

VILNIUS UNIVERSITY

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**THE EVALUATION OF THE FACTORS
INFLUENCING CORPORATE BOND MARKET DEVELOPMENT**

Summary of Doctoral Dissertation

Social Sciences, Economics (04 S)

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INTRODUCTION

Relevance of the topic. Starting in 2007 in the United States and in 2008 in Europe, the financial crisis led to a review of the balance sheets of credit institutions and further restrictions. Tighter standards for business loans forced borrowers to look for alternatives (according to the European Commission in 2013, around 35 percent of SME credit applications were rejected in the euro area). One alternative is corporate bonds or debentures. The popularity of this instrument in the market grew after the financial market crisis in 2008 and the moratoria of its players (such as Lehman Brothers, Inc.). Since 2009, the corporate bond market has enjoyed a yearly growth rate of almost 2 percent in Europe, and has contributed to growth in the GDP of the US. However, the Lithuanian corporate bond market is still underdeveloped. Its role in financing growth is miserable and businesses remain heavily reliant on banks, making the economy vulnerable to any tightening in bank lending. Some SMEs are even looking for financing in the neighbouring capital markets (e.g. Warsaw stock exchange). This reduces the concentration of the financial market's competition-driven advantages – reduction in the cost of raising capital, favourable debt conditions (terms, collateral needed, etc.), greater diversification and allocation of risk, shock-absorption capacity, and allowance for more investment without increasing levels of indebtedness. The domination of one source of borrowing creates some restrictions for market participants, in association with restricted access to funding for development or financing of investment projects and other business needs, and increasing dependence on the economic cycle mediated by segment reactions and changes. Therefore, an additional instrument or established access to capital market funding would increase business opportunities for performance, development and growth, thus channelling financing for sustainable, long-term economic growth and job creation.

The development of a corporate bond market is characterized by a higher level of capital market activity or the measure of a market's depth. In addition to more effectively implemented business or investor needs, capital market development promotes further economic growth, creating conditions for the improvement of other components - labour productivity, investment, etc. The increasingly rapid development of the capital market is characterized by the term 'financialization' which describes a systematic and sustainable

process transcendent with economic growth. Such aspirations and market integration led the European Commission to launch a single capital market and capital market union (CMU) development process¹ by issuing a Green Paper, indicating potential courses of actions and measures, together in consultation with Member States. The CMU creation process is expected to end by 2019.

A capital market and its level of development or further development opportunities are exposed to different factors: intervention or market-created innate qualities, which in turn result in market liquidity, and further impact on an entire country or region's economy. In differential impact, the probability of occurrence and nature or source of market factors determine the scope or depth of its development (growing, moderating or stagnating). Clear identification of market development factors facilitates the focus of accurate and useful decisions or actions influencing the expected results, including their adoption, implementation and monitoring. Well-known (projected) market development opportunities and trends ensure timely and appropriate measures in achieving performance targets. In the case of a corporate bond market, the identification of market development factor conditions allows more effective supervision of the capital market and efficiency in the market participants' activities, resulting in wider funding opportunities. A possibility to predict the development of the corporate bond market, and identify the drivers of change will create conditions for the sustainable and systematic development of the market to the benefit of both businesses and investors, along with the whole country or region's economy.

Scientific problem: an unknown set of factors for corporate bond market development as well as their impact and influence, including the direction and complexity required for a sustained and systematic development of the market. In different countries or regions, corporate bond markets have different levels of development. This differentiation leads to an uneven distribution of financial resources for the implementation of the distribution function of economic resources and is caused by different factors, including their characteristics, degree of occurrence, timing or

¹ Building a true single market for capital and creating a Capital Markets Union (CMU) for all 28 member states are aimed at increasing the efficiency of the EU investment chain, and finding ways to link investors and savers with growth. EC key actions are oriented to identify and remove the barriers which stand between investors' money and investment opportunities, and overcome the obstacles which prevent businesses from reaching the investors. EC performance measures: legislation and its improvement (the prospectus and other directives), specific recommendations to Member States, promotion of market forces (European ..., 2015).

direction. For a single market and the development of its resources, the equal competition of market participants and the sharing of good practices in the implementation, along with an accurate interpretation of the theoretical impact of market factors are needed to facilitate its development, as well as one-sided or complex conditional market development that has been empirically proved.

The clearance rate in Lithuania and the world. The research works of Lithuanian scientists (Klimašauskienė ir Mosčinskienė (1998), Leipus ir Norvaiša (2003), Pekarskienė ir Pridotkienė (2010), Jasienė ir Paškevičius (2010), Stankevičienė ir Gembickaja (2012)) on corporate bond market instruments or separate market development issues usually fall within the context of the capital market and its development without the distinction of the instrument itself, its own specific characteristics, its development and the development determinants. The same global R & D trend observed in the research of Brzozowska (2008), Raddatz and Schmukler (2008), Chami et al. (2009), Peiris (2010), Bianchi et al. (2012), Sienaert (2012), Laeven (2014), could be supplemented by the analysis of corporate bonds as an instrument of credit and related markets by Hubbard (1998), Grande et al. (2011), Greenwood and Hanson (2013). Corporate bond market development factors were distributed between developing and developed countries by Srinivas et al. (2000), Eichengreen ir Luengnaruemitchai (2006), Sui (2011), Jaramillo and Weber (2012), Gozzi et al. (2012), Bayoumi and Bui (2012), Felman et al. (2014), and Levinger and Li (2014). Recent corporate bond market empirical studies, which measure the impact of technological development on the market, were carried out by Yartey (2006), Ezirim et al. (2009), and Bhunia (2011), and evaluation of the substitution to credit institutions instruments was performed by Kaya and Meyer (2013), and Kaya and Meyer (2014).

It should be noted that the international research on the scientific problem is much broader in the scope of its work, and deeper in its evaluation of different aspects. Therefore, the need to supplement the Lithuanian research facilities specifically with this instrument concentrated study is evident.

By choosing the corporate bond market as *the object of the research*, the *investigation goal* is the identification of factors promoting the development of the corporate bond market through an evaluation of the individual and collective structural impact on the market equation, thereby providing opportunities for the forecasting of

market development. In order to achieve the goal, the following *tasks* should be performed:

- 1) Determination of the definition of the corporate bond instrument and analysis of the structure of the corporate bond market in terms of supply and demand and their impact on the development of the market.
- 2) Evaluation and division into groups of the factors behind corporate bond market development which were distinguished in the scientific literature and other researchers' empirical data confirmed by market statistics.
- 3) Comprehensive investigation into the effects of a selected set of corporate bond market development indicators (legal and regulatory basis, ICT, competitiveness to bank loans), indicating those having the largest influence and the time of onset, through a structural equation describing the market.
- 4) Provision of a capability model for corporate bond market development to allow forecasting through utilization of the values of the selected development factors.

The research goals and tasks of the research have been implemented using following *methods*: comparative and logical analysis and a synthesis of the scientific literature, descriptive statistics, dynamic indicators (growth, growth rate), inductive and deductive division, graphical analysis, correlation, regression analysis, cascade evaluation methods, Granger causality evaluation, vector autoregression, Gompertz and ARDL profiling.

In this doctoral dissertation, the data aggregation of the ECB, Eurostat, SIFMA, the World Bank, the Lithuanian Department of Statistics, the Bank for International Settlements database, and the Bank of Lithuania (former Lithuanian Securities Commission) reports were used. The data access or variable length of the data set has become a major limitation of the research methods to be applied in the implementation of the conclusions adopted.

Defended statements of the doctoral dissertation:

- 1) The tax environment does not have a significant effect on the development of the corporate bond market. However, gross corporate bond market regulation influences the development of the corporate bond market positively.
- 2) While technological change is not sufficient to describe the development of the corporate bond market in individual countries, the results of the corporate bond market regional findings ensure its further development. The results of the technological development model encourage corporate bond market standardization.
- 3) As corporate bonds and bank loans are recorded like alternative resources of allocation, identical for the market participants and market development dynamic curves, between one-way causality or controversial correlation, the corporate bond market sector does not constitute a substitute for the bank loans sector. On the other hand, the interaction strength of these markets and the direction depends on their level of development in the country: in developing countries with severe complementarity, a partial substitution of their features has developed.
- 4) The complex nature of the factors of corporate bond market development is opposite to that of an individual combination of the potential synergies of factors and the exposure time. The ICT factor has prolonged exposure to the corporate bond market, which is stronger in more developed markets than in developing ones. The legal framework, market monitoring mechanisms and fiscal environment of a corporate bond market are less robust in developing markets, regardless of the period. When differentiated by periods of time, the banking sector has greater impact on the underlying causes for market changes and reactions in emerging markets than in developed markets.

Scientific novelty and significance. To the best of the author's knowledge, there is no other scientific work in the Lithuanian research community that has examined the corporate bond market development factors and lodging market development forecasting capabilities. The authorial research methodology presented in this doctoral dissertation is

unique. The methodology used on the relevant market in Lithuania's case is investigated for the first time (e.g. the Gompertz model). Also, both Lithuanian and international research does not work for the selected research facility using the ARDL model or investigating Granger causality. The world literature that was examined is not focused on particular corporate bond instruments, and individual studies do not combine the factors into a comprehensive analysis of the measured impact on market development. This doctoral dissertation provides added value to economics in the following aspects:

- The results of aggregate systemic foreign and Lithuanian literature analysis lead to the presentation of different approaches to the factors that influence corporate bond market development and the selection of argumentation.
- Inductive and deductive differentiation of the corporate bond market development factors.
- Innovative research methods, demonstrating yet uncharted corporate bond market development characteristics.
- Introduction of the corporate bond market development prognostic model and the identification of factor exposure, allowing an assessment of the long-term and short-term effects on market development.
- Copy of findings in the corporate bond market development factors and their direction of influence to be used in longitude market analysis.

The practical significance of the doctoral dissertation has the following dimensions:

- The use of the academic community, with expert assessments of the corporate bond market.
- One can understand the decisions of the market surveillance authorities or policy makers.
- Indirect stimulus to market participant solutions for investors and issuers (through the decisions made by supervisory authorities).
- Increase in the competitiveness of the credit market, and familiarization with other, non-bank borrowing facilities.
- Increased public financial literacy.

The structure and scope of the doctoral dissertation. The dissertation consists of three chapters. The first chapter examines in detail the corporate bond instrument and its supply and demand determinants which are identified in the scientific literature and legal acts and analyses the influence of factors on the market by providing the direction of their impact. The second section describes the author's combined research methodology. The third section provides empirical research data and results on selective corporate bond market factors: the corporate bond market regulatory burden is estimated by creating an IRRI (market regulation) index, the optimal tax rate and the Laffer curve is plotted, the growing corporate bond and ICT volume is measured in the form of a Gompertz technological diffusion model, and the corporate bond market and the banking sector substitution is examined by applying correlations and Granger causality assessment measurements. The chapter concludes with a complex analysis of the factors as examined for separate countries or regional analysis. It presents forecasting models for corporate bond market development - structural market equations. The thesis concludes with findings and recommendations.

REVIEW OF THE CONTENT OF THE DOCTORAL DISSERTATION

In the scientific literature, the corporate bond market and the factors that impact it are examined in several dimensions:

- In the makeup of the capital market (Klimašauskienė and Moščinskienė, 1998; Leipus and Norvaiša, 2003; Brzozowska, 2008; Raddatz and Schmukler, 2008; Chami et al., 2009; Pekarskienė and Pridotkienė, 2010; Peiris, 2010; Stankevičienė and Gembickaja, 2012; Bianchi et al., 2012; Sienaert 2012; Laeven, 2014)
- In the scope of credit instruments (Hubbard, 1998; Grande et al., 2011; Greenwood and Hanson, 2013)
- In the samples of developing countries (Srinivas et al., 2000; Eichengreen and Luengnaruemitchai, 2006; International..., 2011; Sui, 2011; Jaramillo and Weber, 2012; Gozzi et al., 2012; Felman et al., 2014; Levinger and Li, 2014) or developed countries (Bayou and Bui, 2012; Australian..., 2014).

In the makeup of the capital market, the corporate bond market and its market performance are analysed in the context of information efficiency (Klimašauskienė and Moščinskienė, 1998; Bianchi et al., 2012), the efficient market hypothesis (Leipus and Norvaiša, 2003; Pekarskienė and Pridotkienė, 2010; Stankevičienė and Gembickaja 2012), institutional investors (Raddatz and Schmukler, 2008), government regulation (Chami et al., 2009), internationalization (Peiris, 2010; Sienaert, 2012), and by identifying the mandatory prerequisites for the effective functioning of the market (Laeven, 2014). A separate analysis of the macro-environment for the corporate bond market has not been conducted.

In the scope of credit instruments, the corporate bond analysis covered credit ratings (Greenwood and Hanson, 2013), state grants (Grande et al., 2011) and equivalent market information (Hubbard, 1998), as well as their impact on the profitability of the instrument and its price. Greenwood and Hanson (2013) demonstrated that a significant reduction in a company's credit rating leads to more credit market "overheating" than a sudden increase in the debt capital gains. The authors agreed that the credit rating for a corporate bond provided less meaningful market information. So far, Grande et al. (2011) provided the measures that favour the corporate bond instrument. He saw the strengths and weaknesses of corporate bonds that had been granted in order to encourage activity in the sector, renew funding, protect against further financial crises and reduce the price of the loan. On the other hand, state guarantees are regarded as an instrument of competitive distortion in the market, providing more favourable conditions for some market participants over others. Other market distortions are examined Hubbard (1998). When assessing the information asymmetry in the credit market, Hubbard (1998) considered it to be of little concern for the minor consequences it caused. Asymmetric information that is possessed by borrowers and lenders causes internal and external financing cost differences, which are represented in the prices and yields of debt instruments.

However, the strongest motivation in the development of the market analysis of multiple factors influencing the capital market is the competition and comparison between different countries. Srinivas et al. (2000) compared the taxation of capital in Latin America and Eastern Europe, indicating favourable circumstances for further development. Moreover, Luengnaruemitchai and Eichengreen (2006) examined the

relationships between the Asian, European and Latin American capital markets, concerning their systemic risk and vulnerability to the effects of economic shocks. Other findings were more concrete as to the reasons for or consequences of underdeveloped capital markets, identifying solutions for further improvements. For example, Sui Hui (2011), in examining the evolving Chinese corporate bond market, identified a lack of innovation (most tools are of limited duration and low yield, with a tight range of risk management and their relationship with profitability measures), an excessive amount of administrative control of state level projects for corporate bond issues (which must be inspected and approved by several institutions), a lack of trusted credit rating agencies (in China), an undeveloped secondary market (a deficiency of specialized institutional investors and dealers), and poor disclosure and publicity interfering with capital market development. Meanwhile, Levinger and Li (2014) complemented this with the factors that encouraged Asian corporate bond market development, which could be distributed domestically and internationally. These are lower interest rates in the developed countries, which encouraged investors to seek the higher-yielding instruments of the Asian market. On the supply side, the development of the market was driven by regulatory and policy initiatives implemented for the development of the market infrastructure (Levinger and Li, 2014). On the contrary, Felman et al. (2014) said that the catalyst factors responsible for the development of corporate bonds in Asia were attributable to foreign investment. However, in unison, Levinger and Li (2014) and Felman et al. (2014) identified the development of the investor base, or its critical mass, as the main driver of the efficient corporate bond market development and focused on the importance of investments to the market infrastructure.

More generally, and without any specific country or region classification, the corporate bond market in developing countries was examined by the International Organization of Securities Commissions in collaboration with the World Bank Group (2011), Jaramillo and Weber (2012), and Gozzi et al. (2012). The factors that interfered with the development of the emerging capital markets could be summarized as (International ..., 2011):

- Limited variety and quality of corporate bonds
- Low liquidity of the secondary market

- Relatively underdeveloped market regulatory framework
- Inefficient market infrastructure
- The lack of diversity of instruments and a narrow investor base.

