THE RELATIONSHIP BETWEEN THE APPLICATION OF CORPORATE SUSTAINABILITY POLICY AND THE WEIGHTED AVERAGE COST OF CAPITAL: EXAMPLES OF EUROPEAN COUNTRIES

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Purpose: This publication aims to verify whether Van Horne coefficient model affects company growth, as expressed by the WACC.

Design/methodology/approach: The study was conducted on a group of nonfinancial companies listed on: the Warsaw Stock Exchange (WIG index), The Frankfurt Stock Exchange (DAX index), The Paris Stock Exchange (CAC index) and the Stockholm Stock Exchange (OMX Stockholm index) from 01/01/2000 - 31/12/2021. Van Horne's SGR model was used as an indicator of the sustainable growth of the firm. The analysis related to WACC and condition assessment of analysed companies is presented as OLS and panel models parameter estimations. The study was carried out using cross-sectional regression analysis and panel data. Several models were estimated using the OLS method, including different sets of independent variables.

Findings: In the analysis, it was found that the VSGR coefficient has a negative impact on the WACC for companies from all the analysed markets, i.e. the better the implementation of the company's sustainable development policy measured by the VSGR index, the lower the WACC of the company may record. These results were also not confirmed in panel studies with fixed effects, which allows us to conclude that these relationships are very weak.

Research limitations/implications: Further research should expand the analysis of firms by size and stage of development considering value growth. In the next research stage, more extensive analysis and robustness tests will be performed to address endogeneity issues such as measurement errors, confounding factors, simultaneity, etc., and the analysis will be performed using panel data with observations over time.

Practical implications: The results of the analysis can support the managers of companies in making decisions aimed at increasing the company's value in conditions of sustainable growth.

Originality/value: The study's novelty is to establish the relationship between the company's sustainable development policy measured by the VSGR index and the weighted average cost of capital.

Keywords: corporate sustainability policy, weighted average cost of capital, Van Horne's SGR model.

Category of the paper: Research paper.

1. Introduction

This paper is empirical, and its main aim is to verify whether the Van Horne coefficient model affects company growth, as expressed by the WACC.

Van Horne defined the Sustainable Growth Rate as the maximum annual percentage increase in sales that can be achieved based on target operating, debt, and dividend-payout ratios (Van Horne, Wachowicz, 2009). The SGR is a practically applicable concept in the modern financial management context that can be used as a firm's strategic planning and controlling tool (Fonseka et al., 2012). It is a valuable tool that can prove handy, especially for financial and marketing managers to exercise control, monitor the steadiness of diverse growth plans, make future financial and marketing plans, and make crucial financial decisions. It is also a tool used to screen the actual growth rate (Mukherjee, Sen, 2018).

Research proves that Sustainable Growth Rate affects firm value (Listiani, Supramono, 2020). SGR and a firm's value are essential strategic tools to determine a company's sustainability.

It should be noted that the growth of firms is important both for investors and for economic and social development (Bentzen, Tung, 2023). Therefore, research is being undertaken, for example, on the relationship between Corporate Social Responsibility and Sustainable Growth (Mukherjee, Sen, 2018) and between CSR and firm value (D'Amato, Falivena, 2020). The interest in this topic has increased significantly in recent years. Researchers focus also on identifying relationships between various factors affecting a company's value and sustainable growth (Bagh et al., 2023).

Considering the above observations, identifying the relationship between the Sustainable Growth Rate and WACC should be considered an important area of research. The issues raised are important and, at the same time, relatively poorly researched.

The study was conducted on a group of nonfinancial companies listed on: the Warsaw Stock Exchange (WIG index), The Frankfurt Stock Exchange (DAX index), The Paris Stock Exchange (CAC index) and the Stockholm Stock Exchange (OMX Stockholm index) from 01.01.2000-31.12.2021. Van Horne's SGR model was used as an indicator of the sustainable growth of the firm. The analysis related to WACC, and condition assessment of analysed companies is presented as OLS and panel models parameter estimations. The study was carried out using cross-sectional regression analysis and panel data. Several models were estimated using the OLS method, including different sets of independent variables.

The study's novelty is to establish the relationship between the company's sustainable development policy measured by the VSGR index and the weighted average cost of capital. The results of the analysis can be useful for managers of companies in making decisions aimed at increasing the company's value in conditions of sustainable growth.

