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SHARE CAPITAL MAINTENANCE IN LARGE CROATIAN GROUPS

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ABSTRACT

Corporate governance is a fundamental mechanism for building a reliable, transparent, accountable business environment for all stakeholders. In today's growing, dynamic, unpredictable, unforgiving environment, it is more than ever crucial to ensure business continuity and going concern by applying proper strategies to achieve adequate financial stability. The conservative approach defines that own sources of financing must finance at least 50% of a company's total assets. Nevertheless, favorable financial leveraging provides higher returns to shareholders than the option of not using debt. Therefore, the management of every company should find a balance between those two strategies. Usually, the shareholders bear more significant risk, which results in demanding higher returns compared to creditors. But this is the case only for newly issued shares and increased subscribed capital, but not for internally created earned equity as retained earnings. Furthermore, internally created equity is considered the cheapest source of financing assets, and there are justified reasons for companies to focus on those sources in developing financing strategies. Although higher stock prices may materialize those returns on the market for listed companies, shareholders' expectations are more often related to the dividends distribution which directly affects the company's sources of financing structure. Thus, to meet the shareholders' expectations on the one side and achieve share capital sustainability objectives on the other, advanced analytical and accounting knowledge and skills are necessary.

The research subject is share capital structure and financial stability as a condition for sustainability and going concerned 77 large Croatian groups in which the parent company is a public limited company from 2011 to 2020. Therefore, as an imperative and precondition of capital maintenance, we analyzed large Croatian groups that have total capital (capital & reserves) at least at the subscribed capital level. Our

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results indicate that many observations have subscribed capital greater than total share capital. We also concluded that a more significant percentage uses financial leverage intensively, i.e., more than 50% of assets are financed by debt rather than by equity. Furthermore, from the cases with positive financial results (net profit), almost 75% of observations distributed more than 50% of their net profit yearly. Finally, research confirms that changes in total capital primarily result from net profit and changes in retained earnings. Accounting adjustments and subsequent measurements were not significant parameters for capital change. The results are obtained using regular descriptive statistics, nonparametric tests, and panel data analysis models.

KEYWORDS*: share capital maintenance, dividends distribution, financial stability, going concern, financial ratios*

1. INTRODUCTION

The word capital has many meanings. From an economic, finance, and accounting point of view, capital, is defined as "wealth or property that is owned by a business or a person and can be invested or used to start a business"[1]. Capital represents "the total amount of money and property that an individual or company owns"[2] or "assets remaining after deduction of liabilities; the net worth of a business"[3], or "excess of assets over liabilities"[4]. The bottom line is that the capital represents residual assets after covering all company's liabilities, i.e., part of assets belonging to the company's owners – net assets. The Conceptual Framework for Financial Reporting recognizes financial and physical concepts of capital. Under the financial concept of capital, "such as invested money or invested purchasing power, capital is synonymous with the net assets or equity of the entity"[5]. We get to the two terms, mostly equally defined – capital and equity. From the accounting point of view, those terms are synonyms. For example, in the Oxford dictionary, equity is defined as "the value of a property after all charges and debts have been paid"[6], i.e. as net assets. The Cambridge dictionary defines equity as "the value of a property for the owner after it has been sold and any loan paid back"[7]. Finally, Collins

[1] [https://www.oxfordlearnersdictionaries.com/definition/english/capital_1], accessed on 08/11/2022.

[2] [https://dictionary.cambridge.org/dictionary/english/capital], accessed on 08/11/2022.

[3] [https://www.collinsdictionary.com/dictionary/english/capital], accessed on 08/11/2022.

[4] [https://www.merriam-webster.com/dictionary/capital], accessed on 08/11/2022.

[5] [https://www.ifrs.org/], accessed on 14/11/2022., 8.1

[6] [https://www.oxfordlearnersdictionaries.com/definition/english/capital_1], accessed on 08/11/2022.

[7] [https://dictionary.cambridge.org/dictionary/english/capital], accessed on 08/11/2022.

dictionary defines equity as "assets minus liabilities; net worth; capital"[8]. "The difference between the liabilities and the assets is the net worth, equity, or ownership capital."[9] "Although the meaning of all those definitions is equal, there are specific differences between them. While the word capital focuses on the value or amount of assets owned by the company, the word equity is more focused on the company's value measured by the net, i.e., residual assets. "Equity means ownership"[10].

It is important to emphasize that investors in the corporate finance field observe capital from a different perspective. Brealey, Myers, Allen, and Edmans (2022) relate capital with an investment decision, often referred to as capital expenditures (CAPEX), where capital refers to the company's sources of long-term financing. The choice between debt and equity authors calls capital structure. Both debt and equity have to be closely examined because the specific mixture of the two is the firm's capital structure."[11] A company's capital structure (or financial structure) "refers to the specific mixture of long-term debt and equity the firm uses to finance its operations"[12]. The process of planning and managing a company's long-term investments is known as capital budgeting[13]. "'Optimal capital structure' involves a trade-off between the benefits of higher leverage, which include the tax-deductibility of interest and the lower cost of debt relative to equity, and the costs of higher leverage, which include higher risk for all capital providers and the potential costs of financial distress."[14] Capital formation is "a method for formalizing the division of risk-bearing, control, and income among the various contributors of funds"[15]. Finally, finan-

[8] [https://www.collinsdictionary.com/dictionary/english/capital], accessed on 08/11/2022.

[9] Guerard, J. B., Schwartz, E.: *Quantitative corporate finance*, New York, NY, USA: Springer, 2022., p. 31

[10] Harrison Jr, W. T., Horngren, C. T., Thomas, C. W.: *Financial accounting*, 9/e, Pearson Education, 2013, p. 11

[11] Pyles, M. K.: *Applied Corporate Finance*, Springer Texts in Business and Economics, 2022, p. 30

[12] Ross, S. A., Westerfield, R., Jordan, B. D.: *Fundamentals of corporate finance*, 13/e, New York, NY, USA: McGraw-Hill, 2022, p.101

[13] Ross, S. A.; Westerfield, R. W.; Jordan, B. D.: *Essentials of corporate finance*, New York, NY, USA: McGraw-Hill Education, 2022; Brealey, R. A., Myers, S. C.; Allen, F.; Edmans, A.: Principles of corporate finance, 14/e. New York, NY, USA: McGraw-Hill Education, 2022; Pyles, M. K.: *Applied Corporate Finance*, Springer Texts in Business and Economics, 2022

[14] Clayman, M. R., Fridson, M. S., Troughton, G. H.: *Corporate finance: a practical approach*, 3/e, Hoboken, NJ, USA: John Wiley & Sons, 2022, p. 21

[15] Guerard, J. B., Schwartz, E.: *Quantitative corporate finance*, New York, NY, USA: Springer, 2022, p. 9

cial[16] and managerial accounting field authors also use the term 'capital' in the context of overall investments into companies' assets. In that context, Horngren, Sundem, Burgstahler, and Schatzberg (2022) emphasize that investments can be defined in several ways, for example, as stockholders' equity, as stockholders' equity and long-term liabilities, or as stockholders' equity, long-term liabilities and current liabilities[17]. Miller-Nobles and Mattison (2021) state that companies are making capital investments to acquire capital assets where the capital assets are defined as the long-term operating assets of the company[18].

The subject of this paper is the capital maintenance of large Croatian groups in which the parent company is a public liability company. From a legal point of view, Directive (EU) 2017/1132 states that "in order to ensure minimum equivalent protection for both shareholders and creditors of public limited liability companies, the coordination of national provisions relating to the formation of such companies and the maintenance, increase or reduction of their capital is particularly important"[19]. IFRS defines *capital* as "the net assets or equity of the entity"[20]. Furthermore, *capital* is maintained "if it has as much capital at the end of the period as it had at the beginning of the period"[21]. The first line of *defense* in the capital maintenance concept determines that the capital value must be at least as is the value of the subscribed capital. For the public limited companies, Chapter IV *Capital maintenance and alteration* of the Directive defines that "a minimum capital shall be subscribed the amount of which shall be not less than EUR 25,000"[22]. Thus, considering that the research subject is groups, it is expected that the nominal amount of subscribed capital shall be higher than EUR 25,000. The doctrine of capital maintenance "emphasizes a fundamental duty of the companies to keep the capital intact for the safety of the creditors giving the mandate to the courts to supervise whether the capital

[16] Alexander, D., Nobes, C.: *Financial Accounting: An International Introduction*, 7/e, Harlow, Essex, United Kingdom: Pearson Education Limited, 2020.

