ECONOMICS AND BUSINESS ADMINISTRATION FACULTY VILNIUS UNIVERSITY

Finance and Banking (English)

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MASTER THESIS

Verslo Ciklo ir Apyvartinio Kapitalo Valdymo Įtaka Nekilnojamo Turto Vystytojų Pelningumui Baltijos Šalyse	The Influence of Business Cycle and Working Capital Management on Real Estate Developers Profitability in Baltic Countries

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INTRODUCTION

Relevance of the topic. Multiple studies have aimed to analyze working capital management impact on firms profitability with evidence from various countries. 2008 financial crisis shown relevance of Working Capital Management in Real Estate companies because of importance of their ability to cover their operational costs, financial obligations and many defaults that occurred during crisis. This research is limited by choice for GDP to represent the business cycle. In order to receive full picture of economic outlook, economists calculate and compare numerous indicators.

Business always requires working capital to smoothly maintain its operations. Capital needs to be invested in machinery, land and inventories, therefore companies have to delay their account payables and collect account receivables early in the best possible manner in order to maintain optimal cashflows without damaging relationship with customers and suppliers. It is crucial to apply compatible working capital management conservative, moderate or aggressive strategies in order to meet long and short term, or so called cyclical working capital requirements. Sectors like real estate developers, tend to have higher net margins compared to other industries, due to their long cash conversion cycle. Cash conversion cycle could be defined as a period it takes for a company receive funds from customer, since account payables for goods and services.

Real estate sector has distinct working capital management approach than any other, due to it's long cash conversion cycle, which is mostly affected by long period of assets invested in inventories. Thus, the study is mostly focused on the question "what is the impact of these factors related with different economic cycles'' and how working capital should be managed by different times and cycles as it could be the key point for real estate company profitability, efficiency and liquidity risks management. Since most companies focus on profitability levels, this paper also briefly reviews company's financial health and possible risks that have to be maintained be executives.

The level of exploration of the topic. Previous studies were more focused on working capital management from company's own available cashflows dependent on cash conversion cycle and operating cycle, while leaving aside external financing sources.

The novelty of the Master thesis. The unique part about this paper, no such research was done in Baltic countries real estate developers sector and very few cases combined business cycle and working capital management impact on companies profitability.

The Problem of the Master thesis. Does business cycles and working capital management impact Real Estate developers profitability in Baltic countries?

Aim of the master thesis. This paper aims to investigate the influence of business cycle and working capital management on Real estate companies in Baltic countries, by analyzing and comparing Real estate developer in each Baltic country.

The objectives of the Master thesis.

1. Present theory of business cycles and working capital management concepts variety.
2. Analyze previous studies results of business cycles and working capital management impact on companies profitability.
3. Provide and identify a methodology for evaluating key factors influencing relationship between business cycles, working capital management and real estate developers profitability.
4. Summarize the results of the research and present the conclusions and suggestions of the work.

The description of the structure of the Master thesis. The theoretical part of the master's thesis reviews business cycle, working capital requirement, strategies, cash conversion cycle and its components. The theoretical part also reviews the previous ones research to examine the link between social responsibility and financial performance. In the methodological part substantiates the suitability of the methods selected for the study and describes the selection of the study indicators developed on the impact of business cycles and working capital management on real estate developers profitability.

The methods deployed by the Master thesis. Analysis of scientific literature of foreign authors, content analysis, descriptive statistics, mathematical statistics methods of correlation and linear regression analysis.

1. THEORY OF BUSINESS CYCLES AND WORKING CAPITAL MANAGEMENT

1.1. Business cycle concept

Burns and Mitchell (1946) define business cycle as follows*: "Business cycles are a type of fluctuation found in the aggregate economic activity of nations that organize their work mainly in business enterprises: a cycle consists of expansions occurring at about the same time in many economic activities, followed by similarly general recessions, contractions, and revivals which merge into the expansion phase of the next cycle; this sequence of events is recurrent but not periodic; in duration, business cycles vary from more than one year to 10 or 12 years."*

Real gross domestic product (RGDP) is an inflation-adjusted measure that reflects the value of all goods and services produced by an economy in a given year, but expressed in a base year prices. GDP divided by GDP deflator makes an equation of real GDP.

Some scholars simplify economic activity phases to two of expansion when economic activity rises from trough and contraction when economic activity declines from it's peak. However according to the Conference Board and the Organization for Economic Cooperation and Development OECD terminology, there are four stages of business cycle around while it deviates around it's trend. Expansion, downturn, slowdown and recovery. Expansion starts when economic activity is above the trend and grows faster than it until expansion reaches the peak. Downturn is a turn from the peak, when economic activity is still above the trend, but declines till the breaking point of the trend. Slowdown occurs when economic activity is below the trend meaning the growth reduces compared to the trend till it reaches business cycle trough. Recovery happens after economic activity reaches it's trough, bounce back from the bottom and rises till breaks the trend (see Figure (1)).

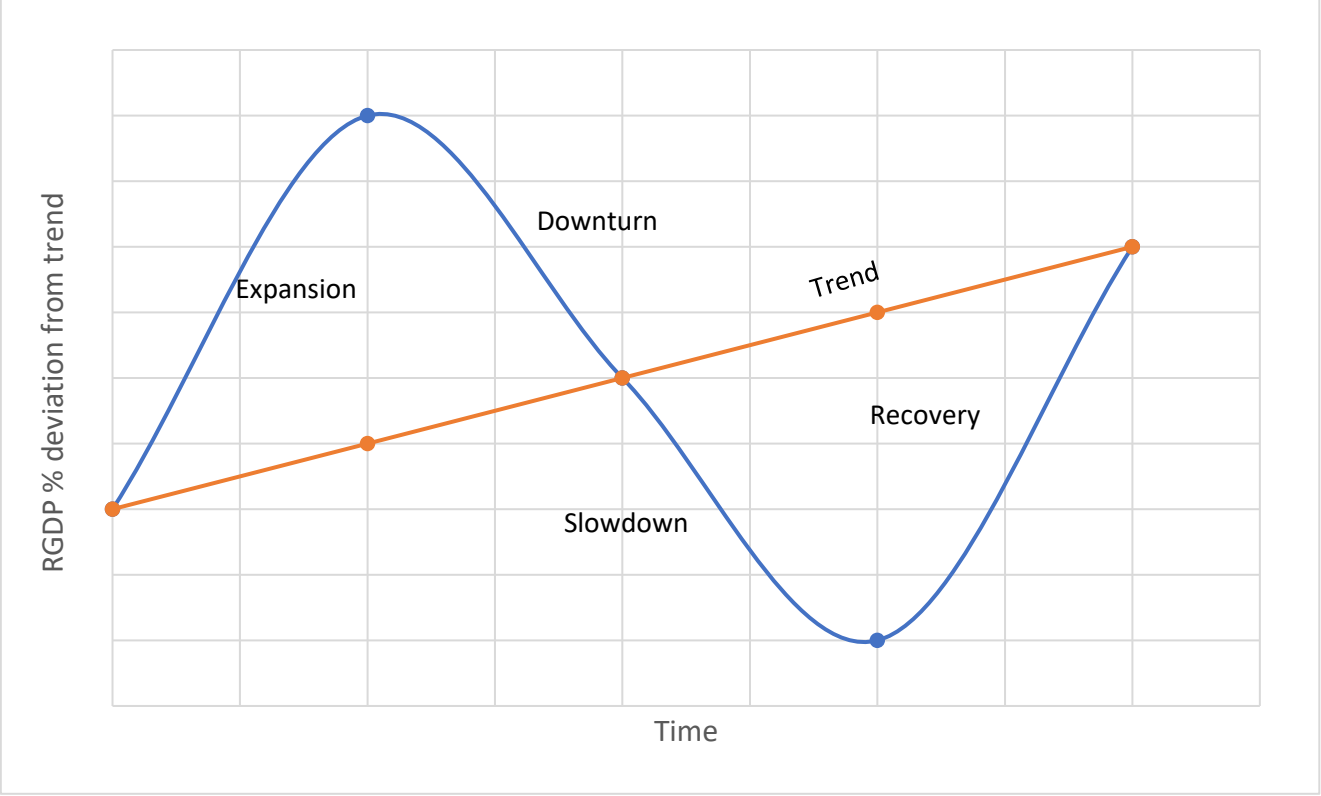
Percentage deviation between RGDP and its trend value is known as output gap. Significant numbers of output gap states thrive in the economy or even a boom, while higher negative output means economy experiencing recession or failing to utilize its resources effectively.

RGDP growth is most used toll by analyst and economist to define business cycle. Movements of GDP entail periods of expansion when economy growth is positive, and contraction or recession with a stagnant or negative economic growth. It could be stated that recession is defined when a country or region faces two consecutive quarters of negative real

GDP growth, however GDP growth fluctuates in short term and in one quarter GDP growth could be negative, next quarter GDP growth is at least slightly positive and in third quarter it is negative again, therefore recession cannot be defined so simply due to inconsistency. Due these limitations and the fact that economic variables are not fully synchronized, many countries have statistical and economic committees with a goal to apply more indicators and sophisticated methods than GDP growth alone in order to identify business cycle expansion and contraction. These organizations often rely on **Burns and Mitchell** (1946) foundations of business cycles they documented over time of a large number of economic variables, whom allows dating business cycles and possibly predict economy turning points. Due to country or region specifics, organizations derive and apply distinct methods for business cycle evaluation.

Figure 1

Business cycle phases



Source: Adapted from ECB, 2011

United States based The National Bureau of Economic Research (NBER) committee, known for dating business cycles, analyze variety of indicators focused on unemployment, sales

and production. NBER defines recession when total output, income, employment and trade shrinks significantly for approximately six to twelve months period.

European Central Bank (ECB) also points importance of business cycle measurement accuracy. As many commercial, academic, policy and government institutions business cycle measurement methods differ, ECB taking into consideration importance of data accuracy for the whole European region, developed their own measurement and predictions methods of business cycles. They describe it as a common measure by using concept of the deviation or growth cycle. Despite their model is created by ECB it is highly familiar with HP filter method as it focuses on cyclical fluctuations in economic activity around long it's long term trend. According to ECB, this model does not show high discrepancy between it's results and measurement derived from real GDP. Both shows the same direction of economic activity, highlights both peak and trough before the turning point at very close timestamp. These measurements mostly differ in depth of results, therefore business cycle measurement based on GDP could efficiently identify expansion and contraction periods required for this paper research.

One of the most eligible methods to identify business cycle that relies on RGDP alone is HP filter. Filter flattens data, by smoothening short term fluctuations appeared in the business cycle and highlights long-term trends. HP filter solving is very complicated and requires advanced matrix algebra. Regardless many supporters of HP filter, lately, this method has been criticised by Hamilton (2017) for several reasons: Filter generates false cycles and suffers produces outcomes that have no data generation basis. Also there is a gap of accuracy when smoothing parameter has to be chosen based on a matter of judgement of an ad-hoc situations. As a response for these gaps, Hamilton proposed his own method known as Hamilton Filter. Further studies compare these two filters where Hamilton Filter received criticism for the same reasons he criticised HP filter: filter is based on ad hoc assumptions and includes false cyclical structure in a economic data series.

Previous studies aimed not only to research Business cycle impact on firms performance, but their behavior and abilities to adapt. According to Cyert and March (1963), companies are failing to adapt due to uncertainty of companies sales results in bad economic times. If company is not planning major expansion, they are often expecting moderate sales growth results in the upcoming years, while economic shocks tend to disbalance their expectations and takes years for companies to adapt to new usual and enter recession with high forecasts, while exit recession and facing expansion with low expectations. Along with disbalanced sales, companies struggle to

make proper decisions regarding operational costs, production levels and inventories and their finances management.

Regardless many issues companies facing during recession, when companies with ineffective business models are facing downfalls and restructuring, many scholars found out that countercyclical strategies during recession tend to help outperform competitors and even achieve better results than during economic expansion period. There is an importance to distinguish between good costs and bad costs. Bad costs arise from increasing manufacturing, administration and other operational costs, while good costs could be defined as investments in marketing, product quality and innovation. According to Roberts (2003), businesses natural reaction to decreased revenue due to recession, is to cut costs in marketing, while scholar found out, they should do the opposite to survive recession and thrive after. (Gulati, Nohria, 2013) found out that 9 percent of companies come out of a recession stronger that before entering it. Authors argues that it is important for company decision makers to think long term and not only focus on short term issues, because if company only goal is to attempt survive recession by reducing costs, their revenues and profits highly probably will not return to levels prior recession. Their main idea is that for a company to successfully thrive during and after recession, is to deploy optimal defensive and offensive strategy – cutting costs is important, but it should not point into companies product quality, stop research and development or avoid to buy planned plants and machinery. Scholars also distinguished between large and medium-size companies in construction sector, stating medium-size companies often missing budget to adopt other strategies than cost leadership, while large ones have capability to apply marketing, niche focused and as well cost leadership strategies (Tansey, Meng, 2013). While one of the most highly cost saving options is to wave employees, in Great Recession period, high performing firms cut less and focused on increasing quality of their employees, meaning that they fired low performing employees and it fact it should have been done earlier (Nickell, Rollins, 2013). In addition to waving low performing employees, job market deepens with more qualified employees, therefore firms are able to re-hire employees at lower wages and benefits compared to what they might demand during bad economic times and scholars argue (March, Simon, 1958) that during such times workers tend to withhold their search for better opportunities due to uncertainty. Therefore other studies argues on the same topic from another angle, stating that companies are failing to adapt when overestimating future sales and retaining excess staff while facing recession and not re-staffing in recovery, because of expecting low sales.

In a recession some firms facing default risks, due to increased rates of short term funding credit rates and incapacity to meet obligations, they aim to decline their costs and default probability by reducing credit (Feijó, Araújo & Pereira, 2020). While some firms struggling to meet their obligations, scholars argues that recession is the best time to maximize profits from mergers and acquisitions. As it seems obvious opportunity to acquire assets at low prices, only few companies are willing to do it, due to focus on their own firm and not sufficient working capital during recession (Colvin, 2009).

In the end of recession, companies whom main goal was only to survive, will likely enter recovery and expansion phases with reduced sales, same old or even lower quality products, while their competitors will slice significant market share with acquired businesses, talents, increased marketing and product quality. Therefore it will be highly difficult for defensive companies to catch up with the winners. Regardless the pressure and losses of recession, it is a rare opportunity to resolve gaps in the current business model, cut operational costs and restructure to work more efficiently and effect of these lessons outlast even after recession ends.

In order to outperform the competition during the contraction period, real estate developers have to maintain sufficient working capital for necessary operational costs and investments during the recession. However, real estate developers are focused on long-term plans, therefore their ability to quickly adapt to business cycle turns are worse than other sectors.