These factors are followed by the insignificance of fiscal factors in affecting the bond yields in developing economies, although valued by the market participants when investing in different countries (Jaramillo and Weber, 2012), and noncompetitive internationalization when the local and international corporate bond markets are complementary and not competing for a different duration or the specific nature of the instruments (Gozzi et al., 2012).

On the other hand, the comparative analysis of the developed capital markets reveals the bandwidth of the markets' sensitivity to economic shocks and the dispersion of these effects. Bayo and Bui (2012) identified that the US impact on other markets (EU, Japan) is much more significant than the other markets' impact on the United States in terms of financial crises or the dissemination of economic shocks. They also found a correlation between the UK and the euro area member states. Meanwhile, the Australian corporate bond market development factors are defined as the exception of short-term "vanilla" corporate bonds' prospectus publicity, the attraction of retail investors to the market, and the issuance of covered bonds by authorized banks – these are the results of changes in the regulatory and legal framework. The importance of the developed market is based on the diversification of investment opportunities for local investors as well as for the issuers of debt (borrowing or investing in a market, not only a bank instrument) and the arguments for systemic risk mitigation. The latter can be subject to market interference: from the issuer side - an unfavourable tax base, and for the investor - low liquidity (Australian..., 2014).

Corporate bond market development is identified as a challenge to all states and there is no rapid deployment of this task, the need of which is justified by the following arguments (International..., 2011):

- A developed corporate bond market can act as a source of stability, especially during periods of financial crisis, when the credit markets are often stagnating.

- A liquid corporate bond market will reduce a country's reliance on the banking sector and increase funding for a variety of asset classes, facilitating diversification.
- The corporate bond market also helps to reduce the risk of currency mismatches and funding periods, especially in long-term projects.

Therefore, on the basis of the credit and capital related market development and stagnation factors identified and reiterated above, and considering their geographical diversity and level of development, the corporate bond market influence factors have been modelled (see Fig. 1), whose presence and operation, promotion or suspension lead to corporate bond market development, efficient operation, and sufficient market depth.

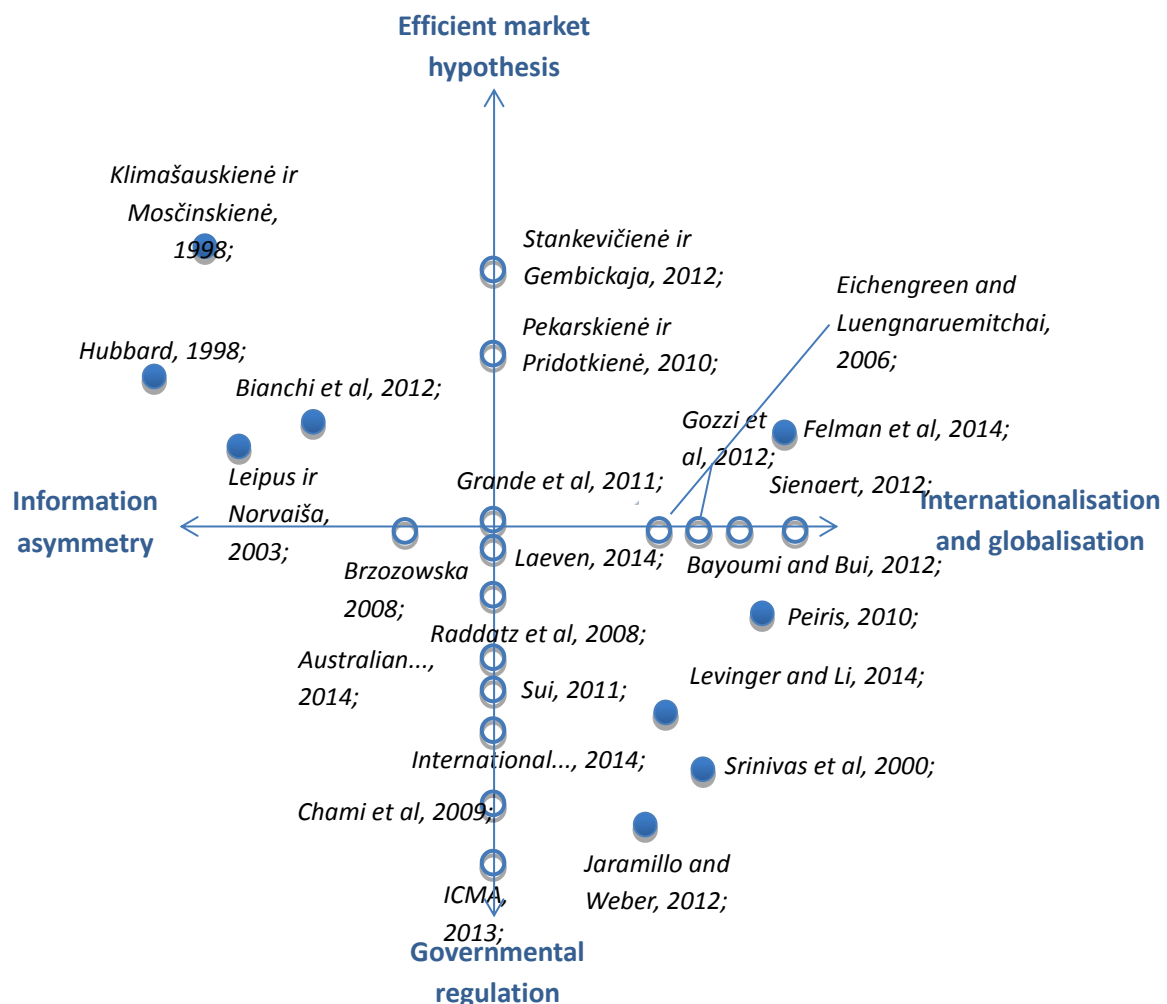


Fig. 1. Corporate bond market influence factors
Source: compiled by the author

As shown in Fig.1, various authors have examined the impact of the market factors and are divided into four theoretical-diffusion factor effects, which refer to the four factor axes' field names ("Efficient market", "Information asymmetry", "Governmental regulation" and "Internationalisation and globalization"). The coloured circles represent the authors in dealing with these factors, including the impact of the credit or capital markets. The hollow circles show one area in the factor analysis. The further away a circle symbol with the names of the authors is located in respect to the centre of the coordinate axis, the more reflective it is in regards to the theme (by analytical depth or volume).

When examining Fig. 1 in the counterclockwise direction, it seems to represent a cycle of effective market progress, attained by a reduction in information asymmetry, limited government regulation and international market integration.

The Efficient Market component of this analysis is treated as the ideal goal of market development, when a market does not have, or only has, minor distortions (in regards to asymmetry of information, strict regulation, taxes, transaction costs, etc.). The prevalence of perfect competition, as their early work, was defined by Modigliani and Miller (1958) and Fama (1970). Such market developments lead to a positive impact on other areas of the economy, which is supported by Pekarskienė and Pridotkienė (2010), who determined the impact of the capital market in terms of resource allocation, which considers a country's GDP growth.

At the junction of the efficient market and information asymmetry factors, the information efficiency (in contrast to the information asymmetry, a component of the efficient market hypothesis) is analysed. Klimašauskienė and Moščinskienė (1998) explained the effectiveness of information as the fast and accurate reflection of security prices in all available market information. On the basis of their experience, information efficiency facilitates the skill and professional flair of individual buyers and sellers of securities to very quickly evaluate any news that may affect the prices of securities and instruments, and accordingly, use it effectively for transactions. Meanwhile, the market processes the information received by its immediate reflection in the market price of the securities. The market is considered effective, if this information becomes available to all. The market price does not change. The effective market price already includes all of what has happened up to this point, and changes depending on the result of new

information as well as the market participants' reactions (Klimašauskienė and Moščinskienė, 1998).

When examining the Lithuanian capital market and its official list of shares (NASDAQ OMX Vilnius), Klimašauskienė and Moščinskienė (1998) found weak capital market efficiency, which means that the prices of securities reflecting the information collected in the analysis of pre-existing prices and market participants cannot support the creation of such an investment strategy, which can overcome the expense of others (Roberts, 1967). There is also an average (based on the past information available to the public) and strong efficiency that exists when both confidential and public information is used for the entire period (Roberts, 1967). Stankevičienė and Gembickaja (2012) extended the conclusions of previous research on the official list of Lithuanian securities trading in regards to behavioural theories and adopting market investment strategies that were weak and inefficient. The authors argue that the market is no longer effective because of irrational investors and their behaviour. They studied the correlation of stock returns and investment strategies (momentary and reverse, which is based on an analysis of past prices) and found that was typical of the short term nature of the NASDAQ OMX Vilnius, Riga and Tallinn stock exchanges.

The examination of the *information asymmetry* component identified the factors of publicity, transparency and the speed of information dissemination. Bianchi et al. (2012) present derivative financial instruments as an innovation of the financial capital market. He noted that the efficiency of macro-prudential policy depends on the power of information availability, credit constraints, and the early phases of optimism in the market delivering innovative financial products. Politics is not effective when the market exudes optimism, the government is unaware (as well as private market participants), and credit constraints exist (Bianchi et al., 2012). In turn, Brzozowska (2008), in examining the creation of venture capital funds in different countries, states that more favourable conditions for enterprises exist when the rules or procedures for capital investments are well known. The difficulties in the market caused by inexperienced management or fund management, as well as for unknown risk or uncertainty, have been conditioned by new technologies. On the other hand, the positive impact of technological factors on market development is seen by Leipus and Norvaiša (2003), who argue that the financial market can be distinguished from the consumer-goods market by its

dynamics and its high degree of uncertainty, which advanced information technologies have helped to develop and explore by gathering information into databases (the price of securities, transaction type, date, quantity, etc.).

The challenges of capital market efficiency and information asymmetry are summarized by the Capital Asset Pricing Model (CAPM):

- An efficient capital market hypothesis focuses on compliance with the pricing information and provides information symmetry and correct information to the market.
- Information symmetry properly allocates resources, as required by the main function of the capital market.

This is closely related to capital market objectives: the pursuit of the perfect market, and eliminating imperfections in information.

Government regulation is an abundantly explored area, which consists of legal regulation, market supervision, and the establishment of infrastructure, taxes and any other state government intervention in the market. Despite this, there is no common approach to the impact government regulation has on the market direction. Some authors (Raddatz and Schmukler, 2008; Chami et al., 2009; Hui Sui, 2011) see shortcomings:

- Hui Sui (2011) identified excessive administrative control as one interference in the development of the corporate bond market (when corporate bonds are checked and approved by several different institutions), which results in a longer process for their issuance and duration.
- Schmukler and Raddatz (2008) examined the relationship of institutional investors and capital market development and has come to the conclusion that government regulation is instrumental in the development of primary markets, but is not a priority factor in determining market liquidity and the challenges of investment management strategies.
- Chami et al. (2009) examined the limitations of the governmental development and attraction strategy of “Build It and They Will Come”. Based on this strategy, governments, in creating a legal framework, market instruments and a stock

exchange mechanism, expect an influx of private investors in the market. Basically, such strategies attract several investors and the market activity is not overstated. Therefore, the authors come to the conclusion that supervision and regulation of the capital market are not direct market development factors, despite massive governmental efforts to facilitate capital market development.

Other authors (International..., 2011; ICMA, 2013; the Australian..., 2014) state the benefits or importance of:

- Regulatory and legal framework changes that can also stimulate the market (examples from Australia): Prospectus publicity exceptions, the attraction of retail investors to the market, and permission for banks to issue covered bonds that led to the scope and depth of market development in Australia (Australian..., 2014).
- The ICMA (2013) highlights the importance of the legal framework and regulation of the corporate bond market, when the possibility for market promotion and excessive constraint both exist. The legal framework and regulatory policies must both comply with the key needs of the market participants (issuers and investors) and ensure their protection (ICMA, 2013).
- Any measures and recommendations for corporate bond market development should be complemented by a strong regulatory and supervisory system (International..., 2011).

The *International integration or globalization* of markets is a component that encompasses market integrity, potential competition, foreign investment and the transfer of systemic risk factors.

As a catalyst of local bond markets, Peiris (2010) identified foreign investors, who further diversify institutional investors and create a greater demand for local debt instruments. Developed capital markets are more attractive to foreign investors. Gozzi et al. (2012) provide data that supports the idea that companies that issue special purpose and currency bonds in international markets often double their positions in local markets. Sienaert (2012) perceives some shortcomings in the growing demand of foreign investors for the local capital market, when the market becomes more sensitive and more

affected by international shocks and systemic risk. Meanwhile, Felman et al. (2014) highlight the importance of an expanding investor base for the efficient development of a corporate bond market.

Luengnaruemitchai and Eichengreen (2006) and Bayoumi and Bui (2012) found elastic geographical, financial and capital market links and interdependence with the high probability of the occurrence of systemic risk. Laeven (2014) sums up all the factors in the appropriate fields and lists the mandatory conditions for local capital markets to operate, which can be divided into three groups (Laeven, 2014):

- Sound macroeconomic policies (for market openness and integration into international markets)
- A strong institutional and legal framework (legislation, as investor protection has a positive correlation with corporate bond market development, and is less severe than the macro-economic factors)
- A well-functioning financial infrastructure (contract terms, credit ratings, investor rights).

Nevertheless, the effective functioning of a market is determined by the requirements of minimum size. There is often an insufficient amount of existing infrastructure, legislation or policy, encouraged demand for investors, intensified private pension funds, and other institutional investors are needed (Laeven, 2014). This was supported by Chami et al. (2009) indicating that the development of a market requires the willingness of borrowers and lenders to enter into transactions, favourable liquidity sources, and the means for conditions that can be supported and developed by removing obstacles that are prevented by the actions of different regulatory structures.

More specific measures and recommendations to develop the corporate bond market are (International..., 2011):

- **Market efficiency:** the development of methods for the initial distribution of securities, reducing the corporate bond issue registration or registration confirmation periods, standardizing bond offering documents, creating a benchmark of government bond yields and the pre-publication of the auction calendar.

- ***Market infrastructure and development of the investor base:*** increasing the efficiency of trade, the development of the market system, creating a corporate bond index and the establishment of a specific guarantee institution, including the cancellation of market entry barriers as well as opening up the market to investors, and in particular, giving a boost to retail investors.
- ***Enhancing Investor Protection:*** promoting price and trade transparency, enhancing the quality and timeliness of information made public, strengthening the supervision and control of the market mechanisms, defining the use of credit ratings and tightening the rules on bankruptcy (insolvency laws) and restructuring.
- ***Favourable Tax System:*** reviewing the tax system and the creation of corporate bond market competition conditions that are adequate in regards to government bonds or bank lending markets.

Other authors extend their proposals for capital and bond market development through democratization (Shiller, 2012) and standardization (Novick et al., 2014). Democratization is described as the opening up of a financial market to the public. It is targeted at creating legal and infrastructural capabilities for retail investors in transactions (not through intermediaries), thereby increasing the activity of the market, liquidity, transparency and confidence (Shiller, 2012). Meanwhile, standardization is understood as uniformity in the duration or extent of an instrument (in this case, a corporate bond), which would also increase market liquidity, reduce issuance and transaction costs, increase the transparency of the price and etc. (Novick et al., 2014). To the view of the author of this paper, this reform is disadvantaged as well: in particular, the standardization of capital market instruments would reduce access to credit for small businesses (proposals for minimum issuance start at 750 million USD). On the other hand, standardization creates favourable conditions for the transfer of statistical data collection, enabling bigger data sets for the analysis of scale and research.

