's GDP losses were around of 0.8%. Both, Latvia and Estonia lost about 0.4% of GDP (Mauricas, 2014).

R. Norvaisiene et al. (2014) made research on Baltic stock market in point of view from corporate financial ratios. Profit, size of company, financial leverage, return on assets and current solvency ratios were

observed in their work in period from 2005 till 2012. The results showed that corporate financial ratios significantly affected the stock liquidity. If we mention liquidity, authors concluded that number of transactions and turnover on Baltic stock market decreased during observed period. A. Pilvere-Javorsa et al. (2018) confirmed the shrinking of analyzed market. They estimated the number of companies listed on Baltic stock market during period of 2008 – 2018. Only Estonia showed positive increase. Lithuania and Latvia showed a significant decrease. The positive thing, in terms of market capitalization, Lithuanian and Estonian companies showed substantial growth. While Latvia stock market's capitalization shrunk at twice. Estonian stock market, as a best in Baltic, was recognized in V. Vaišvilas et al. (2017) work where authors adapted MULTIMOORA method to collect best companies from Baltic stock market in 2016. Estonian companies were dominant on this list, while Lithuania was right behind and Latvia – the last.

The goal of this paper is estimation of value of Lithuania stock market. In the terms of reviewed literature, Lithuanian market looks better than Latvian and is behind Estonian. But, is it possible to increase investments value for investors who keep their capital in Lithuania stock market? Was it growth or loss for such investments during last 10 years? This paper will try to answer on these questions.

## METHODS OF RESEARCH

As paper's goal is estimate the value of Lithuanian stock market, here was used Present Value of Uneven Cash Flow (PV) formula. E. Brigham and M. Ehrhardt (2016), S. Browerman (2010), J. Shim et al. (2008), Lithuania Accounting Standards (2007) and other major investment literature describe the classical formula of PV:

$$PV = \sum_{k=1}^n \frac{CF_k}{(1+r)^k} \quad \text{or:} \quad PV = \frac{CF_1}{(1+r)} + \frac{CF_2}{(1+r)^2} + \dots + \frac{CF_n}{(1+r)^n} \quad (1)$$

Where, PV – Present Value of Uneven Cash Flow;

CF – cash flows

r – discounting factor;

n – duration of cash inflows;

k – year in which cash flows are receivable.

The article assumes that the period under observation lasts from 2010 till 2020 and lasts 10 years (n). The main question is how investments which could be made in 2010 have changed their value till 2020? Thus, calculated here PV of specific stock shows real value of this stock in 2010 and can be compared with real price obtained from NASDAQ OMX Baltic market in 2010. All stock prices used in this paper evaluated on ex-dividend day, i.e. the day when stock buyer can't claim for dividends. Stock prices, usually, return to real market value on that day. The subject of observation – stocks of 14 Lithuanian companies<sup>1</sup> listed on NASDAQ OMX Baltic main list.

The data on uneven Cash Flows (CF) contains received dividends from 2011 till 2020 and stock price which could be received on 2020 ex-dividend day. For example, in 2020, Klaipėdos Nafta paid 0.02 EUR dividends per share. The price of this company on ex-dividend day was 0.36 EUR. It means, the total 2020 cash flow should be 0.38 EUR. The data of paid dividends obtained from NASDAQ OMX Baltic official website.

The discounting factor (r) has few interpretations when computing financial ratios. In the case of estimating bonds value, discount factor is interest rate. Costs of capital discounts when companies need financing the business. E. Rivera et al. (2012) in their work on PV models described discounting factor as the required rate of return, i.e. the rate investors would wish to get from their investment. This paper assumes that this rate equals to annual inflation rate, i.e. investors main wish is do not lose the value of invested capital. The past data of annual inflation rate from 2010 till 2019 was obtained from Lithuanian Department of Statistic. Meanwhile, inflation rate of 2020 was taken from Euro Commission macroeconomic forecast for 2020 (Table 1) (European Commission, 2020).

In case of inflation rate of 2020, we should assume that COVID-19 crisis made this forecast more uncertain than certain. F. Boissay and P. Rungcharoenkitkul (2020) summarized economic forecasts made by world major banks, e.g. Deutsche Bank, Goldman Sachs, Nomura, JP Morgan. All of them changed their

<sup>1</sup> The research started before NASDAQ OMX BALTIC has stopped trading shares of ESO and IGNITIS. The IGNITIS GROUP has to buy back all shares of ESO and IGNITIS till August 17 in 2020

forecasts toward less positive scenarios. The research concluded that COVID-19 led to sharp and rapid revisions of economic forecast. Thus, real inflation rate will be clear only by the end of 2020.

