

# Topics in Financial Economics

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## Research Proposal for 2017-2018 Academic Year, New Economic School

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Financial economics is the branch of applied economics concerned with studying issuance of financial securities to finance different companies, pricing these securities, and trading them in the market to exchange companies' risks between investors.

In this workshop, we plan to focus on the two broad areas: 1) what determines issuance of financial securities, which is traditionally the subject of corporate finance, and 2) how trading of financial securities operates, which is traditionally the subject of market microstructure.

To get a better idea of the types of research Anna and Pavle can advise you on, please look at their websites: <http://pages.nes.ru/aobizhaeva/research.html> and <http://pavleradicevic.com>

#### CORPORATE FINANCE

Broadly speaking, corporate finance is the study of decision-making with a focus on capital allocation and financial structure (corporate policies) where the objective is to maximize the value of the firm. When a firm plans to invest in a new project from a given set of opportunities (investment policy) the “manager” needs to decide how to finance the investment, whether through the issuance of external claims such as debt and equity (financing policy or capital structure) or whether internally generated funds are sufficient for this task with the residual to be paid out to firm's owners (payout policy). At the core of corporate decision-making lies the concept of valuation, which not only links abovementioned corporate policies but also provides a point of tangency with other major areas of finance such as asset pricing and market microstructure.

Corporate finance is home to some of the most elegant theories in economics and is ubiquitous to financial contracting. Because the objectives of parties to financial contracts are almost surely divergent, relationships and corporate decision-making are usually subject to various conflicts of interest. Understanding the determinants of these conflicts and their implications for corporate policies and economic efficiency is the subject of corporate governance, which has recently been integrated in the main body of corporate finance. Common contracting problems range from disagreements over the investment policy, for example asset substitution problem as pointed out by Galai and Masulis (1976) and Jensen and Meckling (1976), to valuation issues arising due to asymmetric information (Leland and Pyle, 1977) and control considerations due to incomplete contracting (Grossman and Hart, 1986).

Despite the theoretical advances and the explosive empirical literature that followed (Goldstein and Hackbarth, 2014), basic questions such as that of the determinants of debt/equity mix (capital structure)

for most part remains a puzzle (see for example Strebulaev and Yang, 2013). That is to say, future research in corporate finance whether theoretical or empirical remains a promising prospect.

## MARKET MICROSTRUCTURE

Like option pricing and fixed income, market microstructure has rapidly moved from the research domain of finance professors into the real world, where competition among exchanges, development of trading algorithms, and design of robust market places all require combining the theory of market microstructure with an understanding of institutional detail of how financial markets work in practice. Liquidity, transaction costs, trading strategies, market fragmentation, high frequency trading, market design, and market crashes are topics of great interest to finance professors, market participants, policy makers, and often even to general public.

In the coming decade, market microstructure has potential to become one of the fastest growing fields of financial economics. Indeed, all ingredients are in place: There are numerous topical questions with no answers yet, theorists are well equipped with game theoretic modeling tools for developing theories to answer those questions, and the financial markets generate vast amount of data which present an excellent opportunity for empiricists to test those ideas.

Market microstructure invariance is one of the recently proposed frameworks for thinking about financial markets, see Kyle and Obizhaeva (2016). The invariance hypothesis is based on the intuition that trading in securities markets can be modeled as games played at different speeds or over different horizons for different securities. In actively traded securities, trading takes place at fast speeds over short horizons, perhaps only a few minutes. In inactively traded securities, trading takes place slowly over longer horizons, perhaps a few months. Invariance hypothesis generates precise quantitative predictions of how various market microstructure variables such bid-ask spread, price impact, order sizes, price resiliency, and market efficiency are related to volume and volatility, measured in calendar time. Several empirical studies found strong evidence in favor of invariance hypothesis using the data on portfolio transitions by U.S. institutional investors, the Trades and Quotes (TAQ) data for U.S. equity market, and Thomson/Reutres data on news articles, see Kyle and Obizhaeva (2013), Kyle, Obizhaeva, Tuzun (2012), and Kyle, Obizhaeva, Sinha, Tuzun (2012). However, there are many other applications that can be explored.