A variety of influential capital and corporate bond market factors were identified in regards to their impact on development or interference. For a comprehensive complex analysis according to the available data and unexplored areas, the following corporate bond market factors influencing development were chosen:

- ***Legal framework, state regulation and taxes.*** The choice of the factor consists of argumentation of the theoretical base, highlighting the efficient functioning of the corporate bond market assumptions within the existing infrastructure, the legal basis (the protection of investors, tax laws) which are under the maintenance, development and direct responsibility of the governments.
- ***Information and communication technologies (ICT).*** This factor was considered and selected as a counterweight to information asymmetry; new technological infrastructures are leading to the development of the market (faster transactions taking place and those served by ICT) and transparency (a widely available set of information).
- ***Competition with bank loans.*** While arguments concerning the need for capital market development to stand as an alternative to bank loans, the author of this paper has decided to include this factor into the analysis to be investigated further, including the relevant market dependence as mutually owned or designated development.

The international integration component in this paper will continue to develop as a comparative analysis: comparing corporate bond market development in the US and Lithuania. These countries were chosen for their different level of market development as well: the US representing a developed market, while that of Lithuania, an underdeveloped market.

Besides the geographic factor, and in accordance with the dynamic nature of the research object (corporate bond market and its development), a time series approach is introduced with an evaluation of the long-term or short-term impact on the dependents.

The doctoral dissertation details the transatlantic (USA), international (EU) and national (Lithuania) legal framework analysis, examining the corporate bond market partially or completely in relation to legislation and its direct and indirect impact on the lifecycle of corporate bonds and the legal regulatory process, or cyclical economic contribution priorities affecting corporate bond market activity results. The analysis led to these conclusions: a reactive legislative procedure concerning overall economic processes at all levels was observed. The US and Lithuania have exclusively specialized on legislation pertaining to the market for corporate bonds. Based on the investor

protection point of view, its weak but positive legal impact on corporate bond market development was identified. While the strengthening of market regulation legislation has had a negative impact on market development, a positive impact can be seen in market transparency. In the absence of specialized legislation at the instrument level to regulate the market, EU legislation has been enacted towards the positive side of the market development impact factor. In the EU, the influence of these economic processes is more overshadowing, while in the US and Lithuania, it emphasizes the positive impact of legislation and regulation. A gap between market regulation periods was observed: the US market started the development of its legal framework early in 1934, Lithuania in 1994, and the EU in 2000. These gaps have given rise to differences in market volume, which have been determined by exceptions to laws or exemptions as well, which pursue the purposeful identification of country policy (The US concentrating on SMB, a large issue concentration in the EU and rare exceptions in Lithuania). In comparison with the remarkable development of the administrative apparatus in the United States, the consolidation of the EU echoed new development trends in the existing law of the US, influencing the creation of new legislation in the EU. The United States is leading in technological advancement and systematized information and dissemination, and that serves to formulate a recommendation for the EU in the field of development.

The capital (including corporate bonds) market regulation problems are summarized at the regulatory level (the extent of macro-prudential policy implementation, a network of supervisors, stringent requirements) and regulatory burden optimization (direct and alternative cost), to achieve the key objectives of market regulation (transparency, reliability, investor protection) and integration. The author of this dissertation believes that capital (including corporate bonds) market regulation is necessary for the manifestation of an efficient market hypothesis and investor protection, however, up to a certain limit (in the number of exceptions) to promote market segments (e.g. SMB) and instruments (e.g. corporate bonds) in order to increase their degree of utilization.

The market regulation component is complemented by theories and insights resulting from capital market and corporate bonds taxation, which are seen as relevant by Ramsey (1927), Diamond and Mirrlees (1971), Atkinson and Stiglitz (1976), Chamley (1986) and Judd (1985) tax theorists insights and recent Golosov et al., 2003; Fahri,

2010; Picketty and Saez, 2012; Gross, 2014 and similar others. The authors' reviews were distributed between a zero rate on taxing capital income and higher rates than zero and every opinion was accompanied by argumentation. Even though the standard optimal taxation theory describes the main purpose of the tax system as a magnification of the social welfare function with a certain set of restrictions (Mankiw et al., 2009), the optimal capital taxation could be summarized by several different character traits and some theories and assumptions that have been determined (See Table 1).

Table 1. Optimal capital taxation characteristics in the economy

No.	Characteristic	In accordance with the theory	Assumption or motivation
1.	The efficient capital tax rate is close to zero.	Chamley (1986) and Judd (1985), Fahri (2010), Gross (2014).	The effective tax rate is a ratio of the nominal rate and state budget revenues caused by it or a ratio of the tax burden.
2.	Differential taxation of labour and capital is preferable, and in favour of capital.	Atkinson and Stiglitz (1976).	In case of divergence between labour and capital taxation, lower tax rates, a narrower base or more exceptions (exemptions, tax credits or other forms) should be applicable to capital.
3.	The taxation of financial instruments of asset and capital class should be differentiated according to their elasticity in regards to demand.	Ramsey (1927), Mankiw (2000), Alworth and Arachi (2001), Gropp (2002), Reis (2011).	Market competition condition with partial insight into corporate capital structure adjustment (adjusting the debt-equity ratio, according to the debt indicators and potential risks).
4.	Unified taxation of corporate bond counterparties is preferred (if the owner of the instrument is a natural or legal person).	Diamond and Mirrlees (1971).	Standardization of taxation, without distorting the market for the establishment of new institutions.

Source: compiled by the author

To sum up the preferred taxation characteristics, it should be noted that there are no conclusions about determining the optimum size of the nominal tax rate (provided by law), and the effective rate analysis was performed for the long run. Hence, all the

theories that were investigated do not contradict with short-run capital taxation. Capital which generates investment opportunities through possibilities to reinvest should be encouraged more than by labour forced by the differentiation of fiscal policy. The same differentiation is proposed for the taxation of several market instruments at the levels of the administrative costs of the tax system. However, the tax burden for different counterparties should be equalized, regardless of their legal status. This practice is not widespread, and is dominated by different businesses and individuals of the same transaction tax experience in contrast to e.g. Lithuania or Estonia, where both businesses and individuals are taxed at the same 15 and 21 percent income tax rates, respectively².

In the analysis of the taxation of corporate bonds, theoretical considerations in regards to tax exemptions or to differentiation by the holder or the risk are concluded by exhaustive tax administration and market distortion arguments. With corporate bonds that vary by their accrued interest amounts (zero coupon bonds, coupon bonds and etc.), price (discounted, denominated or at a premium), the date of acquisition and retention until their maturity, the differentiated taxation administration of the instrument is complicated. If the cost of the tax collection is notable for the revenues being generated, the application of this tax is inexpedient. It is also not intended to influence the behaviour of the investor when acquiring, selling or at the redemption/maturity of the instrument.

Taking into account the theoretical ideas of capital gains exemptions from taxation (as promoting development) and with the assumption that the corporate bond transactions do not account for the largest part of the state budget income, and that the behaviour of the participants in the transactions is sensitive to taxation (elastic demand), the author of this paper supports the idea of the interest of corporate bond transactions (and similar capital gains) be exempt from any taxation as a default in the state fiscal target however, to prevent the stagnation of market instrument development.

In scientific literature analysis, information asymmetry was identified as an issue concerning the different disposition of information (by content or time) by different counterparties. Its solutions are searched and set by information and communication technologies (ICT), when assessing the occurrence of the phenomenon and the

² Source: European (2014)

prevention of the problem (information asymmetry), which is needed for the research object - the corporate bond market. The ICT factor analysis sections are:

- 1) Information asymmetry (Modigliani and Miller, 1958; Merton, 1987; Stiglitz, 1969; Stiglitz and Weiss, 1981; Bolton and Freixas, 2000; Wilhelm, 2001; Claus, 2010; Armstrong et al., 2011; Lambert et al., 2012) prevention factor;
- 2) Information as a product (Arrow, 1962; Healy and attics, 2001; Wilhelm, 2001; Eggleston et al., 2002) dissemination factor;
- 3) Economic or individual industries development factor (Santos et al., 1993; Berndt and Morrison, 1995; Bharadway et al., 1999; Eggleston et al., 2002; Welfens, 2005; Tang, 2006);
- 4) The factor of direct and indirect impact on the corporate bond market (Yartey, 2006; Ezirim et al., 2009; Bhuna, 2011). For example, Yartey (2006) survey data from 76 countries shows that the credit and capital markets develop due to the growth of ICT. The conclusion is that countries with less developed financial markets more rarely use the ICT. On the other hand, Bhuna (2011) found that the majority of ICT determinants in securities market were the growth in the number of investors, brokerage increases and improved access to ICTs. This was supported by Ezirim et al. (2009) by excluding specific ICT components that nurtured the market capitalization: Internet access, telephony (main and mobile), as well as familiarity with the brokerage web activity.

It should be noted that information asymmetry is closely related to the ICT directly creating networks, platforms and approaches for the rapid and efficient distribution of information and its publicity to counterparties or stakeholders. This reduces the impact of this factor to market imperfections, identifying the process carried out for prevention. A similar contrast was seen by Wilhelm (2001), in search of information asymmetry solutions for financial markets, and identifying them as particularly sensitive to information. Receptivity was interpreted as the immediate dissemination, storage or transmission of information related to the development of the Internet. On the other hand, due to the long position in the dissemination of information on financial markets, web development was explained as an evolutionary, rather than

revolutionary factor in nature. This also applies to the securities markets, where the human factor is often measured or is replaced by electronic order processing systems, electronic auctions of securities (Wilhelm, 2001).

Widely used in corporate bond market development as a reason for a decrease in bank lending volumes, another motivation of this doctoral dissertation implemented was research in testing the substitution of corporate bonds and bank loans for enterprises' instruments, or the complementation hypothesis.

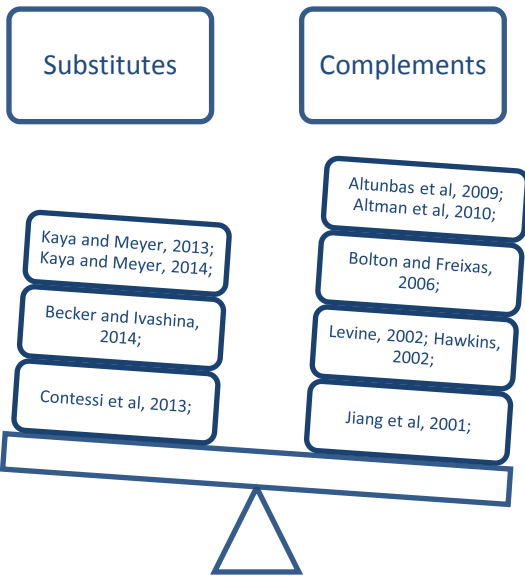


Fig. 2. The distribution of researchers of corporate bonds and bank loans and their bias towards the effects of substitution or complementation
 Source: compiled by author

As shown in Fig. 2, most authors' research findings were biased in favour of corporate bonds and bank loans complementation. The conclusions are based on statistical comparison (Levine, 2002; Hawkins, 2002; Altunbas et al., 2009), correlation (Jiang et al., 2001), causality (Altman et al., 2010) analysis and modelling (Bolton and Freixas, 2006). Their market supplementation arguments are provided:

- 1) Direct bank participation in the life cycle of corporate bonds in the process of providing financial services, intermediating in the corporate bond market (Jiang et al., 2001; Levine, 2002; Hawkins, 2002);

- 2) Bank loans and corporate bond diversification strengthens the corporate balance sheet structure (Jiang et al., 2001; Hawkins, 2002; Altunbas et al., 2009; Altman et al., 2010);
- 3) Cyclical economic or monetary policy impacts on reverse dynamics of corporate bonds and bank loans (Hawkins, 2002; Bolton and Freixas, 2006).

By directly participating in the corporate bond market (as brokers, institutional investors and in the role of issuers) banks precondition the market to develop, diversifying their own risks (using bonds as collateral) (Hawkins, 2002). Their balance sheet position is directly correlated with the instrument (Jiang et al., 2001). That notes, and Levine (2002), highlights, the individual financial services group, which banks and the financial market cooperate in, belonging to neither the banks' nor financial markets' interest systems.

In cooperation, banks and corporate bond markets could add corporate debt and risk diversification considerations and reflections of their balance-sheet positions, when choosing a syndicated bank loan for the realization of longer needs while financing short term goals in the corporate bond market (Altunbas et al., 2009) or refinancing bank loans by issuing corporate bonds (the examples of Hungary and Thai) (Hawkins, 2002). This argument also leads to a positive correlation between the two markets (Jiang et al., 2001) and causality (Altman et al., 2010), when bank loans are prerequisites for issuing corporate bonds (Hawkins, 2002; Altman et al., 2010).

Counterarguments for corporate bond and bank loan market substitution are available from the statistics, where Hawkins (2002) points out that the banking sector contraction in 1995-2000 was a consequence of the economic downturn, rather than corporate bond market development. A temporary increase in the amount of corporate bonds was explained by the tighter monetary policy (higher interest rates) by Bolton and Freixas (2006), but it only refers to the redistribution of risky and risk-free borrowers of the banking sector and the capital market.

On the other hand, corporate bond and bank loan substitution was argued about in regards to the different dynamics of these markets (Contesti et al., 2013; Kaya and Meyer, 2013; Becker and Ivashina in 2014) or a negative correlation between them (Kaya and Meyer, 2013; Kaya and Meyer, 2014) (see Fig. 2). The bank loan variation

seemed to be pro-cyclical and corporate bonds - anti-cyclical (Contesti et al. 2013), while the national product analysis includes market regulation (Kaya and Meyer, 2013; Becker and Ivashina 2014) and monetary policy (Becker and Ivashina 2014) levers. The inverse dynamics of the instruments are observed:

- In a recession, there is monitored the decrease in bank loans which is recovering only at the economic growth. Meanwhile, corporate bonds vary in the opposite manner: the volume increases in times of economic downturn and a decrease is seen in times of economic growth (Contesti et al., 2013).
- The reinforcement of ongoing monetary policy, banking sector regulation, lending standards, and the decreasing performance of banks develop the corporate bond market - an alternative to bank loans (Kaya and Meyer, 2013; Becker and Ivashina 2014).

Notably different market positions support the interaction and contradiction between the authors: Contesti et al. (2013) is contrary to Hawkins' (2002) position on the pro-cyclical impact on the economy and Kaya and Meyer (2013), while Becker and Ivashina (2014) disapprove of Bolton and Freixas' (2006) insights on monetary policy tightening. Regarding the arguments above, the author of this doctoral dissertation agrees with Hawkins (2002) and Bolton and Freixas' (2006) position on market complementarity.

The calculation of the correlation between bank loans and corporate bonds by Kaya and Meyer (2013) argues that a company's desire to issue bonds is negatively correlated with the price of alternative sources of financing - bank loans. In subsequent studies, the authors approve of the relevant markets' substitution effect: when swap spreads increased, it had a negative effect on loans and a positive effect on corporate bonds. On this basis, it was thought that the banks and their customers substitute these instruments (Kaya and Meyer, 2014). On the other hand, a large part of the corporate bond market is growing due to growth in investor demand (Kaya and Meyer, 2013).

In summary of corporate bond and bank loan markets' interchangeability or supplemental research, it must be concluded that the alternative presence of the instruments in question does not constitute an adequate premise for the assumption of

confirmation of market substitution, especially if there is complementary (not just alternative) cooperation between the instruments observed. With the agreement to Berlin (2012), it is noted that bank loans and corporate bonds replace each other in the process of redistribution of funds: lending or attracting investment. However, these markets can be complementary as well, while many companies are differentiating debts on loans and bonds (Berlin, 2012).

After the scientific literature analysis and synthesis, the corporate bond market development factors were identified, differentiating in characteristics and nature. These properties determined a multiple research methodology with the aim of using effective and cutting-edge research methods in order to achieve the scientific research goals and objectives. The multiple research methodology is presented in Figure 3.

There are three groups of factors: Legal regulation, covering legislation, market surveillance and the tax environment; Information and communication technology, including computer and Internet dissemination; and Alternative banking instruments.

The Legislative and regulatory factors group was estimated by a tiered approach, distinguishing between legislative dynamics and cyclical economic links, as well as causal analysis, providing the reasons for the changes. Furthermore, the tax environment was estimated by Laffer curves, capturing the optimal capital (which includes income from corporate bonds) tax rates. The factors of integrated effect were measured through a specialized corporate bond market index compiled by the author of this doctoral dissertation.