1.2. Real estate financing models

Real estate project development process is long and complex, compared to any other industry process of product creation from scratch, to selling it and receiving cashflows. Developer, to finish the project from scratch to the very end, usually pass four stages of development . Planning phase before starting any other preparations takes place and includes soft costs for researching and solving environmental, legal issues and permissions necessary before construction. Architectural and engineering preliminary research is also done in this stage and falls under soft costs. After all planning is finished, developer is looking to prepare a land for construction, by installing necessary utilities and preparing infrastructure needed for machinery and this process includes hard costs. During preparation process, if project financed by loan, interest payments could be defined as soft costs as well with all fees that arise from paper work in this stage. Majority of costs in a Construction stage is will be hard ones, as the process in this

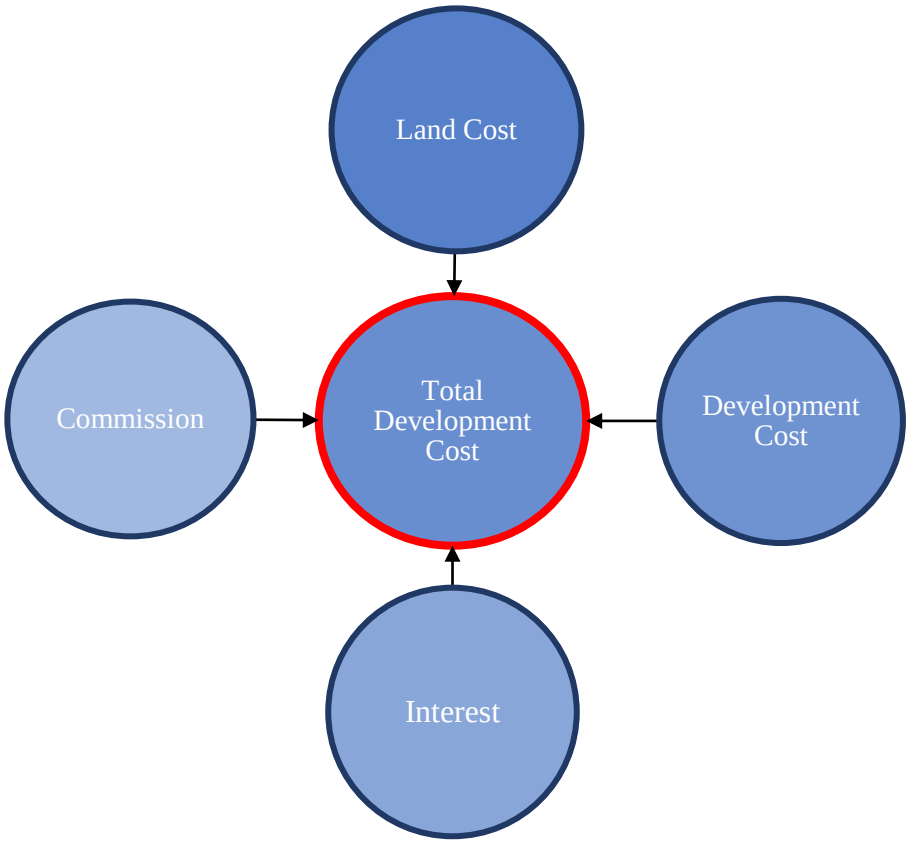
stage mostly concludes labor and materials, which mainly depends on a project size and complexity. Final stage comes as a stabilization of a project when only few final steps are left for locking revenues. Commissions are paid for leasing of commercial buildings and sales of housing projects (Brueggeman, Fisher, 2011)

There is a certain risk for real estate developers to not be able receive credit from a banks, which occurred in 2008 housing crisis, when banks investments appeared to be over exposed to real estate market related loans, mortgages.

Since debt interest of loans taken for project development is one of three main components of Total Development Cost (Figure 2), developer's goal is to fund project from it's own resources as much as possible, especially cost of land as it is the very first stage of the project, meaning debt for land has longest period till it will be repaid and most interest accumulated.

Figure 2

Total project development costs components.



Source: Adapted from Fisher (2016)

Based on developer's plans for the project there are different types of loans applied for different purposes. Acquisitions loans are used to purchase land, but most often such loans provide very little room for further plans of development, therefore acquisition loans rarely used alone. When a land is already bought, for further plans, development loan are to be exploited to fund building process. In practice these two loans could be used as a combination for the whole development process. The construction loan could be used as an alternative for development loan. Main difference between them is that construction loan is used by monthly withdrawals as a development process begins, instead of withdrawing the whole sum at once.

However the most common real estate development lenders are banks, because of their existing necessary infrastructure and knowledge on local market conditions. Financing model of funding a particular development project might include short and long term loans as one package. Short term loan is dedicated for a construction period till developer receives income from finished construction and long term loan is devoted as a security that short term loan will be paid at least in the long term, if developer struggles to finish the project or receive income from it.

While bank loans stays as the main source of financing real estate developers projects, World Bank widely supports innovative finance for real estate development as a non traditional forms of funding options such as real estate crowd funding, private lenders, partners, pension, insurance companies funds, credit unions and other financial mechanisms that are able to lend money (Grishankar, 2009). Nevertheless, innovative finance should not be viewed as an alternative funding form of finance, but as a supplementing to existing traditional form. Non traditional financing role is to provide support financial institutions in lending process and diversify credit risk by accepting a part of it. There is also an option of where government is interest to step in Euro Area to fill important gaps between senior loans and equity, by participating in a subordinated loan product. In a case where it is too risky for a financial institution to accept huge amount project to finance due to lack of diversification and risk to return ratio, government plays a perfect role to accept part of the risk as well with a part of returns made by developer (PricewaterhouseCoopers, 2011)

Banks or Funds specializing in real estate development funding have specific requirements for the borrower and differs in percentage of a project costs they are willing to lend, often vary from 65 to 80 percent or up to their set amount.

One of the most important terms from a lender to developer is that borrower's principals provides a guarantee, loan will be paid back at any scenario. Therefore it has to be backed up by

collateral, meaning that borrower as a option to repay debt will sell part of it's assets company or even personal assets, or has sufficient credit rating to take additional loan elsewhere to repay initial loan. Guarantee terms are a matter of negotiation between two parties and could be full or partial obligation to repay debt.

In a prior studies, scholars examined some cases to demonstrate traditional and non-traditional financing models being combined in order to fund exceptionally huge projects. The Battersea Power Station housing and commercial spaces development project was in a one company hands with approximate value for gross development of 8 billion GBP. Debt-equity financing was selected to finance the project from non-domestic investors, pension funds and international banks. In addition to the real estate project part, public sector guaranteed 1 billion GDP for rail infrastructure extension (Squires, Hutchison et al, 2015). In a cases of a high value projects, multiple lenders are the best and sometimes the only options to split the risk and provide full lending amount. Also, in this case the size and the value of a project to the country, attracts even public sector funds due to developer goal to revive useless former power station closed in 1983.

1.3. Real estate developers working capital management strategies

Working capital is known as Current assets minus Current liabilities, its components often vary depending on a business industry and are defined in financial statements (see Table 1) . Real estate developers have a difficult task, to forecast their cashflows for distant period, therefore it is extremely difficult to manage working capital and estimate the needed levels.

Table 1

Working capital in financial statement

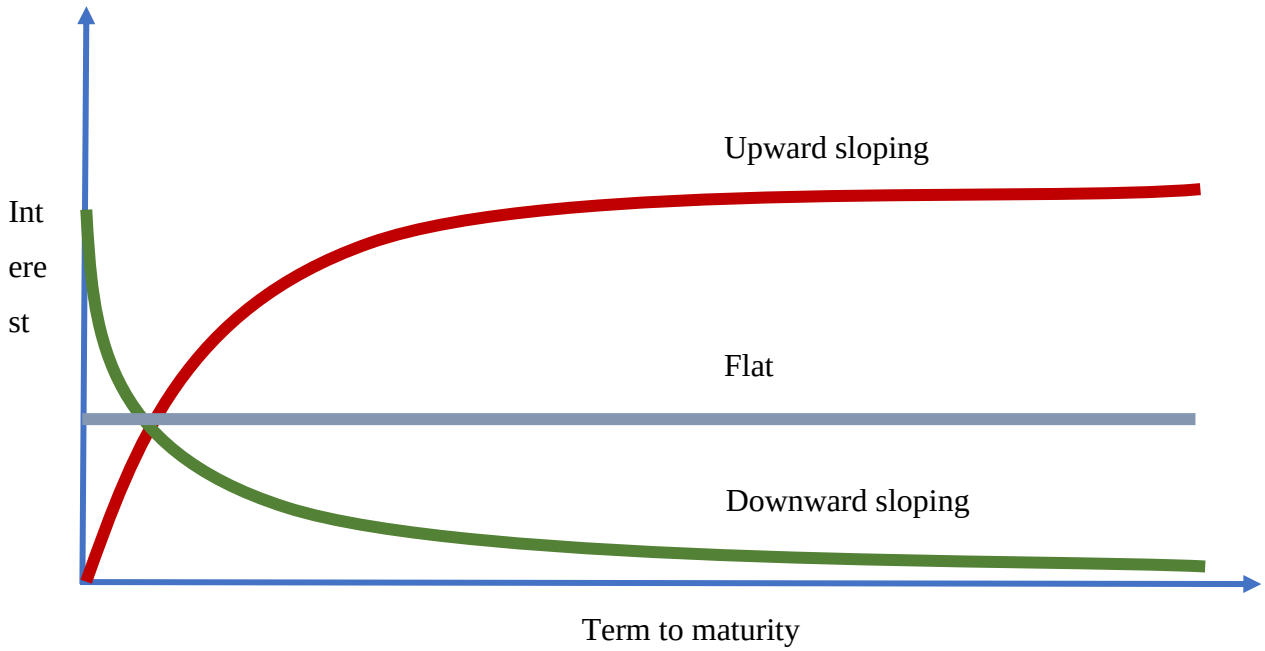
Cash and cash equivalents	Short-term credits
Receivables	Accrued taxes
Inventories	Interest from long term
Short term securities	Account payables
Other current assets	Other current Liabilities
Total current assets	Total current Liabilities

Source: Adapted from Graham, McGolrick 1937

Firms have to forecast their cashflows for exceptionally long cash conversion cycle, to be able cover their financial and operational obligations. Regardless the developers experience in managing long term projects successfully, there is a certain risk developer is exposed to, that in a longer period some economic conditions, such as labor, raw materials costs and interest rates for loans could change and negatively affect the initial project plans. Cash conversion cycle could be used as a base point on how the firm funds its required investment in operations. For some firms, differentiation between permanent and seasonal funding has to be established. It has a role in describing conservative and aggressive funding strategies. In a case of a simple business model, where sales are constant and funding requirement tends to be permanent. In a more complex cases, when firm's revenue is cyclic, its operational costs fluctuation will cause a need for a cyclical funding requirements in addition to the permanent minimum requirements (Gitman and Zutter, 2014).

Figure 3.

Yield curve types



Source: Adapted from Kettel (2002)**.**

According to the macroeconomics theory, short term interest rates normally are lower than long term rates. The yield curve of bonds with equal credit quality but different maturity

dates is usually upward sloping (see Figure 3), that is because long term lenders accepts the risk caused be long term uncertainty, therefore they have higher reward for taken risk ratio.

Regardless higher costs, long-term finance enables to ensure longer period funding and avoid the risk of short term rates increase. Cyclical short term funding creates exposure for a firm to fail acquire funding it's cyclical operations when needed, which could be ensured with long term loans.

Working capital requirement peculiarities

Hawawini (1986) widely criticized traditional definition of working capital which is strictly tied with companies operating cycle. Author suggests to consider working capital as a equation of current assets deducted by current liabilities on accounting level instead. He further argues that working capital cannot be viewed from the operations point of view, because of outside finance sourcing, as various types of loans should also be considered as a tool to finance its operations. Optimum working capital requirement should be every company's executives target to maintain risk and efficiency balanced. Insufficient levels of current assets might lead company to liquidity shocks and issues to maintain further operations, such as production continuity Horne, Wachowicz, 2004). Following difficulties caused by insufficient working capital requirement, it has been indicated as major reason of defaults (Shin, Soenen, 1998). On the other hand, the excess of current assets, might lead executives to frivolous decisions, when available cash could be spent for unnecessary purchases, higher bonuses, dividends or overspending.

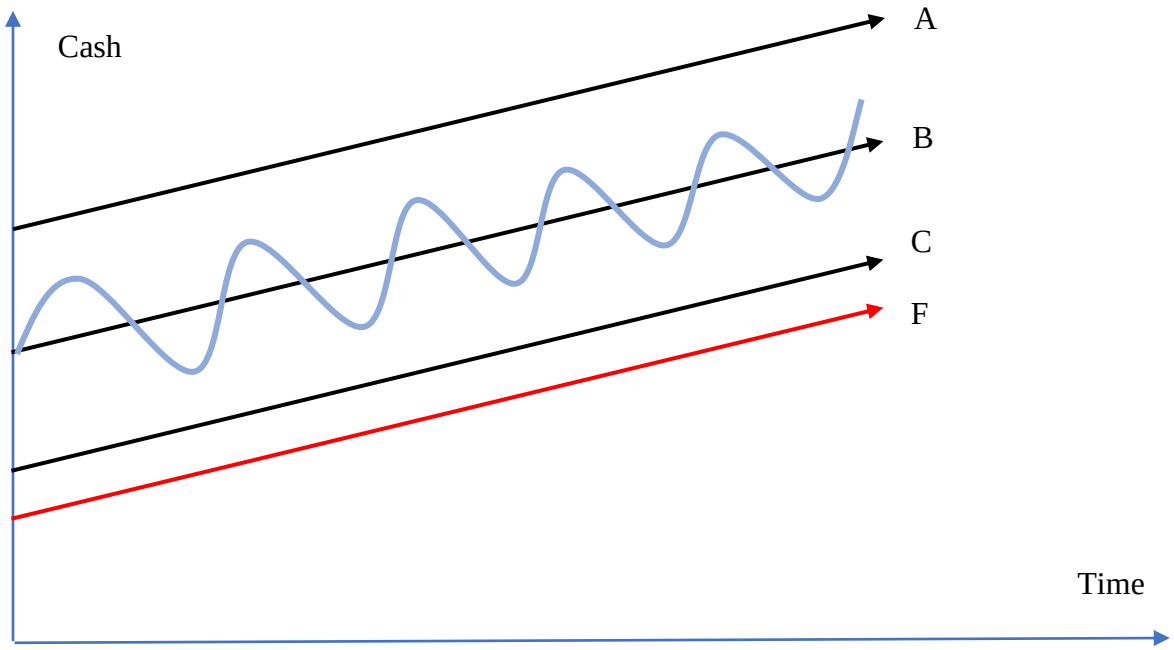
According to (Figure 4), working capital requirement is floating, therefore it is up to company's executives to choose working capital management strategies, based on a requirement and its cyclicality. Each black line represents working capital of a company, based on its strategy and a blue wavy line represents cumulative capital requirement and based on company expands over the time, this measurement also increases over time. F line stands for company's own cash for operations, A line stands for conservative strategy, B is for moderate one and C for aggressive. It is further explained in following paragraphs.

It is important to point out that working capital requirement is directly dependent in amount of sales, however previous studies argues to not calculate working capital requirement base on expected sales, as Nadiri and Rosen (1969) findings states, that account receivables could

be significantly damaged by not received debts, because of shocks caused by recession and they are hard to be forecasted. There are different methods applied to forecast working capital requirement, however from the first sight, the most suitable ones, lacks precision, i.e. method based on sales could not work for a new companies with few or no records and for a companies with history, it could be misleading, as past sales could not guarantee future sales. One of the methods that focuses on more current events is based on Operational cycle (see formula 1):

Figure 4:

Working capital requirement and strategies



Source: Jordan (2002).

Given that working capital requirement is funded by their own assets and debt, there are few theories how executives uses them to achieve best results for stakeholders. Pecking order theory introduced by Myers and Majluf (1984) companies prefer to use cash on hand over the debt for financing and prefer the debt over funding by new equities. This theory also states that higher debt level in a company correlates with higher risks and growth opportunities. Contrary, to this statement, Pratheepan and Banda (2016) argues firms should have lower debt to increase growth opportunities. Previous studies shown that real estate developers debt to equity ratio is considered to be high, compared to other industries, meaning that it requires outsource funding

for it's projects and operations. Moreover, company profitability has a strong influence on the methods of working capital planning and control.

Conservative strategy peculiarities

Conservative strategy as the naming suggests, refers to security of a company and under this strategy, company's cyclical and permanent working capital requirement are funded with long term debt. Previous studies findings by Guimaraes and Nossa (2010) suggest that excessive working capital amount indicates better company financial health. Furthermore, companies that applies conservative working capital strategies, tend to be short term lenders of their working capital excess from their cumulative capital requirement, otherwise they end up in excess unused cash affected by inflation (see Figure 4).