2. Review of the literature

Describing the issue of the growth of companies on the capital market in the literature, we can observe different directions regarding the approaches to this issue and its measurement. Among these approaches, we can distinguish several groups: stochastic, descriptive, deterministic, and evolutionary. One of the first concepts describing the growth of the enterprise was the theory of proportional growth formulated by Gibrat, which talks about the growth of large enterprises in connection with the industrial economy (Guerzoni et al., 2023). According to this theory, the size of the enterprise in the next period will be larger by a stochastic variable, and all enterprises have the same chance of growth. However, as research has shown, this theory does not apply to small enterprises such as start-ups, which at the beginning grow intensively and only when they leave the phase of intensive development can they be described according to this theory (Lotti et al., 2003, Rivera et al., 2023).

The development of Gibrat's work was the emergence of stochastic models, which assumed that there are too many factors affecting the growth of the company and this fact should be perceived as a random situation that cannot be predicted and not a constant as it was in Gibrat's case. In turn, the deterministic approach identifies other factors influencing this phenomenon, which allows focussing on areas significantly related to development. In this approach, internal and external growth factors are distinguished, making it possible to distinguish those factors influencing a given entity as well as those that affect the entire group of entities (Yadav et al., 2020; Dosi et al., 2020).

The growth of a company on the capital market can bring a number of benefits and influences. First, the shareholder value can increase as the company's increasing market value leads to an increase in the value of its shares. This, in turn, can help increase their wealth and investment returns. Second, the company can benefit from easier access to capital (Tannady et al., 2023; O'Connell et al., 2023). Higher market value and positive feedback from investors can open the door to various sources of financing for the company, such as issuing new shares, raising capital from institutional investors, or using debt instruments. The increased availability of capital enables the enterprise to carry out investments, develop new products, enter new markets, or conduct acquisitions (Mao, 2009). The company's growth on the capital market also contributes to its attractiveness to investors. Higher market value and growth prospects attract new investors, both individual and institutional. An increased number of investors can increase the demand for company shares, which in turn may lead to an increase in their price (Chabachib et al., 2020).

Growth in the capital market may also contribute to improving relations with business partners. Increased market value and positive business prospects build greater trust and credibility in the eyes of partners, suppliers, and customers. This may lead to establishing new strategic partnerships, negotiating more favourable commercial terms, or increasing the

involvement of business partners (Damodaran, 2024; DesJardine et al., 2023). Finally, growth in the capital market increases the company's ability to raise capital in the future. A positive history of growth and success in the capital market makes the company more attractive to potential. A company can increase its value if the return on invested capital exceeds the cost of capital rate. Value management requires the introduction of criteria that evaluate the result of solutions for the enterprise, as well as the knowledge of all factors that can affect the increase in value (Irawan et al., 2023).

It also seems necessary to use measures that assess the manner and pace of value formation. The increase in the value of the company is influenced by the increase in the value of operating profit and cash flows, obtained from high sales dynamics, the search for the optimal capital structure, and the transition from management through functions to process management (Fitri et al., 2023). It is also important to change the thinking of management staff at all levels to one more valuable ones. The concept requires constant risk control, and attention is paid to alternative ways of using capital, so as to extract a sufficiently high rate of return from each of them. Value creation is a process that involves activities of the company that will generate a rate of return much higher than expected and will also allow it to achieve a competitive advantage (Rahim et al., 2021; Ferrigno et al., 2024; Rawel et al., 2023).

The growth of an enterprise on the capital market has significant effects both for enterprises and the economy as a whole, as well as for investors (Eldor, Mamlakat, 2024). Access to capital is a key factor in the growth of enterprises on the capital market. By issuing shares or bonds, companies can obtain the necessary funds for development, investment, and expansion into new markets. Access to capital enables companies to pursue their growth strategies and achieve better financial results. The value of the stock reflects investors' expectations about the company's future performance. The increase in the value of shares translates into capital gains for investors and creates favourable conditions for enterprises to raise additional capital for development (Khanka et al., 2022). In addition, the higher value of the shares increases the attractiveness of the company to potential investors. Competition on the capital market contributes to greater innovation, efficiency, and transparency. Companies competing with each other are forced to constantly improve their offer, search for new markets and investments, as well as effective management. For investors, a competitive capital market means greater choice of investments, the possibility of portfolio diversification, and better opportunities to compare different companies.