The information and communication technology group of factors was evaluated by descriptive statistical analysis, identifying the most important changes in characteristics, correlation analysis, indicating the relationships and Gompertz model – an innovative technology development measurement, evaluating the growing or expanding components of synergy.

As an alternative to corporate bond instruments, an assessment of bank loans to the private sector was carried out through a correlation analysis of relationships and Granger causality assessment in determining the degree of substitutability of alternatives.

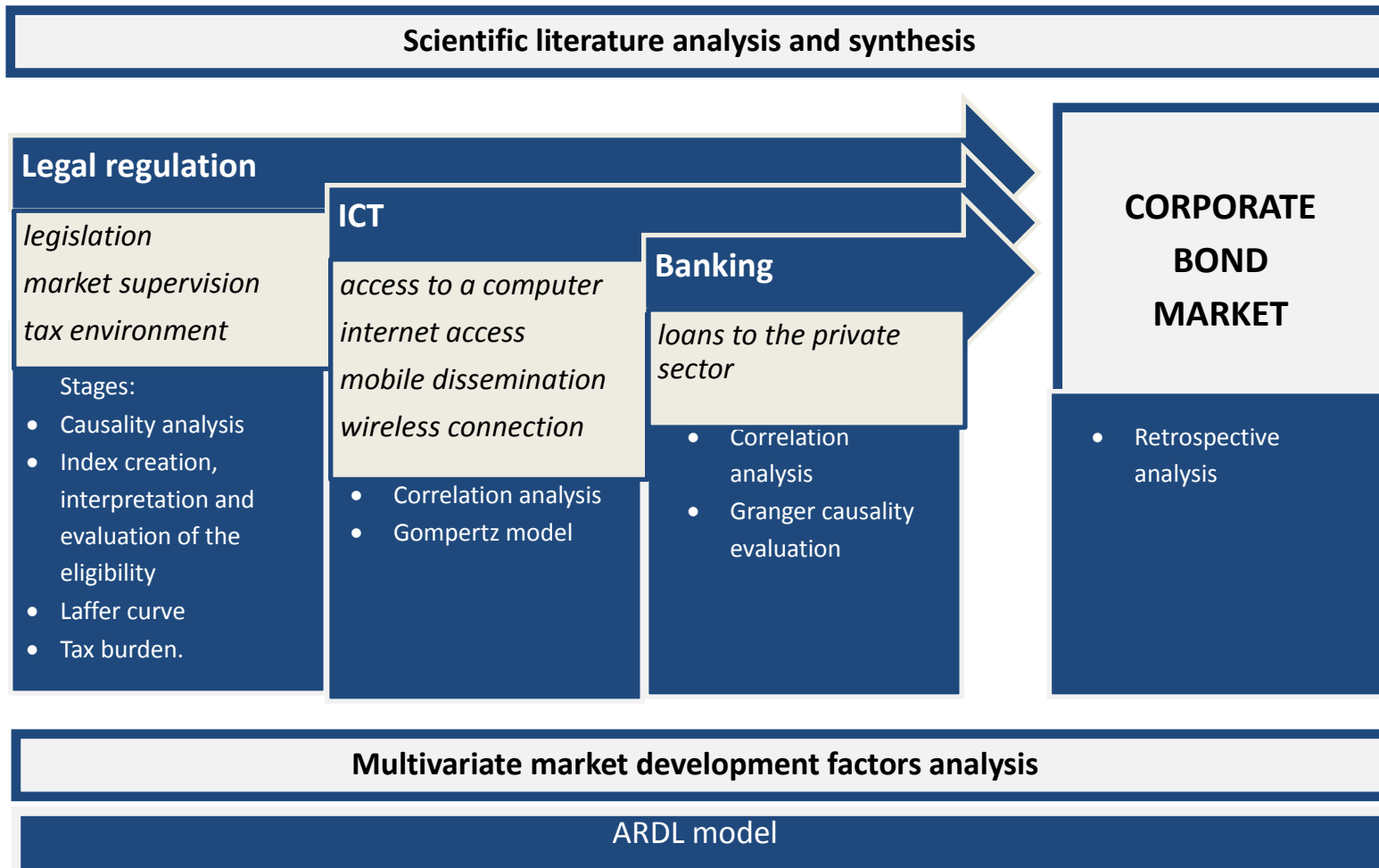


Fig. 3. **Complex research methodology**
Source: compiled by author

The research was completed by a complex analysis. Synergic effects were assessed by the technology awarded ARDL model. The structural-market equations were constructed as prognostic models.

The validity of the conclusions was assessed by the reliability of different models, statistical significance tests, and model validation rules. The conclusions were drawn at the geographic and market development level.

The most common limitations of the models:

- Short, barred data
- Stretch correlation between variables
- Large, interconnected pattern correlation errors.

The thesis was continued through the utilization of the presented methodology, and the empirical results and their conclusions follow after the presentation of the findings.

Legal regulation, government regulation and taxation component evaluation

As access to the Doing Business and Economic Freedom indexes only partly reflects the corporate bond market regulatory burden, the author of this doctoral dissertation presented the corporate bond market regulatory burden index (IRRI), which is based on the available information, the criterion of comparability and the standardization of information principles. The index aims to more accurately assess the relevant market-specific regulatory effects (in order to estimate the burden). The IRRI includes:

- ***The level of legal regulation.*** This is an assessment of the main component of market legislation in its adequacy in providing investor protection, market transparency, market instruments and players (local and foreign), rules for their entry and activities in the market, and market manipulation areas. Greater legal regulation implies a greater regulatory burden. A qualitative rating is used to calculate the estimates.

- ***The institutional market surveillance level.*** This is an assessment of the main component of market regulator rights and terms in reference to investor protection, market transparency, market instruments and participants entering the market and operating within its rules, and the market manipulation area as well. A more developed market surveillance infrastructure implies an increased regulatory burden. A qualitative rating is used to calculate the estimates.
- ***The tax environment.*** The component for assessment consists of corporate bond transactions which are subject to taxation: the tax rate and the tax burden (the ratio of revenue transactions). The estimate is aggregated by giving equal weights to its constituents.
- ***Administrative cost-effectiveness.*** This component assesses the costs incurred by market participants for the sake of increasing investor awareness and market transparency (standard cost model) to the generated income. With the assumption of their investment into asset class instruments, the alternative costs are also estimated. The estimate is aggregated by giving equal weights to its constituents.

Under the similar objects indexing best practices (The Heritage, 2014; the S & P, 2014; the World, 2013; Fehder and Stern, 2013; Foa and Tanner, 2009), and in order to achieve comparability with the Doing Business and Economic Freedom indexes, all the components in equal parts constitute the general index, or the index components are calculated by the average method. The corporate bond market regulatory burden index and its components in the US, EU and Lithuanian examples are presented in Figure 4.

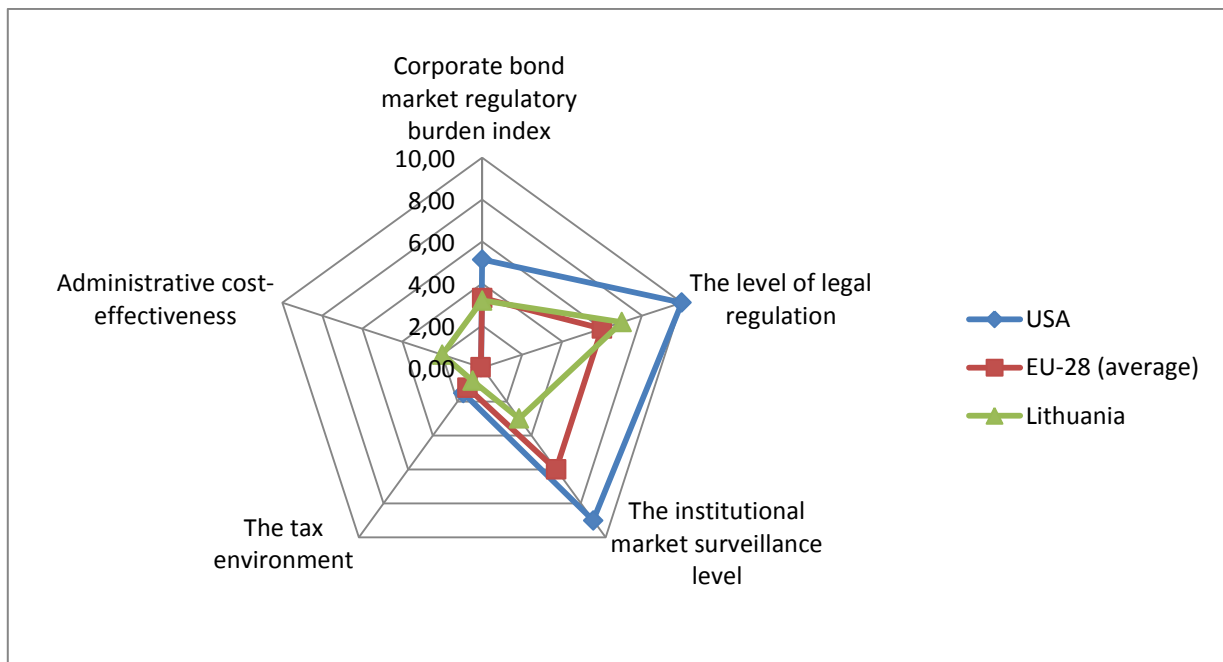


Fig 4. Corporate bond market regulatory burden index and its components in the US, EU and Lithuania, 2013

Source: compiled by author, based on the author's calculations

As seen in Fig. 4, the largest corporate bond regulatory burden index value indicating a greater regulation of the market among the countries compared, and the costs incurred as a result, is observed in the US (5.5 out of 10). A lower index value is seen in the EU (3.82 out of 10), while the lowest is in Lithuania (3.19 out of 10), which implies that Lithuania has the least significant amount of market regulation comparable to other countries in the context of establishing a low or no corporate bond market regulatory burden on its participants. According to the index scale, this applies to the average in the US, and the market regulatory burden is less in the EU and Lithuania.

The findings of the corporate bond market regulatory burden index are similar to the findings and the conclusions reached by the Doing Business and Economic Freedom indexes:

- Lithuania is assessed to be the most attractive for corporate bond transactions in respect to tax.
- The largest Lithuanian and EU indicators' shortcomings are due to the lack of legal and institutional protection of investors.
- When there is an increase in market legal regulation and proactive supervision (institutional level), the regulatory burdens on the market index values of the United States also increase.

The reliability of the index interpretations is tested by pictorial regression equations, measuring the impact of the independently selected parameters on the dependent variable (the determination coefficient, statistical significance). It should be noted that the index developed by the IRRI better describes the corporate bond market development than the modified Economic Freedom index (only the components describing the market are included in the assessment). Regional differences should also be noted, and higher indexes are described in the US data. This consistent pattern is observed for several reasons. Firstly, the level of corporate bond market development is higher in the US (quality of the data, clear variation, and the cyclical nature) as compared with the Lithuanian market. Secondly, it relies on the nature of the selected factors and the subjectivity of the rating scale (in the IRRI index case, a qualitative assessment of the scale model of the best available in the market - the US - regression procedures). Also, the potential probability of latent factors' impact to the model of different regions is not excluded. The market-based regulatory burden index is regarded to be of sufficient interpretation for qualified data rows in niche markets.

As the tax component in the context of measurement does not disclose the impact on the corporate bond market tax burden (in the absence of statistically significant regression equations), other analytical techniques are applicable (e.g. the Laffer curve).

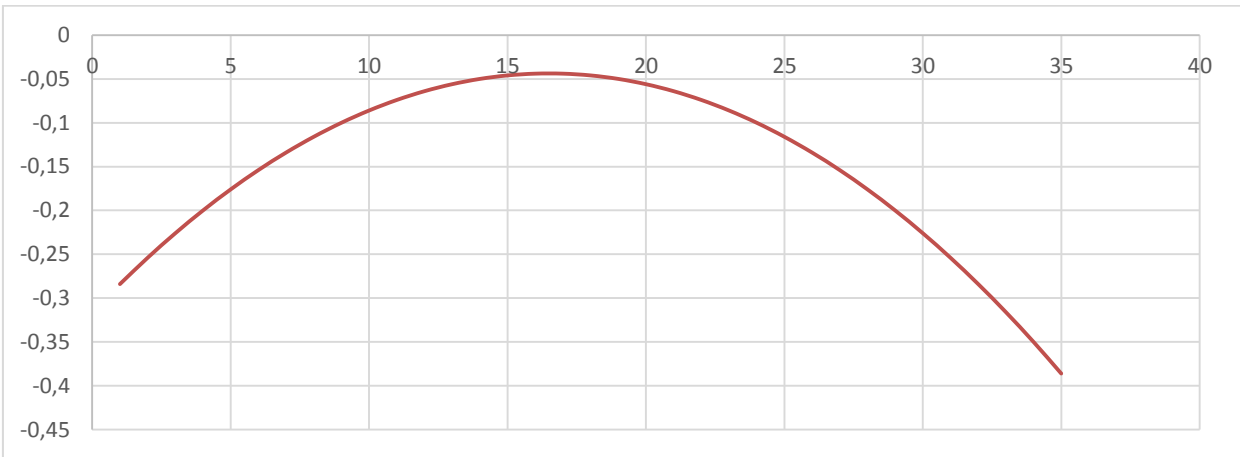


Fig.5. Hypothetical Laffer curve for corporate bond tax revenue collected and the personal income tax rate in Lithuania, in percent
 Source: compiled by author, based on the author's calculations

Figure 5 shows the Lithuanian case, where the Laffer curve proposes an optimal tax rate of 16-17 percent, which generates a uniform maximum of state tax revenue

collected from the corporate bond interest of the individual counterparties. The personal income tax rate is currently 15 percent in the country.

To sum up, the Laffer curves presupposes conclusions to be found in the differences of scales when changes to the PIT rate, which is applicable to corporate bond transactions, do not exceed any of the state budget income percentages, while a similar corporate tax revenue to the budget creates a much higher share of GDP (e.g. the US case). An explanation is found in the tax rate, being higher for corporate than individual income in the USA. In comparing the different counterparties involved in corporate bond transactions, individuals are assessed to be more sensitive to tax rate changes than legal entities (as one can see from the slopes of the curves), concluding with the current corporate bond transaction tax base differentiation.

Another distinction in the analysed cases became evident when the Laffer curve proposed a lower optimal tax rate for corporate bond yield in Lithuania than in the USA. Compared to the existing legally enshrined tax rates and those proposed by the Laffer curve, Lithuania is considered to be closer to the optimal rate (currently 15 percent, proposed rate 16-17 percent), while the USA has rate enhancement potential (~ 9 percent higher) without fiscal side effects. In comparing the different parameters of the model's independent variables and their economic interpretations, conclusions can be made, that lower rate changes result in smaller changes in the collection of the tax revenue. It should be noted that the Laffer curve is more appropriate to describe the corporate bond market in Lithuania than in the US (according to the R^2 measure).

However, the weaknesses of the Laffer curve method's applicability for separate transactions and the type of budget income are the absence of equations and models (there is only one statistically significant equation for the PIT rate in Lithuania) and the complexity of interpretations of the model without a full explanation of the dependent variable (negative scale deviations, latent factors).

Information and communication technologies (ICT) component evaluation

According to the Gompertz technology diffusion model, the impact of ICT on Lithuanian, EU and US corporate bond market development was studied. The model's dependent variable represented the corporate bond market development (e.g. Y1 -

corporate bond issues (pcs.), Y2 - nominal gross value of corporate bonds issued (million EUR), and Y4 - corporate bond market depth (percent of GDP). The model's independent variables explained the diffusion of ICT, which included: X1 – the percent of 16-74 year olds who used a computer during the last 3 months, X2 – the percent of 16-74 year olds who accessed the Internet during the last 3 months, X4 - broadband penetration per 100 inhabitants, in units, X5 – the percent of companies that use information technology with Internet access, and others.