Students with interests in empirical and theoretical market microstructure are invited to participate in the project. It takes students directly to the frontier of research in finance and may result in high-quality work publishable in international journals. Research in this area is also a lot of fun.

This area is obviously of a great interest for the Moscow Exchange, which is interested in topics on liquidity, market design, high-frequency trading, price manipulation, and many others. Students will have an opportunity to get involved into working on some of these projects.

Examples of research topics in market microstructure and corporate finance are listed below.

1. *Cross-sectional heterogeneity in capital structures.* Starting with the irrelevance theorems of Modigliani and Miller (1958, 1963), the core topic in corporate finance is that of the firm's capital structure. Surprisingly, after decades of theoretical and empirical research the field is still facing difficulty explaining the cross-sectional variation in leverage ratios as observed in the data (Strebulaev and Yang, 2013). In fact, more than 90% of the variation in leverage ratios is captured by firm-fixed effects (Lemmon, Roberts and Zender, 2008). Shedding light on some of the firm specific determinants is promising future avenue for research.
2. *Debt structure.* Most of the external financing takes the form of equity and debt securities, a puzzling result given the rich set of instruments available to firms. However, while equity is a relatively simple contract a standard debt security is a complicated contract containing numerous provisions aimed at restricting borrower's behavior. A commonly argued problem faced by the lenders is that of the asset substitution or risk-shifting (Galai and Masulis, 1976 and Jensen and Meckling, 1976). Because equity is a claim on residual cash flows and shareholders face limited liability, their incentives favor increasing the risk profile of the firm ex post. That is, by substituting riskier assets for safer ones shareholders are able to transfer wealth away from creditors as they do not bear the costs in the bad states but capture the benefits in the good states of the world.

While the lenders may be able to bypass the limited liability, and mitigate risk-shifting in some circumstances by requiring collateral, this is usually not feasible in the case of a public corporation. The theory proposes several solutions to the risk-shifting problem in the form of covenants (Smith and Warner, 1979), short maturity (Barnea, Haugen and Senbet, 1980) and inclusion of credit rating trigger making the debt sensitive to performance (Bhanot and Mello, 2006) amongst others. Yet we observe debt contracts with shorter maturity containing strict covenant provisions, suggesting a possible redundancy. This warrants further study of contractual provisions. The empirical literature in this area is emerging and some more notable examples are: Chava and Roberts (2008), Roberts and Sufi (2009), Nini, Smith and Sufi (2012), Rauh and Sufi (2010), Vig (2013) and Gilje (2016).

3. *Founder controlled firms and corporate policies in Russia.* Corporate finance has long acknowledged the importance of large shareholder characteristics on corporate policies. However, the empirical literature has primarily been focusing on large institutional entities and their monitoring role. Yet recent studies point out that family ownership tends to be prevalent, persistent and most common form of corporate control around the world, and that family firms exhibit inherently different behaviour from a typical public corporation with widely dispersed shareholder base (see for example Holderness, 2009). Challenges remain going forward as the set of family firms is quite heterogenous. It is generally agreed that heir (and more generally descendant) controlled firms tend to underperform both non-family firms and founder controlled firms. However, identifying the subsets is a challenging task. Russia provides a unique setting in that it is a young capitalist economy making it easier to identify and study the founder effect.
4. *Study of various market design questions for the Russian markets.* Questions about market design are the most traditional questions in market microstructure area. These are questions about setting optimal tick size, lot size, margins, fees etc. How will changes in different parameters affect trading

and profits of various groups of traders as well as market liquidity. These questions are especially important nowadays for the Moscow Exchange as well as regulators all around the world. For example, under a big pressure from the U.S. Congress, the U.S. Securities and Exchange Commission have been running an experiment, a pilot test program to trade stocks in wider increments (like nickels instead of pennies) to determine whether such a change would make it easier for investors to trade some securities. This project presents an excellent opportunity to learn in detail about the market microstructure of the Russian financial markets and develop skills necessary for working with large financial datasets. Different markets can be studied: currency, commodities, equities, etc.