[17] Horngren, C. T., Sundem, G. L., Burgstahler, D., Schatzberg, J.: *Introduction to Management Accounting*, 17/e, Harlow, Essex, United Kingdom: Pearson Education Limited, 2022, p. 416

[18] Miller-Nobles, T., Mattison, B.: Horngren's Financial & Managerial Accounting: The Managerial Chapters, 7/e, Harlow, Essex, United Kingdom: Pearson Education Limited, 2022, p. 594

[19] Directive (EU) 2017/1132 of the European Parliament and of the Council of 14 June 2017 relating to certain aspects of company law

[20] [https://www.ifrs.org/], accessed on 14/11/2022., 8.1

[21] [https://www.ifrs.org/], accessed on 14/11/2022., 8.6

[22] Directive (EU) 2017/1132 of the European Parliament and of the Council of 14 June 2017 relating to certain aspects of company law, Article 45§1

is dissipated lawfully or not"[23]. Deloitte (2019) emphasizes that "the rules on capital maintenance exist in order to protect the interests of creditors"[24], and they refer to those rules as 'creditors' buffer. Furthermore, "a limited company should be expressly prohibited from reducing its capital and from purchasing its shares save as provided in the national legislation and the procedure for the reduction of capital must be designed to protect both creditors and shareholders."[25]

Nevertheless, profitable operations result in a capital increase for the company, creating *earned capital*. The IFRS Foundation emphasizes that "any amount over and above that is required to maintain the capital at the beginning of the period is profit"[26]. Thus, the profit represents the increase of nominal money capital[27] over the period when capital is defined in terms of nominal monetary units[28]. It is important to emphasize that, next to the realized profit from the income statement, the capital can be increased due to unrealized gains such as revaluation adjustments or fair value reserves. From that context, it is essential to regulate under which circumstances and which part of capital can be distributed to the shareholders. It is essential because 'modern' accounting includes choosing between various accounting policies, which may result in a direct capital increase or decrease bypassing income statements, or including non-cashable revenues and expenditures, which significantly can influence the financial result. "In the case of physical capital maintenance, it is required to apply current cost measurement, and arising price changes are treated not as profit or loss but as capital maintenance adjustments. Thus, these capital maintenance adjustments cannot be distributed as dividends."[29] "In addition to the

[23] Islam, M. S.: *The Doctrine of Capital Maintenance and its Statutory Developments: An Analysis*, Northern University Journal of Law, (4) 2015, pp. 47-55, p. 47

[24] [https://www.iasplus.com/en-gb/publications/uk/closer-look/2019/a-closer-look-capital-maintenance-and-distributions-under-the-spotlight], accessed on 14/11/2022, p. 2

[25] Islam, M. S.: *The Doctrine of Capital Maintenance and its Statutory Developments: An Analysis*, Northern University Journal of Law, (4) 2015, pp. 47-55, p. 55

[26] [https://www.ifrs.org/], accessed on 14/11/2022., 8.6

[27] Related to the nominal money capital, it is important to recognize and perceive in times of inflation – a general increase of prices because "increases in the prices of assets held over the period, conventionally referred to as holding gains, are, conceptually, profits" (IFRS Foundation, IASB, 8.7). On the other side, when capital maintenance is considered in terms of constant purchasing power units, profit is "only that part of the increase in the prices of assets that exceeds the increase in the general level of prices" (IFRS Foundation, IASB, 8.7).

[28] [https://www.ifrs.org/], accessed on 14/11/2022., 8.4

[29] Paksiova, R., Oriskoova, D.: *Capital maintenance evolution using outputs from accounting system*, Scientific Annals of Economics and Business, 67(3) 2020, pp. 311-331, https://doi.org/10.47743/saeb-2020-0017, p. 313

nominal maintenance of (equity) capital, the principle of real capital maintenance requires that equity capital is also maintained not only nominally, but in real terms by covering inflation."[30] Related to this, Garcia (2020) concludes that "the modern view of capital maintenance in IFRS is based on comprehensive income, which corresponds to the increase in net assets. Since the scope of comprehensive income is broader than that of net income in the dynamic view, the concept of capital maintenance is less conservative"[31]. The capital maintenance rules aim to "protect creditors and other company stakeholders by preventing directors from paying dividends or return capital to members other than in limited circumstances"[32].

Under certain circumstances, the company may distribute earned capital (profit), which consequently leads to a decrease in capital. Thus, considering the minimum amount of the subscribed capital for the public limited companies in the European Union, Directive (EU) 2017/1132 deals with and defines:

- rules on distribution,
- rules on companies' acquisitions of their shares,
- rules for the increase and reduction of capital.

Islam (2015) emphasizes that the doctrine of capital maintenance supports the legal rules in four areas: (1) payment of dividends or other distributions to shareholders; (2) reduction of a company's share capital and/or reserves; (3) prohibition on the provision by a company of financial assistance for the purchase of its own shares; and (4) a company's redemption or purchase of its own shares[33]. "Capital maintenance can be understood in several ways. In a modern setting, capital maintenance refers to the need to prevent corporate capital reduction by excess dividend distribution or other aggressive equity transactions. In the pre-IFRS world, the main focus of capital maintenance was to distinguish between capital, the original investment of shareholders, and income, i.e., the profits earned from business operations."[34] Finally, "due

[30] Gleißner, W., Günther, T., Walkshäusl, C.: *Financial sustainability: Measurement and empirical evidence*, Zeitschrift Für Betriebswirtschaft, 92(3) 2022, pp. 467-516, https://doi.org/10.1007/s11573-022-01081-0, p. 475

[31] Garcia, C.: *From Financial to "Sustainable" Capital Maintenance*, InterEU Law East, 7(2) 2020, pp. 229-243, p. 238

[32] [https://www.iasplus.com/en-gb/publications/uk/closer-look/2019/a-closer-look-capital-maintenance-and-distributions-under-the-spotlight], accessed on 14/11/2022, p. 2

[33] Islam, M. S.: *The Doctrine of Capital Maintenance and its Statutory Developments: An Analysis*, Northern University Journal of Law, (4) 2015, pp. 47-55, p. 47

[34] Garcia, C.: *From Financial to "Sustainable" Capital Maintenance*, InterEU Law East, 7(2) 2020, pp. 229-243, p. 231

to restoration of non-current assets and creation of funds for their financing as the basis for capital maintenance is a key factor for sustainable development of the enterprise."[35]

Firstly, we will investigate if large Croatian groups follow the conservative rule by which the majority of assets shall be financed by equity rather than debt. Considering that it is impossible to maintain any entity's capital if its value is below the level of subscribed capital, we determined the second research objective. Thus, the objective is to determine if large Croatian groups in which the parent company is a public limited company have total capital (capital & reserves) at least at the subscribed capital level. Nevertheless, from the accounting point of view, the company's net worth (net assets) can be increased only by retaining earned capital for future growth and development of the company's business operations. Moreover, considering the IFRS Foundation's definition of financial capital maintenance, the concept is not narrowly related to the subscribed capital but to the amount of the capital, i.e., net assets. Thus, retaining earnings increase net assets at the end of the period and stands for a higher capital maintenance threshold for the upcoming period. "Lack of accounting transparency induced by compensation structures is evidence of the failure of sufficient profitability and uncontrolled risk, which damage sustainability."[36] In that context, the objective is to investigate if large Croatian groups have maintained their capital over the years. Additionally, the objective is to investigate if groups that increased the total capital between two periods refine net assets due to retained earnings or due to the accounting assumptions like adjustments, subsequent measurement, or revaluation. Related to this, the research aims to find the main determinants due to which changes in the total capital of large Croatian groups occur. Furthermore, the objective is to investigate if a large Croatian group's larger part of net profit retains to increase its capital or distribute to its shareholder. Finally, the research aims to find the main determinants due to which changes in the total capital of large Croatian groups occur.