In summary, the Gompertz adaptive technology diffusion model for the Lithuanian, EU and US case studies revealed that:

- The Lithuanian and EU corporate bond markets are not constant (values change and intervals are large; on average, the values are widely scattered). The US corporate bond market is comparatively stable in its value changes. It therefore follows that the US corporate bond market development is more predictable than the Lithuanian or EU market development.
- All of the countries' ICT indicators are more evenly distributed than the corporate bond market during the period in question, as well as business more evenly than the population itself. This leads to a more resilient correlation between the ICT diffusion indicators, in contrast to corporate bond describers.
- The technological developments in the US and Lithuania are insufficient to account for their corporate bond market development (29 twinning and multiple regression equations for the logarithmic data resulted in 1 statistically significant case for Lithuania and 2 out of 8 in the US case). Contrary to this, the EU's technology leads to further development of its corporate bond market (EU ICT factors alone resulted in significant corporate bond market development, joint formations to none). All eligible equation intercepts were marked with a negative sign, which indicates that if the ICT does not result in corporate bond market development, it is not without ICT growth (growth rates slow down). One of the most decisive factors of corporate bond market development is the mobile dispersion (X1) - 11.73 percent and companies with access to the Internet (X3) - 17.6 percent. The best explanation for the development of the market in the EU (the highest R^2) is given by households with access to the Internet (X2) ($R^2 =$

0.87) and a computer (X4) ($R^2 = 0.87$). This conclusion presupposes that the relevance of the model to aggregated data, the longer the period, but it is not a sufficient interface for the level of market development.

The results of the Gompertz adaptive technology diffusion model support the theoretical analysis of Novick et al. (2014), who offer corporate bond market standardization as a result of the uneven development of the market and the limit of the forecasting capabilities. In standardizing corporate bond issues in size and maturity, more even-term data distributions on average, and larger sections of data collection are expected, which would lead to the statistical significance of the data set analysis based on the findings and conclusions of the predictive models.

Competition for bank loans component evaluation

In summing up the EU, US and Lithuanian cases concerning the corporate bond and bank loan correlation analyses conducted, only one case (or 33.33 percent of the sample) confirmed the hypothesis that the corporate bond and loan markets are not affected by the effect of substitution or are not interchangeable. Other cases did not rule out the hypothesis, although it was not confirmed as well for different markets dealing with the same indicators characterizing the relationship in different directions. In the correlation analysis, derivative indicators in relation to GDP were used that highlighted the corporate bond market to be of a pro-cyclical nature in the United States and Lithuania (or 66.67 per cent of the sample) and anti-cyclical in the EU (33.33 per cent of the sample).

Summing up the results of the causality assessment, the conclusion of the corporate bond market depth as the presence of private sector loans in terms of a Granger cause of all the cases was examined. The impact assessment is not an unambiguous trend: the corporate bond market depth historical values changed by one percentage point, conditioned by the negative EU and US loans to the private sector prognostic changes, however, it caused positive dynamics in the Lithuanian company bank loans. This distribution could be determined by the corporate bond market development level, when more developed markets track the substitution characteristics of the instruments in

different periods, while less developed markets are characterized by the relevant sectoral complementarity. The Lithuanian and US case studies identified the interaction of the corporate bond nominal value and bank loans to the private sector: the Lithuania corporate bond nominal value in predicting the private sector loans and US private loans forecasted the values of the corporate bonds. In the case of Lithuania, coefficients of variables are recording positive values observed. In the case of the United States it is a reverse link. Under the depth of the market indicator formed findings of the substitution effect of these markets in more developed than in developing countries were confirmed.

It should be noted that the Granger causality assessment partially eliminated in Altman et al. (2010) provided conclusions that bank loans are a Granger cause for the corporate bond market (the author of this thesis proves that this is only in the case of the US). These differences can be accounted for by the different set of data analysed (both in terms of countries, and both in terms of markets). The Altman et al. (2010) findings are provided on the basis of the secondary corporate bond and bank loan market.

The doctoral dissertation author notes that although corporate bonds and bank loans are characterized by the nature of their distribution as alternative funds, for identical market participants, market development dynamic curves, one-way causality (forecasting) or controversial correlations, the corporate bond market cannot be considered as a substitute for bank loans across the entire sector. On the other hand, the interaction strength of these markets and their direction depends on their level of development in respect to the country, i.e., different case studies result in findings obtained and differentiated by the developing or developed category of the country. These findings do not contradict the empirical findings of Scholtens (1997) and Levine and Demirguc-Kunt (1999) on the distribution of countries according to the architecture of their financial systems.

While assessing the competitiveness of the corporate bond market to that of the banking sector in terms of the existence of substitutability or complementarity, the research findings and analyses do not provide enough support to confirm the relationship of such assumptions.

Aggregate analysis of short-term and long-term corporate bond market development indicators. The corporate bond market development factors are selected

from the factor groups investigated in the previous sections of this thesis. The selection criteria is the significance of the factor's impact throughout the factor groups that were investigated. In this way, the ARDL model includes the following independent variables: corporate bond market regulatory burden index (IRRI) (INDEX), internet dissemination (the percent of the population having access to the Internet) (Internet), and in the US case, the number of active public mobile phone subscribers per 100 inhabitants (Mobile), and in Lithuanian case, local bank loans to the private sector in billion USD or EUR (depending on the country). The dependent variable, as in previous models, was evaluated by two corporate bond market development potential characteristics: volume, measured by corporate bonds issued at par value (ISSUE), and market depth indicator (percent of GDP) (DEPTH). In the absence of the integration of factors between long-term exposure measurements, the ARDL model is not customizable for the EU area.

The final ARDL model equations comparable to the structural market equations allowing forecasting the US case are:

$$D(ISSUE_{US}) = -495.65 + 0.11 * ISSUE_{US(-1)} + 0.03 * LOANS_{US(-1)} - 0.44 * D(ISSUE_{US(-1)}) + 0.08 * D(LOANS_{US(-1)}) \quad (1)$$

$$D(DEPTH_{US}) = -0.03 + 0.001 * INTERNET_{US(-1)} - 0.11 * D(INTERNET_{US(-1)}) \quad (2)$$

Where D represents disaggregated data, (-1) - the first delay, C – intercept, INTERNET_{US} - Internet dissemination (the percent of the population with access to the Internet), LOANS_{US} - Local banks' loans to the private sector in billions of USD, ISSUE_{US} – the nominal value of the corporate bonds issued, DEPTH_{US} - market depth indicator (as a percent of GDP).

As the calculated estimates of the equation models are concerted, efficient and unbiased (by the LM (Lagrange multiplier), White and Jarque-Bera test outcomes), they are used for further estimation of the impact (in terms of its direction and size) on

corporate bond market development by the evaluation of the elasticity (see Table 2).

Table 2. Elasticity measures of the US ARDL model coefficients

<i>Dependent variables</i>	<i>Independent variables</i>			
	<i>INTERNET_{US}</i>	<i>D(INTERNET_{US})</i>	<i>LOAN_{US}</i>	<i>D(LOAN_{US})</i>
<i>ISSUE_{US}</i>	X	X	-0.27	-0.75
<i>DEPTH_{US}</i>	0.08	-0.01	X	X

Source: compiled by the author, based on the author's calculations

A one percentage point increase in Internet dissemination in the US results in a short-term decrease of 0.01 percent in the corporate bond market depth. However, over the long-term, the same factor increases market depth by 0.08 percent. The significant differences resulting from the period of the impact of ICT development are explained by the psychological characteristics of the users of the ICT, including its availability, the users' capacity for learning and their adaptive characteristics: when skills have been developed and experience gained, the advantages of them are realized over the long term. Notably, the long-term impact is greater than short-term impact of ICT on the corporate bond market depth.

In contrast, a one percent increase in US bank loans to the private sector results in 0.75 percent short-term and 0.27 percent long-term losses in the nominal value of the corporate bond issues. Although the changes are negative, there are no significant arguments for the substitution effect in these markets. It should be noted that the short-term corporate bond market shrinkage effect is amortized over time.

Statistically insignificant and eliminated as a factor in the equation, the legal and regulatory framework has no significant short-term or long-term impact on the US corporate bond market development.

In summary, it must be concluded that the most prominent factor for US corporate bond market development is ICT development over the long term, as well as both short and long term declines in the business loan portfolios of local banks.

The final ARDL model equations comparable to the structural market equations allowing the forecasting of the Lithuania case are:

$$\begin{aligned}
D(ISSUE_{LT}) = & 43.27 - 0.86 * ISSUE_{LT(-1)} - 0.27 * LOANS_{LT(-1)} + 0.03 * \\
& MOBILE_{LT(-1)} - 10.97 * INDEX_{LT(-1)} + 0.33 * D(LOANS_{LT(-1)}) + 7.66 * \\
D(INDEX_{LT(-1)}) &
\end{aligned} \tag{3}$$

$$\begin{aligned}
D(DEPTH_{LT}) & \\
= & 0.55 - 0.91 * DEPTH_{LT(-1)} - 0.003 * LOANS_{LT(-1)} + 0.0003 \\
& * MOBILE_{LT(-1)} - 0.14 * INDEX_{LT(-1)} + 0.004 * D(LOANS_{LT(-1)}) + \\
& + 0.1 * D(INDEX_{LT(-1)}) &
\end{aligned} \tag{4}$$

Where D represents disaggregated data, (-1) - the first delay, C – intercept, $INDEX_{LT}$ - an index on the regulatory burden of the corporate bond market, $MOBILE_{LT}$ - number of mobile telephone subscribers per 100 inhabitants, $LOAN_{LT}$ - bank loans for private companies in billions EUR, $ISSUE_{LT}$ - nominal value of the corporate bond issues, $DEPTH_{LT}$ - market depth indicator (as a percent of GDP).

Unlike the case of the USA, Lithuanian corporate bond market development is determined by the majority of indicators examined, which are evenly spread across the prediction of different corporate bond market characteristics (e.g. volume and depth).

As the calculated estimates of the equation models are concerted, efficient and unbiased (by the LM (Lagrange multiplier), White and Jarque-Bera test outcomes), they are used for further estimation of the impact (in terms of its direction and size) on corporate bond market development by the evaluation of the elasticity (see Table 3).

Table 3. Elasticity measures of the Lithuanian ARDL model coefficients

<i>Independent variables</i>	<i>Dependent variables</i>	
	<i>ISSUE_{LT}</i>	<i>DEPTH_{LT}</i>
<i>LOAN_{LT}</i>	-0.31	-0.004
<i>MOBILE_{LT}</i>	0.03	0.0003
<i>INDEX_{LT}</i>	-12.79	-0.15
<i>D(LOAN_{LT})</i>	0.39	0.004
<i>D(INDEX_{LT})</i>	8.94	0.11

Source: compiled by author, based on the author's calculations

As can be seen from Table 3, from all market development indicators analysed, the Lithuanian corporate bond market is most sensitive to changes in the index (RBI), with the direction of the reaction depending on the period. A one percent increase in the RBI evaluation results in an almost 9 percent increase in the development of the market in the short term, while an adequate change in the index over the long run reduces the nominal value of the corporate bond issues by almost 13 percent. The impact of the RBI on the corporate bond market depth has an identical mark and period, but stands out with the significantly smaller size of its effect: only a 0.15 percent corporate bond market contraction over the long term and 0.11 percent of development in the short term are accompanied by 1 percent RBI changes.

Another factor that affects the market value of corporate bonds for both long and short terms is bank loans for private companies. A one percent increase in private bank loans to businesses increases the corporate bond issues by 0.39 percent in the short term. However, the same scope of change in bank loans reduces the corporate bond issues by 0.31 percent over the long term. This effect must be regarded as an amortization of the business loans' effect on the corporate bond market when the positive and negative change in value is approximately the same size. This is supported by the market depth and elasticity analysis of corporate loans in both the long and short terms having the opposite effect and the identical size: a one percent increase in the business loan portfolio increases the corporate bond market depth by 0.004 percent in the short term, but equally decreases it (-0.004 per cent) over the long term.

When compared with other influential factors, the impact of mobile penetration is

considered to have the lowest impact in the Lithuanian corporate bond market: a one percent increase in the number of subscribers results in a 0.03 percent increase in corporate bond issuance and a 0.0003 percent increase in the market depth indicator. It should be noted though, that the dissemination of mobile communication does have a long-term impact on the corporate bond market.

To conclude, in the short term, Lithuanian corporate bond market development is ensured by the legal and regulatory framework and bank loans to private entrepreneurs. The complementarity of the banking sector and the corporate bond market has been established and the importance of the legal framework and regulatory infrastructure is possibly linked to the emerging market phase. Meanwhile, the long-term negative impact of the legal and regulatory framework and bank loans to the corporate bond market could be diminished by the wider development of ICT.

A general conclusion regarding the multivariate complex analysis was formulated on the US and Lithuanian models. It should be noted that the ICT factor displayed a stronger long-term impact on a developed corporate bond market than on a developing one. Contrary to this, the legal and regulatory framework, mechanism and tax environment are more robust in developing markets, regardless of the period, which determines that the direction of the impact is often conditioned by the expectations, preferences or other psychological characteristics of the market participants. The short-term positive market reaction to changes in the legal framework can be converted into long-term negative ones because of a tightened regulatory system or an increase in the tax burden on the market participants' mood. The differential effects of the impact of the banking sector on the corporate bond market in emerging markets are influenced by the importance of greater market development more than the developed markets' reaction to the change in bank loans, which is one-way.

CONCLUSIONS AND PROPOSALS

1. In economic theory, the factors that determine changes in demand and supply for the corporate bond market fall into the macroeconomic (inflation, interest rates, economic growth), mezo-economic (changes in other sectors, such as bank loans, stock market access) and microeconomic (a company's balance sheet structure,

financing needs, shareholders expectations and preferences) areas. Economic growth is regarded as a factor in corporate bond market development ($D_b \uparrow$, $S_b \uparrow$). Other markets (e.g.: bank lending) restrictions, shareholders' decisions are in favour of issuance of corporate bonds as well.

2. After an examination of the literature and the market problems described there (asymmetry of information, equivalency to the efficient market hypothesis, the challenges of state regulation and internationalization), the influences on the corporate bond market are divided into legal regulation and governmental regulation and taxation, information and communication technologies (ICT), and competition for bank loan components which have the following clear indications:
 - a. Market regulation is essential for the manifestation of the efficient market hypothesis in the real market, and for investor protection as well. However, limitations (the number of exceptions) are expected to arise when attempting to promote several market segments (e.g. SMB) and instruments (e.g. corporate bonds) in order to expand the scope of their use.
 - b. Given the theoretical proposals for tax-exemption to capital gains (in order to promote development) and with the assumption that corporate bond transactions only account for a small part of the state budget income, and that the transaction participants are sensitive to taxation (elastic demand), there is strong support for the idea of exempting the interest of corporate bond transactions (et al., instrument interest), which does not contribute to the fiscal state goals, because it stagnates the development of the instrument market.
 - c. According to the empirical studies of separate countries or regions (Ezirim et al., 2009, Bhuna, 2011), the access of market participants (often of intermediate links, as an example, brokers) to ICT increases the activity of capital markets.
 - d. Although corporate bonds and bank loans have an alternative nature, this does not result in market substitution. Therefore, the development of a

single market does not result in the contraction of the other market or sustainable development in the long-term. In other words, an increase in the amount of bank loans will not result in corporate bond market contraction, as rising corporate bond issuance in their amount or value will be accompanied by a simultaneous growth in bank loans.