Table 1

**Inflation rate of Lithuania**

Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Rate,%	3.4	2.8	0.4	-0.3	-0.1	1.7	3.9	1.9	2.7	2.3

**THE RESULTS**

Firstly, COVID-19 impact on financial markets should be mentioned. Early study of N. Sansa (2020) found significant positive relationship between COVID-19 confirmed cases and US, China financial markets. In case of Lithuania stock market, OMX Vilnius index fell more than 20% in first weeks of COVID-19 crisis. 8 Lithuanian companies from 14 which listed in stock market didn't pay dividends in 2020. While, year ago the numbers were opposite, i.e. 8 Lithuanian companies from 14 which listed in stock market paid dividends. Thus, the estimated results in this paper are affected by pandemic crisis.

This paper uses two leveraged ratios never used before, for reaching the main aim. Both ratios represent the Present Value (PV) of portfolios made from group of stocks. First ratio is Share Ratio (SR) which includes 1 unit of share of each 14 Lithuanian companies listed NASDAQ OMX BALTIC. So, company which share's market price is bigger has bigger impact on this ratio. However, SR ratio does not reflect real value of such portfolio perfectly, because of difference in share's worth of each company in the market. Second ratio is Value Ratio (VR) and it is more balanced - each of 14 companies has 1/14 part in this ratio. In other words, VR shows how 1 EUR invested in Lithuania stock market will change its value. SR and VR ratios during the researching period presented in Figure 1.

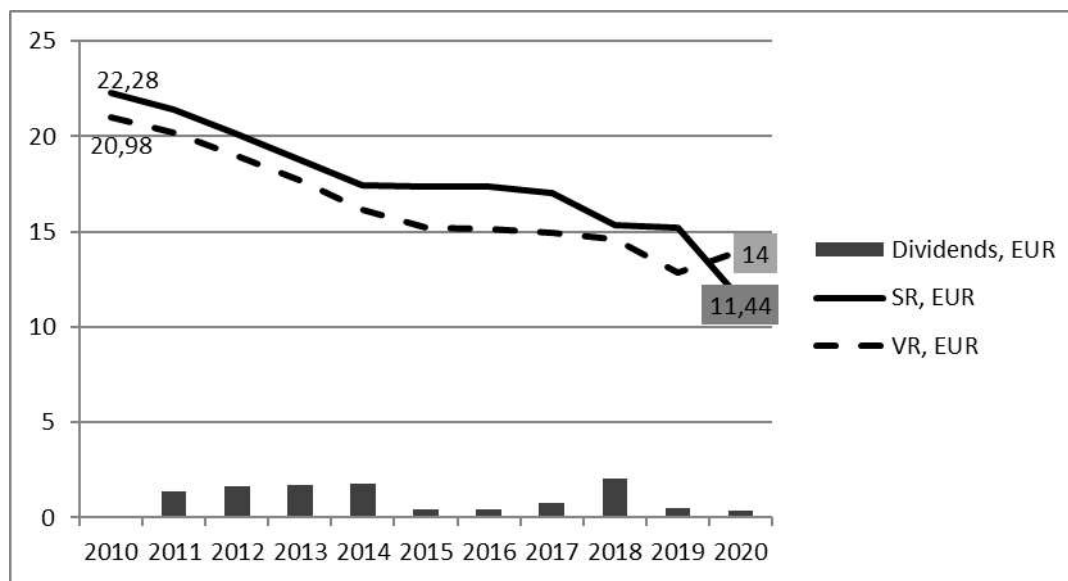


Figure 1. Dynamic of the Present Value of Lithuanian stock market

Figure 1 shows the difference between two ratios. The Share Ratio (SR) made from portfolio of 14 different stocks. Initial value of this ratio (or portfolio) was 11.44 EUR by the 2010. If these euro wouldn't be invested in 14 different stocks we should have the same amount by the 2020. In fact, it would be less than 11.44 EUR because of inflation during the last decade. In opposite way, invested 11.44 EUR almost doubled their value despite of impact by inflation. As mentioned before, the Value Ratio (VR) is more balanced and reflects realistic view into Lithuanian stock market because of equal amount invested in every share. The VR value of 14 EUR in 2010 has grown to 21 EUR (+50%) by the middle of 2020. The results could be better if world wouldn't face COVID-19 crisis which negatively impacted cash flows of 2020. For example, SR value on 2019 ex-dividend day was 17.55% (+3.91 EUR) bigger than year latter.

COVID-19 crisis has negatively affected components of Cash Flow: market price of stocks and amount of dividends. As was mentioned before, 8 Lithuanian companies from 14 which listed in stock market didn't pay dividends in 2020. The relationship between amount of dividends and Present Value ratios

could be visually confirmed in Figure 1. The major increase of SR and VR happened in period from 2011 and 2014 when Lithuanian companies were generous in term of paid dividends. Statistical correlation between Present Value ratios (SR, VR) and dividends (D) is confirmed in Table 2.