We divided the paper as follows. The first and second chapters include an introduction and a comprehensive literature review of conducted studies regarding capital maintenance policies. In the following chapter, we explained the sampling approach and used methodology. Finally, the core part of the paper includes research results and findings, which we elaborate on in the conclusion.

[35] Paksiova, R., Oriskoova, D.: *Capital maintenance evolution using outputs from accounting system*, Scientific Annals of Economics and Business, 67(3) 2020, pp. 311-331, https://doi.org/10.47743/saeb-2020-0017, p. 313

[36] Lee, M.; Hwang I. T.: *The Effect of the Compensation System on Earnings Management and Sustainability: Evidence from Korea Banks*, Sustainability (Basel, Switzerland), 11(11) 2019, pp. 3165, p. 3170

2. LITERATURE REVIEW

Only a few studies narrowly relate to capital maintenance. A certain number of authors investigated capital maintenance more broadly than previously defined. For example, Boucekkinen, Martineznn, and Saglamnnn (2010) introduced a model for capital maintenance as a labor service[37]. Albonico, Kalyvitis, and Pappa (2014) relate capital maintenance with capital depreciation[38]. The authors designed a business-cycle model in which expenditures on capital maintenance endogenously determine the depreciation rate. Those expenditures are an integral part of the capital accumulation process, primarily related to capital expenditures (CAPEX). Kalyvitis and Vella (2014) also investigated capital maintenance from a much broader perspective[39]. Their paper focuses on operation and maintenance (O&M) spending by state and local governments in the USA and its productive impacts on public capital maintenance.

On the other hand, Bogan (2012) investigated changes in the efficiency of microfinance institutions (MFIs) related to the changes in capital structure[40]. The author defines MFIs as providers of financial services "to low-income households in developing countries around the world"[41] organized as nongovernmental organizations (NGOs), credit unions, nonbank financial intermediaries, or commercial banks. The author questions "the best mix of debt, equity, and grant funding that will ensure solvency and self-sufficiency"[42] of lending institutions. The research covers MFIs with total assets over 3.1 million USD, at least level 3 diamond disclosure rating on the MIX Market, and audited financial statements in English, French, or Spanish located in Africa, East Asia, Eastern Europe, Latin America, the Middle East, and South Asia for the years 2003 and 2006. The author uses the modified formula of operating self-sufficiency from the MIX Market database provided by the World Bank[43] and

[37] Boucekkine, R., Martinez, B., Saglam, C.: *Capital Maintenance as a Key Development Tool: Capital Maintenance*, Scottish Journal of Political Economy, 57 (5) 2010, pp. 547-567

[38] Albonico, A., Kalyvitis, S., Pappa, E.: *Capital maintenance and depreciation over the business cycle*, Journal of Economic Dynamics & Control, 39, 2014, pp. 273-286, https://doi.org/10.1016/j.jedc.2013.12.008

[39] Kalyvitis, S., Vella, E.: *Productivity effects of public capital maintenance: Evidence from U.S. States*, Economic Inquiry, 53(1) 2014, pp 72-90, https://doi.org/10.1111/ecin.12136

[40] Bogan, V. L.: *Capital Structure and Sustainability: An Empirical Study of Microfinance Institutions*, The Review of Economics and Statistics, 94(4) 2012, pp. 1045-1058

[41] Bogan, V. L.: *Capital Structure and Sustainability: An Empirical Study of Microfinance Institutions*, The Review of Economics and Statistics, 94(4) 2012, pp. 1045-1058, p. 1045

[42] Bogan, V. L.: *Capital Structure and Sustainability: An Empirical Study of Microfinance Institutions*, The Review of Economics and Statistics, 94(4) 2012, pp. 1045-1058, p. 1045

[43] DataBank, MIX Market, The World Bank, web

emphasizes that operational sustainability is having operating self-sufficiency of 100% or more while financial sustainability is having operating self-sufficiency of 110% or more[44]. The indicators represent the dependent variable in the model. As independent variables, the author uses capital structure variables as a debt-to-assets ratio, grants as a percentage of assets, shareholder capital as a percentage of assets, deposits relative to assets, and for MFIs specific variables, MFI characteristics (type of entity), MFI maturity level, country-level macroeconomic indicators (foreign direct investment, GDP, and inflation)[45]. The author uses OLS regression and probit models to analyze the data. Bogan (2012) concluded that various factors like maturity stage, the size of assets, and capital structure are associated with the performance of MFIs. In addition, the author found that debt relative to assets negatively relates to operational self-sufficiency[46].

Bodhanwala S. and Bodhanwala R. (2018) investigated whether corporate sustainability impacts profitability performance. Authors define *sustainability* as a "multi-dimensional concept covering within its reigns environmental, social, economic and governance aspects of business"[47]. As a measure of sustainability, authors used revenue growth (year-on-year change in revenue) and environment, social, and governance (ESG) score as a dummy variable where one (1) is assigned to the *high ESG compliant* with EWRS scores more than 50 in all six years. Thus, they analyzed 58 Indian companies[48] from 2010 to 2015 (290 observations). The sustainability proxies represented independent variables in the model. The authors prepared four models where the dependent variable was profitability indicator – return on invested capital (ROIC), return on equity (ROE), return on assets (ROA), or earnings per share (EPS). To ensure the homogeneity of the two groups and models, the authors included control variables such as size (total assets growth) and risk (ratio of total debt to equity). Their findings "provide evidence for Indian firms that they should align their strategies and economic goals with environmental protection, social cause, and good governance. The findings of this study reveal that a better focus on the sustainability efforts by Indian firms in taking policy decisions should have a positive and significant impact on their profitability in the long

[44] Bogan, V. L.: *Capital Structure and Sustainability: An Empirical Study of Microfinance Institutions*, The Review of Economics and Statistics, 94(4) 2012, pp. 1045-1058, p. 1048

[45] Bogan, V. L.: *Capital Structure and Sustainability: An Empirical Study of Microfinance Institutions*, The Review of Economics and Statistics, 94(4) 2012, pp. 1045-1058, p. 1052

[46] Bogan, V. L.: *Capital Structure and Sustainability: An Empirical Study of Microfinance Institutions*, The Review of Economics and Statistics, 94(4) 2012, pp. 1045-1058, p. 1056

[47] Bodhanwala S. and Bodhanwala R., 2018, p. 1739

[48] Thomson Reuters Asset 4 ESG database

run."[49]. Bodhanwala S. and Bodhanwala R. (2018) concluded that high-rated ESG companies have significantly lower leverage than low-rated ESG companies[50]. The authors explained the results as that "high-rated ESG firms enjoy larger access to equity capital markets; which limits the need for borrowed funds"[51]. Their conclusion opens the need to investigate the equity structure of those companies to obtain broad conclusions.

Garcia (2020) prepared a paper focusing on capital maintenance as the IFRS Foundation defines it. She emphasized the problem regarding capital maintenance related to the 'source' of capital increase – realized profit or unrealized gains[52]. To enhance corporate transparency and emphasize the importance of capital maintenance author suggested a new capital structure in the balance sheet. In the suggested structure, comprehensive income, sustainability reserve, other elements of net assets, and non-controlling interests would be reported separately from total shareholder's capital (subscribed capital, capital reserve, retained earnings, other reserves, and treasury stocks). The author concludes that "capital maintenance should be rediscovered as an essential tool for sustainability reporting, as well as for subsequent regulation"[53].

Paksiova and Oriskoova (2020) investigated 663 Slovak enterprises and constructed a capital maintenance evolution model for quantifying capital maintenance by applying a neural network[54]. The model consists of five input neurons, five hidden neurons, and one output neuron. According to the obtained results, the authors concluded that the most significant influence on the preservation of capital has the ratio of selected equity items which is the combined indicator of changes in the capital between two periods. The modest impact has the total assets turnover ratio (ratio between total revenues and total assets) and total assets and liabilities ratio[55].