3. Retrospective analysis of the corporate bond market showed market clusterisation for the concentration of financial and credit institutions as its main participants. The other conclusions of the analysis are distributed by the selected country markets or their geographical dimension, indicating the direction of market development, and identifying the main stimulants for the corporate bond markets:
 - a. The Lithuanian corporate bond market is approaching its classical definition in the use of longer term instruments, and its innovative interpretations (filling the derivative market with traditional corporate bond combinations).
 - b. Meanwhile, the EU's corporate bond market is stimulated by supply-side effects, which can be distinguished as external, such as potential difficulties for the substitution markets, global events and technology, and those that are internal, such as company size, risk standards for potential internal issuers, and management's approach. In contrast to US, demand side factors in the EU also contributed to the development of the corporate bond market, however in non-exclusive first-line way. The cause is identified in the lack of accents to investor protection (confidence in the market).
 - c. The major factors that drive the US corporate bond market are declining interest rates, legislation opening the market to new entrants, the latest technology, enhancing market transparency and investor confidence. And in regards to market shifts or trends, there is stagnation in the lending activities of financial institutions and an increasing rise in systemic risk.
 - d. Investor confidence is required for attracting investment in a developing market, and in the subsequent market development periods, there is a need

for the yields provided by the proposed instruments. The growth of emerging markets is stimulated by the demand for corporate bonds, while the developed markets only require a minimum supply of corporate bonds as a stimulating factor for sustainable market development.

- e. The factor of geographic market dependency (internationality) is observed in the more developed markets' response to global events, when it results in the transferring of its consequences to the less-developed countries (e.g. the impact of the US Lehman Brothers bankruptcy on the EU market contraction). Market internationality and the international integration factor links the markets and explains their changes. It is important, but not a sufficient condition for market development.

Findings of the assessment of legal regulation, government regulation and the taxation component:

4. The transatlantic (USA), international (EU) and national (Lithuania) analysis of legislation at all levels has highlighted the reaction of legislative procedure to economic processes, and over periods of time, there are exceptions and priorities:
 - a. Sustainable and purposeful EU legislation for a single market and a common approach towards the implementation of the long procedures required for regulations or directives to come into effect does not correspond to cyclical economic changes: economic processes overshadow the influence of legislation in the EU, however, it does highlight the impact of legislation in the United States and Lithuania.
 - b. Similarities in the content of US and EU securities market legislation defining market-based instruments, participants, their activities and regulation of the highest priorities for increasing transparency in the market and investor protection, stand a few decades apart in time difference: the US legislation stands ahead of regulation of the same phenomena in the EU.

- c. Law exceptions are oriented to different sized market participants, that cause further market trends: the US focus on SMEs, however, the EU is the favourite of larger corporate market participants (according to their emission levels and release capabilities).
 - d. The remarkable development of the administrative apparatus in the United States and the consolidation of the EU factor echoed the existing law of the US and the EU's trends in the development of new laws.
5. Legal regulation of the market is one of the most important issues of corporate bond market development as a positive factor of influence:
- a. Exclusive US and specialized Lithuanian legislation (only for the market) has a weak, but positive legal impact on corporate bond market development, based on the investor protection point of view. Meanwhile, the strengthening of market regulatory legislation has a negative impact on market development, while its impact on market transparency is positive. There is an absence in the EU of specialized legislation to regulate the market concerning instruments and their issuance, which needs to be enacted to address and complement the right side of the market development impact factor.
6. Market regulatory measurements identified an insignificant burden on the existing structure of the corporate bond market participants:
- a. The development of the specialized corporate bond regulatory burden index (IRRI), with its maximum value and the costs incurred as a result, indicating that there has been greater regulation of the markets in the countries compared, which can be observed in the US (5.5 out of 10). The index value is lower in the EU (3.82 out of 10), while the lowest value is in Lithuania (3.19 out of 10), which implies the index value of the least significant market regulation in comparable countries in the context of establishing a low, or no corporate bond market regulatory burden on its participants. According to the index scale it applies to the US average, while Lithuania and the EU exhibit a relatively weak corporate bond market regulatory burden.

- b. In assessing the values of coefficients of determination it was found that the relevant market specialized indices (like the IRRRI) better describe the object parameters: the index developed by the IRRRI explained the corporate bond market development better than the modified ELI index (the inclusion of descriptive components only for the market in question). Rising regional differences are better described by indexes possessing higher quality datasets (e.g. US).
7. The tax environment is conducive to the development of the corporate bond market:
 - a. In evaluating the regulatory burden on the markets by the indexes (ELI, GVI), their estimated fiscal freedom (ELI) and the tax burden (GVI) components, Lithuania's leading role is evident. The tax system of the country is attractive for business as well as a small total tax burden to the other parties included in the indexing. The country is competitive in relation to tax.
 - b. The differences in the tax environment in the US and Lithuania are distinct, not only by tariff, but by the tax base and the scope or application of tax exemptions. On the other hand, the existing tax rates are lower than the Laffer method evaluation proposes as the optimal ones, while the tax burden rates, although significantly unstable in the long term, are not significant. So there is no firm argument for the tax environment's influence on corporate bond market stagnation (retarding development).

Findings of the evaluation of the information and communication technologies (ICT) component

8. The descriptive statistical analysis in the ICT of the characteristics discloses imbalances in corporate bond market measures and their stability. Most of the cases examined the sample taken from the ICT do not result in corporate bond market development:
 - a. The Gompertz technology diffusion model demonstrated that the technological changes in Lithuania and US are inadequate to describe the

development of the corporate bond market, while EU technology has led to the further development of the corporate bond market. This conclusion presupposes the relevance of the model to the aggregated data and longer (equal data) periods, but is not of sufficient level for the interface of market development for the countries under comparison.

- b. The results of the adapted Gompertz technology diffusion model support the author's (Novick et al., 2014) position towards the standardization of the corporate bond market, as a result of the uneven development of the market and the limited forecasting capabilities. In standardized corporate bond issue size and maturity, more even-term data distributions on average are expected, and larger sections of data collection for the statistical significance of the analysis of the data set, which is based on the findings and conclusion of predictive models.

Findings regarding the competition with bank loans component

9. The corporate bond market, in competition with the bank loans on the market, the available financial resources in more developed markets are tracked as instruments of substitution throughout different periods, and the less developed markets are characterized by the sectors' complementarity:
 - a. In the EU, US and Lithuanian data, corporate bonds and bank loans only exhibit one case of analysis indicating correlation (or 33.3 per cent), which certifies that the corporate bond and loan markets do not demonstrate the effect of substitution or interchangeability.
 - b. Corporate bond market depth is the Granger cause driving private sector lending. The impact assessment is not an unambiguous trend: changing the historical values of corporate bond market depth by one percentage point results in negative prognostic changes for EU and US loans to the private sector. However, for Lithuanian companies, the bank loan dynamics are positive for the same change in the historical data of corporate bond market depth.

- c. The Lithuanian and US case studies identified an interaction between corporate bond nominal values and bank loans to the private sector: the Lithuanian corporate bond nominal value could be used in predicting private sector loans, while in the US, private loans forecast corporate bonds. In the case of Lithuania, variable coefficients are recorded with positive values while in the case of the United States, a reverse link is observed, confirming the findings that the depth of the market drove the substitution effect to a greater extent in more developed markets than in developing ones.

Findings on the assessment of the complex corporate bond market development factors

10. The coefficients of the structural equation of the ARDL model enable the prediction of corporate bond market development in consideration of the measures of the ICT sector and banking terms in the developing countries' models. All the components have their own significance - legal regulation, ICT, bank loans, and spreading the duration of their impact:

- a. The ICT factor is described by its long-term impact on the corporate bond market, which is stronger in more developed markets than in developing ones: the factors examined in the development of the US corporate bond market leads to the most famous of ICT development in the long term; the dissemination of mobile communication and technology in Lithuania is also distinguished by its long-term exposure to the corporate bond market.
- b. On the contrary, the legal framework, monitoring mechanisms and fiscal environment of the corporate bond market is less robust in developing markets, regardless of the period, especially the latter in determining the direction of impact, often resulting from market participants' expectations, preferences and other psychological effects. Lithuanian corporate bond market development in both the short and long term is ensured by legal regulation.

- c. The differential effects of the banking sector in emerging markets has resulted in an increasingly important component in the development of the market than the more developed markets in response to change, which is one-way. The component forecasts the corporate bond market for both the short and long term.
11. The different levels involved in the development of corporate bond markets in the structural equation corresponded to the theoretical assumptions, but differed in the selective and comprehensive analysis:
 - a. Legislative and regulatory importance is a positively proven factor for corporate bond market development.
 - b. The ICT factor did not result in the market development of any single model, however, it was characterized by its positive long-term impact in the structural equation.
 - c. The competitiveness of the banking sector is important at all levels, with negative effects on developed markets and short-term positive effects on developing markets.

Proposals:

1. Sustainable and systematic corporate bond market development should be ensured by the necessary comprehensive legal protection of the EU by strengthening investor protection, and the regulation of the corporate bond redemption phase process (regulation of solvency, the conversion process).
2. The increased market regulation and regulatory information integrity of the US as compared to that of the EU and Lithuania, with the latter's opportunity for progress in perceiving the aggregated data and solid public access to information, which is favoured for transparency and various research, applied research or statistical purposes indicates that an organized database platform for the specific data of companies in regards to bond issues and the entire life cycle of information should be established.

3. In response to the example of the US corporate bond market, Lithuania is required to activate legislative incentives for SME participation in the capital market, characterized by legislative participation in markets, pooled funding platforms or regulation and tax advantages.
4. Long-term investment in advanced technology solutions (e.g. platforms, databases, etc.) is encouraged, contributing to the long-term development of the market.

Further research directions

- The spread of further research on the set of variables and models validated with facts and carried out through lengthy investigations.
- Corporate bond instrument examination of the demand side and its determinants (reasoning).
- The competitiveness of corporate bonds, and verification for government bonds.
- Other capital market instruments, market and development factors should be examined.

Approval of the results of research and dissemination. Basic scientific research was published in 5 scientific publications, and 4 presentations on dissertation topics were delivered at international conferences.

List of scientific publications:

1. Astrauskaitė I. Lithuanian capital market: challenges of attracting the investments // *Вісник*. ISSN 1728-3817, Київ, Київський національний університет імені Тараса Шевченка, 2012. p. 5–6.
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3. Astrauskaitė I. The Reasons and Opportunities for Baltic Bond Market to Develop in Comparison with Asian and Central European Countries // EKONOMIKA (Supplement A). ISSN 1392-1258, Vilnius, Vilniaus universitetas, 2013. p. 7–16.
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5. Astrauskaitė I. Digital Provide: from Information Asymmetry to ICT Impacts on Bond Market Development. Lithuania Case // Proceedings of 28th International Business Research Conference. ISBN: 978-1-922069-60-3, Australia, World Business Institute, 2014. no. 310.

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1. Astrauskaitė I. Lithuanian capital market: challenges of attracting the investments. Pranešimas skaitytas tarptautinėje konferencijoje “The Global Challenges for Economic Theory and Practice in Central and Eastern European Countries”. Kijevas, Faculty of Economics Taras Shevchenko National University, 11-12 October, 2012.
2. Astrauskaitė I., Paškevičius A. Competition between banks and bond markets: hardly impacted or softly complemented. Pranešimas skaitytas tarptautinėje konferencijoje “5th International Conference The Economies of Balkan and Eastern Europe Countries in the changed world EBEEC 2013”. Stambulas, Kavala Institute of Technology, Department of Accountancy, Istanbul University, Department of Economics, 9–12 May, 2012.
3. Astrauskaitė I. The Reasons and Opportunities for Baltic Bond Market to Develop in Comparison with Asian and Central European Countries. Pranešimas skaitytas tarptautinėje konferencijoje “Economic Transformations and Business Prospects”. Vilnius, Vilniaus universitetas, Wrocław University of Economics, Faculty of Economics Taras Shevchenko National University, 26–27 September, 2013.

4. Astrauskaitė I. Digital Provide: from Information Asymmetry to ICT Impacts on Bond Market Development. Lithuania Case. Pranešimas skaitytas tarptautinėje konferencijoje 28th International Business research conference “Research for change”. Barcelona, London Academic Research and Publication, UK, Australian Centre for Accounting, Finance and Economics and American Research and Publication, USA, World Business Institute Australia, 8–9 September, 2014.

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Scientific field of interest: Capital markets, corporate finance, taxation.

DISERTACIJOS SANTRAUKA

Temos aktualumas. 2007 m. JAV, o 2008 m. Europoje prasidėjus finansų krizei, reikėjo atlikti kredito institucijų balansinę peržiūrą ir įvesti tolesnės veiklos apribojimus. Griežtėjantys bankų verslo paskolų standartai verčia verslą ieškoti alternatyvų (Europos Komisijos duomenimis, 2013 m. buvo atmesta 35 proc. SVV kredito paraiškų euro zonoje). Viena jų – įmonių obligacijos. Šios priemonės populiarumas rinkoje padidėjo po 2008 m. finansų rinkų krizės ir jos ištiktųjų (kaip antai Lehman Brothers Inc.) moratoriumų. Įmonių obligacijų rinka nuo 2009 m. Europoje kasmet auga po 2 proc., JAV savo apimtimi viršijan BVP, o Lietuvoje pasižymi vystymosi bruožais. Šalyje neplėtojant kapitalo rinkos kreditavimo galimybių, formuojamas bankininkystės sektoriaus finansavimo monopolis, emigruoja finansų išteklių paklausa (verslas ieško finansavimo gretimose kapitalo rinkose). Tokia koncentracija finansų rinkose sumažina konkurencijos teikiamus pranašumus – pigesnę skolinimąsi, palankesnes sąlygas (terminus, užstato būtinybę ir kt.), rizikos diversifikaciją, rinkos šokų amortizaciją, investicijas, nedidinančias verslo įsiskolinimo rodiklių. Papildomos priemonės ar ja sukurtos finansinių išteklių rinkos prieigos buvimas didintų verslo galimybes vykdyti veiklą, plėstis, augti, taip nukreipiant finansinius išteklius tvariam ir ilgalaikiam ekonominiam augimui, sukuriančiam darbo vietas.

Įmonių obligacijos – kapitalo rinkos dalis, kurios plėtra apibūdinama didesnėmis jų emisijų apimtimis ar rinkos gyliu. Kapitalo rinka, jos išsivystymo lygis ir ar tolesnė plėtra yra veikiami skirtingų veiksnių – intervencinių ar sukurtų rinkos prigimtinių savybių, kurie savo ruožtu lemia rinkos likvidumą, apyvartumą ir tolesnę poveikį visos šalies ar regiono ekonomikai. Būdami skirtingo poveikio, pasireiškimo tikimybės, prigimties ar šaltinio, veiksniai sąlygoja rinkos apimties ar gylio plėtrą (spartėjančią, lėtėjančią ar stagnuojančią). Aiškių rinkos plėtros veiksnių identifikavimas sutelkia reikiamą dėmesį į tikslų ir naudingų sprendimų, padedančių pasiekti norimų rezultatų, priėmimą, vykdymą ar stebėseną. Įmonių obligacijų rinkos atveju, identifikuoti rinkos plėtros veiksniai lems efektyvesnę kapitalo rinkos priežiūros institucijų veiklą, rinkos dalyvių rinkos veiklos sampratą, dėl to ir didesnes finansavimo galimybes, sukurs prielaidas tvariam ir sistemingam rinkos plėtojimuisi, naudingam tiek verslui ir investuotojams, tiek visai šalies ar regiono ekonomikai.

Temos aktualumą pagrindžia regiono politinės iniciatyvos. 2015 m. vasarį Europos Komisija pradėjo kurti bendrą kapitalo rinką ir CMU³ – išleido žaliąją knygą, nurodė potencialias veiksmų kryptis ir priemones, konsultavosi su šalimis narėmis. CMU procesą baigti kurti numatoma 2019 m.