Despise the better health of a company and lower risk, under conservative strategy, previous studies associated this policy with lower returns (Weinraub, and Visscher 1998). Due to company's main goal to maximize utility and returns, conservative strategy tends to be more transitional than permanent. Case of Australia, shown that during confrontation with global financial crisis, led more than a half of companies switch to conservative strategy by tightening credit policies and more frequently reviewing working capital policies. As well with review of policies, companies aimed to reduce expenditure and inventory to secure liquidity, liquidate debts. Companies also focused to cut cash conversion cycle instead of focusing on sales.

Moderate strategy peculiarities

Moderate strategy users aims to match their long term working capital requirement with long term debts and short term, or so to say cyclical requirement with short term debts. Companies assets and long term usually finances often covers both long term and cyclical requirement, however in case when long-term debt is not sufficient to cover working capital requirement, the remaining part is funded by short term debts, which causes credit risks. It might be extremely difficult and costly for a company, to constantly fund it's cyclical operations with credit. Also, in a (Figure 4)**,** it is visible, that company anyway might end with some surplus left on account, therefore in order to maximize utility of moderate strategy, companies have to frequently lend excess money for short term periods.

Aggressive strategy peculiarities

Aggressive strategy as the naming could suggest, is opposite to conservative strategy and aims to predict and finance needed long term funding with long term debt and no excessive balance left, while cyclical requirement fluctuations purely funded by short-term debt. While conservative and moderate strategies aims to cover cyclical requirement, aggressive strategy heavily relies on short term funding, which implies struggle to receive credit once it is needed and interest rate fluctuations causing uncertainty about funding costs in the future. As short term financing is usually cheaper, well managed aggressive strategy have advantage, because it relies on less fixed long term debt and short term debt that purely depends on requirement at that moment, while well managed conservative strategy re-invests surplus from long term debt to short term financial instrument, it anyway shows inferior results compared to aggressive strategy. To choose a strategy, executives highly depend on the proportion of company's fixed and cyclical requirement. Worth to mention, that aggressive strategy is more easily applied for large companies, as they have better credit rating, which provides a significant certainty to receive credit on demand, than small and medium companies. It is executives decision to choose working capital strategies on behalf of shareholders taking into consideration their risk tolerance, returns preference and in general company's expansionary policies.

In a previous studies, scholars argues on advantages of aggressive strategy as it indicates higher return and risk ration, while conservative strategy tends to show lower risk and return ratio (Weinraub, Visscher, 1998). Similar results found by Smith (1980), stating that chosen management policy correlates not only with risk and profitability, but as well with its expansionary policy and value of a company. Study from real estate sector in India examined financial ratios such as current and liquid rations impact on companies profitability. Current ratio which shows company's ability to pay back debts within 1 year period, resulted to have significant negative correlation with companies profitability, when 79% of ROA changes were explained by Current ratio changes and even 92% could be explained by liquid ratios (Bhatia, Barwal, 2015). Rationale behind these results could be decreasing financial liabilities triggers higher profit margins, as less is paid for debt interest.

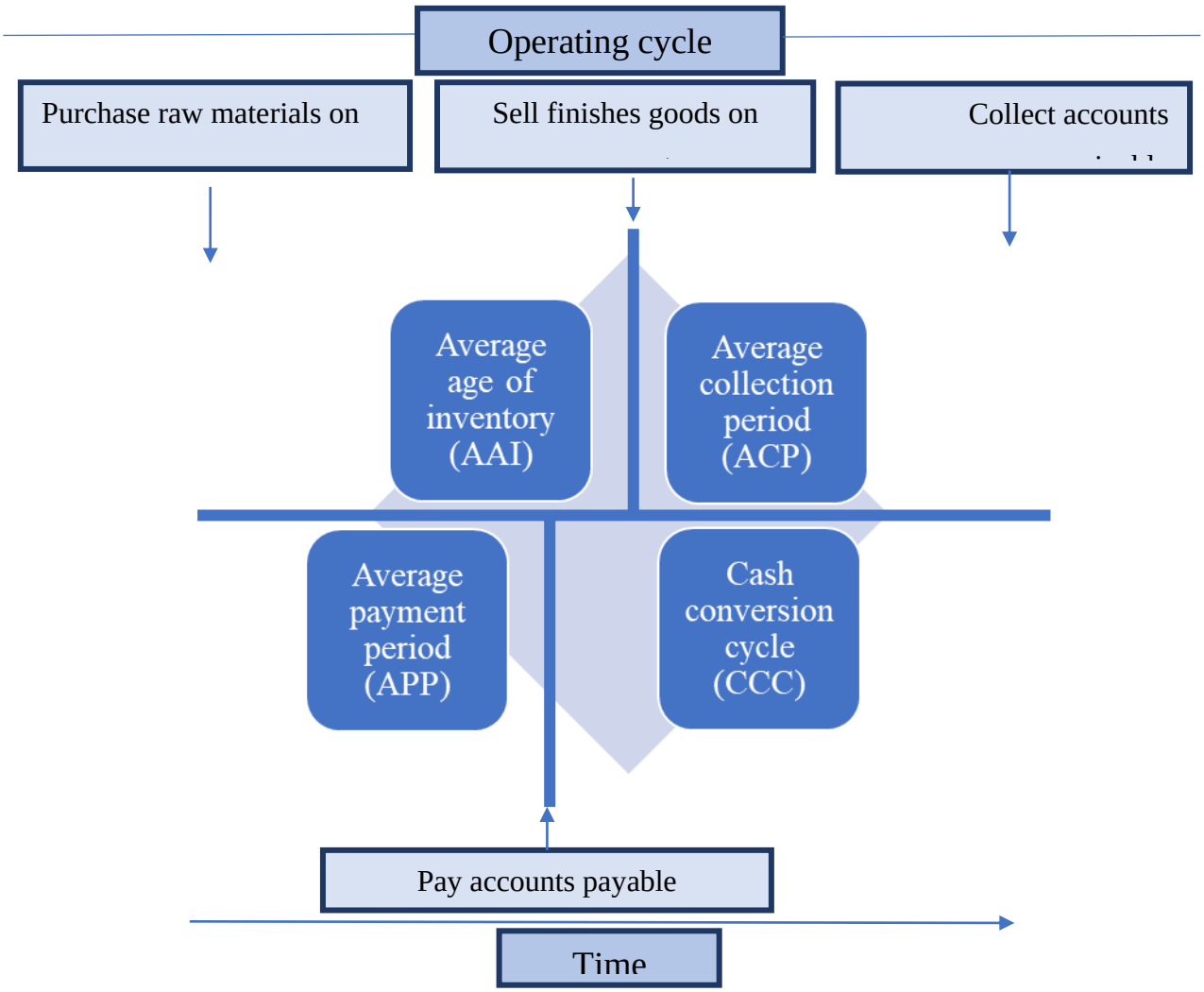
Working capital is further split into management of each Cash conversion cycle components, later examined in following paragraphs.

1.4. Cash conversion cycle management

Scholars previously used CCC as a measurement of working capital management strategies to examine the relationship between profitability and working capital management of US companies. Jose et al. (1996) received interesting results, pointing that shorter CCC defines aggressiveness level of working capital management strategy, while research shown significant negative relationship between CCC and profitability, stating higher profitability is achieved by aggressive working capital management. Negative relationship results between cash conversion cycle and profitability received also by Shin and Soenen (1998) in US manufacturing firms.

Figure 5:

Timestamp of cash conversion cycle



Source: Adapted from Jordan (2003)

Scholars also argued that cash conversion cycle affects not only profitability, but is highly related with a company's liquidity and default risks (Schilling, 1996). Study pointed association of CCC with minimum and optimal levels of liquidity, which indicates increasing CCC from its minimum level required for liquidity, then liquidity level also increases and vice versa, when CCC decreases from minimum level, liquidity level decrease as well.

According to the Figure 5 it is visible that cash conversion cycle begins somewhere in the mid of Average Age of Inventory, at the point when Average Payment Period ends and Account Payables are processed to the supplier and closes in the end of Average Collection Period.

Operating cycle management

A firm's operating cycle (OC) is the time from the beginning of the production process to collection of cash from the sale of the finished product. The operating cycle encompasses two major short-term asset categories, inventory and accounts receivable.

As operating cycle contains sum of AAI and ACP, in other words it means period of obtaining raw materials, producing goods, storing them in warehouse, making a sale, having receivables from a sale and finally receiving cash from. Optimally short operating cycle requires less cash to maintain its operations, because of demonstrating high turnaround rate, meaning that company is able to focus on higher level of productions at lower margins. While contrary, some businesses having exceptionally operating cycle tend to focus on higher margins.

Account payment period management

Account payables refer to entries made in a general ledger representing company's short term obligations to pay its creditors, suppliers and appears on a balance sheet. These entries usually arise from wages, short term debt, interest from long term debt, purchases from suppliers and taxes. Account payables are considered to be a major source of short-term financing for any business as, payment for purchases often is delayed for 30 days, depending on negotiated terms. It results as a unsecured type of loan, because of transaction for goods and services is not based on any signed formal note and is left as a purchaser agreement to transfer invoice amount to seller at some point in the future (Gitman, Zutter, 2010).

APP is known as the final component of CCC and depending on a country and business agreements this ratio split into two parts: firstly the period from purchase of goods or services and when seller provides invoice for payment, secondly the time it takes for buyer to make a payment inside the business and for a banking systems to clear the payment to the seller. If agreement between the seller and buyer does not include any discounts, the main goal for buyer is to delay the payment as much as possible without risking to lose supplier and good credit rating. In such case payment should be done on the last agreed payment day in order to avoid any fines related to interest for excess delayed period and credit rating damages. APP period in another words could be free loan from a supplier, that often allows to sell already made goods and pay payback the seller. On the other end, account payables might have a negative sides as well – depending on a business model, same tactics might be applied by company clients. Seller also might offer discount for those who pay by cash immediately, therefore from the first sight free loan from a seller for some period could already include costs for paying later.

Research by Deloof (2003) shown negative correlation APP and firms profitability, which defined that account payables policies have and impact on firms profitability, as one of the reasons, sellers applied discount for paying with cash. Boisjoly (2009) study results shown that during a 15 year time period researched companies account payable turnover increased which contradicts with a with the statement, that during the same period some large companies extended their payment period to suppliers by 15-30 days. It could be explained taking into consideration number of large companies compared to others and the probability that such changes were not successful.

Average collection period management

The second component of the CCC is the average collection period (ACP). ACP defines how long for a company it takes to receive funds to its accounts, since the sale of goods or services. It refers account receivables and total sales. Account receivables defined as one of a current assets in a balance sheet. There are very few types of account receivables, as they often come from credit sales, short term notes lent, interest, tax refunds and etc.

The purpose to manage account receivables is to shorten ACP as much as possible, to reduce time when company's funds are frozen. Complexity of receivables management comes from the goal to receive credit on a shortest possible period, without losing sales due to collection

pressure pointed towards clients. To ensure account receivables, company should get familiar with its customer first. Basic research on customer's history of previous obligations, current ability to repay credit according to their financial statement, debt to equity ratio and any assets that could be sold to repay debt in case of default, could bring security to sell on credit to seller. General evaluation of economy conditions adds some general understanding about all customers abilities to pay. In previous studies, Deloof (2003) researched Belgian firms from a 1992 – 1996 and its analysis captured interesting results, that confirms firms profitability is positively affected of shortened ACP ratio. However, account receivables received earlier than expected will not necessarily increase firms profitability, due the deviation from the initial plan, therefore company may end up with unexpected cash on their hands.

Due to the real estate developers industry effect, credit selection technique mostly applies to the developer clients using rent services, since rent usually is paid monthly, therefore before signing long-term contract, developer must check client ability to pay in the future. On the other hand, property from developer most usually bought by individuals with cash or mortgage from the bank. For this reason, obligation to check their credit possibilities is transferred more to the client.

In some European countries rental contracts are or at some point were linked to inflation calculated by Consumer Price Index, partially covering landlord's inflation losses. On the other hand, business rental contracts might be linked to their turnover. Such practices differs by countries, because of their regulations and business practices, however such tools helps to mitigate risks and add diversification for real estate developers income, especially for a long term contracts.

Average age of inventory management

Study by Rafuse (1995) argues that poor stock management could be called as a waste of recources, by stating that stock is basically a physical evidence of wasted time, which managed well could improve cash flow, reduce operation costs and capital requirement as none other management area. According to the Deloof (2003) findings, there is a significant negative relation between gross operating income and average age of inventories. It is another point of judgement on such reasons, because either decrease in sales leads to higher inventory levels and lower revenue for companies or it could refer to costs to related to inventories turnaround. In a

study by Boisjoly (2009) found out that during a fifteen years period, companies inventory turnover increased, indicating that companies inventory management method improved.

Ross et al. (2003) defines inventory as a composition of raw material for production, working in process and finished goods. Farris and Hutchison (2002) argues that optimum inventory is the exact amount, required to for immediate production, however inventory management have several practices highly dependent on business and inventories type, such as make to order or just in time procedures. Lean manufacturing initiatives with a forecast of operations expansion, quality programs based on computer machines to minimize steps number and minimizing supplier numbers to simplify and smoothen inventories management process. As inventories mostly depend on anticipated sales, those firms who delay production decline, will end up with accumulated amount of inventories in case of demand shocks caused by recession. Contrary, during a times of recovery companies may struggle to increase inventory levels to meet increasing demand, however companies manage to do it early, improves their chances to get advantage in the market. One, of companies inventory management objectives is to weight costs of excess inventory levels versus costs of lacking inventories. However high inventories could be associated not only with costs, but with liquidity level, as inventories often stated to be short term assets that could be easily liquidated, therefore excess of inventories, could be a reason of cash shortage and liquidity risk.

2. BUSINESS CYCLE AND WORKING CAPITAL MANAGEMENT IMPACT ON REAL ESTATE DEVELOPERS PROFITABILITY EVALUATION METHODOLOGY

2.1. Business cycle and working capital management impact on real estate developers profitability evaluation methods

Real estate is an important part of the economic potential. It accounts for the huge part of each country's national wealth. Previous studies shown importance of business cycles and working capital management impact on a companies success.

The following research hypotheses are put forward to test the relationships of the conceptual model:

H_1: Business cycle phases have a statistically significant impact on financial results.

H_2: Working capital have statistically significant impact on financial results.

Stages of empirical model:

1. Perform analysis of 2008 – 2021 financial results, by calculating various ratios and examining them;
2. Determine the strength of the correlation between the financial performance and performance influencing factors;
3. Perform linear regression analysis
4. Formulate the regression equation and its parameters are evaluated.

2.2. Real GDP and companies financial data collection methods

For the research purposes, the aim is to retrieve secondary data of financial statements of one biggest real estate developer in each of Baltic countries: Estonia, Latvia and Lithuania. The main criteria that overrules company size in research selection, is a company lifetime which is required to be no later than 2008, which indicates latest recession in the economy, affected real estate the most. Lifetime selection will allow to receive full scope of all business cycle phases, starting from downturn and moving to slowdown, recovery and expansion. Financial statement will allow to perform analysis related to working capital, return on assets and other financial ratios. For the purpose to find impact on companies performance during various business cycle phases, Real GDP will be utilized in order to define business cycle phase, which will be available quarterly.

2.3. Evaluation models of business cycle and working capital management impact on real estate developers profitability

Working capital and financial ratios models

The analysis aims to find a correlation between business cycle phases, working capital management and companies profitability, therefore various ratios will be used for analysis. Financial results of each company for 2008 – 2021 period will be calculated separately and independent variables affect on dependent variables will be calculated for each company.