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[49] Bodhanwala, S.; Ruzbeh B.: *Does Corporate Sustainability Impact Firm Profitability? Evidence from India*, Management Decision, 56(8) 2018, pp. 1734-1747, p. 1744

[50] Bodhanwala, S.; Ruzbeh B.: *Does Corporate Sustainability Impact Firm Profitability? Evidence from India*, Management Decision, 56(8) 2018, pp. 1734-1747

[51] Bodhanwala, S.; Ruzbeh B.: *Does Corporate Sustainability Impact Firm Profitability? Evidence from India*, Management Decision, 56(8) 2018, pp. 1734-1747, p. 1744

[52] Garcia, C.: *From Financial to "Sustainable" Capital Maintenance*, InterEU Law East, 7(2) 2020, pp. 229-243

[53] Garcia, C.: *From Financial to "Sustainable" Capital Maintenance*, InterEU Law East, 7(2) 2020, pp. 229-243, p. 242

[54] Paksiova, R., Oriskoova, D.: *Capital maintenance evolution using outputs from accounting system*, Scientific Annals of Economics and Business, 67(3) 2020, pp. 311-331, https://doi.org/10.47743/saeb-2020-0017

[55] Paksiova, R., Oriskoova, D.: *Capital maintenance evolution using outputs from accounting system*, Scientific Annals of Economics and Business, 67(3) 2020, pp. 311-331, https://doi.org/10.47743/saeb-2020-0017, p. 326

Gleißner, Günther, and Walkshäusl (2022) in their paper do not focus directly on capital maintenance but on creating a measure of overall financial sustainability[56]. Nevertheless, they include four conditions to define financial stability and emphasize that "the four conditions are also in line with traditional principles of accounting theory on capital maintenance"[57]. According to the authors, conditions for measuring financial sustainability are: "(1) a real growth of the firm that prevents its shrinkage or liquidation over time, (2) a significant probability of firm survival, (3) an adequate level of risk exposure by the firm and (4) an attractive risk–return profile for the owners"[58].

3. SAMPLE AND METHODOLOGY

To meet research objectives we obtained data for large Croatian groups from annual consolidated financial statements. Investigating groups instead of companies captures a broader range of business activities of a particular entity and consolidate transactions between related entities. Under Croatian Accounting Law, the parent company (investor) must prepare consolidated financial statements if they have control over one or more subsidiaries (investee)[59]. "An investor controls an investee when it is exposed, or has rights, to variable returns from its involvement with the investee and has the ability to affect those returns through its power over the investee"[60]. Furthermore, IFRS 10 defines that the parent company has control over the subsidiary if it has all of the following: (a) power over the subsidiary, (b) exposure, or rights, to variable returns from its involvement with the subsidiary, and (c) the ability to use its power over the subsidiary's to affect the amount of the investor's returns[61]. The parent company, together with all its subsidiaries, is a group[62].

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[56] Gleißner, W., Günther, T., Walkshäusl, C.: *Financial sustainability: Measurement and empirical evidence*, Zeitschrift Für Betriebswirtschaft, 92(3) 2022, pp. 467-516, https://doi.org/10.1007/s11573-022-01081-0

[57] Gleißner, W., Günther, T., Walkshäusl, C.: *Financial sustainability: Measurement and empirical evidence*, Zeitschrift Für Betriebswirtschaft, 92(3) 2022, pp. 467-516, https://doi.org/10.1007/s11573-022-01081-0, p. 507

[58] Gleißner, W., Günther, T., Walkshäusl, C.: *Financial sustainability: Measurement and empirical evidence*, Zeitschrift Für Betriebswirtschaft, 92(3) 2022, pp. 467-516, https://doi.org/10.1007/s11573-022-01081-0, p. 507

[59] Accounting Law (Official Gazette No. 78/2015, 134/2015, 120/2016, 116/2018, 42/2020, 47/2020, 114/2022), Article 23§1

[60] [https://www.ifrs.org/], accessed on 14/11/2022., IFRS 10, 6

[61] [https://www.ifrs.org/], accessed on 14/11/2022., IFRS 10, 7

[62] Directive 2013/34/EU of the European Parliament and of the Council of 26 June 2013 on the annual financial statements, consolidated financial statements and related reports of certain types of undertakings, Article 2§11

Unfortunately, there is no official data on the number of groups in Croatia. However, according to data from the Croatian Chamber of Economy[63], in 2022, there were 391 large companies (0.28% of all active companies in Croatia in a given year) that generated 312 billion HRK in total revenues, making 41.96% of overall total revenues. The structure of companies by size in Croatia is in line with other European countries, i.e., sector SMEs make 99.72% of all entities, of which micro entities make 89.44%. From the Financial agency, we asked for specified items for all groups' annual consolidated financial statements from 2010 to 2021. Considering that at the moment of inquiry, all groups still did not disclose their financial statements to the Financial agency, we excluded 2021 from our analysis. By obtained data, in 2020 was a total of 178 large groups in Croatia, of which in 46% parent company was *public limited company* and in 54% were *limited liability companies* (Table 1). Large groups made 205.6 billion HRK of total revenues, had 399 billion HRK of total assets, and employed 217,897 people (by working hours).

Table 1: Structure of the sample by legal type

Year	Limited partnerships	Limited liability companies	Public limited companies	Total
2010	0	49	97	146
2011	0	51	94	145
2012	1	48	86	135
2013	0	66	104	170
2014	0	68	102	170
2015	1	75	102	178
2016	1	79	91	171
2017	1	75	93	169
2018	1	88	94	183
2019	1	89	81	171
2020	1	96	81	178
2021	0	11	13	24

Source: Author's calculation; data obtained by Financial agency (e-mail)

[63] [https://digitalnakomora.hr/home], accessed on 08/11/2022.

Nevertheless, for the sake of data homogeneity, we made certain assumptions for the inclusion of the group in further research: (1) the parent company is a public limited company, and (2) to be classified as a large group for at least six (6) years within the observed timeline. Thus, the final sample covered by the research includes 77 different groups (Table 2). For the majority of groups (56%), we had the data for the overall period covered by the study (2011-2020).

Table 2: Structure of groups included in the research by the number of business years covered by the research

Number of years	n	%	Number of observations
6	7	9.09	42
7	6	7.79	42
8	10	12.99	80
9	11	14.29	99
10	43	55.84	430
Total	77	100.00	693

Source: Author's calculation; data obtained by Financial agency (e-mail)

Observed by region (NUTS 2), 44% of 64 groups (2020) are located in the City of Zagreb, followed by 25% in Adriatic Croatia, 20% in Northern Croatia, and 11% in Pannonian Croatia. The domination of Zagreb increased by three p.p. during the ten years. The distribution is expected and follows the macroeconomic development of Croatian regions.

According to the Croatian Accounting Law, which is harmonized with Directive 2013/34/EU, large groups are parent and subsidiary companies that are included in the consolidation. Furthermore, on a consolidated basis, large groups exceed the thresholds of at least two of the three following criteria: balance sheet total of 150 million HRK (20 million EUR), revenues of 300 million HRK (40 million HRK), on average over 250 employees during the financial year.

Table 3: Descriptive statistics of size indicators for groups included in the research (in millions HRK, except employees)

Year	Employees number			Total revenues			Total assets		
	Mean	S.D.	Median	Mean	S.D.	Median	Mean	S.D.	Median
2011	2,277	4,838	894	2,347	5,726	808	3,194	6,874	1,154
2012	2,265	4,832	852	2,236	5,588	800	3,031	6,700	1,064
2013	2,165	4,516	866	2,063	5,276	617	2,863	6,555	1,003
2014	2,334	6,366	788	2,005	5,373	540	3,149	7,781	1,056
2015	2,200	6,214	725	2,137	6,433	606	3,099	7,867	1,072
2016	1,494	2,211	718	1,389	2,622	600	2,480	5,514	1,024
2017	2,236	6,149	731	2,048	5,401	610	3,001	6,742	1,082
2018	2,306	6,349	674	2,132	5,536	617	3,039	6,792	997
2019	1,713	2,361	796	1,762	3,514	714	2,897	6,393	1,029
2020	1,697	2,304	787	1,600	2,789	739	3,018	6,622	1,027
Total	2,067	4,924	796	1,965	4,972	693	2,971	6,780	1,042

Source: Author's calculation; data obtained by Financial agency (e-mail)

Therefore, by observing three size criteria (employees' number, total revenues, total assets), over the ten years, groups in samples (per year and per group), on average, employed over 2,000 employees, generated an average of almost 2 billion HRK of total revenues and had an average of 2.9 billion HRK of total assets (Table 3). However, considering high deviations in results (skewed distributions), which indicates that significant differences are present between observations, it is better to observe the median. Thus, over half of the observed groups employed more than 796 employees, generated more than 693 billion HRK of total revenues, and had a value of total assets of more than 1,042 billion HRK. Of all observations covered by the research, minimum total revenues had a group in 2018 of 105 million HRK, and minimum total assets had a group in 2012 of 172 million HRK. In fact, every group covered by the research had total assets over the prescribed threshold, but 117 observations (of 693) had total revenues in lower amounts.