Mokslinė problema. Nežinomi įmonių obligacijų rinkos plėtros veiksniai, poveikio kryptis ir įtakos kompleksiskumas, būtini tvariam ir sistemingam rinkos plėtojimuisi. Įvairių šalių ar regionų įmonių obligacijų rinkos išsivystymo lygis skiriasi. Tokia diferenciacija lemia netolygų finansinių išteklių perskirstymo funkcijos vykdymą ir yra sąlygota skirtingų veiksmų, jų pobūdžio, pasireiškimo laipsnio, laiko ar krypties. Siekiant vientiso rinkų plėtojimosi ir lygiavertės išteklių ir dalyvių konkurencijos bei gerųjų praktikų įgyvendinimo, išaiškintinas rinkos įtakos veiksmų teorinis poveikis ir empiriškai įrodytina vienpusiškai ar kompleksiskai sąlygojama rinkos plėtra.

Ištyrimo lygis Lietuvoje ir pasaulyje. Lietuvos mokslininkų darbuose (Klimašauskienė ir Mosčinskienė (1998), Leipus ir Norvaiša (2003), Pekarskienė ir Pridotkienė (2010), Jasienė ir Paškevičius (2010), Stankevičienė ir Gembickaja (2012)) įmonių obligacijos ar atskira rinkos plėtra nagrinėjamos kapitalo rinkos ir jos vystymosi kontekste, neišskiriant pačios priemonės, tik jai būdingų bruožų ar jos plėtrą lemiančių veiksmų. Tokia pati pasaulinė mokslo tiriamųjų darbų tendencija ryškėja Brzowska (2008), Raddatz ir Schmukler (2008), Chami *ir kitų* (2009), Peiris (2010), Bianchi *ir kitų* (2012), Sienaert (2012), Laeven (2014) darbuose, papildytina įmonių obligacijų, kaip kreditavimo priemonės ir su ja susijusių rinkų tarpusavio veikos analize (Hubbard (1998), Grande *ir kiti* (2011), Greenwood ir Hanson (2013)). Įmonių obligacijų rinkos plėtros veiksmus į besivystančių ir išsivysčiusių šalių skirstė Srinivas *ir kiti* (2000), Eichengreen ir Luengnarumitchai (2006), Sui (2011), Jaramillo ir Weber (2012), Gozzi *ir kiti* (2012), Bayoumi ir Bui (2012), Felman *ir kiti* (2014), Levinger ir Li (2014). Naujausi įmonių obligacijų rinkos empiriniai tyrimai, matuojantys technologinį poveikį rinkos plėtrai, atlikti Yartey (2006), Ezirim *ir kitų* (2009), Bhunia (2011), o vertinantys

³ Bendros kapitalo rinkos ir CMU kūrimu siekiama efektyvinti ES investicijų grandinę, sujungiant investuotojus, lėšų naudotojus ir augimo dėmenis. Pagrindiniai EK veiksmai orientuoti į esamų barjerų investuotojų lėšų panaudojimo galimybėms identifikavimą ir panaikinimą bei kliūčių, kylančių dėl verslo prieigos prie investuotojų, įveikimą. EK veikimo priemonės: teisėkūra ir jos tobulinimas (prospekto ir kt. direktyvų peržiūra), konkrečių rekomendacijų šalims narėms kūrimas, rinkos jėgų skatinimas (European..., 2015).

substituciją kredito institucijų priemonėms – Kaya ir Meyer (2013), Kaya ir Meyer (2014).

Pažymėtina, kad tarptautinis mokslinės problematikos ištyrimo lygis yra kur kas aukštesnis, turint omenyje nurodytų darbų apimtį, ir nuodugnesnis skirtingais vertintiniais aspektais. Todėl Lietuvos tiriamąją bazę būtina papildyti konkrečiai šios priemonės tyrimu.

Tyrimo objektu pasirinkus įmonių obligacijų rinką, tyrimui keltas **tikslas** – veiksmų, skatinančių įmonių obligacijų rinkos plėtrą, identifikavimas, sudarant atskiras ir bendras struktūrines jų poveikio rinkai lygtis, teikiančias galimybes prognozuoti rinkos plėtrą. Tyrimo tikslui pasiekti išsikelti **uždaviniai**:

- 1) Apibrėžti įmonių obligacijas ir išanalizuoti jų rinkos sandarą: paklausos ir pasiūlos dėmenis ir jų poveikį rinkos plėtrai.
- 2) Įvertinti ir suskirstyti į grupes mokslinėje literatūroje išskirtus, kitų tyrėjų empiriniais duomenimis, rinkos statistika patvirtintus veiksmus, lemiančius įmonių obligacijų rinkos plėtrą.
- 3) Atlikti identifikuotų plėtos veiksnių (teisinio reglamentavimo ir reguliavimo, IRT, konkurencingumo bankų paskoloms) apžvalgą ir analizę, išaiškinant pagrindinius dėmenis, būtinus rinkos plėtrai, jų pasireiškimo pobūdį ir pasiskirstymą pagal geografinius ar rinkos išsivystymo lygio kriterijus.
- 4) Kompleksiškai ištirti pasirinktos įmonių obligacijų rinkos plėtos veiksnių (teisinio reglamentavimo ir reguliavimo, IRT, konkurencingumo bankų paskoloms) poveikį, nurodyti didžiausią įtaką turinčius veiksmus ar prioritetus ir jų pasireiškimo laiką, sudaryti rinką aprašančias struktūrines lygtis.
- 5) Numatyti įmonių obligacijų rinkos plėtos prognozavimo galimybes (modelį) naudojantis pasirinktų plėtos veiksnių reikšmėmis.

Tyrimo tikslui ir uždaviniams įgyvendinti taikyti **tyrimo metodai**: mokslinės literatūros lyginamoji, loginė analizė ir sintezė, aprašomosios statistikos, dinamikos rodiklių (augimo, prieaugio tempų) analizė, indukcinis ir dedukcinis skaidymas, grafinė analizė, koreliacinė, regresinė analizės, pakopiniai vertinimo metodai, Grangerio

priežastingumo vertinimas, vektorinė autoregresija, Gompertzo ir ARDL modelių sudarymas.

Tyrimo duomenims agreguoti panaudotos ECB, EUROSTAT, SIFMA, Pasaulio banko, Lietuvos statistikos departamento, Tarptautinių atsiskaitymų banko duomenų bazės, Lietuvos banko (buvusios Lietuvos VP komisijos) ataskaitos. Tyrimo duomenų prieiga ar skirtingo ilgio duomenų eilutės buvo pagrindinė kliūtis taikomiems tyrimo metodams įgyvendinti, išvadoms patvirtinti.

Ginamieji disertacijos teiginiai:

- 1) Mokestinė aplinka didesnės įtakos įmonių obligacijų rinkos plėtrai neturi. Bendrasis įmonių obligacijų rinkos teisinis reglamentavimas ir reguliavimas laikytinas teigiamos įtakos įmonių obligacijų rinkos plėtrai veiksmiu.
- 2) Nors technologiniai pokyčiai nėra pakankami pavienių šalių įmonių obligacijų rinkos plėtrai apibūdinti, jie lemia tolesnę įmonių obligacijų rinkos plėtrą regioniniais duomenimis pagrįstose išvadose. Technologinės plėtros modelio rezultatai skatina standartizuoti įmonių obligacijų rinką.
- 3) Kadangi įmonių obligacijos ir bankų paskolos pasižymi alternatyviu lėšų paskirstymo pobūdžiu, dėl tapačių rinkos dalyvių, rinkos plėtros dinamikos kreivių, vienpusio tarpusavio priežastingumo ar prieštaringos koreliacijos įmonių obligacijų rinka nelaikytina bankų paskolų sektoriaus substitutu. Kita vertus, šių rinkų sąveikos stiprumas ir kryptis priklauso nuo jų išsivystymo lygio šalyje: besivystančiose šalyse esant ryškiam komplementarumo, išsivysčiusiose – dalinės substitucijos požymiams.
- 4) Kompleksinis rinkos plėtros veiksnių pobūdis yra priešingas pavieniam, apima galimą veiksnių sinergiją ir poveikį bėgant laikui. IRT veiksnys pasižymi ilgalaikiu poveikiu įmonių obligacijų rinkai, stipresniu labiau išsivysčiusiose nei besivystančiose rinkose. Teisinės bazės, priežiūros mechanizmo ir mokestinės aplinkos įtaka įmonių obligacijų rinkai yra svaresnė mažiau išsivysčiusiose rinkose, kad ir koks būtų laikotarpis. Laikotarpiams diferencijuotas bankininkystės sektoriaus poveikis besivystančiose rinkose lemia didesnę šio dėmens svarbą rinkos vystymuisi nei išsivysčiusių rinkų reakciją į jos pokyčius.

Darbo mokslinis naujumas ir reikšmė. Autorės žiniomis, Lietuvoje nėra kito mokslinio darbo, nagrinėjančio įmonių obligacijų rinkos plėtros veiksnius ir pateikiančio rinkos plėtros prognozavimo galimybes. Darbe pristatyto autorinio tyrimo metodika yra unikali. Pasirinkti metodai nagrinėjamai rinkai Lietuvos atveju tirti yra taikomi pirmą kartą (pvz., Gompertzo modelis). Taip pat tiek Lietuvos, tiek pasauliniu mastu nėra darbų, pasirinktam tyrimo objektui naudojančių ARDL modelį ar tiriančių Grangerio priežastingumą. Išnagrinėta pasaulinė literatūra nėra susitelkusi į konkrečią, šiame darbe apibrėžiamą priemonę – įmonių obligacijas, pavieniai tyrimai nesusieja nagrinėjamų veiksnių į kompleksinę analizę ir jos matuojamą poveikį rinkos plėtrai. Šis darbas teikia pridėtinę vertę ekonomikos mokslui šiais aspektais:

- Agreguoti sisteminės užsienio ir Lietuvos literatūros šaltinių analizės ir sintezės rezultatai, jų lemti skirtingų mokslinių požiūrių į įmonių obligacijų rinkos plėtros veiksnius pristatymai ir pasirinkimo argumentacija.
- Įmonių obligacijų rinkos plėtros veiksnių indukcinis ir dedukcinis suskaidymas.
- Novatoriški tyrimo metodai, atskleidžiantys dar neištirtus įmonių obligacijų rinkos plėtros požymius.
- Pristatytas įmonių obligacijų rinkos plėtros prognostinis modelis ir veiksnių įtakos laikotarpių identifikavimas, leisiantis įvertinti jų ilgalaikį ir trumpalaikį poveikį plėtrai.
- Autorinės įmonių obligacijų rinkos plėtros veiksnių poveikio ir krypties išvados, panaudotinos tolesnėje šios rinkos analizėje.

Praktinė darbo reikšmė pasižymi šiais ypatumais:

- Panauda akademinėje bendruomenėje, ekspertiniuose įmonių obligacijų rinkos vertinimuose.
- Galima rinkos priežiūros institucijų ar politikos formuotojų sprendimų argumentacija.

- Pradėtas įmonių obligacijų rinkos monitoringo ir vertinimo procesas, atkreiptas dėmesys, leisiantis plačiau naudoti priemonę ir vykdyti jos rinkos plėtrą.
- Galima netiesioginė rinkos dalyvių (investuotojų ar emitentų) sprendimų paskata (per priežiūros institucijų priimtus sprendimus).
- Konkurencingumo kredito rinkoje padidinimas, supažindinant su kitokiomis, ne bankinio skolinimosi, galimybėmis.
- Didesnis visuomenės finansinis raštingumas.

Disertacijos struktūra ir apimtis. Disertaciją sudaro trys skyriai. Pirmame skyriuje išsamiai nagrinėjamos įmonių obligacijos ir jų pasiūlą bei paklausą lemiantys veiksniai, mokslinėje literatūroje bei teisės aktuose identifikuojami ir išanalizuojami rinkos įtakos veiksniai, numatoma jų poveikio kryptis. Antrame skyriuje aprašoma autorinė sudėtinio tyrimo metodologija. Trečiame skyriuje pateikiami selektyvių įmonių obligacijų rinkos veiksnių tyrimų empiriniai duomenys: vertinama rinkos reguliavimo našta, sudarant IRRI indeksą, optimalus mokesčio tarifas ir brėžiama Lafero kreivė, sudaromas Gompert zo technologinės sklaidos modelis didėjančioms įmonių obligacijų ir IRT apimtims matuoti, tiriama įmonių obligacijų rinkos ir bankininkystės sektoriaus substitucija, pritaikant koreliacinius ir Grangerio priežastingumo vertinimo matavimus. Skyrius baigiamas kompleksine nagrinėtų veiksnių ir šalių bei regionų analize – pristatomi įmonių obligacijų rinkos plėtrai prognozuoti naudotini modeliai, struktūrinės rinkos lygtis. Disertacija baigiama išvadomis ir rekomendacijomis.

IŠVADOS IR PASIŪLYMAI

1. Ekonomikos teorijoje veiksniai, lemiantys įmonių obligacijų rinkos paklausos ir pasiūlos poslinkius, skirstytini į makroekonominius (infliacija, palūkanų norma, ekonominis augimas), mezoekonominius (kitų sektorių, pvz., banko paskolų, akcijų rinkos prieiga) ir mikroekonominius (įmonės balanso struktūra, finansavimo poreikis, akcininkų lūkesčiai ir preferencijos). Įmonių obligacijų rinkos plėtros ($D_b \uparrow$, $S_b \uparrow$) veiksniais laikytinas ekonomikos augimas, kitų rinkų

(pvz., bankų) restrikcijos skolinimui, palankūs emisijoms leisti ar joms didinti įmonių valdymo organų sprendimai.

2. Išnagrinėjus mokslinėje literatūroje analizuojamą rinkos problematiką (informacijos asimetrija, atitikmuo efektyvios rinkos hipotezei, valstybės reguliavimas ir internacionalizacijos iššūkiai), įmonių obligacijų rinkos įtakos veiksniai suskirstyti į ***teisinio reglamentavimo, valstybės reguliavimo ir mokesčių, informacinių ir ryšio technologijų (IRT), konkurencijos banko paskoloms dėmenis***, pasižyminčius aiškiais indikacijomis:
 - a. Rinkos reguliavimas yra būtinas dėl efektyvios rinkos hipotezės rinkoje pasireiškimo, investuotojų apsaugos, tačiau ribotinas (išimčių skaičiumi) skatinamiems rinkos segmentams (pvz., SVV) ar priemonėms (pvz., įmonių obligacijoms), siekiant plėsti jų panaudojimo mastą.
 - b. Atsižvelgiant į teorinius siūlymus neapmokestinti kapitalo pajamų (kaip skatinančius plėtrą) ir padarius prielaidą, kad įmonių obligacijų sandorių dalis valstybės biudžeto pajamose nėra didelė, o sandorių dalyvių elgsena jautri apmokestinimui (paklausa elastinga), palaikytina palūkanų iš įmonių obligacijų sandorių (ir kt. priemonių palūkanų) neapmokestinimo idėja, kaip neįvykdanti fiskalinio valstybės tikslo, tačiau stagnuojanti priemonės rinkos plėtrą.
 - c. Atskirų šalių ar regionų empirinių tyrimų duomenimis (Ezirim *et al.*, 2009; Bhunia, 2011), rinkos dalyvių (dažnai tarpinių grandžių, pvz., maklerių) prieiga prie IRT didina kapitalo rinkų aktyvumą.
 - d. Nors įmonių obligacijos ir bankų paskolos pasižymi alternatyviu pobūdžiu, šis nesąlygoja rinkų substitucijos. Todėl vienos rinkos plėtra nesąlygoja ilgalaikio kitos rinkos susitraukimo ar tolygios plėtros, t. y. didėjančios bankų paskolų apimtys taps vienalaikio įmonių obligacijų rinkos susitraukimo priežastimi, kaip ir didėjantis įmonių obligacijų emisijų kiekis ar vertė lydės vienalaikį banko paskolų augimą.
3. Retrospektyvi įmonių obligacijų rinkos analizė atskleidė rinkos klasterizaciją, koncentruojančią finansų ir kredito institucijas pagrindiniais jos dalyviais. Kitos

analizės išvados paskirstytinos selektyvia šalies, rinkų išsivystymo ar geografinės plotmės kryptimi, identifikuojant pagrindinius įmonių obligacijų rinkų stimulatorius:

- a. Lietuvos įmonių obligacijų rinka artėja klasikinio jos apibrėžimo link (ilgesnis priemonės terminas) ir inovatyvios jos interpretacijos (rinka papildoma išvestinių tradicinių įmonių obligacijų derinių).
- b. ES įmonių obligacijų rinka stimuliuojama pasiūlos poveikio veiksnių, kurie savo ruožtu skirtini į išorinius – potencialiai substitucinių rinkų sunkumai, globalūs įvykiai, technologija – ir vidinius – įmonės dydis ir galimybės, vidiniai emitentų rizikos normatyvai, vadovybės požiūris. Įmonių obligacijų rinkos paklausos pusės veiksniai, ES taip pat turėję įtakos rinkos plėtrai, priešingai nei JAV, neišskirtini kaip svarbiausi to, priežastimi laikomas investuotojų apsaugos (rinkos patikimumo, pasitikėjimo rinka) akcentų trūkumas.
- c. Pagrindiniai JAV įmonių obligacijų rinką skatinantys veiksniai: mažėjančios palūkanos, teisės aktai, atveriantys rinką naujiems dalyviams, naujausios technologijos, didinančios rinkos skaidrumą, investuotojų pasitikėjimą, susijusių rinkų pokyčiai – kreditavimo sąstingis finansų institucijose ar sisteminės rizikos padidėjimas.
- d. Pritraukiamų investicijų besivystančioje rinkoje būtinoji sąlyga – investuotojų pasitikėjimas, vėlesniais rinkos plėtros laikotarpiais – priemonės siūlomas pajamingumas. T. y. besivystančių rinkų plėtrai užtikrinti stimuluotina įmonių obligacijų paklausa, o išsivysčiusių rinkų tvariam vystymuisi ne mažiau reikalingi įmonių obligacijų pasiūlą skatinantys veiksniai.
- e. Geografiniu rinkų priklausomybės (tarptautiškumo) aspektu pažymėtina globalių labiau išsivysčiusių rinkų įvykių perdavimo kitoms, mažiau išsivysčiusioms, tendencija su visais iš to kylančiais padariniais (pvz., JAV Lehman Brothers bankroto įtaka ES rinkos susitraukimui). Rinkos

tarptautiškumo ar tarptautinės integracijos veiksnys sieja rinkas ir aiškina jų pokyčius, yra svarbi, tačiau nepakankama rinkos plėtros sąlyga.

Teisinio reglamentavimo, valstybės reguliavimo ir mokesčių dėmens vertinimo išvados

4. Transatlantinės (JAV), tarptautinės (ES) ir nacionalinės (Lietuvos) teisės aktų analizė įrodė visų lygių reaktyvią teisės aktų priėmimo ekonominiams procesams procedūrą, besiskiriant laikotarpiams, išimtims ir prioritetams:
 - a. Tvari ir kryptinga ES teisėkūra bendros rinkos koncepcijos įgyvendinimo link, esant ilgoms reglamentų ar direktyvų įsiteisėjimo procedūroms, neatliepia ekonominio cikliškumo pokyčių – ekonominių procesų įtaka ES atveju užgožia, JAV ir Lietuvos – papildo ar pabrėžia teisės daromą poveikį.
 - b. JAV ir ES VP rinką reglamentuojančių teisės aktų turinio panašumai, apibrėžiant rinkos priemones, dalyvius, jų veiklą ir jos reguliavimą, aukščiausiais prioritetais keliant rinkos skaidrumą, investuotojų apsaugą, išsiskiria kelių dešimtmečių laiko skirtumu, JAV teisės aktams anksčiau reglamentuojant tuos pačius reiškinius nei ES.
 - c. Į skirtingo dydžio rinkos dalyvius orientuotos įstatymų išimtys sąlygoja tokias rinkos plėtros tendencijas: JAV orientacija į SVV, ES – didesnių korporacijų rinkos favoritė (pagal emisijų dydžius ir jų išleidimo galimybes).
 - d. Pažymėtinas ir administracinio aparato plėtros JAV, konsolidavimo ES veiksnys, atliepiamas esamų teisės aktų papildymo JAV, o ES – naujų kūrimo tendencijų.
5. Teisinis rinkos reglamentavimo lygmuo yra vienas svarbiausių (iš nagrinėjamų) įmonių obligacijų rinkos plėtrą teigiamai lemiančių veiksnių:
 - a. Išskirtinas JAV ir Lietuvos, turinčių specializuotų (tik tai rinkai skirtų) teisės aktų, mažas, bet teigiamas teisės poveikis įmonių obligacijų rinkos vystymuisi, pagrįstas investuotojų apsauga. Rinkos reguliavimo stiprinimo teisės aktai turi neigiamą poveikį rinkos plėtrai, rinkos skaidrumo –

teigiamą. ES, neturint specializuotų teisės aktų nagrinėjamai priemonei ir jos rinkai reglamentuoti, teisė laikytina šalutiniu rinkos plėtros poveikio veiksmu.

6. Rinkos reguliavimo matavimai identifikuoja nedidelę esamos struktūros našta įmonių obligacijų rinkos dalyviams:

a. Sukurto specializuoto įmonių obligacijų reguliavimo naštos indekso (IRRI) didžiausia reikšmė, reiškianti didesnę rinkos reguliavimą lyginamų šalių atžvilgiu ir dėl jo atsirandančias sąnaudas, būdinga JAV (5,5 iš 10). Mažesnė indekso reikšmė – ES (3,82 iš 10), mažiausia – Lietuvoje (3,19 iš 10), pastarosios indekso reikšmė rodo mažiausiai reikšmingą rinkos reguliavimą lyginamų šalių kontekste, sukuriantį nedidelę įmonių obligacijų rinkos reguliavimo našta jos dalyviams ar visai nesukuriantį tokios naštos. Pagal indekso skalę JAV taikytina vidutinė, Lietuvai ir ES – maža įmonių obligacijų rinkos reguliavimo našta.

b. Vertinant determinacijos koeficientų reikšmes nustatyta, kad specializuoti nagrinėjamos rinkos vertinimui skirti indeksai (kaip antai IRRI) geriau aprašo tyrimo objekto parametrus: sudarytas IRRI indeksas geriau paaikškino įmonių obligacijų rinkos plėtrą nei modifikuotas ELI indeksas (įtraukus tik nagrinėjamą rinką nusakančius dėmenis). Kylantys regioniniai skirtumai – geriau indeksais aprašomų kokybiškesnių duomenų masyvų (pvz., JAV) duomenys.

7. Mokestinė aplinka yra palanki įmonių obligacijų rinkos plėtrai:

a. Reguliavimo našta rinkai vertinant indeksais (ELI, GVI), įvertintuose fiskalinės laisvės (ELI) ir mokesčių naštos (GVI) dėmenyse lyderiaujant Lietuvai, patvirtintinas šalies mokesčių sistemos patrauklumas verslui ir nedidelė visuminė mokesčių našta kitų į indeksavimą įtraukiamų šalių atžvilgiu. Šalis yra konkurencinga mokestiniu atžvilgiu.

b. Mokestinės aplinkos skirtumai JAV ir Lietuvoje – ryškūs, ne tik tarifo, bet ir mokesčių bazės apimties ar mokestinių lengvatų taikymo. Kita vertus, esami mokesčio tarifai yra mažesni nei Lafero metodu įvertinti siūlomi

optimalūs, o mokesčių naštos dydžiai, nors gerokai svyruoja ilguoju laikotarpiu, nėra dideli, todėl nėra tvirtų mokesstinės aplinkos įmonių obligacijų rinkos stagnacijos (trukdymo plėtrai) argumentų.

Informacinių ir ryšio technologijų (IRT) dėmens vertinimo išvados

8. Aprašomajai statistinių charakteristikų analizei atskleidžiant įmonių obligacijų rinkos netolygumus, o IRT pastovumą, IRT nagrinėtais atvejais daugiausia nesąlygoja įmonių obligacijų rinkos plėtros:
 - a. Gompertzo technologijų sklaidos modelis įrodė, kad Lietuvoje ir JAV technologiniai pokyčiai yra nepakankami įmonių obligacijų rinkos plėtrai apibūdinti, o ES technologijos sąlygoja tolesnį įmonių obligacijų rinkos vystymąsi. Išvada suponuoja modelio tinkamumą agreguotiems duomenims, ilgesniam (vienodų eilučių) laikotarpiui, tačiau nėra pakankama šalių išsivystymo lygio sąsajai.
9. Adaptuoto Gompertzo technologijų sklaidos modelio rezultatai palaiko autorių (Novick *et al.*, 2014) pasiūlymus, kaip standartizuotų įmonių obligacijų rinką, dėl esamo netolygaus rinkos vystymosi ir apribotų prognozavimo galimybių. Esant standartizuotiems įmonių obligacijų emisijų dydžiams ir terminų duomenims, tikėtini tolygesni laikotarpio duomenų pasiskirstymai apie vidurkį, didesnių pjūvių duomenų surinkimas, įgalinsiantis statistinį duomenų aibės analizės reikšmingumą, juo besiremiančias išvadas ir prognostinių modelių sudarymą.

Konkurencijos banko paskoloms dėmens išvados

10. Įmonių obligacijų rinka konkuruoja su bankų paskolomis dėl rinkoje esančių laisvų finansinių išteklių – labiau išsivysčiusiose rinkose matyti priemonių substitucijos skirtingais laikotarpiais ženklų, o mažiau išsivysčiusios rinkos pasižymi nagrinėjamų sektorių komplementarumu:
 - a. Euro zonos, JAV ir Lietuvos duomenų įmonių obligacijų ir bankų paskolų koreliacinės analizės tik vienu atveju (arba 33,3 proc. aibės) patvirtina, kad įmonių obligacijų ir bankų paskolų rinkos nepasižymi substitucijos efektu arba nėra viena kitą pakeičiančios.

- b. Įmonių obligacijų rinkos gylio yra privataus sektoriaus paskolų Grangerio priežastis. Poveikio krypties vertinimas nėra vienodos: įmonių obligacijų rinkos gylio praeities reikšmėms kintant vienu procentu, lemiami neigiami euro zonos ir JAV paskolų privačiam sektoriui prognostiniai pokyčiai, tačiau teigiama Lietuvos įmonėms suteiktų bankų paskolų dinamika.
- c. Lietuvos ir JAV atvejų analizė išskyrė ir įmonių obligacijų nominaliosios vertės ir banko paskolų privačiam sektoriui sąveiką – Lietuvoje įmonių obligacijų nominaliąją vertę prognozuoja privataus sektoriaus paskolos, o JAV privačios paskolos prognozuoja įmonių obligacijų emisijas. Lietuvos atveju kintamųjų koeficientams pasižymint teigiamomis reikšmėmis, JAV atveju ryškėja atvirkštinė sąsaja, patvirtinanti rinkos gylio suponuotas išvadas apie substitucijos efekto pasireiškimą labiau išsivysčiusiose nei besivystančiose rinkose.

Kompleksinio įmonių obligacijų rinkos plėtros veiksnių vertinimo išvados

- 11. ARDL modelio struktūrinių lygčių koeficientams išsivysčiusias įmonių obligacijų rinkas prognozuojant IRT ir bankinio sektoriaus dėmenimis, besivystančių šalių modeliai pasižymi visomis reikšmingomis sudedamosiomis dalimis – teisiniu reglamentavimu ir reguliavimu, IRT, banko paskolomis, pasiskirstant poveikio trukmei:
 - a. IRT veiksny išsiskyrė savo ilgalaikiu poveikiu įmonių obligacijų rinkai, stipresniu labiau išsivysčiusiose nei besivystančiose rinkose – iš nagrinėtų veiksnių JAV įmonių obligacijų rinkos plėtrą daugiausia lėmė IRT plėtra ilgoju laikotarpiu; mobiliojo ryšio sklaida Lietuvoje taip pat išsiskiria ilgalaikiu poveikiu įmonių obligacijų rinkai.
 - b. Priešingai, teisinės bazės, priežiūros mechanizmo ir mokesstinės aplinkos įtaka įmonių obligacijų rinkai yra svaresnė mažesnio išsivystymo rinkose, kad ir koks būtų laikotarpis, jam nulemiant poveikio kryptį, dažnai sąlygotą rinkos dalyvių lūkesčių, preferencijų ar kitų psichosomatinių

efektų. Lietuvos įmonių obligacijų rinkos plėtrą tiek trumpuoju, tiek ilguoju laikotarpiu užtikrina teisinis reguliavimas ir reglamentavimas.

- c. Diferencijuotas bankininkystės sektoriaus poveikis besivystančiose rinkose sąlygoja šio dėmens didesnę svarbą rinkos vystymuisi nei išsivysčiusių rinkų reakciją į jos pokyčius, kuri yra vienakryptė. Dėmens įtaka obligacijų rinkos prognozei veiksni tiek trumpuoju, tiek ilguoju laikotarpiu įmonių.

12. Suformuotos skirtingų išsivystymo lygių įmonių obligacijų rinkų struktūrinės lygtys atitiko teorines prielaidas, tačiau skyrėsi selektyvių ir kompleksinės analizės rezultatai:

- a. Teisinio reglamentavimo ir reguliavimo veiksnio teigiama svarba įrodyta besivystančioms rinkoms.
- b. IRT veiksnys, nesąlygojęs rinkos plėtos pavieniuose modeliuose, pasižymėjo teigiamu ilgalaikiu poveikiu struktūrinėje lygtyje.
- c. Konkurencingumas bankininkystei svarbus visų lygių rinkose, daro neigiamą poveikį išsivysčiusiose, bet trumpalaikį teigiamą – besivystančiose rinkose.

Pasiūlymai

1. Tvariai ir sistemingai įmonių obligacijų rinkos plėtrai užtikrinti reikia visapusės teisinės apsaugos – ES stiprintinas investuotojų apsaugos, įmonių obligacijų išpirkimo fazės proceso (reglamentuojant mokumo, konvertavimo procesus) reglamentavimas.
2. Didesnis rinkos reglamentavimo ir reguliavimo bei informacinis vientisumas JAV, palyginti su ES ir Lietuva, pastarųjų pažangos galimybes išvelgiant duomenų agregavime ir viešoje vientisos informacijos prieigoje, skaidrumo ir įvairių mokslinių, statistinių ar taikomųjų tyrimų tikslais: steigtina organizuota duomenų bazė ar platforma, agreguojanti įmonių obligacijų emisijoms būdingus duomenis ir visą gyvavimo ciklo informaciją.

3. JAV pavyzdžiu Lietuvos įmonių obligacijų rinkai aktyvinti reikalingas įstatymais įtvirtintų lengvatų SVV dalyvavimui kapitalo rinkoje sukūrimas, pasižymintis teisės aktų dalyvavimui rinkoje kūrimu, sutelktinio finansavimo platformų reglamentavimu ir arba mokesčių lengvatomis.
4. Skatintinos visų šalių ilgalaikės investicijos į pažangius technologinius sprendimus (pvz., platformos, duomenų bazės ir kt.), lemsiančius ilgalaikę rinkos plėtrą.

Tolesnių tyrimų kryptys

- Tolesniems tyrimams plėstinos kintamųjų aibės, modeliai validuoti faktiniais duomenimis ir atliktini tęstiniai tyrimai.
- Plačiau nagrinėtina įmonių obligacijų paklausos pusė ir ją lemiantys veiksniai (motyvai).
- Tikrintinas vyriausybės obligacijų konkurencingumas įmonių obligacijoms.
- Nagrinėtinos kitos kapitalo rinkos priemonės, rinkos ir jų plėtros veiksniai.

Mokslinio tyrimo rezultatų aprobavimas ir sklaida. Pagrindiniai mokslinio autorinio tyrimo teiginiai ir rezultatai paskelbti penkiose mokslinėse publikacijose, keturi pranešimai disertacijos tematika pristatyti tarptautinėse konferencijose.

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