The financial results of a company were chosen to be based on the return on assets. The indicator that best describes the efficiency of the use of the bank's assets. The higher the value of the indicator, the more profitable the company's assets are used. The return on assets (return) ratio is calculated according to the following formula (see formula):

$$ROA = \frac{Net\ Earning\ After\ Taxes}{Total\ Assets}$$

(Formula 1)

Since real estate companies maintain inventory considered to be not liquid as it has long period to receive cash from inventories. Quick ratio is even more accurate indicator of liquidity because take into consideration only more liquid assets, such as cash and debtors by leaving away inventories. It is calculated as follows (see formula 2):

$$Quick\ Ratio = \frac{Current\ Assets - Inventories}{Current\ Liabilities}$$

(Formula 2)

The current ratio measures a company's ability to meet its short term liabilities. A higher current ratio indicates a higher degree of liquidity. The amount of liquidity a company needs depends on a variety of factors, including the size of the company, accessibility to short-term funding sources such as credit and the security of its business. It is calculated as follows (formula 3):

$$Current\ ratio = \frac{Current\ assets}{Current\ liabilities}$$

(Formula 3)

The debt ratio measures the share of total assets financed by the company's creditors. The ratio discloses the company's capital structure and financing policies. The higher this ratio, the greater the amount of debt money used to achieve financial results. The ratio is calculated as follows (see formula 4):

$$Debt\ ratio = \frac{Total\ liabilities}{Total\ assets}$$

(Formula 4)

The ratio discloses the company's capital structure and financing policies. The ratio shows the amount of assets to one unit capital. A high indicator indicates a lower company's capital risk.

Further on, the main components of cash conversion cycle, ACP, APP, AAI and CCC itself, described in 1.4 paragraph will be calculated as well to examine each component correlation with financial results.

The ratio of current assets to total assets helps to understand the company's investment policy and provides a clear picture of how much current assets are used to meet working capital needs. An aggressive approach is possible when a company has a small amount of current assets, so the ratio of current assets to total assets is low. On the contrary, the company will take a conservative approach with a large amount of current assets. The ratio is calculated as follows (see formula 5):

$$Current\ Assets\ to\ Total\ Assets\ ratio = \frac{Current\ Assets}{Total\ Assets}$$

(Formula 5)

The ratio of current liabilities to total assets gives an idea of the company's financing strategy. A higher level of current liabilities compared to the level of total assets will be in line with the riskier strategy of the company. The ratio is calculated as follows (see formula 6):

$$Current\ Liabilities\ to\ Total\ Assets\ ratio = \frac{Current\ Liabilities}{Total\ Assets}$$

(Formula 6)

Debtors and receivables arise when a company sells on credit. Debtors turnover refers to the number of times borrowers turn over each year. In general, the higher the turnover value of

the debtors, the more efficient the management of the company. The ratio is calculated as follows (see formula 7):

$$Debtors\ Turnover = \frac{Credit\ Sales}{Average\ Account\ Receivables}$$

(Formula 7)

Inventory turnover ratio shows a company's ability to convert its inventory into revenue by selling it. This ratio indicates the number of times the inventory has been converted into sales during the particular period. The ratios is calculated as follows (see formula 8):

$$Inventory\ Turnover = \frac{Cost\ of\ Goods\ Sold}{Average\ Inventory}$$

(Formula 8)

Cash conversion cycle (CCC) measures the period in days it takes a company to realize investments of inventory into cash income as a result of their final production turned into sales. In other words CCC is a measurement for business to calculate how long their financial resources invested in operations will be froze until cash is collected from customers. CCC is a cornerstone in the working capital management and the liquidity goal. According to scholars, shorter CCC cycle defines lower capital requirements for the company (Gitman and Zutter, 2014). However, regardless lower capital requirement it is stated that positive CCC gap is usual in many industries and may enhance chances to ensure their business operations. CCC equation formula is defined by three components: operating cycle deducted by account payables or sum of average collection period and average age of inventory deducted by average payment period (Formula 9).

$$CCC = OC - APP$$

Or

$$CCC = AAI + ACP - APP$$

Formula 9

Operating cycle is measured in elapsed time by summing the average age of inventory (AAI) and the average collection period (ACP). Operating cycle technically could be also defined as a sum of Average Payment Period and Cash Conversion Cycle. The ratios is calculated as follows (see formula 15):

$$OC = AAI + ACP$$

(Formula 9)

Average payment period (APP) defines how long it takes for a company to make a payment, since the purchase of services and goods. APP equation includes account payables and cost of good sold (Formula 10).

$$APP = \frac{Account\ Payable}{Cost\ of\ good\ sold} X\ 365$$

(Formula 10)

The average collection period could be split in two parts: firstly a period since the sale to the customer made payment and secondly, till funds are cleared by the bank into company's account. ACP formula contains account receivables and sales (see Formula 11).

$$ACP = \frac{\text{Account Receivables}}{\text{Sales}} X\ 365$$

(Formula 11)

Average Age of Inventory (AAI) is the average days count it takes for a company to sell its inventory from since it was added to stock and is used to define sales efficiency. The objective of inventory management is to turn inventory at highest speed to reduce storage costs without loosing sales from stock shortage. The following formula is used to calculate the length of the supply period (see Formula 12).

$$AAI = \frac{\text{Inventories}}{\text{Cost of good sold}} X\ 365$$

(Formula 12)

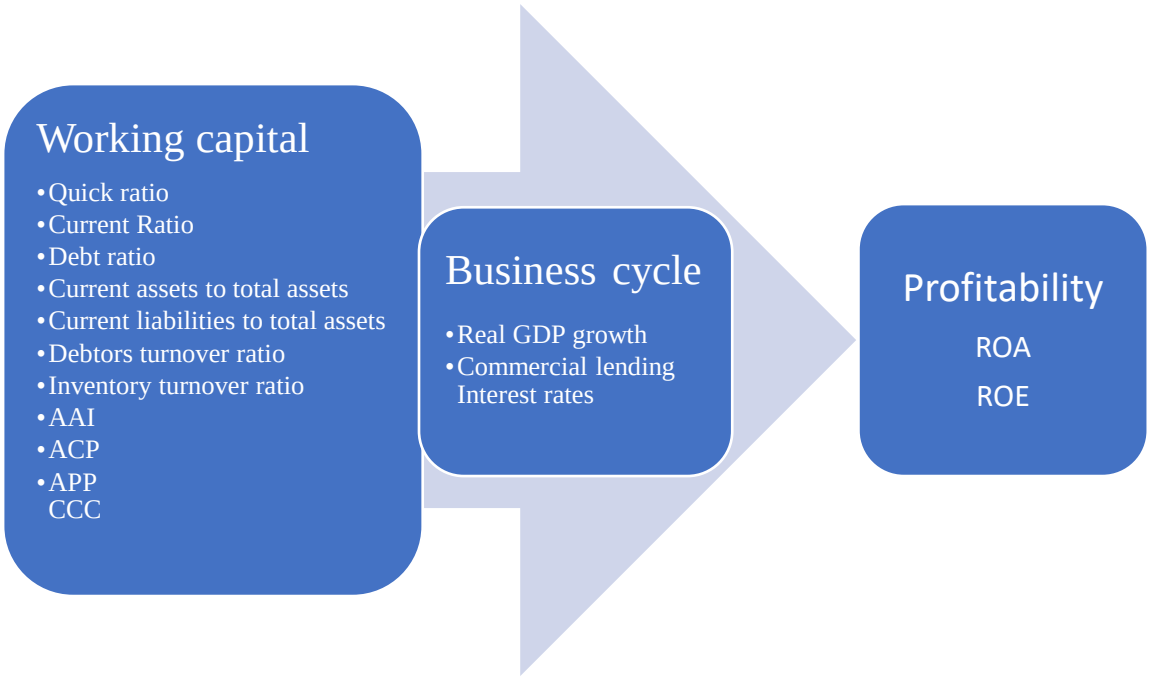
These calculated ratios will enable to proceed further with correlation and regression analysis, as their dependent variables correlation with independent variables and its significance will be considered as a results of this study.

Pearson Correlation analysis concept

After ratio analysis done, their interpretation will be further assessed for their impact on companies profitability. Correlation analysis is a statistical method that does not reveal the occurrence of relationships between values reasons. It only quantifies the strength of those bonds. Quantitative variables link strength is possible measured by the Pearson correlation coefficient r. This coefficient indicates only a linear relationship. Correlation relationships does not show which symptom is the cause and which is the consequence. They testify that a change in one symptom causes change in another symptom, but does not indicate whether the cause of the change is in one of the symptoms or outside the study. The correlation coefficient is between -1 and 1: the closer to -1, the stronger the negative linear connection; the closer 1 is, the stronger the positive linear relationship; close to 0, connection is weak or missing (Wilcox, 2008).

Figure 6

Working capital and business cycle indicators as a independent variables to ROA as a dependent variable.



Source: Created by author

For the purpose of this study profitability ratios namely Return on Assets (ROA) was taken as the dependent variable, while quick ratio (QR), current ratio (CR), debt ratio (DR),

current assets to total assets (CATA), current liabilities to total assets (CLTA), debtors turnover ratio (DTR), inventory turnover ratio (ITR), average payment period (APP), average collection period (ACP), average age of inventory (AAI), cash conversion cycle (CCC), RGDP and commercial lending interest rates (as an independent variables (see Figure 6).

To explain how business cycle phase and working capital management affect financial results of real estate developers, a regression analysis is performed.

Regression analysis concept

Regression analysis is a statistical method whose main advantage is that it consists an option to select the variables linking function. The purpose of the Regression analysis is to predict the value of the dependent variable in at least one independent variable basis, explain how changes in an independent variable affect a dependent variable. A dependent variable is a variable that is wanted to explain, an independent variable is a variable to interpret a dependent variable. To assess the business cycle phase and working capital management affect financial results of real estate developers, further to be a conceptual model, research hypotheses were put forward to test the correlations, the stages of correlation and linear regression analysis were defined.

According to the fact of having many variables, method will be chosen multiple linear regression analysis with 2 formulated hypotheses, null and alternative one:

H0: $\beta 1 = \beta 2 = \ldots = \beta n = 0$

Ha: $\beta 1 = \beta 2 = \ldots = \beta n \neq 0$

Null hypothesis states the β coefficients are equal to zero and there is no significant relationship between independent and dependent variables. Alternative hypothesis states that independent variables have significant statistical impact to dependent variable. The regression analysis mathematical representation is provided below (see formula 13), where dependent and independent variables express relationship of slope and intercept.

$$Y = a + \beta 0X + \beta 1X + \beta 2X + \beta 3X \ldots + \beta nX$$

(Formula 13)

There are many layers in regression analysis to be performed in depth and tested, however the main goal is to reject null hypothesis and confirm model and each variable significance. Scholars

explain (N.H.Bingham, 2012), for that purpose key indicators enables to evaluate significance – R square is coefficient of determination, it explains how many points fall on the regression line, in other words it reflects as percentage how much X values explain Y value variation. In case of multiple linear regression, adjusted R square is used more often, because it accounts the inflation of many variables. Significance F or in other words – P value defines the significance of the whole model. Usually P value is set at 1%, 5% or 10% and basically defines the probability of an error that the model is wrong. If model P value does not exceed set value, null hypothesis can be rejected. Same measure is applied for each value to determine it's significance for the model.

3. FINANCIAL RATIOS AND RGDP INDICATOR ANALYSIS, THEIR CORRELATION WITH REAL ESTATE DEVELOPERS PROFITABILITY

3.1. Financial ratios and RGDP analysis

To search for correlation of separate companies working capital management and business cycle impact on their profitability, various financial rations computed and together with Real GDP analyzed. Study data have been gathered from 2008 (2007 in particular ratios) to 2020. Companies financial results were taken and systemized from annual balance sheet and profit loss statements, their results until Euro adoption nationally, were converted from previous national currency to Euros at irrevocably fixed exchange rate. Real GDP data collected from Eurostat, using following parameters: Eurostat unit ID: CLV10_MNAC; Eurostat item ID = B1GQ; Seasonally and calendar adjusted data. Pearson's correlation is to be preformed for each company separately including both ROE and ROA ratios for observation, as both of them included does not change each others relationship with other ratios. However for linear regression analysis, only ROA ratio will be used as dependent variable, because later in the research ratios analysis, it was founded that this ratio is more consistent than ROE.

Return on Assets

ROA ratio shown quite shown partially correlating, but mostly various results across all three companies performed. Hanner faced 3 year losses period of slightly negative 1% to 5% ROA ratio and returned to profits path until the very 2020's. In the meantime, Endover took a big hit of -40% ROA ratio in 2008, then remained profitable for 3 years and faced significant losses in 2012 and 2013 for 51% and 7% respectively.

Table 2

ROA ratios of 3 Real Estate Developers

ROA:	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008
Hanner UAB	0.04	0.04	0.01	0.02	0.06	0.10	0.09	0.05	0.05	0.12	-0.01	-0.05	-0.03
Bonava Latvija SIA	0.11	0.11	0.00	0.13	-1.14	0.09	-0.01	-0.06	-0.01	-0.03	-0.13	-0.49	-0.21
Osaühing Endover KVB	-0.09	0.01	-0.07	0.15	0.07	0.01	0.14	-0.07	-0.51	0.03	0.03	0.04	-0.40
Average:	**0.02**	**0.05**	**-0.02**	**0.10**	**-0.34**	**0.07**	**0.07**	**-0.03**	**-0.16**	**0.04**	**-0.04**	**-0.17**	**-0.21**

Source: computed by work author based on companies annual reports, 2008-2021.

Bonava had biggest losses out of all companies in 2008-2010 period and stood less significant losses until very 2015 when generated +9 % ROA ratio. Out of research scope containing 13 years, Bonava have been profitable only in 5 years. These results could highly correlate with crash of Real Estate bubble in 2008 and one of the deepest recessions manifested. Real Estate prices were sinking and forcing Real Estate developers into complicated environment, which caused many re-evaluations and terminated contracts that led to losses.

Return on Equity

ROE ratio shown quite unique results when Bonava LV had negative equity capital during 2008-2010 years, due to minimum company capital and high losses that were brought forward from previous years. ROE cannot be calculated using losses and negative equity, therefore fields were left unpopulated. Negative equity and continuous losses have been covered by short-term liabilities and brought in additional equity. Company have experienced losses until very 2015 year when ROA reached 28%. While Endover negative ROA of 40% and 51% looks like a big hit to total assets, for company's equity it was even bigger issue as in both of 2008 and 2012 years, losses exceeded equity.

Table 3

ROE ratios of 3 Real Estate Developers

ROE:	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008
Hanner UAB	0.05	0.04	0.01	0.02	0.06	0.21	0.16	0.11	0.10	0.17	-0.01	-0.14	-0.08
Bonava Latvija SIA	0.31	0.38	0.02	0.32	-2.10	0.28	-0.03	-0.35	-0.06	-0.12	-	-	-
Osaühing Endover KVB	-0.26	0.02	-0.19	0.45	0.25	0.04	0.41	-0.29	-1.09	0.07	0.09	0.10	-1.12
Average:	**0.03**	**0.15**	**-0.05**	**0.26**	**-0.60**	**0.18**	**0.18**	**-0.18**	**-0.35**	**0.04**	**0.04**	**-0.02**	**-0.60**

Source: computed by work author based on companies annual reports, 2008-2021.

While Hanner had negative ROE period in 2008-2010 period, toping -14% and further on generated stable returns to it's shareholders, it is visible that Bonava and Endover results highly fluctuated not only to the negative side, but positive as well: in a years, when Bonava have not experienced losses, 4 out of 5 periods, company ROE was equal or higher to 28%. Similar patterns could be visible in Endover results, where after 2012-2013 loss period, company's ratio were positive for 4 years, even reaching 45%. In comparison to lower ratio of ROA in the same

period, it could be stated that these two companies managed to exploit financial leverage to reach extraordinary returns to shareholders, however they have a room to improve stability.