However, the paper's objectives cover investigating the value and structure of groups' total capital (equity), recognizing the most critical determinants of its forming, and determining if Croatian groups respect the capital maintenance premise. Firstly, in the context of forming subscribed capital, it is essential to emphasize that Croatian Companies Law does not prescribe a minimum amount of subscribed capital for groups but only for capital companies as individual entities. The same is for distribution policies. As a result, groups cannot

distribute profit, but the distribution decisions of parent companies and subsidiaries reflect consolidated financial statements.

However, the subject of this paper is groups in which the parent company is a public limited company. Under the Companies Law, the minimal subscribed capital requirement for a public limited company is 200,000 HRK (c. 26,440 EUR)[64]. The provision of the Croatian Companies Act regarding the minimal amount of subscribed capital is harmonized with the European Parliament's Directive (EU) 2017/1132. Therefore, considering subscribed capital requirements, it is expected that subscribed capital for groups in which the parent company is a public limited company would be over that minimum requirement.

Table 4: Descriptive statistics for subscribed capital, total capital (capital & reserves), and coefficient of subscribed capital in total capital (capital & reserves) (in millions HRK, except coefficient)

	Subscribed capital			Total capital			Share of subscribed capital in total capital		
	Mean	S.D.	Median	Mean	S.D.	Median	Mean	S.D.	Median
2011	910.50	2,944.77	170.51	1,418.03	3,492.78	368.23	0.884	2.761	0.470
2012	939.52	2,860.63	197.57	1,371.93	3,423.67	359.83	0.868	1.730	0.597
2013	863.42	2,756.83	188.62	1,307.29	3,328.37	378.41	1.082	3.368	0.541
2014	858.05	2,710.78	179.90	1,307.47	3,372.57	362.61	0.056	2.704	0.524
2015	832.87	2,665.78	200.00	1,289.62	3,440.10	359.56	4.465	34.944	0.525
2016	850.39	2,680.95	213.00	1,261.64	3,553.71	361.21	0.695	2.249	0.524
2017	872.41	2,717.24	206.15	1,080.20	4,483.97	359.93	1.067	4.202	0.531
2018	891.25	2,733.35	233.91	1,076.29	4,559.61	359.38	1.578	8.146	0.570
2019	956.50	2,867.82	203.06	1,520.99	3,865.69	396.84	1.212	6.317	0.516
2020	986.79	2,932.41	193.12	1,562.61	3,955.38	427.49	1.142	6.130	0.467
Total	893.25	2,763.16	200.00	1,311.30	3,760.02	369.67	1.341	12.441	0.526

Source: Author's calculation; data obtained by Financial agency (e-mail)

As results show, on average, the subscribed capital of large groups in Croatia was 893 million HRK with a standard deviation of 2,763 million HRK for the analyzed period (Table 4). It can be noticed that the average value of subscribed capital has an increasing trend starting from 2015 up to the most recent year. On average, the value of total capital (capital & reserves) is significantly

[64] Companies Act (Official Gazette No. 111/1993, 34/1999, 121/1999, 52/2000, 118/2003, 107/2007, 146/2008, 137/2009, 125/2011, 152/2011, 111/2012, 68/2013, 110/2015, 40/2019, 34/2022), Article 162

higher than subscribed capital. Nevertheless, these results cannot take us to the conclusion that large Croatian groups meet the capital maintenance requirements. That conclusion would be superficial, considering the overall average total capital does not show an increasing trend. Furthermore, we are still determining which capital component is most significant for a capital increase; it could result from unrealized gains or revaluation reserves. Thus, we conduct a comprehensive regression analysis of panel data to make clear conclusions regarding capital structure and its maintenance.

Although descriptive statistics results for the subscribed capital and total capital are promising regarding capital maintenance, results of the average share of subscribed capital in total capital are somewhat concerning. Continuously from 2017, on average, the value of subscribed capital is higher than total capital, i.e., the ratio is higher than 1. In-depth analysis shows that there were 167 observations with a coefficient higher than 1, making up 24% of the total observations (of 693). Detailed analysis of the individual groups shows us that a total of 25 groups or 32% of all analyzed large groups had the value of total capital less than the value of subscribed capital in at least one analyzed year. Considering the high percentage of groups with an unfavorable ratio of subscribed and total capital, we will analyze groups separately to determine if differences exist in factors that significantly influence changes in total capital.

Respecting the research objectives elaborated in the Introduction chapter, we developed four research hypotheses tested in the paper using financial data from the designed sample of large Croatian groups:

H1: Large Croatian groups favor using lower financial leverage.
H2: Large Croatian groups maintain their capital at least at the level of the subscribed capital.
H3: Distribution policies of a parent company and subsidiaries significantly reflect the total capital of large Croatian groups.
H4: Changes in total capital are mainly the result of net profit and changes in retained earnings.

Considering that most analysts measure financial leverage using a debt-to-equity ratio (D/E), we will also use it to analyze the first research hypothesis (H1). Generally, the level of financial leverage represents the share of debt in total sources of financing assets. Thus, lower financial leverage means less debt in total sources of financing assets, i.e., such companies (groups) favor using their own sources of financing assets (capital). This financial indicator is calculated as a ratio of total debt and total capital (capital & reserves). The assumption for testing the hypothesis is (1):

$$D/E < 1 \tag{1}$$

Based on the new variable (D/E), we will test if at least 60% of observations prefer financing assets with capital compared to debt, i.e., that they are not using financial leverage intensively. If the ratio is below one for at least 60% of observations, we may conclude that large Croatian groups prefer capital next to debt. Finally, we will use the Binomial test to test the statistical significance of the results. The conservative financing rule determines that at least 50% of the assets of the entity shall be financed by capital (equity) to maintain financial stability and operate less riskily.

The second research hypothesis assumes that large Croatian groups maintain a total capital (CR) level of at least the subscribed capital (SC) level. Therefore, the given ratio is a precondition for respecting the capital maintenance concept. Thus, capital at the end of the financial year must be at least at the level from the beginning of the financial year. Thus, the given can be written as (2):

$$CR \geq SC \rightarrow \frac{SC}{CR} \leq 1 \tag{2}$$

The assumption covers the request that total capital must be at least at the level of the capital invested by the owner to preserve their investment. In addition, of course, the owner's objective is to increase the value of the entity's net assets, which assumes an increase in total capital over time. Considering all, we set the threshold of positive outcomes at a high level of 90% when we tested the second research hypothesis.

To analyze if the distribution policies of a parent company and subsidiaries significantly reflect the total capital of large Croatian groups, we calculated the assumed amount distributed to the shareholders in the form of dividends using the following equation (3):

$$div = netPR - \Delta LR - \Delta SR - \Delta OR - \Delta ROS - \Delta REL \tag{3}$$

where:

div – dividends
NetPR – net profit for the financial year
ΔLR – changes in legal reserve between two financial years, i.e., $LR_t - LR_{t-1}$
ΔSR – changes in statutory reserve between two financial years, i.e., $SR_t - SR_{t-1}$
ΔOR – changes in other reserves between two financial years, i.e., $OR_t - OR_{t-1}$
ΔROS – changes in reserve for own shares between two financial years, i.e., $ROS_t - ROS_{t-1}$
ΔREL – changes in profit or loss brought forward between two financial years, i.e., $REL_t - REL_{t-1}$.