Table 1

**Statistical correlations between dynamics of dividends, stock prices, PV ratios and GDP in period 2010-2020**

Correlation	D/SR	D/VR	D/Price	D/GDP	Price/GDP
	1	2	3	4	5
<b>Results</b>	0.408184	0.416398	0.413042	0.278809	0.297600
<b>Definition</b>	Strong positive	Strong positive	Strong positive	Weak positive	Weak positive

Strong positive correlation (Table 2) between change in dividends payment and both Present Value ratios (SR and VR) says that amount of dividends have an impact on investors wish to gain the value in their portfolios. Thus, historical data about such payments should be used to avoid companies with poor dividend-biased history in portfolios. Also, column 3 suggests that increase in dividends has positive impact on stock price in the market. The results in columns 4 and 5 present correlation between Lithuanian economical growth and growth of dividends and stock prices. In these cases, here are weak positive correlations, i.e. growing economy could affect the companies to pay bigger dividends.

This research has determined Lithuanian companies which value fell and grew the most. Table 3 shows companies from the best on top till worst down on bottom.

Table 3

**Particular results on Lithuanian companies in period 2010-2020**

Company	SR growth, €	VR growth, €	Growth, %	D per Share, €	D payments periodicity per 10 years
Telia Lietuva	1.46	2.09	208.57	1.118	10
Ignitis	0.66	1.40	140.43	0.6192	7
Siauliu Bankas	0.19	1.27	126.66	0.045392	6
Apranga	1.73	0.96	96.11	2.38	9
Pieno Zvaigzdes	1.30	0.92	91.55	2.1	9
Rokiskio Suris	1.19	0.76	76.28	0.87	9
Vilkyskiu Pienine	1.10	0.70	70.00	1.33	7
Grigeo	0.41	0.55	54.67	0.29	8
ESO	0.10	0.11	11.49	0.19141	3
Klaipedos nafta	0.04	0.07	7.27	0.3422	9
Linus Agro Group	-0.02	-0.03	-3.34	0.1388	7
PST	-0.92	-0.54	-54.12	0.266	6
AUGA group	-0.33	-0.56	-55.93	0.00	0
Novaturas	-7.47	-0.70	-70.48	1.29	1

The leader of Lithuanian stock market by gained value is Telia Lietuva – each euro invested in 2010 grew 208.57% by the middle of 2020 (Table 3). Also, they are leaders in periodicity of dividends payments, i.e. 10 payments during last 10 years (Table 3, Column 6) ensured by stabile every-year profit between 30 and 60 million euro. The positive trend of Telia Lietuva stock price in the NASDAQ OMX Baltic market could be affected mergers with Omnitel and Baltic Data Center. Other case, Siauliu Bankas is in top 3 by gaining of value (+126.66%) with mediocre dividends history. The reason could be that Siauliu Bankas made two big acquisitions of Ukio Bankas in 2013 and Finasta in 2015. According to N. Rani et al. (2015), mergers and acquisitions can significantly change the company value in both positive and negative ways.

The worst result was shown by travel company Novaturas which value has reduced by -70.48% (Table 3, Column 4). COVID-19 crisis directly has hit the traveling business by taking away their incomes. This shock was reflected in stock market by sharp decrease of shares prices issued by travel companies. For example, in 2020 from February 15<sup>th</sup> till March 15<sup>th</sup> stock price of eDreams fell by -70%, Booking Holding fell by -41.25% and Tui Group by -71.93%. The second from the bottom is Auga group which reduced its

value company had in 2010 by -55.93%. It is possible that investors don't like this share for its poor dividends history (Table 3, Column 5, Column 6).

In future, such data from Lithuanian stock market should be compared with Latvian and Estonian stock markets. The Introduction part of this article has revealed the leadership of Estonia in researches of other authors. So, needs to know do Estonian companies gained its value better than other Baltic countries. Also, the results from all three countries would represent NASDAQ OMX BALTIC market better. Other sight could be directed to NASDAQ OMX BALTIC Secondary List which contains 28 companies. This list could be investigated and compared with Main List units.

## CONCLUSIONS

1. The investing in Lithuanian stock market can protect wealth for investors from inflation and even ensure the growth of capital value. Two different approaches to the calculating the value of Lithuanian companies showed the growth from 50% to 100% in period from 2010 till 2020 despite the negative impact of inflation and COVID-19 crisis. Major reason for these results is cash flows made from yearly dividends paid by companies to shareholders.