Quick ratio

Quick ratio shows company's ability to meet it's short term obligations without it's inventories, in case sales would fail or would be delayed for any reason. It is said that the higher ratio is the better, while having ratio value less than 1 could cause trouble to a company if sales would stagnate as short term liabilities exceeds quick assets. If a company Current ratio higher than 1, but Quick ratio less than 1, it states that company relies a lot on it's inventories to meet short term obligations.

Table 4

Quick ratios of 3 Real Estate Developers

Quick Ratio:	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008
Hanner UAB	11.90	24.71	4.49	29.73	34.80	3.62	5.14	1.60	2.12	21.81	4.23	1.88	1.39
Bonava Latvija SIA	0.21	0.16	0.27	0.65	0.28	0.06	0.04	0.03	0.03	0.01	0.03	0.01	2.85
Osaühing Endover KVB	1.42	0.78	0.50	1.79	0.65	2.17	0.93	0.61	0.87	2.05	1.71	1.65	2.62
Average:	**4.51**	**8.55**	**1.75**	**10.72**	**11.91**	**1.95**	**2.04**	**0.75**	**1.01**	**7.96**	**1.99**	**1.18**	**2.29**

Source: computed by work author based on companies annual reports, 2008-2021.

As it is visible in Table 4, throughout research scope, Hanner had very healthy ratio of at least 1.6 and in 9 years keeping it above 3.62 by lightly depending on inventories to meet short-term liabilities that were successfully maintained to very low levels. In the meantime, Quick ratio of Bonava in all years except 2008 were lower than 1 and in many years close to 0, what means company relies a lot on it's inventories, as further on in Table 5 Current ratio is way higher. Endover seems to be in the middle of significantly high Hanner ratio and low Bonava ratio, meaning that all of them exploiting different strategies to meet it's short term obligations.

Current ratio

Current ratio, differently than Quick ratio, measures company's ability to meet short term liabilities with all current assets and is even called Working Capital ratio. Higher ratio considered to be healthy indicator to some extent, as extremely high ratio could mean that company finances

current assets mainly from long term investment. In many sectors it would be stated as conservative approach, but according to Real Estate specifics, it is usual practice to fund projects with loans equal to project period and then refinance if necessary. Other researches shown that it is usual for a Real Estate project to exceed short term range.

Table 5

Current ratios of 3 Real Estate Developers

Current Ratio:	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008
Hanner UAB	12.98	25.52	5.52	29.75	34.85	3.62	5.15	1.60	2.12	21.81	4.23	3.48	2.25
Bonava Latvija SIA	1.59	1.43	1.23	1.68	2.03	0.41	0.47	0.58	0.67	0.67	0.39	0.55	16.17
Osaühing Endover KVB	1.43	0.79	0.50	1.81	0.66	2.24	0.94	0.61	0.87	2.05	1.71	1.65	2.62
Average:	**5.33**	**9.25**	**2.42**	**11.08**	**12.51**	**2.09**	**2.19**	**0.93**	**1.22**	**8.18**	**2.11**	**1.89**	**7.01**

Source: computed by work author based on companies annual reports, 2008-2021.

It is visible in Table 5, Hanner Current ratio in most years is higher than Quick ratio, but does not stand out significantly and it confirms company relies very lightly on it's inventories. In none of research scope years, short term liabilities exceeded current assets and in 5 periods, very conservative approach is visible, where current assets exceeded short-term liabilities more than 12 times, however it could be explained by sharp both short-term liabilities drop after EUR adoption in Lithuania in 2015. Bonava ratio, compared to Quick ratio looks healthier, but in many years after 2008 remained below 1, which indicates aggressive approach and heavy reliance on inventories in the period of 2009-2015. Worth to mention, this period goes along with losses distinguished with ROE and ROA ratios and profitable years 4 out of 5 times match with Current ratio value increase above 1. Endover case is distinctive to above ones as it's ratio compared to Quick ratio, shows company's none to very light reliance on it's inventories, which been kept to the very minimum amounts through all research scope. Once again, company shows approach that is in the middle of Hanner and Bonava, by applying more moderate one, with several exceptions when ratio value was below 1.

Debt ratio

Debt ratio measures total financial leverage of a company. From the first sight it is lightly related with working capital as it has a view on longer term outlook, however as stated previously in the research, it is typical to fund Real Estate projects by loans equal maturity of the project.

This point makes sense to compute Debt ratio in order to have a brief look of general financing approach and company's abilities to meet liabilities after project is finished, meaning after Cash Conversion Cycle.

Table 6

Debt ratios of 3 Real Estate Developers

Debt Ratio:	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008
Hanner UAB	0.03	0.03	0.02	0.10	0.09	0.55	0.47	0.51	0.52	0.30	0.40	0.65	0.67
Bonava Latvija SIA	0.62	0.69	0.81	0.59	0.44	0.63	0.79	0.83	0.79	0.77	1.76	1.82	1.21
Osaühing Endover KVB	0.64	0.59	0.63	0.66	0.73	0.66	0.67	0.75	0.53	0.48	0.62	0.61	0.65
Average:	**0.43**	**0.43**	**0.49**	**0.45**	**0.42**	**0.61**	**0.64**	**0.69**	**0.61**	**0.52**	**0.92**	**1.02**	**0.84**

Source: computed by work author based on companies annual reports, 2008-2021.

As Table 6 shows, Hanner Total Liabilities have not exceeded Total Assets once in 13 years, indicating financial health of a company and it's ability to meet all obligations. Important to emphasize, company's ratio dropped closely to 0 after 2015, when EURO been adopted in Lithuania nationally, leading to management approach change towards financing strategy, by reducing Total Liabilities by more than 10 times. It could be said that Bonava default risk increased in 2008-2010 after global financial crisis, when company's Total Liabilities been higher than Total Assets, due to negative Equity. Worth to mention, company moved long-term liabilities to short-term after 2008, what could be considered as aggressive strategy sign. From Debt ratio results, Endover approach on Total Liabilities management reminds Hanner, because of keeping at the similar levels, but the main difference that Endover financing policy have not significantly changed since EURO adoption in 2011.

Current Assets to Total Assets ratio

Purpose of CATA ratio is to indicate what part of Current assets consists in Total assets. Current assets are essentially involved in forming working capital and company's general liquidity. Ratio varies from 0 to 1, where means closer to 1 indicates higher liquidity and means closer to 0 indicates contrary.

Table 7

CATA ratios of 3 Real Estate Developers

CATA Ratio:	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008
Hanner UAB	0.45	0.68	0.09	0.16	0.19	0.13	0.18	0.10	0.14	0.42	0.32	0.37	0.46
Bonava Latvija SIA	0.99	0.99	0.99	0.99	0.90	0.26	0.38	0.48	0.53	0.52	0.68	1.00	1.00
Osaühing Endover KVB	0.13	0.31	0.25	0.19	0.08	0.24	0.36	0.31	0.29	0.32	0.41	0.28	0.18
Average:	**0.52**	**0.66**	**0.44**	**0.44**	**0.39**	**0.21**	**0.31**	**0.30**	**0.32**	**0.42**	**0.47**	**0.55**	**0.55**

Source: computed by work author based on companies annual reports, 2008-2021.

Table 7 show that Bonava differs from other companies by many years keeping ratio tightly to 1, meaning that their Total assets are mostly Current ones, what allows company to create liquidity. As founded out earlier, company heavily relies on it's inventories and this ratio points in the same direction by showing that high amount of Total assets are consisted out of inventories and most of ratio fluctuation reflects increase or decrease in inventories. In the meantime, Hanner and Endover mostly kept ratio between 0 and 0.5, as they invested less in Current assets. Both of them have comparatively low inventories. Hanner jump in 2019-2020 period could be justified by increase in account receivables, cash and account equivalents.

Current Liabilities to Total Assets ratio

CLTA ratio shows another angle of company's financing strategy. Value equal or close to zero indicates financial health and low reliance on Total assets to meet short-term liabilities, while value closer to 1 or exceeding it exposes risky strategy or even financial issues.

Table 8

CLTA ratios of 3 Real Estate Developers

CLTA Ratio:	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008
Hanner UAB	0.03	0.03	0.02	0.01	0.01	0.04	0.04	0.06	0.07	0.02	0.08	0.11	0.21
Bonava Latvija SIA	0.62	0.69	0.81	0.59	0.44	0.63	0.79	0.83	0.79	0.77	1.76	1.82	0.06
Osaühing Endover KVB	0.09	0.40	0.51	0.10	0.12	0.11	0.39	0.51	0.33	0.15	0.24	0.17	0.07
Average:	**0.25**	**0.37**	**0.44**	**0.23**	**0.19**	**0.26**	**0.40**	**0.47**	**0.40**	**0.31**	**0.69**	**0.70**	**0.11**

Source: computed by work author based on companies annual reports, 2008-2021.

As Hanner Current and Quick ratios shown strong financial health, CLTA shown in Table 8 could be stated as even stronger, due to company's Total assets being many times higher than

Current assets. Company is easily able to cover Current liabilities with Current assets and even higher Total Assets provides a shield. As analyzed previously, Bonava current liabilities been equal to total liabilities in all years except 2008, therefore CLTA ratio is equal to Debt ratio, except in 2008 when company had very low current liabilities levels. Endover Current ratio shown that company had several years when Current liabilities exceeded Current assets and causing some threats, but it never exceeded total assets, which indicating moderate financing strategies.

Debtors Turnover

Debtors turnover aims to measure how many times the average debts are converted into cash through the year. Ratio indicates efficiency in managing account receivables and it's strategy towards collecting them and their credit period agreed with debtors. The higher value means the higher efficiency in collecting debts.

Table 9

Debtors Turnovers of 3 Real Estate Developers

Debtors Turnover:	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008
Hanner UAB	0.24	0.20	0.28	0.21	0.36	0.76	0.57	1.14	0.17	0.11	0.16	1.03	1.96
Bonava Latvija SIA	17.20	8.50	2.31	6.99	5.08	63.75	144.66	74.16	23.04	17.85	22.62	14.44	-0.83
Osaühing Endover KVB	3.98	3.59	2.65	14.33	12.73	3.63	2.40	0.38	0.69	0.53	1.07	1.12	1.58
Average:	**7.14**	**4.10**	**1.75**	**7.17**	**6.06**	**22.71**	**49.21**	**25.23**	**7.97**	**6.16**	**7.95**	**5.53**	**0.90**

Source: computed by work author based on companies annual reports, 2008-2021.

Table 9 shows Hanner ratio is the lowest one, i.e. in 2019 ratio value 0.2 roughly means that one of five debtors return their debts that year and leaves a space for improvement, but according to other studies it is quite typical in Real Estate Developers business. Quite the opposite in Bonava case, where their ratio jumps even to 144.66 value, meaning they collect debts quicker than every 3 days. Exception should be applied to 2008 years where ratio had unusually negative value, because of negative sales, which could have been caused by revoked contracts or bad sales being written off. This additional indicator goes in line with a pattern that a company operates in aggressive short term strategy. As this ratio results shows, Endover ratio compared to Hanner and Bonava, again seems moderate, besides few significant increases and

decreases in a ratio, however worth to mention, overall trend indicates that company strongly improved collectibles management since 2014, which been decreasing since 2008.

Inventory Turnover

Real Estate Developers have uniquely long product delivery period. There is a saying "Rome was not built in a day" which could be applied to this business, therefore it is crucial for companies to execute fast construction from scratch and at the same hand maintain high quality. Inventory turnover estimates how many times a year company turns inventories into sales, when higher ratio means higher pace of turning inventory to sales.

Table 10

Inventory Turnovers of 3 Real Estate Developers

Inventory Turnover:	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008
Hanner UAB	1.45	2.45	2.31	135.4	98.49	130.6	132.8	131.4	169.0	315.1	0.10	0.91	4.49
Bonava Latvija SIA	0.88	0.99	0.48	1.94	0.43	1.93	1.59	0.95	0.39	0.29	0.45	0.43	0.02
Osaühing Endover KVB	360.9	344.9	317.0	1064	285.8	186.2	2217	-	-	-	-	-	38.56
Average:	**121.1**	**116.1**	**106.6**	**400.5**	**128.2**	**106.2**	**783.7**	**66.17**	**84.70**	**157.7**	**0.28**	**0.67**	**14.36**

Source: computed by work author based on companies annual reports, 2008-2021.

In Table 10 there are dramatical increases and decreases in ratio values and even empty fields left. All that indicates inconsistency of inventories and COGS. Previous cases have not shown such fluctuations and especially high turnovers. To identify what influenced such range of ratio values, COGS and inventories change over the years is necessary. Hanner had high both inventories and COGS until 2009, and dramatically decreased both in 2010, but inventories were kept to the very minimum level, causing ratio to skyrocket. Later on in 2018 inventories increased significantly compared to previous amounts, while COGS increased enough to equate ratio to 1,45-2,45. In the meantime, Bonava quite consistently had high inventories, in most periods averaging higher amounts than COGS, but have improved inventory turnover in 2014, 2015 and 2017 years. Endover has distinct inconsistency due to inventory equal to 0 in 2008-2013 period. It does not signal as a bad sign directly, because company were profitable in half of those years and operated as usual through whole research period, which is visible through continuous COGS. It could be indication of extremely well receivables management as in 2014-

2020 period ratio had value of hundreds, due to inventories kept closely to 0, but it is not typical behavior of Real Estate Developer according to similar studies.

Average Payment Period

APP ratio is the only component of CCC, which does not have similar ratio in this research. The higher ratio is the better, however only to some extent, because too long period could mean insolvency or in more common case, could result in tense relationship with suppliers.

Table 11

APP of 3 Real Estate Developers

APP:	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008
Hanner UAB	308	288	305	81.7	74.66	854	853	1474	1581	661	2447	222	187
Bonava Latvija SIA	326	303	1310	206	665	377	413	630	1472	1931	2079	1370	1162
Osaühing Endover KVB	47.0	197	458	36	72.3	51.4	381	3019	769	485	364	274	153
Average:	**227**	**263**	**691**	**108**	**271**	**428**	**549**	**1708**	**1274**	**1026**	**1630**	**622**	**501**

Source: computed by work author based on companies annual reports, 2008-2021.

As Table 11 indicates, all 3 companies surprisingly have high ratios, pointing out similar approaches on account payables management, which could be industry effect. Companies as well had high value peaks that tend to be inconsistent. Bonava high ratio values could be explained by it's short-term financing strategy as it consistently results in high account payables. It is also noticeable that high APP values partially matches with years marked with losses. Hanner had highest values in 2010-2015 years, however later on company managed account payables within one year. Number decreased, however it does not necessarily indicates account payables management got worse. Endover also had fluctuations in ratio, spiking to 3019 value in 2013, however mostly company keeps account payables within 1 or 2 years.

Average Collection Period

ACP ratio has similar meaning to debtors turnover, just like AAI to inventory turnover. Metrics in days of ACP ratio is the main difference and as well uses only current year account

receivables and not average as debtors turnover. The lower ratio considered to be better as it measures company's ability to receive cash flows from operations.

Table 12

ACP of 3 Real Estate Developers

ACP:	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008
Hanner UAB	509	3630	218	1725	1651	67	910	377	270	3847	2815	222	186
Bonava Latvija SIA	16	28	209	85	121	6	4	1	18	23	13	3	-438
Osaühing Endover KVB	24	106	163	45	17	78	181	1198	355	543	439	407	190
Average:	**183**	**1254**	**197**	**618**	**596**	**51**	**365**	**525**	**214**	**1471**	**1089**	**211**	**-21**

Source: computed by work author based on companies annual reports, 2008-2021.

Table 12 reveals various observations between the companies. Hanner results shown their receivables exceeding sales many years in a row and pointed out to long collection period. Highest values mostly could be explained by receivables from customers and heavy investments in subsidiaries. In regards of ACP ratio, Bonava performed extremely well, in all periods, keeping receivables collectible within one year. One significant inconsistency in ratio appeared in 2008, when sales were negative for a company. Endover had rising ratio in 2008-2013 period, when ACP reached 1198 value, however company improved a lot in regards of ratio and maintained receivables period within one year.