3. Research methods and statistical data

The study was conducted on a group of nonfinancial companies listed on: the Warsaw Stock Exchange included in the WIG index, The Frankfurt Stock Exchange included in the DAX index, The Paris Stock Exchange included in the CAC index and Stockholm Stock Exchange included in the OMX Stockholm index from 01.01.2000-31.12.2021.

The study was carried out with annual data. All data used in the study came from the NOTORIA and Bloomberg databases. Prices have been adjusted for equity changes such as preemptive rights, dividends, and splits. The table below presents data statistics for the indices analysed.

The Van Horne model was used as an indicator of stable growth. Van Horne (1987) developed a sustainable growth model to measure a firm's sustainable growth. It comprises of four accounting ratios namely: net profit margin, asset turnover, retention rate of return and equity multiplier. This model comprises of sales performance, financing ability and dividend policy of the firm. Van Horne's sustainable growth equation is as follows:

$$VSGR = ((b * \left(\frac{NPBT}{TO}\right) * \left(1 + \frac{D}{E}\right)) / (\left(\frac{A}{S0} - b * \left(\frac{NPBT}{TO}\right) * \left(1 + \frac{D}{E}\right)\right)) \qquad (1)$$

where:
D/E - Debt to Equity.
A/S - Total Assets to Sales.
b - Retention rate.
NPBT - Net profit before tax.
TO - Turnover (Sales).

Van Horne's (1983) SGR model is the quantitative description of the sustainable growth rate which is at variance with the sales income. Van Horne and Wachowicz (2009) explain that determinants of desired sales growth are constant with the realities of the firm and the financial market place. Dhannapal and Ganesan (2010) point out that Van Horne's SGR model is a powerful tool for checking consistency between sales growth goals, operating efficiency and financial objectives of a firm.

The analysis related to WACC and condition assessment of companies listed on the WIG index, DAX index, CAC index and OMX Stockholm index is presented as OLS and panel models parameter estimations. The study was carried out using cross-sectional regression analysis and panel data. Several models were estimated using the ordinary least squares (OLS) method with the inclusion of different sets of independent variables.

Moreover, tests for the presence of fixed and random effects were also carried out (redundant fixed effects – Wald test, random effects – Breusch-Pagan test). Fixed-effects models were applied as they are a class of statistical models in which the levels of the

independent variables are assumed to be constant and only the dependent variable changes in response to the levels of the independent variables. The description of the interpretation of the test results is as follows:

Test for the occurrence of fixed effects (Wald test), Hypothesis H0 - no fixed effects:

- if the p-value of Wald's test is <0.05, reject the hypothesis that there are no fixed effects, so there are fixed effects in the model.
- if the p-value of Wald's test >0.05, the hypothesis of no fixed effects cannot be rejected.

Additionally, in order to exclude the occurrence of random effects from the analysis, the Breusch-Pagan test was performed for models with random component decomposition. The Breusch-Pagan test, based on the Lagrange multiplier, allows for verification of the hypothesis that the model with random component decomposition is statistically better than the model in which no effects were distinguished in group and/or temporary. Test for the occurrence of random effects (Breusch-Pagan test), hypothesis H0, no random effects:

- if the p-value of Breusch-Pagan's test <0.05, reject the hypothesis that there are no random effects, so there are random effects in the model.
- if the p-value of Breusch-Pagan's test >0.05, the hypothesis of no random effects cannot be rejected.

The model for the total sample is presented in Equation 2.

$$WACC_n = a_{1t} + a_2 VSGR + a_3 lnTA_t + a_4 ROE_t + e_t \qquad (2)$$

where:

VSGR - Van Horne coefficient model calculated according to equation (1).

ROE - Return on equity.

TA - Total Assets.

WACC - the weighted average cost of capital.

The cross-sectional OLS models are applied with Total Assets as logarithmic variable that is explained by the growth of the WACC.

The independent variables were not collinear because most of the VIF values were <5.

4. Results

The main purpose of this study is to verify whether Van Horne coefficient model affect company growth, as expressed by the WACC. Based on the methodology described above, the relationship between the WACC of companies and Van Horne coefficient model, as well as control variables for the collected data, was first tested according to formula (2) to obtain the results described in Table 1. The model specification was also analyzed using the RESET test,

which indicated the correctness of the model used (p-value >0.05). The RESET test results obtained show that the specification of the variables in the model is correct.