2. The effect of dividends and its payments periodicity on stock value was noticed in detailed analysis of Lithuanian companies which listed in NASDAQ OMX BALTIC market's main list. The leader – Telia Lietuva tripled its Present Value ratios during last 10 years and all these years were generous for dividend recipients. On the bottom of the list noticed opposite view – two companies (Auga group, Novaturas) with poor dividends history. Therefore, value of these companies decreased from 55% to 70%.

3. Early researches and data from market indexes let assume that COVID-19 made negative impact on stock prices. More than a half (8 from 14) of Lithuanian companies decided to do not pay dividends in 2020. So, in the scenario where the world wouldn't face COVID-19, present value ratios could be higher.

## REFERENCES

- Aleknevičienė, V., Kviedaraitienė, L., & Aleknevičiūtė, E. (2018). Semi-Strong Form Efficiency in the Baltic Stock Markets under Changing Economic Situation. *Engineering Economics*, 29 (5), 495-506.
- Basdevant, O., & Kvedaras, V. (2002). Testing the Efficiency of Emerging Markets: the Case of the Baltic States. *Working Paper of Eesti Pank*, 9.
- Boissay, F., & Rungcharoenkitkul, P. (2020). Macroeconomic Effects of Covid-19: an Early Review. *BIS Bulletin*, 17.
- Brigham, E., & Ehrhardt, M. (2016). Financial Management: Theory & Practice. *Cengage Learning*.
- Broverman, S. (2010). Mathematics of Investments and Credits. *Actex Publications Inc.*, 5<sup>th</sup> Edition.
- Deltuvaite, V. (2015). An Empirical Investigation of the Baltic Stock Markets Global Integration. *Procedia – Social and Behavioral Sciences*, 213, 430-435.
- Dubinskas, P., & Stunguriene, S. (2010). Alteration in the Financial Markets of the Baltic Countries and Russia in the Period of Economic Downturn. *Technological and Economic Development of Economy*, 16 (3), 502-515.
- European Commission (2020). Winter 2020 Economic Forecast: Offsetting Forces Confirm Subdued Growth. Access: <https://ec.europa.eu/info/business-economy-euro/economic-performance-and-forecasts/economic-forecasts>
- Institute of Accounting of the Republic of Lithuania (2007). 23 Business Accounting Standard "Impairment of Assets". *Official Gazette*, 1-60.
- Kiete, K., & Uloza, G. (2005). The Information Efficiency of Stock Exchanges in Lithuania and Latvia. *Stockholm School of Economics in Riga*, March 18.
- Klimasauskiene, D., & Moscinskiene, V. (1998). Lietuvos kapitalo rinkos efektyvumo problema. *Pinigy Studijos*, 2, 25-34.
- Mauricas, Z. (2014). Baltics: Effect of Russian Economic Sanction. *Nordea Research*, 12 August, 2014.

- Norvaisiene, R., & Stankeviciene, J. (2014). Impact of Companies Internal Factors on Stock Liquidity in Baltic Markets. *Procedia – Social and Behavioral Sciences*, 156, 543-547.
- Pilinkus, D. (2010). Macroeconomic Indicators and Their Impact on Stock Market Performance in the Short and Long Runs: the Case of the Baltic States. *Technological and Economic Development of Economy*, 16 (2), 291-304.
- Pilvere-Javorska, A., Pilvere, I., & Rivza, B. (2018). Comparative Analysis of Post-Recession Stock Market Performance in the Baltic States. *Science and Studies of Accounting and Finance: Problems and Perspectives*, 12 (1), 37-46.
- Rani, N., Yadav, S., & Jain, P. (2015). Impact of Mergers and Acquisitions on Shareholders' Wealth in the Short Run: An Event Study Approach. *Vikalpa: the Journal of Decision Makers*, 40 (3), 293-312.
- Rivera, E., Martin, D., Marcal, E., & Basso, L. (2012). Present Value Model Between Prices and Dividends with Constant and Time-Varying expected Returns: Enterprise-Level Brazilian Stock Market Evidence from Non-Stationary Panels. *Brazilian Business Review*, 9(4), 51-86.
- Rudzkis, R., & Valkaviciene, R. (2014). Econometric Models of the Impact of Macroeconomic Processes on the Stock Market in the Baltic Countries. *Technological and Economic Development of Economy*, 20 (4), 783-800.
- Sansa, N. (2020). The Impact of Covid-19 on the Financial Markets: Evidence from China and USA. *Electronic Research Journal of Social Sciences and Humanities*, Vol. 2, Issue II.
- Shim, J., Siegel, J., & Dauber, N. (2008). 2008-2009 Corporate Controller's Handbook of Financial Markets. *A Wolters Kluwer Business*.
- Vaisvilas, V., & Martinkute-Kauliene, R. (2017). Investment Portfolio Formation Using Multi-Criteria Evaluation Method Multimoora. *Science – Future of Lithuania*, 9 (2), 209-219.