Average Age of Inventory

AAI is quite similar to inventory turnover, but the difference is that it measures how many days it's inventory is outstanding and calculated in days metrics as APP and ACP in order to be able calculate CCC with all 3 ratios. While inventory turnover had limitations to compute results, because of 0 inventories in Endover case, AAI provides value equal to 0, instead of leaving fields unpopulated.

Table 13 shows variety of values, from 0 to 15471,3, where such value means a pace, Bonava would turn it's inventories into sales in 42 years, however it's rather an exception and not ordinary behavior, because of very low COGS. Company ratio got better within years, however it still have been kept cash frozen into production for a very long periods, but it is only one of 3 components of CCC, therefore company has other 2 to offset general result.

Table 13

AAI of 3 Real Estate Developers

AAI:	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008
Hanner UAB	332.0	231.8	312.6	2.2	3.3	2.7	3.0	2.5	2.8	1.2	1.1	354.8	160.5
Bonava Latvija SIA	448.2	388.1	1257.0	212.1	1165.3	132.6	179.8	344.3	938.4	1269.6	741.4	732.0	15471.3
Osaühing Endover KVB	0.5	1.3	1.3	0.4	0.6	3.8	0.3	0.0	0.0	0.0	0.0	0.0	0.0
Average:	260.2	207.1	523.6	71.6	389.7	46.4	61.1	115.6	313.7	423.6	247.5	362.3	5210.6

Source: computed by work author based on companies annual reports, 2008-2021.

Endover shows that company easily able to convert inventories to sales and Hanner managed to do the same in 2010-2017 period, while in the rest of years, it still turned inventories to sales within a year, which could be considered a decent result in this sector.

Cash Conversion Cycle

Inconsistencies in any of CCC components might cause heavy fluctuations in a ratio. It is also important to emphasize that each component has equal weight in CCC ratio, regardless of variables size used in components equations. Ratio could be negative if APP exceeds AAI and ACP and suggests that company is able easily generate cash from operations.

Table 14

CCC of 3 Real Estate Developers

CCC:	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008
Hanner UAB	533	3573	226	1645	1580	-784	60	-1095	-1308	3188	369	355	160
Bonava Latvija SIA	138	112	156	91	622	-238	-229	-284	-515	-639	-1325	-636	13871
Osaühing Endover KVB	-23	-90	-293	9	-55	31	-199	-1821	-414	59	74	133	37
Average:	**216**	**1199**	**29**	**582**	**716**	**-331**	**-123**	**-1067**	**-746**	**869**	**-294**	**-49**	**4689**

Source: computed by author based on companies annual reports, 2008-2021.

Table 14 suggests that Bonava successfully exploits aggressive strategy based on short-term operations. Company's ratio is negative in 2009-2015 period due to high APP ratio and later on became positive mostly due to increased account receivables, which previously were kept close to 0. Spike in 2008 could be explained by very low COGS compared to inventories as already mentioned in AAI analysis part. While Endover revealed moderate strategy in most of

ratios, it is visible that company consistently had healthy low or mostly negative ratio, indicating company's ability to generate cash flows. Biggest merit for such results points to smooth inventories management. In the meantime, Hanner had only 3 periods of negative ratio and quite high ratio in other years, compared to other companies. Both negative ratio and high positive ratio could be tracked down to changes in account receivables, which contributed most to CCC ratio for a company. It reveals company has very clear opening for improvement in account receivables management which could significantly improve total CCC ratio value.

Real Gross Domestic Product Growth

Global financial crisis widely dated as 2008 years, touched many economies across the world, however the biggest hit for Baltic countries have been exposed in 2009, when all 3 countries experienced more than 14% negative RGDP growth that led countries into recession. Negative RGDP growth appeared in Latvia and Estonia in 2008, resulting in -2.79 % and -4.61 % respectively, while Lithuania managed to stay in a positive zone of 2.41% that year. Latvia continued to face negative results in 2010 as well, while other countries economies started to recover by that time until the very 2020's, when Global Pandemic occurred. Pandemic had put many sectors in a struggle due to lockdown and uncertainty, where Real Estate market was no exception in the first half of the year. Prolonged lockdown led to increased inhabitant savings, as less activites were available, emigrants inflow increased, together with their savings, due to uncertainty in foreign countries and attractive interest rates, conditions on mortgages kept residential Real Estate market active.

Table 15

RGDP growth in % of 3 Baltic countries

RGDP growth (%):	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008
Lithuania	-0.04	4.58	3.98	4.17	2.64	2.01	3.47	3.65	3.80	6.12	1.58	-14.69	2.41
Latvia	-3.76	2.43	4.19	3.28	2.15	3.73	2.04	2.09	7.31	2.35	-4.91	-14.28	-2.79
Estonia	-2.62	4.02	4.12	5.45	3.09	2.29	2.79	1.37	3.30	7.08	2.08	-14.27	-4.61
Average:	-2.14	3.67	4.10	4.30	2.63	2.68	2.77	2.37	4.80	5.18	-0.42	-14.41	-1.66

Source: computed by author based on Eurostat National Accounts data release, 2007-2021.

As countries had negative RGDP growth for only 1 to 3 years after global financial crisis of 2008, it would seem that recession ended and economics started to roar in 2010-2011. However it is far from true, because it took way longer to return to previous levels, than 2011. To have more clear picture on how negative and positive RGDP growth looks on actual data, RGDP data in billions year by year could be exploited. 2020 marked as a year of pandemic hit all 3 countries, due to lockdown that put many businesses on halt.

Table 15

RGDP data in billions of 3 Baltic countries

RGDP (In Billions):	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007
Lithuania	39.26	39.27	37.55	36.12	34.67	33.78	**33.11**	32.00	30.87	29.74	28.03	27.59	**32.34**	31.58
Latvia	23.22	24.12	**23.55**	22.61	21.89	21.43	20.66	20.25	19.83	18.48	18.06	18.99	22.15	**22.79**
Estonia	19.92	20.45	19.66	18.89	**17.91**	17.37	16.98	16.52	16.30	15.78	14.74	14.44	16.84	**17.65**
Average:	27.46	27.95	26.92	25.87	24.82	24.19	23.58	22.92	22.33	21.33	20.27	20.34	23.78	24.01

Source: computed by author based on Eurostat National Accounts data release, 2007-2021.

Latvia and Estonia Real GDP output peaked at 2007, while Lithuania peak was at 2008. Estonia reached previous highs only in 2016, Latvia in 2018, meanwhile for Lithuania it was the earliest – 2014. It would be correct to state that 1-3 years of negative RGDP growth negatively impacted RGDP for up to 12 years to fully climb out of recovery stage and switch to expansion, therefore for Pearson's Correlation analysis, both RGDP growth and actual data will be used to search for correlation with Real Estate Developers financial ratios.

Table 16

Commercial lending interest rates in Baltic countries

Interest rates:	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008
Lithuania	2,55	2,23	2,07	2,08	2,13	2,24	2,54	2,58	2,91	3,93	4,06	3,87	5,90
Latvia	3,68	3,26	2,92	3,02	2,99	3,07	2,95	3,41	4,01	4,69	4,44	5,87	7,04
Estonia	2,89	2,66	2,55	2,64	2,65	2,78	3,15	3,28	3,74	5,26	6,55	4,98	6,05
Average:	3,04	2,72	2,51	2,58	2,59	2,70	2,88	3,09	3,55	4,63	5,02	4,91	6,33

Source: computed by author based on Euro area statistics, 2007-2021.

Global financial crisis damaged banking sector, their liquidity and willingness to lend. High commercial interest rates after 2008 reflects increase risks in a businesses, surged default rates and damaged banks liquidities.

Ratio analysis revealed very distinct variations among the companies and their strategies, while Business cycle tendencies were going more or less foot to foot between Baltic countries. Observation and conclusions, makes most sense in comparison between companies. Hanner tends into conservative strategy the most and performed stably through most of research period. Company took noticeable, but far from crucial losses in 2008-2010 period and consistently held healthy financial ratios. In the meantime, analyzing most of ratios, Endover strategy and management were moderate, in the middle between other 2 companies. Company adapts by variating between short and long term financing, which creates indication of moderate strategy. Company resulted in highest consistency and efficiency of CCC ratio, mostly in merit of low inventories maintenance.

3.2. Pearson's Correlation analysis of financial ratios and RGDP

Main limitation of Pearson's correlation is that it does not have dependent variable and does not indicate which of 2 variables impact one another and simply just shows if linear correlation exists and how strong it is between variables. The purpose of ratios analysis by deploying Pearson's Correlation method is to define what ratios had biggest correlation with ROE and ROA ratios. Value between 0.4 and 0.6 is considered to be moderate correlation while less than 0,4 to be weak or not correlated at all and 0,6 to 1 is relatively strong.

As it can be visible in Table 17, many variables have very low correlation and only few ones have relatively or very strong correlation. Worth to mention, that all ratios correlation are very similar between ROA and ROE and deviates only a little. CCC and short-term liquidity ratios have not shown significant correlation with ROE and ROA, however inventory turnover results in strong positive and AAI results in moderate negative correlation with ROA and strong with ROE, underlying inventories management importance in a company which in Hanner's case were handled very well comparatively to the industry standards. Other two components of CCC shown quite high inconsistency, which could be a cause of weak correlation. It is interesting how Current and Quick ratios have not shown significant correlation, however CLTA ratio strongly moves in the opposite direction of company's financial results, indicating that aggressiveness in

financing policy might negatively impact company's ROE and ROA and points out company's conservative strategy might contribute to good financial results.

Table 17

RGDP, IR and Hanner financial ratios Pearson's correlation

	ROA	*ROE*	*QR*	*CR*	*DR*	*CATA*	*CLTA*	*DT*	*IT*	*APP*	*ACP*	*AAI*	*CCC*	*RGDP*	*RGDP %*	*IR*
ROA	**1,00**															
ROE	**0,97**	**1,00**														
QR	0,28	0,12	**1,00**													
CR	0,26	0,09	**1,00**	**1,00**												
DR	-0,18	-0,08	**-0,70**	**-0,71**	**1,00**											
CATA	-0,20	-0,35	0,22	0,25	-0,15	**1,00**										
CLTA	**-0,61**	-0,57	-0,58	-0,57	**0,71**	0,28	**1,00**									
DT	-0,40	-0,36	-0,48	-0,47	**0,68**	0,04	**0,82**	**1,00**								
IT	**0,76**	**0,71**	0,24	0,21	0,12	-0,31	-0,37	-0,25	**1,00**							
APP	0,09	0,24	-0,48	-0,51	0,38	-0,26	0,09	-0,16	0,13	**1,00**						
ACP	0,27	0,14	**0,62**	**0,61**	-0,41	0,53	-0,35	-0,53	0,27	0,09	**1,00**					
AAI	-0,54	**-0,61**	-0,18	-0,13	-0,23	0,45	0,20	0,13	**-0,69**	-0,49	-0,24	**1,00**				
CCC	0,16	-0,04	**0,78**	**0,79**	-0,59	**0,65**	-0,35	-0,39	0,12	-0,45	**0,85**	0,12	**1,00**			
RGDP	0,18	0,15	0,42	0,43	**-0,77**	0,15	-0,44	-0,26	-0,28	-0,54	-0,01	0,34	0,29	**1,00**		
RGDP %	**0,60**	**0,62**	0,31	0,28	-0,38	-0,14	-0,36	-0,31	0,43	0,16	0,35	-0,55	0,19	0,39	**1,00**	
IR	-0,44	-0,48	-0,38	-0,38	**0,61**	0,41	**0,87**	**0,60**	-0,11	0,13	0,02	0,07	-0,04	-0,59	-0,24	**1,00**

Source: computed by author based on companies annual reports, Eurostat National Accounts data release, 2007-2021.

While increased aggressiveness tend to negatively correlate with financial results, debt ratio low correlation could mean that conservative strategy enables company to operate more freely and affect results less by long-term debt. RGDP growth was chosen to define business cycle, shown strong positive correlation, while RGDP output itself shown weak one. It does not mean controversial results, because it could be explained in way sharper fluctuations in growth which more matches sharp movements of financial results, than tiny changes of RGDP value. Results could be foreseen, because of Global financial crisis directly related with Real Estate companies and RGDP that tends to move along over the years. Increasing interest rates tend move oppositely to ROA and ROE.

While Hanner exposed several correlations between ratios, Bonava had none strong correlations with ROA and ROE and only several moderate ones (See table 18). Quite surprising that Pearson's correlation have not shown correlation between RGDP data and company's financial

results, as from the sight of ratio analysis, negative RGDP and long recovery period to it's previous levels were in line with company's losses for fairly long time.

Table 18

RGDP, IR and Bonava Latvia SIA financial ratios Pearson's correlation

	ROA	*ROE*	*QR*	*CR*	*DR*	*CATA*	*CLTA*	*DT*	*IT*	*APP*	*ACP*	*AAI*	*CCC*	*RGDP*	*RGDP %*	*IR*
ROA	**1,00**															
ROE	**0,99**	**1,00**														
QR	-0,07	-0,01	**1,00**													
CR	-0,12	-0,37	**0,99**	**1,00**												
DR	-0,12	0,48	0,11	0,14	**1,00**											
CATA	-0,24	-0,07	0,40	0,36	0,15	**1,00**										
CLTA	-0,06	0,48	-0,55	-0,53	**0,76**	-0,05	**1,00**									
DT	0,22	0,11	-0,32	-0,30	-0,11	**-0,74**	0,05	**1,00**								
IT	0,44	0,44	-0,29	-0,38	-0,42	-0,35	-0,13	0,52	**1,00**							
APP	-0,15	-0,13	-0,01	0,04	**0,63**	-0,06	0,50	-0,30	**-0,73**	**1,00**						
ACP	-0,03	-0,32	**-0,83**	**-0,87**	-0,32	-0,05	0,32	0,03	0,28	-0,09	**1,00**					
AAI	-0,12	-0,49	**0,97**	**0,99**	0,23	0,30	-0,46	-0,28	-0,46	0,17	**-0,88**	**1,00**				
CCC	-0,11	-0,47	**0,98**	**1,00**	0,12	0,32	-0,55	-0,25	-0,35	0,01	**-0,87**	**0,99**	**1,00**			
RGDP	0,17	0,18	0,29	0,24	-0,59	0,51	**-0,63**	-0,24	0,28	**-0,70**	0,07	0,13	0,25	**1,00**		
RGDP %	0,29	-0,03	-0,11	-0,14	**-0,79**	-0,40	**-0,60**	0,17	0,30	-0,25	0,28	-0,16	-0,12	0,31	**1,00**	
IR	-0,17	0,13	**0,63**	**0,68**	**0,68**	0,27	0,13	-0,34	**-0,63**	0,53	**-0,79**	**0,75**	**0,67**	-0,37	**-0,62**	**1,00**

Source: computed by author based on companies annual reports, Eurostat National Accounts data release, 2007-2021.

As expected, Debt and CLTA ratios have equal correlation to ROE, because in 13 years short-term and total debt were almost identical, which created 0,48 moderate positive correlation. Correlation is not strong, but it enables interesting assumption, that increasing liabilities might positively impact financial results, which in other words means that aggressive strategy pays off. One of CCC components – AAI and even CCC itself turn out in negative correlation with ROE, meaning it's importance in managing to shorten inventories and cash conversion cycle. Previous studies have founded out that CCC might have significant correlation even if all of it's components show weak correlation, therefore it is normal that only AAI was enough to create moderate correlation of CCC.

Even though Bonava had very few indicators correlating with ROA and ROE, Endover has only one (see table 19). Inventory turnover that was moderately correlating with returns for Bonava and strongly for Hanner is strongly positively correlating for Endover ROA and ROE as

well. This Endover ratio was highest among the companies, because of very low or none inventories kept and again outlines importance of inventory management. Debtors turnover shown positive moderate correlation, pointing to importance of account receivables handling policy in the company.