It is important to emphasize that obtained amount represents only a rough approximation of distributed profit to shareholders (div). Our research assumption that parent companies and subsidiaries of large Croatian groups retain more net profit (rNetPR) than distribute to shareholders (div) can be written as follows (4):

$$rNetPR = NetPR - div \rightarrow rNetPR > div \rightarrow \frac{div}{rNetPR} < 1 \qquad (4)$$

Finally, to test the hypothesis that changes in total capital are mainly the result of net profit and changes in retained earnings, we applied the following function (5):

$$\Delta CR = f(\frac{SC_t}{CR_t}, \frac{\Delta LR}{LR_t}, \frac{LR}{CR_t}, \frac{OS_t}{CR_t}, \frac{\Delta SR}{SR_t}, \frac{\Delta OR}{OR_t}, \frac{\Delta RR}{RR_t}, \frac{\Delta REL}{CR_t}, \frac{\Delta MI}{MI_t}, \frac{NetPR_t}{CR_t}) \qquad (5)$$

As was earlier elaborated, our data make unbalanced panel data where n = 77 and the number of observed years per group goes from 6 to 10, i.e., $t_1 = 1, \ldots, 6 \ldots t_i = 1, \ldots, 10$. The total number of observations in the sample is 693. We gathered financial data from annual consolidated financial statements and calculated needed variables for the given observations. Considering that capital maintenance assumes a neutral or positive difference of total capital between two-time frames, it is justified to use changes between current and lagged value ($x_t - x_{t-1}$) in assessing capital maintenance policies in large Croatian groups. Therefore, the analysis used variables shown in the next table (Table 5).

Table 5: Variables used in the analysis

Abbreviation	Explanation (name)
D/E	Debt-to-equity ratio
CR	Total capital
SC	Subscribe capital
div	Distributed profit
NerPR	Net profit for the year
LR	Legal reserve
ST	Statutory reserve
OR	Other reserves
ROS	Reserves for owned shares
OS	Owned shares
REL	Profit or loss brought forward
RR	Revaluation reserves
MI	Minority (non-controlling) interest

4. RESEARCH RESULTS

As the first step of capital maintenance assessment, we analyzed if large Croatian groups follow a conservative rule that at least 50% of total assets shall be financed by their sources of financing (capital). To test the research hypothesis, we created a dummy variable and coded observations in which D/E is less than one with one (1), meaning that those observations finance its total assets with more than 50% of its own sources. Otherwise, observations were coded with zero (0). The binomial test shows that those two groups do not appear with the same probability of 0.5:0.5 (p-value 0.015). Descriptive statistics show that 45% of observations have a D/E ratio lower than one and finance more than 50% of total assets by own sources (on average 66%).

Table 6: Descriptive statistics for debt-to-equity (D/E) ratio (1)

	Count	% of n	Mean	Standard Deviation	Median
1<D/E<0	379	54.70	5.23	53.70	1.69
0<D/E<1	314	45.31	0.56	0.26	0.57
Total	693	100.00	3.11	39.76	0.91

Source: Author's calculation; data obtained by Financial agency (e-mail)

For those observations using financial leverage more intensively, the average value of the D/E ratio is 5.23, meaning that total debt is five times higher than total equity (Table 6). Obtained results show an extremely high standard deviation. Thus, to make more comprehensive conclusions, we analyzed those observations more closely and divided them into two groups: a ratio higher than one and a negative ratio. The results of all three groups are shown in the following table.

Table 7: Descriptive statistics for debt-to-equity (D/E) ratio (2)

	n	% of n	Mean	Standard Deviation	Median
1<D/E<0	314	45.31	0.56	0.26	0.57
0<D/E<1	314	45.31	7.97	58.55	1.93
Negative	65	9.38	-7.99	7.26	-6.33
Total	693	100.00	3.11	39.76	0.91

Source: Author's calculation; data obtained by Financial agency (e-mail)

Excluding observations with negative D/E in the separate group resulted in higher deviation for observations that more than 50% of their total assets were financed by debt (Table 7). Those observations intensively use financial leverage, i.e., debt is almost eight times higher than capital (equity). Space for future research is to investigate if those observations use financial leverage efficiently. Finally, over 9% of observations had a negative D/E ratio due to the negative value of total capital (capital & reserves). In the case of 9% of the total observations, debt is higher than total assets. In those cases, net assets are negative, which means financial instability and not respecting the going concern concept. Considering that the fundamental concept of capital is violated in such a situation, these 65 observations are excluded from testing the hypothesis.

Table 8: Frequencies, mean value, and Binomial test results for debt-to-equity (D/E) ratio

Year	Higher than 1 (code = 0)			Lower than 1 (code = 1)			One-Sample Binomial Test
	Mean	Count	% of n	Mean	Count	% of n	
Overall	7.97	314	50.00	0.56	314	50.00	0.000
2011	4.28	33	58.93	0.55	23	41.07	0.003
2012	6.46	32	55.17	0.52	26	44.83	0.013
2013	6.72	31	49.21	0.54	32	50.79	0.086
2014	2.58	33	51.56	0.58	31	48.44	0.039
2015	33	35	50.72	0.61	34	49.28	0.045
2016	3.99	32	47.76	0.58	35	52.24	0.121
2017	3.52	33	49.25	0.53	34	50.75	0.078
2018	5	34	50.75	0.52	33	49.25	0.047
2019	4.26	29	48.33	0.57	31	51.67	0.118
2020	7.6	22	38.60	0.6	35	61.40	0.468

Source: Author's calculation; data obtained by Financial agency (e-mail)

We tested the research hypothesis that large Croatian groups favor using lower financial leverage on an overall and yearly basis, i.e., for every observed year separately, to make more detailed conclusions. Considering that we divided the D/E into two categories (1 if D/E<1 and 0 if D/E>1), we used the Binomial test by which we tested if the defined categories occur with probabilities 0,6 (category 1) and 0,4 (category 0). Results suggest we cannot accept the assumption (p-value 0.000). Overall, an equal number of observations favor using higher and lower financial leverage (Table 8). Observing by years 2013, 2016, 2017, 2019, and 2020, we can accept the assumption, i.e., we could conclude that a more significant proportion of groups use lower financial leverage. Never-

theless, only in 2020, more than 60% of groups preferred owned sources of financing (D/E<1). On average, they are financing 64% of assets with equity. Opposed that groups that are intensively using financial leverage (D/E>1) in 2020 finance, on average, only 30% of their assets by equity.

Considering all results, we could not accept the first research hypothesis that large groups in Croatia favor using lower financial leverage. Above all, the reasons for this are marginal results observed over the years and rejecting statistical hypothesis on the overall basis—additionally, 9% or 65 observations with negative D/E ratio and negative value of total capital confirms the conclusion. When an entity has a negative total capital value, we cannot speak of financial stability and reasonable use of financial leverage. In those circumstances, we cannot say that large groups in Croatia are cautious in using debt and tend to finance their assets with capital (equity).

Capital maintenance assumes that the amount of capital at the end of the financial year is the same as at its beginning. Every profit-oriented entity would aim to increase net assets, i.e., the value of total capital (capital & reserves). Thus, operating with losses leads in the opposite direction and decreases the value of net assets. In such circumstances, it is not possible to talk about capital maintenance but about the ability of the company to survive, considering its financial stability is seriously endangered, and the going concern concept is violated. To analyze if groups had their capital level at least at the amount of subscribed capital, we used a ratio of subscribed capital and total capital (capital & reserves). This ratio indicates the proportion of invested capital by the owners in total available capital, including invested and earned parts of the capital. Preliminary results of the one-sample binomial test set at 10% reject the statistical null hypothesis (p-value 0.000) that 90% of observations maintain their capital at least at the amount of subscribed capital. As a result, it is impossible to accept the second research hypothesis. Considering that in the sample exists, more than 10% of observations with the value of subscribed capital higher than total capital, we supplemented our research objective to investigate the depth and reasons for those results.

Table 9: Descriptive statistics for D/E ratio for observations with a favorable and unfavorable ratio

	Count	% of n	Mean	Standard Deviation	Median
Unfavourable D/E ratio	167	24.10	4.04	25.20	1.09
Favourable D/E ratio	526	75.90	0.48	0.28	0.51
Total	693	100.00	1.34	12.44	0.53

Source: Author's calculation; data obtained by Financial agency (e-mail)

The majority of observations have a good value of the ratio, i.e., 76% have subscribed capital lower than total capital. More precisely, subscribed capital makes, on average, 48% (standard deviation of 28%) of total capital (Table 9). Furthermore, more than half of the total capital is earned capital for those observations. On the other side, 24% of observations had an unfavorable ratio of subscribed and total capital, i.e., in 24% of cases, subscribed capital was higher than total capital. This result indicates a negative value of other capital elements.