Table 1. Estimation of the model parameters from equation (2) using the OLS method.

Table 1.
Estimation of the model parameters from equation (2) using the OLS method

	POLNAD	SWEDEN	FRANCE	GERMANY
Dependent variable: WACC				
const	6.784 ***	9,.207 ***	4.4950 ***	3.592 ***
VSGR	-0.0009 *	−0.006 ***	-0.0006 ***	-0.013 ***
ln(TA)	0.029	-0.223 **	0.1330	0.3778 ***
ROE	0.012 ***	-0.0008	-0.0617 ***	-0.0167
R2	0.012	0.15	0.86	0.11

Note: ∗/∗∗/∗∗∗ Ratios are significant at 10%/5%/1%, respectively.

Source: the author's own elaboration.

As Table 1 shows, the VSGR coefficient has a negative impact on the WACC of enterprises listed on the markets in Germany, Poland, France and Sweden. However, in the case of companies from the Polish market, no such relationship was observed, perhaps due to the fact that the Polish market is still a developing market, which significantly affects the results obtained. As for the remaining control variables adopted for the study, i.e. the return on equity (ROE), only in the case of the Swedish and German markets cannot a significant impact of these variables on the WACC. The second control variable, expressing the size of the company (TA), has no impact on WACC in the case of companies from the Polish and French markets.

Then tests for the presence of fixed and random effects were carried out (redundant fixed effects - Wald test, random effects - Breusch-Pagan test). Cross-sectional regression analysis was performed by estimating models with fixed and random effects for various combinations of the effects. As the models with random effects did not produce statistically significant results, only the models with fixed effects were further analyzed.

Table 2 presents the results of the estimation of model parameters from equation 1 using panels method with fixed effects.

Table 2.
Estimation of the model parameters from equation (2) using the panel method

	POLNAD	SWEDEN	FRANCE	GERMANY
Dependent variable: WACC				
const	9.1113 ***	7.0400 ***	5.8873 ***	2.7099 **
VSGR	-0.0008 *	−0.0204 *	-0.0005 ***	−0.0143 **
ln(TA)	-0.3604 ***	3,5124	-0.0127	0.4357 ***
ROE	-0.0004	−0.0016	-0.0078	-0.0142
const	9.1113 ***	7.0400 ***	5.8873 ***	2.7099 **

Note: ∗/∗∗/∗∗∗ Ratios are significant at 10%/5%/1%, respectively.

Source: the author's own elaboration.

As presented in Table 2, in the case of WACC, the results obtained during the first estimation using the OLS method were not confirmed, perhaps this is due to the weak impact of this variable on the growth of companies. As for the other control variables adopted for research, i.e. the size of assets, only in the case of the Polish and German markets can a significant impact of these variables on WACC be observed, which is consistent with the results obtained in the OLS method. The second control variable, the return on equity (ROE), has no effect on WACC for companies from any of the analyzed markets.

5. Discussion and conclusions

Communication related to business responsibility and sustainability is becoming an increasingly important issue in the context of enterprises. This is expected primarily by consumers, but also by investors, employees and regulators. Hence the ESG standards, which will soon apply to the vast majority of enterprises operating in the EU. about the issues that modern enterprises should pay attention to, so as not to strive only for profits, but also to act in the long term, paying attention to factors that affect each of us. ESG is therefore a natural extension of CSR activities, i.e. Corporate Social Responsibility.

In the analysis presented in the article, it was found that the VSGR coefficient has a negative impact on the WACC for companies from all the analyzed markets, i.e. the better the implementation of the company's sustainable development policy measured by the VSGR index, the lower the WACC of company may record. These results were also not confirmed in panel studies with fixed effects, which allows us to conclude that these relationships are very weak. The research results confirmed our hypothesis that the sustainable growth of the enterprise, measured as the VSGR indicator, affects the weighted average cost of capital (WACC). This shows the relationship that the more stable the growth of an enterprise, the lower the average weighted cost of capital, which may translate into lower costs of obtaining capital from the market.

The results of the analysis can support the managers of companies in making decisions aimed at increasing the company's value in conditions of sustainable growth.

Further research should expand the analysis of firms by size and stage of development in light of value growth. In the next stage of the research, more extensive analyzes and robustness tests will be performed to address endogeneity issues such as measurement errors, confounding factors, simultaneity, etc., and the analysis will be performed using panel data with observations over time (one year).

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