Table 19

RGDP, IR and Osaühing Endover KVB financial ratios Pearson's correlation

	ROA	*ROE*	*QR*	*CR*	*DR*	*CATA*	*CLTA*	*DT*	*IT*	*APP*	*ACP*	*AAI*	*CCC*	*RGDP*	*RGDP %*	*IR*
ROA	**1,00**															
ROE	**0,99**	**1,00**														
QR	-0,08	-0,13	**1,00**													
CR	-0,07	-0,13	**1,00**	**1,00**												
DR	0,26	0,22	-0,28	-0,27	**1,00**											
CATA	0,11	0,11	-0,08	-0,08	-0,37	**1,00**										
CLTA	-0,04	-0,04	**-0,77**	**-0,77**	0,09	0,55	**1,00**									
DT	0,42	0,47	-0,08	-0,07	0,43	**-0,65**	-0,39	**1,00**								
IT	**0,60**	**0,60**	-0,24	-0,24	0,15	0,55	0,32	0,06	**1,00**							
APP	-0,15	-0,20	-0,40	-0,40	0,30	0,33	**0,62**	-0,37	0,38	**1,00**						
ACP	-0,11	-0,17	-0,16	-0,16	0,05	0,50	0,47	-0,53	0,25	**0,92**	**1,00**					
AAI	0,20	0,20	0,08	0,11	0,15	-0,14	-0,07	0,14	-0,31	-0,28	-0,40	**1,00**				
CCC	0,17	0,21	0,52	0,52	-0,43	-0,20	**-0,66**	0,24	-0,38	**-0,97**	**-0,79**	0,18	**1,00**			
RGDP	0,09	0,09	-0,35	-0,34	0,20	-0,46	0,14	0,44	-0,26	-0,23	-0,53	0,38	0,03	**1,00**		
RGDP %	0,15	0,20	-0,27	-0,26	-0,11	0,14	0,27	0,27	0,34	0,07	-0,05	0,20	-0,14	0,37	**1,00**	
IR	-0,25	-0,30	**0,60**	0,58	-0,39	0,38	-0,29	-0,50	-0,20	-0,03	0,31	-0,49	0,24	**-0,75**	-0,35	**1,00**

Source: computed by author based on companies annual reports, Eurostat National Accounts data release, 2007-2021.

Regardless many weak correlations of the analysis, it enabled to observe and examine moderate and strong ones. Correlations outlined value of increased efficiency in cash conversion cycle components handling, healthy liquidity, solvency ratios and importance of different exploited strategies by the companies. Hanner case also shown that RGDP tend to move along returns and interest rates tend to move to opposite directions. Even though Pearson's correlation analysis shown strong correlations of ROA and ROE with financial ratios and RGDP, IR indicators, however even stronger correlations been observed across those same financial ratios, RGDP indicators and IR that will be used in regression analysis. Some indicators even have perfect correlation, therefore all of them cannot stay in regression model. For regression analysis,

multicollinearity causes issues to interpret the model and creates overfitting, therefore at this analysis part, testing will be done prior final analysis.

3.3. Regression Analysis

One of the most complicated parts of regression analysis was to remove highly correlated independent variables to mitigate multicollinearity and increase equation significance. The goal at first was to remove variables across companies was to make it in a standardized way, so that companies different strategies would still be comparable according same variables. However hundreds of test revealed that by exploiting different working capital management strategies, different variables makes impact on companies performances. Pearson's correlation implied reasons to exclude certain variables in the first stages of regression testing, because of their high multicollinearity. There is no surprise financial ratios might overfit each other, because of re-used components in their equations. The reasoning for removing certain variable in the beginning, were specific: The highest correlation with other variables have CCC ratio, however as it is crucial for the study, other ratios were decided to be removed such as APP, ACP, AAI ratios at first. They are part of CCC equation, therefore there is no surprise they have correlation in between, however debtors and inventory turnover were left to substitute removed ones, except in Endover case as inventory turnover was blank for many periods, which is not allowed for regression analysis. Quick ratio and current ratios are highly correlated and in Hanner case even perfectly correlated, so in result quick ratio been removed while current ratio left as more reliable and reflective as an indicator for a company. CLTA ratio is also significantly correlated to many ratios and in some cases is equal to debt ratio, so it was removed as well.

In addition to multicollinearity reasons, RGDP in billions have interesting behavior that has a reason to be removed from regression analysis. RGDP is a lagging indicator and has a pattern to grow consistently except when facing significant economic turnovers. While a company usually does not keep such consistency to grow, RGDP in billions seems to be incorrect measure, therefore RGDP growth in percentage is left as a substitute as it better reflects small swifts in economy.

ROA value been changed from fraction to percentage in order to have less decimal points in regression formula and general convenience.

Table 20

Linear Multiple Regression statistics of Hanner, Bonava and Endover

	Hanner	***Bonava***	***Endover***
Multiple R	0,9760	0,9861	0,9381
R Square	0,9525	0,9725	0,8800
Adjusted R Square	0,8576	0,9243	0,7800
Significance F (P value)	0,0205	0,0057	0,0098
Independent variables	8	7	5
Observations	13	12	12

Source: computed by author based on companies annual reports, Eurostat National Accounts data and Bank Interest Rates

Multiple regression tests resulted in successful analysis output (see Table 20). To achieve significance in general regression output and each variable separately, count of variables were decreased to 5, 7 and 8 for the companies. P value of all 3 companies is below acceptable 5% significance level, therefore regression model is validated by rejecting null hypothesis. In case of condition when simple linear regression is performed, R square would define for what percentage of dependent variable change, independent variables are accountable for, however as regression been performed with multiple variables, adjusted R square better represents the results. More independent variables usually inflate results, however in all 3 cases results were mitigated pretty well and together in the model they account for major part of ROA. 7 independent variables of Bonava resulted in falling better on regression line than 8 variables of Hanner. Comparatively, Endover with 5 variables, explain quite high changes percentage of ROA. As null hypothesis is rejected, in simple words, regression models confirms, that selected financial ratios, economic output and interest rates have significant impact for companies profitability. Further on, each independent variable will be analyzed for all companies.

Probability of an error for CATA ratio and IR are 5.8% and 7,6% respectively and exceeds 5%, however removing any of variables, leaves the model insignificant, therefore higher probability of an error is being accepted (See table 21). Negative intercept states a theory, if all other ratios would be zero, ROA would result in -23,16%. Obviously it is not that straightforward, as company would not have entire balance sheet as zero, but intercept together with all variables comes in a shape of a complex model that can actually explain ROA. Worth to note origins of ratios are different as for some maximum value could be 1 and for others infinite,

liabilities in current ratio stands as numerator and in debt ratio as denominator, Multiple linear regression equations ROA model is presented below:

Table 21

Regression analysis output of RGDP, IR and Hanner financial ratios

	Coefficients	*t Stat*	*P-value*
Intercept	-23,1602	-3,2217	**0,0322**
Current Ratio	0,4905	3,0098	**0,0396**
Debt Ratio	40,3738	4,6054	**0,0100**
CATA Ratio	17,3145	2,6310	**0,0581**
CLTA Ratio	-224,0502	-5,0980	**0,0070**
AAI	0,0362	2,9655	**0,0413**
CCC	-0,0039	-2,7906	**0,0493**
RGDP Growth %	1,1903	4,8345	**0,0084**
IR	3,7153	2,3746	**0,0764**

Source: computed by author based on companies annual reports, Eurostat National Accounts data and Bank Interest Rates

Regression model states that increment of current ratio by 1 unit, accounts for positive 0.49% ROA change, meaning increasing lower current liabilities compared to current assets, acts as a worse option of funding (see table 21). Short term liabilities might still contribute to ROA, however such equation means diminishing returns. CLTA confirms the same statement, when ratio increases by 0.1, results in ROA deduction of dramatical 22,4%. On the other hand, increasing debt ratio by 0.1, ROA acts contrary by increasing 4.04%.

$$\text{ROA} = -23{,}1602 + 0{,}4905\boldsymbol{CR} + 40{,}3738\boldsymbol{DR} + 17{,}3145\boldsymbol{CATA} - 224{,}0502\boldsymbol{CLTA} + 0{,}0362\boldsymbol{AAI} - 0{,}0039\boldsymbol{CCC} + 1{,}1903\boldsymbol{RGDP\ Growth} + 3{,}7153\boldsymbol{IR}$$

(Formula 14)

Company got rid of high debt to maintain risks caused by turn of the market and increased interest rates. Mostly, collected account receivables and reduced inventories enabled to yearly reduce debt and in 2015 company been funded mostly of it's own equity. This interesting contradiction points out that company had better financial results when been funded more by long term liabilities and performed behind once they had higher current liabilities, therefore after financial crisis occurred, these liabilities were reduced to minimum first. Also the fact that Hanner went to way larger scale of development once they were highly funded points out great

ability to utilize conservative strategy funding. One of the most interesting observations are certainly CCC and it's component AAI contradiction. AAI increased by 33 units, accounts for 1,19% surge in ROA. As it sounds contrary to benefit from keeping higher inventories, however in such industry where sales are pretty slow, if not slowest across the industries, because negotiation for a individual price of home or lease of office and time invested to connect with the right buyer prolongs, for that reason there is certainly a standard AAI rate where the higher is the better. While CCC, one of the most important ratios for the study states it's importance to a company – boost in ratio by 100 units, results in 0.39% decrease in ROA. From straightforward comparison, AAI have bigger impact than entire CCC, however AAI had lower weight through research period, therefore even more accountability turns to APP and ACP ratios. Excellent account receivables collection and account payables settlement management significantly contributes to company ROA. Interest rates have a positive sign in a model, meaning that profitability increase as interest rates increase. When interest rates rise by 1%, ROA tends to increase by 3,17% It would make sense if company would be a bank or other type of lender, but not for real estate developer as it usually borrows money and not lends. The answer lies in a balance sheet – as expected in conservative working capital management approach, company had excessive cash that were being invested in a short term, so it generates returns that correlated with interest rates. Account receivables from buyers and subsidiaries could had established agreements to pay with interest. Undoubtedly the most matching impact for ROA does RGDP growth – 1 percent increase contributes to ROA surge by 1.19%. Such closely direct relationship confirms business cycle impact for the real estate developer. In addition to that, higher increase in ROA than economic output, states that Hanner tends to perform better than economy as a whole.

Most of variables P-values were maintained below 5%, however inventory turnover is at 8.5% level of significance (See table 22). Removing the variable worsen other P-values, therefore it is kept even with higher probability of error. Due to high standard deviation of a regression model and other important indicators inaccuracy, 1 observation (year period) were removed as an outliers from Bonava Latvia. 114% of negative ROA in year 2016 deviates from the average ROA by 29 times, while other ratios that year did not have similar sharp changes. It could be explained by comparison of company and it's project sizes. I.e. unsuccessful, costly project of 2,5M causes deep negative ROA for a company with 5M of assets. According to previous ratio analysis, company kept moderate level of equity and total assets in many periods and been refinanced couple of times by stakeholders. In 2008, AAI ratio of 15 471 was 24 times higher

than the average and affected CCC dramatically as well. Company had unusually low COGS, mostly because of increased uncertainty in real estate sector. As further ratio values shown, it was exception and initially been decided to be removed as well, however during multiple tests, both AAI and CCC were cut as ratios at all, therefore the issue were maintained and this period kept in analysis. Multiple linear regression equations ROA model is presented below:

Table 22

Regression analysis output of RGDP, IR and Bonava Latvia SIA financial ratios

	Coefficients	*t Stat*	*P-value*
Intercept	44,1660	2,9371	**0,0425**
Current Ratio	-6,2864	-3,7310	**0,0203**
CATA Ratio	53,6562	4,0651	**0,0153**
CLTA Ratio	-37,4518	-5,2998	**0,0061**
Inventory Turnover	12,7062	2,2732	**0,0854**
APP	0,0284	4,0127	**0,0160**
ACP	-0,2134	-3,8730	**0,0179**
IR	-20,1757	-4,7652	**0,0089**

Source: computed by author based on companies annual reports, Eurostat National Accounts data and Bank Interest Rates

Regression model does not contain RGDP or it's growth. From the eye sight, RGDP impact is visible on company results, especially when both ROA and RGDP growth resulted in negative values in 2008-2010, however further on, company ROA observed as negative in even more periods pointing to other reasons for such performance. Consequently it could be stated, economic turns was irrelevant for company profitability.

$$\text{ROA} = 44{,}1660 - 6{,}2864\boldsymbol{CR} + 53{,}6562\boldsymbol{CATA} - 37{,}4518\boldsymbol{CLTA} + 12{,}7062\boldsymbol{IT} + 0{,}0284\boldsymbol{APP} - 0{,}2134\boldsymbol{ACP} - 20{,}1757\boldsymbol{IR}$$

(Formula 15)

Aggressive working capital management strategy for Bonava been already identified, therefore it would be only natural to have high dependency on smooth execution of this strategy. In a periods when short term assets accounted for major part of total assets, short term liabilities been maintained below short term or total assets, company were mostly profitable. Of course there is no surprise short term liabilities exceeding short term assets would cause liquidity issues, however company chose such model and once liquidity ratios were in line, profitability been

achieved. Current ratio, CATA and CLTA perfectly express such behavior, even though these ratios are highly related and have possibility to trigger multicollinearity, removing any of these ratios from the model, leaves others as insignificant together with the whole model. They actually even contradict to each other with their components and signs in a model, therefore increasing one variable would mean that other variable will be offset the impact in ROA. To test actual weight of components and clarify result, changes should be made in the balance sheet instead, rather than directly on ratio level. Only increase in current assets positively contribute to ROA – 10% increase results in average 2.57% boost of ROA. In case of current assets increase by 10% and no change in long term assets, by average boosts total assets by 7.4%. After both components increased, ROA tends to increase on average by 1.39%. Increase in short term liabilities or total assets alone by 10% would reflect as decrease in ROA on average by 1.94% and 0.69% respectively. With all that said, it could be stated, that investment in current assets and as an aftermath in total assets, reflects in higher ROA ratio. In case of aggressive strategy, working capital management have unordinary importance to be handled in excellent manner. Inventory turnover and CCC components - APP and ACP expressed significance in a regression model. Raise in inventory turnover by 0.1 unit, ascends ROA by 1.27%, while increase in APP by 33 units, results in ROA boost by 0.94%. On the other hand, ACP decreased by 33 units increase ROA even by 7,04% - such result indicates strong dependency on account receivables management as account receivables collected after by additional 33 days accounts for huge part of ROA. All 3 components perfectly reflect importance of working capital management as it becomes basically a must for the company. Moving the inventory as often as possible, extending account payables and increasing account receivables have significant positive impact even when improved at small increments. In addition to other ratios, interest rates have high impact for company financial results. As short term liabilities tend to affect profits negatively, interest rates only confirms that, because 1% increase in interest rates negatively affect ROA by huge 20,18%. Impact relationship like this highlights the importance to reduce dependency on short term liabilities in order to enhance financial results.