On average, almost a quarter of observations had subscribed capital four times higher than total capital. Still, the standard deviation of that result is exceptionally high (25.20), making the median a much better indicator. According to the median, 50% of observations had a coefficient less than 1.09, and in the case of the other 50% over that value. This result could lead us to conclude that the first 50% of observations only slightly exceed the threshold, but a more detailed analysis reveals more serious structural problems.

Table 10: Descriptive statistics for unfavorable D/E ratio by 'negative' and 'over one' observations

	Count	% of n	Mean	Standard Deviation	Median
Negative ratio	65	38.92	-1.70	3.65	-0.24
Ratio value over one	102	61.08	7.70	31.64	1.48
Total	167	100.00	4.04	25.20	1.09

Source: Author's calculation; data obtained by Financial agency (e-mail)

Out of 167 observations, 61% had a ratio of subscribed and total capital higher than one, with a very high average level of 7.70 and a standard deviation of 31.64 (Table 10). However, the median for 61% of observations was 1.48, meaning that 50% had a share of subscribed capital 48% higher than total capital, and the other 50% had a share less than 48% higher. Even worse case is that 39% of observations had a negative ratio. The result is possible when total capital is negative due to accumulated losses, which overcome positive capital elements.

Table 11: Results of Binomial test for D/E ratio

	D/E > 1			0 < D/E < 1			Binomial Test
	Mean	Count	% of n	Mean	Count	% of n	
sccr_ratio	7,70	102	16,24204	0,48	526	83,75796	0.000

Source: Author's calculation; data obtained by Financial agency (e-mail)

Again, we excluded from testing hypothesis 9% or 65 because of their negative total capital value, which represents significant noise in results (Table 11). Considering the importance of maintaining capital at least at the level of subscribed capital, we set a rigorous threshold that at least 90% of observations manage to preserve their total capital at least at the level of the subscribed capital. Therefore, using the Binomial test, we tested if category sc/cr>1 (code = 1) occurs with a probability of 0.9. Results show that we cannot accept the given hypothesis. The conclusion is even firmer if we consider those observations with a negative total capital value. Thus, large groups in Croatia do not maintain their total capital level, at least at the level of the subscribed capital.

To test if the distribution policies of the parent company and subsidiaries significantly reflect the total capital of large groups in Croatia, we excluded from the sample observation with a negative financial result for the year and a negative outcome of our equation (4). Therefore, the final sample includes 382 observations which we divided into two groups by the equation (4) result. The first group (code = 1) covers observations in which the parent company, together with subsidiaries, distributed less than 50% of net profit for the financial year, and the second group (code = 0) covers those observations in which the distribution ratio was over 50%.

Table 12: Mean value and frequencies of groups that distributed less and more than 50% of net profit (divNet)

Categories	Mean	Count	% of n
Distributed more than 50%	6,58	286	74,87
Distributed less than 50%	0,26	96	25,13
Total	4,99	382	100,00

Source: Author's calculation; data obtained by Financial agency (e-mail)

The table shows that only 25% of observations distributed less than 50% of net profit (Table 12). On average, they distributed 26% while the majority of net profit they retained in the capital, representing internally created sources of financing assets. Contrary to these results, almost 75% of observations that generated positive financial results decreased capital components (retained earnings, reserves, etc.) above the amount of the net profit for that year. In most cases, the decrease resulted from decreasing retained earnings (profit or loss brought forward). It is important to emphasize that 28% or 81 (of 286) observations had a negative value of profit or loss brought forward, and 5% or 14 (of 286) observations had a negative value of total capital. On the group level, for 20% or 57 (of 286) observations, profit or loss brought forward is

worsened (become more negative) despite the positive financial result for the observed year.

To test the research hypothesis, we used multiple regression analysis of panel data in which the dependent variable was total capital (cr), and the independent variables were a result of equation (3) (div) and net profit (NetPR). The natural logarithm of total assets was the control variable. The overall model is statistically significant and explains at least 70% of all variations. The results of the Breusch and Pagan test indicate that comparing OLS and RE, RE is an appropriate model (p-value 0.000), and the Hausman test, which compares RE and FE models, demonstrates that the FE model is suitable (p-value 0.000). Results indicate the existence of autocorrelation (p-value 0.0017) and heteroskedasticity (0.000). Thus, we used robust cluster error to obtain relevant results.

Table 13: Results of panel regression analysis – Ordinary least squares (OLS), fixed effects (FE) and random effects (RE), dependent variable: change in total capital, ΔCR)

	OLS		FE		RE	
	t	P>|t|	t	P>|t|	z	P>|t|
div	-1.67	0.099	-3.95	0.000	-3.60	0.000
NetPR	4.51	0.000	3.68	0.000	4.15	0.000
lnTA	3.90	0.000	3.46	0.001	3.68	0.000
_cons	-3.85	0.000	-3.13	0.003	-3.63	0.000
Number of observations	382		382		382	
Number of groups:			75		75	
Obs per group:						
min		1		1		
avg		5.1		5.1		
max		10		10		
F	16.76		12.66		21.73	
Prov > F	0.0000		0.0000		0.0001	
R-sq:						
within			0.2991		0.2841	
between			0.6441		0.6300	
overall	0.7881		0.7065		0.6989	

Source: Author's calculation; data obtained by Financial agency (e-mail)

The results of all three models indicate that distributed amount (div) has a statistically significant negative impact on total capital (Table 13). Therefore, the results suggest that we can accept the third research hypothesis but in a negative context. Thus, the distribution policies of the parent company and subsidiaries significantly reflect the total capital of large Croatian groups, but negatively.

Considering that our results indicate that large Croatian groups are inefficient in capital maintenance, we conducted analysis separately for efficient, inefficient, and overall observations to conclude regarding the most critical determinants in forming their total capital (capital & reserves). As previously elaborated, the dependent variable in our model is a proportion of change in total capital concerning the value of total capital from the current year (c_dcr). Additionally, we have chosen eleven relevant indicators for independent variables in forming and maintaining total capital. Next to composition elements of total capital, those indicators include return on equity (roe) as a performance indicator.

To determine if it is best to use the ordinary least square (OLS), fixed effects (FE), or random effects (RE) model, we applied appropriate tests. To decide if we should choose OLS or RE, we used Breusch and Pagan Lagrangian multiplier, and to select between FE and RE, we used the Hausman test. Thus, the Breusch and Pagan Lagrangian multiplier test for random effects for the overall model shows a p-value of 1.000, meaning that the RE model is inappropriate. The result is the same for the inefficient model (p-value 1.000) and the efficient model with a p-value of 0.4629. Furthermore, the overall model result of the Hausman test indicates that we should use the FE model instead of the RE model (p-value < 0.000, the empirical p-value was 0.000). The result is the same for the model with efficient (empirical p-value 0.0085) and inefficient observations (empirical p-value 0.000). Thus, for all three groups of observations FE model is appropriate. Wooldridge test for autocorrelation in panel data shows that there is no autocorrelation problem in the overall model (p-value 0.1471) and inefficient model (p-value 0.1661). Opposed to that, in the efficient model exists an autocorrelation problem (p-value 0.000). Modified Wald test show groupwise heteroskedasticity in all three models (p-value of 0.000). We used robust standard error to deal with heteroskedasticity in the overall and inefficient model. We used robust cluster standard error (clustered by n) to deal with heteroskedasticity and autocorrelation in the efficient model (Table 14).