Probability of an error of each independent variable is below 5% (See table 23). Due to the same reasons as in Bonava case, 2012 observation have been removed from Endover analysis as ROA deviated by 40 times from the average. It could be stated that funding opportunity from parent company creates such observations when entire equity is being wiped out by one year loss, because under normal conditions, if no back-up is available, company might looks for safer

operational model, i.e. decrease projects size to mitigate risk or increase equity capital to have more robust ground to accept losses. Even though company experienced -40% ROA in 2008 that also wiped out equity, the observation is left in analysis, because it is expected to correlate more with certain period economic conditions. Multiple linear regression equations ROA model is presented below:

Table 23

Regression analysis output of RGDP, IR and Osaühing Endover KVB financial ratios

	Coefficients	*t Stat*	*P-value*
Intercept	-10,4495	-0,7794	**0,4654**
CATA Ratio	105,1955	3,5432	**0,0122**
Debtors Turnover	2,3235	3,5901	**0,0115**
APP	0,0568	2,9214	**0,0266**
CCC	0,0935	3,0770	**0,0217**
IR	-9,6218	-3,5999	**0,0114**

Source: computed by author based on companies annual reports, Eurostat National Accounts data and Bank Interest Rates

Regardless Endover model defines 5 variables with significant impact, it accounts for a major part of ROA change and includes CCC, APP and debtors turnover that supposed to explain working capital management impact on financial results. Cannot oversee unnatural CCC result that means decreasing days of inventories being converted to cash in hands by 33 days, decrease ROA by 3.09%. Such statement contradicts the logic looking straightforward into the final CCC ratio, but the answer for this behavior lies in it's components. Company kept short term liabilities quite high compared to it's COGS, therefore APP often exceeded ACP, while AAI were close or equal to zero, resulting in negative CCC. While ACP were at a moderate levels, it would be questionable if too high APP could result in a negative way for profits, however in the model, ratio shows significant impact, when increasing by 33 days, results in a boost of ROA by 1.87%. Even though ACP does not have significant impact, debtors turnover as a substitute occurs in a model, when enhanced by 0.1 unit, increases ROA by 0.23%. As importance of account receivables and payables management already expressed, attention turns to AAI. Earlier in the study it seemed Endover did excellent work in keeping inventories close to zero, by beating industry standard, it might be similar case as stated with Hanner – it might be there is a minimum age of inventory when company benefits the most when achieves the best selling point,

consequently higher CCC as a whole period of inventory turned to cash, tends to benefit in better ROA. It could be confirmed by how CATA ratio behaves in a model – increase in CATA by 0.1 unit, which means either increase in current assets or decrease in total assets in comparison of each other, ROA tends to rise by heavy 10.52%. Current assets include inventories, therefore increasing scale of development and holding inventories, would result in higher current assets. On top of that, interest rates increased by 1%, results in plunge of ROA by 9.62 and identifies diminishing returns of funding operations by debt.

$$\text{ROA} = -10{,}4495 + 105{,}1955\boldsymbol{CATA} + 2{,}3235\boldsymbol{DT} + 0{,}0568\boldsymbol{APP} + 0{,}0935\boldsymbol{CCC} - 9{,}6218\boldsymbol{IR}$$

(Formula 16)

It is a must to highlight that between the companies regression models, same variables have different signs, meaning in one scenario variable adds up in determining ROA and in other case it actually deducts from ROA results. Such behavior could indicate that changes in a certain variable behave as advantage or disadvantage based on company structure and working capital management strategy. To underline, the model cannot predict force major scenarios, when entire equity is being wiped out in single year. Regression models for each company highlights different points to focus on improving – exploited unique strategies result in different indicators which makes impact for financial results. In none case short term liabilities increased in a model would add up to developers profits, while increase in current assets would boost ROA for all companies, that establishes a statement companies most likely are increasing scale of operations or moving to advanced stages of development. CCC, it's components or substitutes had significant impact for each company and improved working capital management would increase ROA ratio. Interesting behavior have been noticed in Hanner and Endover cases where too low inventories implied statement of unnaturally negative impact to company profits – inventory turnovers distinctly below industry standard signaling either scale of development is at pretty low level, companies are too quick to move inventories and likely missing better opportunities of a sale. Interest rates affect all companies – increase in rates, tend to reduce profit, but for Hanner, increase actually raises profits, because of it's structure with subsidiaries and financial activities.

CONCLUSIONS

The theoretical part of the master's thesis reviews business cycle phases, real estate developers financing models, working capital requirement, strategies, cash conversion cycle and its components. Business cycle contains expansion, downturn, slowdown and recovery phases. It could be stated that recession is defined when a country or region faces two consecutive quarters of negative real GDP growth. Regardless many issues companies facing during recession, when companies with ineffective business models are facing downfalls and restructuring, many scholars found out it is more efficient to use strategies that tends to be not only defensive, but offensive, such as countercyclical marketing, investing in product quality, research, new employees, mergers and acquisitions. These strategies during recession tend to help outperform competitors and even achieve better results than during economic expansion period. Due to long cash conversion cycle, which is mostly affected by long period of assets invested in inventories, Real Estate Developers finances significant part of their projects and operations through external funds, such as debts from banks, investors, partners or even a government. It is crucial for executives too choose suitable working capital management strategy to maintain its requirement and still reach optimal risk to reward ratio.

Second part of this study reviewed set Real GDP and companies secondary financial data collection methods. Research model aims to analyze business cycle and working capital management impact on biggest Real Estate Developer in each of Baltic Countries, that was established no later than 2008 in order to evaluate their performance during all 4 business cycle phases. In order to express working capital management, various working capital and financial ratios to be used: (QR), current ratio (CR), debt ratio (DR), current assets to total assets (CATA), current liabilities to total assets (CLTA), debtors turnover ratio (DTR), inventory turnover ratio (ITR). All of them defined as an independent variables and will be utilized to find if correlation exists between them and dependent variable ROA, which represents companies profitability. Linear regression analysis to be used in order to assess how independent variables changes affect dependent variable and regression equations defined.

Research data from 2008 to 2020 allowed to enabled successful analysis real estate developers exploited strategies, their results in different economic cycles. It could be stated each company deployed unique strategies and faced different results as an outcome. Ratio analysis disclosed Hanner deployed conservative strategy, leaning towards long term focused operational

model by investing more in long term debt than a short one, healthily balancing between liabilities and own equity. On the other hand Bonava chose aggressive approach focusing mostly on current assets and short term liabilities, while Endover was navigating with moderate strategy, showing both conservative and aggressive signs. Economic crisis distinctly impacted Baltic countries, while in Lithuania RGDP peaked in 2008 and had negative 14,69% growth in 2009, in Latvia and Estonia RGDP peaked at earlier and resulted in negative growth in 2008, lasting for 3 and 2 years respectively in similar depth as in Lithuania, hence economic shock prolonged, as well started recovery later. On top of financial crisis, 2020 were underlined as a pandemic year, when RGDP growth went negative as well for Baltic countries, fortunately have not matched the depth of previous downturn. Regression model shown RGDP growth impact only in Hanner case, when 1% positive growth results in 1,19% increase of ROA, which indicates developer dependency on the economic cycles, however also stating that company tends to outperform economy. Even though Hanner had high both short and long term debt facing the recession, company managed to smoothly reduce in to safe levels. For others, RGDP had no significance, however as all companies been partially funded by debt, interest rates had impact on all of them, only differently. 1% increase in commercial lending interest rates, negatively affects Bonava ROA by 20.18%, Endover by 9.62%, while Hanner ROA grows by 3.72. In a picture of aggressive or moderate strategies and heavy funding by debt, associates with risk and costs of interest rates, however with conservative strategy, re-investing excessive funds is beneficial. CLTA and CA ratios shown for each company increasing short term liabilities in regards to current or total assets, would results in plunge of ROA. CATA in all cases implies that increase in ratio results in significant ROA growth – 0.1 unit increase account for ROA boost by 1.73%, 10.52%, 5.37% for Hanner, Bonava and Endover respectively. Such result in a model highlights importance to invest in current assets respectively to total assets and it is mostly done by increasing scale of operations and keeping it consistent. With all that said, it turns to importance of inventories management – even though that Hanner and Endover performed way beyond industry standards in terms of inventories turnover, regression analysis shown unexpected results when increase in inventories by days outstanding, would increase ROA significantly. Behavior like this could be explained following the logic that real estate cannot be built and sold in days or weeks period, therefore undetermined industry minimum applies, because when quantity of products is limited to quite low number, it takes time to connect with the right buyer to execute sale at a fair price, to maximize the profit. Bonava example confirms the statement as inventories

were kept on a moderate level and company's raise in inventory turnover by 0.1 unit, ascends ROA by 1.27% On top of that, part of low inventories could be explained by post financial crisis period, when trust in real estate sector been damaged, potential clients financial situation worsened and purchasing power decreased dramatically, settled an environment where real estate developers faced low cap of demand meeting profitable price. Impact of working capital management have been confirmed by CCC, it's components and substitutes. CCC in Hanner model states it's importance to a company – decrease in ratio by 100 days, results in 0.39% boost of ROA. If that is not enough to confirm the impact on profitability, increase in APP by 33 days ascends Bonava ROA by 0,94% and Endover by 1.87%, consequently it is a benefit for companies to extend account payable at agreeable level. Account receivables plays significant role for these companies as well – ACP improved by 33 days, tends to increase Bonava ROA by heavy 7.04%, while increase in debtors turnover for Endover, enhances ROA by 0.23%.

These metrics in real estate industry are quite slow compared to other industries, because of it's specifics, but there is a lot of potential for improvement. Taken into consideration all analysis results, it could be stated working capital management and business cycle have significant impact on real estate developers profitability. In comparison to other strategies, conservative one signals more resistance and consistent results when facing all economic cycles. Such approach mitigates dependency on APP and ACP, but not eliminate their importance. Consequently it is recommended to deploy conservative strategy to stand firmly in risks and opportunities horizon of different business cycles. Stable track record also allows timely and accessible borrowing for operations. Credit policy with suppliers should be agreed to be as extensive as possible, but not harming business relationship. On the contrary same policy with clients recommended to be tightened in a manner to not lose attractions in company products due to terms and conditions. As economic cycles are inevitable and downturn cannot be avoided, company funding structure should account such possibility to withstand stress tests. As downturn is associated with low sales, companies could aim for expansion of operations once economy shows signals of positive turn. If possible, preparation for larger scale of development should be in place – buy land, prepare projects to meet demand later. The study research have not faced any significant limitations and it could be a starting point for future research. Even though real estate industry is mature, this business peculiarities have room for research, where scholars could focus on segmenting companies by size, scope of countries increased and perhaps focus more on forecasting.

THE INFLUENCE OF BUSINESS CYCLE AND WORKING CAPITAL MANAGEMENT ON REAL ESTATE DEVELOPERS PROFITABILITY IN BALTIC COUNTRIES

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Master Thesis

Finance and Banking Master Programme

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SUMMARY

62 pages, 6 figures, 15 formulas, 23 tables, 24 references.

The main goal is to investigate the influence of business cycle and working capital management on Real estate companies profitability in Baltic countries, by analyzing and comparing Real estate developer in each Baltic country.

The main paragraphs that Master thesis consists of – literature review, methodology, research and results, conclusion and recommendations.

Literature review contained business cycle concept, defined Real GDP to represent it. Further on real estate financing models, development stages and industry insights were examined and deepened into working capital management strategies for real estate developers. Cash conversion cycle have been defined as one of the most important measure for working capital management. In a methodology part, financial ratios ROA, ROE, liquidity and solvency ones were described as suitable ones for further analysis, together with Real GDP and Commercial lending interest rates. To evaluate if there is an impact of business cycle and working capital management to real estate developers, Pearson's Correlation and multiple linear regression analysis selected as a tools.

Companies for each Baltic country were chosen as follows: Hanner UAB for Lithuania, Bonava Latvija SIA for Latvia, Osaühing Endover KVB for Estonia. In depth analysis of each ratio, RGDP and interest rates were performed in order to examine observations of 13 years period, companies working capital management strategies, profitability and economic outlook. Pearson's correlation enabled to identify many strong correlations between the ratios, however it did not defined impact to each other, while multiple linear regression analysis highlighted

different factors for different deployed strategies by the companies. Significant impact of Real GDP and cash conversion cycle been observed, confirming the benefit of excellent working capital management for companies profits. Research as well pointed to resilience advantage of conservative funding model and gaps against economic cycles, possible negative debt impact and different operations scale across economic cycles.

Conclusions and recommendations summarize the key points of literature review, methodology and performed research part. The observations and outcome of study could contribute to companies as a guiding focus points to maximize profitability in terms of working capital management and different economic cycles.

Keywords: Business cycle, working capital, ROA, cash conversion cycle, RGDP, regression analysis, Pearson‘s correlation, Hanner, Bonava, Endover, account payables, account receivables.

VERSLO CIKLO IR APYVARTINIO KAPITALO VALDYMO ĮTAKA NEKILNOJAMO TURTO VYSTYTOJŲ PELNINGUMUI BALTIJOS ŠALYSE

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SANTRAUKA

62 puslapiai, 6 iliustracijos, 15 formulių, 23 lentelės, 24 šaltiniai.

Pagrindinis darbo tikslas – ištirti verslo ciklo ir apyvartinių lėšų valdymo įtaką nekilnojamojo turto vystytojų pelningumui Baltijos šalyse, analizuojant ir lyginant nekilnojamojo turto vystytojus pagal rinkos kapitalą kiekvienoje Baltijos šalyje.

Pagrindiniai paragrafai, iš kurių susideda magistro baigiamasis darbas – literatūros apžvalga, metodologija, tyrimai ir rezultatai, išvados ir rekomendacijos.

Literatūros apžvalgoje pateikta verslo ciklo samprata, jai reprezentuoti tyrime apibrėžtas realus BVP. Toliau buvo nagrinėjami nekilnojamojo turto finansavimo modeliai, plėtros etapai ir industrijos ypatumai ir taip pat buvo gilinamasi į nekilnojamojo turto vystytojų apyvartinio kapitalo valdymo strategijas. Grynųjų pinigų konvercijos ciklas buvo apibrėžtas kaip viena iš svarbiausių apyvartinio kapitalo valdymo priemonių. Metodologijos dalyje finansiniai rodikliai tokie kaip ROA, ROE, likvidumo ir mokumo rodikliai buvo apibrėžti ir išaiškinti tolimesnei analizei kartu su realiuoju BVP ir komercinio skolinimo palūkanų normomis. Norint įvertinti, ar verslo ciklo ir apyvartinio kapitalo valdymas turi įtakos nekilnojamojo turto vystytojams, kaip įrankiai pasirinkta Pearsono koreliacija ir daugiau nei vieno rodiklio tiesinės regresijos analizė.

Įmonės kiekvienai Baltijos šaliai buvo atrinktos taip: UAB Hanner Lietuvai, Bonava Latvija SIA Latvijai, Osaühing Endover KVB Estijai. Siekiant išnagrinėti 13 metų laikotarpio stebėjimus, įmonių apyvartinio kapitalo valdymo strategijas, pelningumą ir ekonomines perspektyvas, atlikta išsami kiekvieno įmonių rodiklio, RGDP ir palūkanų normų analizė. Pearsono koreliacija leido nustatyti stiprias koreliacijas tarp koeficientų, tačiau ji neapibrėžė vieno kitam poveikio, tačiau tiesinės regresijos analizė pabrėžė skirtingus veiksnius atitinkamoms įmonių strategijoms. Pastebėta reikšmingas realaus BVP ir grynųjų pinigų konvercijos ciklo

įtaka, patvirtinanti tinkamai valdomo apyvartinio kapitalo valdymo naudą įmonių pelningumui. Tyrimai taip pat parodė konservatyvaus finansavimo modelio atsparumo pranašumus ir atsparumą nuo skirtingų ekonomikos ciklų, galimą neigiamą skolos poveikį ir besikeičiantį verslų apimties mąstą per skirtingus ekonomikos ciklus.

Išvadose ir rekomendacijose apibendrinami pagrindiniai literatūros apžvalgos punktai, metodologija ir atlikta tiriamoji dalis. Tyrimo pastebėjimai ir rezultatai galėtų padėti įmonėms kaip gairės padidinti pelningumą akcentuojant apyvartinio kapitalo valdymo strategijas skirtingų ekonomikos ciklų akivaizdoje.

Raktiniai žodžiai: Verslo ciklas, apyvartinis kapitalas, ROA, grynųjų pinigų konversija, RGDP, tiesinė regresinė analizė, Pearson koreliacija, Hanner, Bonava, Endover, mokėtinos sąskaitos, gautinos sumos.

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