Table 14: Results of panel regression analysis, dependent variable: change in total capital (ΔCR)

Independent variables	Overall		Efficient		Inefficient	
c_dcr	Coef.	P>|t|	Coef.	P>|t|	Coef.	P>|t|
c_sccr	0.076	0.000	-0.148	0,369	0.071	0,015
c_dsc	-0.039	0.532	0.039	0,036	-0.088	0,701
c_dlr	0.002	0.495	0.017	0,001	0.024	0,738
perlr	0.051	0.779	0.040	0,001	0.057	0,847
peros	0.068	0.773	-0.111	0,090	12.059	0,000
c_dsr	-0.021	0.164	0.008	0,743	-0.071	0,000
c_dor	0.001	0.818	0.000	0,839	0.164	0,245
c_drr	0.000	0.912	0.001	0,010	-0.003	0,508
per_drel	0.080	0.009	0.791	0,000	0.061	0,141
c_dmi	0.000	0.852	0.000	0,509	-0.018	0,087
roe	1.064	0.000	0.784	0,000	1.079	0,000
_cons	0.930	0.000	0.993	0,000	0.086	0,741
Number of observations	693		526		167	
Number of groups:	77		71		33	
Obs per group:						
min	6.00		1.00		1.00	
avg	9.00		7.40		5.10	
max	10.00		10.00		10.00	
F	71268.570		174.490		140518.990	
Prov > F	0.000		0.000		0.000	
Model	FE (robust standard error)		FE (clustered standard error)		FE (robust standard error)	
R-sq:						
within	0.979		0.748		0.982	
between	0.931		0.639		0.430	
overall	0.975		0.719		0.911	
corr(u_i, Xb)	-0.070		-0.216		-0.306	

Source: Author's calculation; data obtained by Financial agency (e-mail)

The final results show that all three models are statistically significant (p-value is 0.000). Additionally, all models explain the high proportion of the variability of dependent variables. The overall R-squared for the overall model is 97.5%, and for the inefficient model, 91.1%. A slightly lower R-square of 71.9% for the efficient model could lead us to the conclusion that additional determinants influence the group's total capital. Finally, individual results show use differences between the three models. The only statistically significant variable in all three models is the return on equity (roe). Moreover, observing all three models, return on equity is the most significant variable in case of inefficient observations. Nevertheless, analysis of the inefficient model shows that statistically significant independent variables are the share of subscribed capital in total capital, the proportion of owned shares in total capital, and changes in statutory reserves. In contrast to inefficient observations, statistically significant independent variables differ in the case of efficient observations. Thus, next to return on equity (coefficient 0.784) most important positive effect on changes in total capital has a proportion of changes in profit or loss brought forward (coefficient 0.791). Results lead us to conclude that observations that maintain capital efficiently are profitable and retain their earnings, i.e., increase earned capital which adds value to the group. Next to those two variables, a significant positive effect on the total capital increase have changes in the subscribed capital, changes in legal reserve, the proportion of legal reserve, and changes in revaluation reserves. Finally, by observing overall observations, three independent variables are statistically significant for changes in the total capital of large Croatian groups. Firstly, return on equity is the most significant one (coefficient 1.064), followed by the proportion of changes in profit or loss brought forward (coefficient 0.080) and the proportion of subscribed capital in total capital (coefficient 0.076).

Our sample includes a total of 77 large Croatian groups in which the parent company is a public limited company and was classified as a large group for at least six (6) years within the observed timeline. Research results indicated that, on average, large groups are inefficient in capital maintenance. Detailed information reveals that out of the total observations, 24% had subscribed capital higher than the total capital.

To make more concrete conclusions regarding capital maintenance in large Croatian groups, we decided to conduct an analysis that comprehensively includes all years covered by the research. Thus, we observed if large Croatian groups successfully maintain their capital long-term. Unfortunately, the results are even worse. Over 40% of analyzed groups (total of 77) decreased their total capital (capital & reserves), and 58% of groups managed to maintain their capital within all analyzed years efficiently. Analysis of efficient groups, on average, includes 9.267 years; in the case of inefficient groups, the average number of observed years is 8.625.

Efficient groups increased their total capital on average by 771 million HRK with a standard deviation of 1,311 million HRK. Half of the groups raised their total capital of less than 243 million HRK, and another half for more than 243 million HRK. The group with a minimum increase raised its total capital by 10.7 million HRK, and the group with the maximum increase by 6,733 million HRK. Regarding the type of capital, subscribed capital increased on average by 143 million HRK, which may result from business combinations. The sum of changes in total capital compared to the amount of total capital from the last observed year (TotalREL_perCR) result in a negative average value and a bad indicator for the analysis. The negative value on the overall level results from a negative change in profit or loss brought forward (ΔREL). Even seven (7) groups, with an increase in total capital within all observed years, had this negative change in profit or loss brought forward. Those are the cases in which the increase in total capital results from additional capitalization by owners, i.e., an increase in the subscribed capital. In one group, the increase in total capital is a result generated in the last observed year and not an increase in subscribed capital. The high negative mean value of -3.325 mainly results from of individual group, which over the years had an increase of profit or loss brought forward (ΔREL) by 1,428 million HRK but in the last observed year reported a negative value of total capital (-9,9 million HRK). Thus, it is more indicative of analyzing the median for the share of change in profit or loss brought forward (ΔREL) over the years to total capital in the last observed year, which indicates that 50% of efficient groups increased total capital for 13.4% within all observed years. Other 50% increased total capital by more than 13.4% in an average of 9.267 years. On the other hand, earned capital in the form of retained earnings averagely increased by 461 million HRK. Additionally, efficient groups averagely generated 1,036 million HRK of net profit (NetPR) during the observed years. An interesting indicator is the proportion of changes in profit or loss brought forward (ΔREL) in total net profit (NetPR) generated in all analyzed years. Results show that efficient groups retained 77.6% of net profit. Again, considering the high standard deviation (2.080), it is better to observe the median by which 50% of groups retained less than 40% of net profit, and the other 50% retained more than 40% of net profit.

Results for inefficient groups are, as expected, negative. For those groups, total capital decreased, on average, by 1,248 million HRK (standard deviation of 4,999 million HRK). For 50% of inefficient groups, total capital decreased by less than 199 million HRK, and for the other 50%, more than 199 million HRK. Out of 32 groups with a negative change in total capital, 10 or 31% had a negative value of total capital in the last observed year. Other 22 or 69% had positive total capital, but its value decreased over the analyzed period. The decrease is a direct result of cumulated negative financial results over the years

and, as a result, a decrease in retained earnings (or an increase of loss brought forward). Despite its unfavorable results, 10 or 31% of inefficient groups decreased their subscribed capital. The results confirm comprehensive findings that the financial result is the most significant variable for change in total capital for large Croatian groups with inefficient capital maintenance.

5. CONCLUSION

From an accounting point of view, the value of entities is measured by their net assets, i.e., their total capital. Thus, to increase their value, entities must operate profitably and retain their earnings for future growth and development of business operations. The capital increase assumes its maintenance, where capital maintenance occurs when an entity has as much capital at the end of the period as it did at the beginning. Analysis of 77 large Croatian groups in which the parent company is a public limited company from 2011 to 2020 shows us that 16 groups, a total of 65 observations, had a negative value of total capital. Those 16 groups are considered financially unstable with violated going concern concept. Out of the other 61 groups (628 observations) with a positive value of total capital, 50% finance, on average, 19% of their total assets by equity, and the other half finance, on average, 66% of their assets by equity. Considering the results, we concluded that large groups in Croatia are not cautious in using debt, and they tend to use high financial leverage. Future research could focus on the analysis if they manage to make higher returns due to financing its assets by debt. The major indicator of capital maintenance shows that large Croatian groups do not maintain their capital at least at the level of the subscribed capital. Over 16% of observations (observations with a negative value of total capital excluded) had the value of subscribed capital higher than the value of total capital. These results indicate that 167 or 24% of all observations do not meet the minimum capital maintenance requirement – the capital at the end of the period is the same as the capital at the beginning. Even 54 groups had an unfavorable ratio of subscribed and total capital for at least one year, but most had it in several years. Those groups are mostly included in observations with a negative total capital value. Thus, only two groups had a negative value of total capital during the overall analyzed period. Finally, 56 out of 77 large groups (or 73%) had the value of subscribed capital higher than the value of total capital in at least one analyzed year. All together leads to the conclusion that large groups in Croatia do not maintain their capital appropriately. Additionally, the research results suggest that distributed amount for observations with net profit has a statistically significant negative impact on total capital. Thus, the distribution policies of the parent company and subsidiaries significantly reflect the total capital of large Croatian groups, but negatively. Fur-

thermore, of those profitable observations, almost 75% distribute more than half net profit for the year. Finally, research results show that net profit and changes in retained earnings (loss carried forward) are the most significant capital components for annual changes in total capital. This research confirms the need for developing precise guidelines regarding capital maintenance and profit distributions as starting points for corporate sustainability.

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