5. *Empirical study of invariance relationships in the Russian financial data.* This project involves testing various predictions of market microstructure invariance. The project presents an excellent opportunity to learn about the market microstructure of the financial market in Russia and develop skills necessary for working with large financial datasets. Different markets can be studied: currency, commodities, equities, etc. This project is also of a broader interest, as it will provide the evidence on whether invariance hypotheses hold outside of the U.S. market.
6. *Study of financial stability.* Insuring financial stability is key for well functioning of our economy. It is important to study in detail how people trade, how markets help to create liquidity and absorb shocks. For example, mid December 2014 was an unusually volatile period for the Russian currency; the ruble first sharply depreciated by 40 percent and then quickly came back to the prior level within a couple of days. This episode was similar to the famous Flash crash that happened in the U.S. markets on 6 May 2010. It is interesting to analyze in detail how often market dislocations and periods of stress happen, and how the market absorbs imbalances.

This list is not restrictive and other projects can be suggested. Students may also choose to develop their own ideas as long as they fall within the broad area of market microstructure or corporate finance.

## References

Market Microstructure Invariance: Empirical Hypotheses, 2016, Albert S. Kyle and Anna A. Obizhaeva, *Econometrica*.

Trading Game Invariance in the TAQ Dataset, 2012, Albert S. Kyle, Anna A. Obizhaeva, and Tugkan Tuzun

News Arrival and Trading Game Invariance, 2012, Albert S. Kyle, Anna A. Obizhaeva, Nitish R. Sinha, and Tugkan Tuzun

Intraday Trading Invariance in the E-mini S&P 500 Futures Market, 2015, Torben Andersen, Oleg Bondarenko, Albert S. Kyle, and Anna Obizhaeva

Anatomy of the Flash crash, 2015, Albert J. Menkveld and Bart Zhou Yueshen

Анализ события на российском валютном рынке 15-16 декабря 2014 года, 2015, Анна Обижаева

Most of the papers above can be found on <http://pages.nes.ru/aobizhaeva/research.html>

The Cost of Capital, Corporation Finance and the Theory of Investment, 1958, Franco Modigliani and Merton Miller, *The American Economic Review*, 48(3), 261-297

Corporate Income Taxes and the Cost of Capital: A Correction, 1963, Franco Modigliani and Merton Miller, *The American Economic Review*, 53(3), 433-443

The option pricing model and the risk factor of stock, 1976, Dan Galai and Ronald W. Masulis, *Journal of Financial Economics*, Volume 3, 53-81

Theory of the firm: Managerial behavior, agency costs and ownership structure, 1976, Michael C. Jensen and William H. Meckling, *Journal of Financial Economics*, Volume 3, 305-360

A Rationale for Debt Maturity Structure and Call Provisions in the Agency Theoretic Framework, 1980, Amir Barnea, Robert A. Haugen and Lemma W. Senbet, *The Journal of Finance*, 35(5), 1223-1234

How Does Financing Impact Investment? The Role of Debt Covenants, 2008, Sudheer Chava and Michael Roberts, *The Journal of Finance*, 63, 2085–2121

Michael Roberts and Amir Sufi, 2009, Control Rights and Capital Structure: An Empirical Investigation. *The Journal of Finance*, 64, 1657–1695

Creditor Control Rights, Corporate Governance, and Firm Value, 2012, Greg Nini, David C. Smith and Amir Sufi, *The Review of Financial Studies*, 25, 1713-1761

Should corporate debt include a rating trigger?, 2006, Karan Bhanot and Antonio Mello, *Journal of Financial Economics*, 79 (1), 69-98

Capital Structure and Debt Structure, 2010, Joshua D. Rauh and Amir Sufi, *Review of Financial Studies*, 23 (12), 4242-4280

Access to Collateral and Corporate Debt Structure: Evidence from a Natural Experiment, 2013, Vikrant Vig, *The Journal of Finance*, 68, 881–928

Do Firms Engage in Risk-Shifting? Empirical Evidence, 2016, Erik P. Gilje, *The Review of Financial Studies*, 29 (11), 2925-2954

The mystery of zero-leverage firms, 2013, Ilya A. Strebulaev and Baozhong Yang, *Journal of Financial Economics*, Volume 109, Issue 1, 1-23

The Myth of Diffuse Ownership in the United States, 2009, Clifford G. Holderness, *The Review of Financial Studies*, 22 (4), 1377-1408

Back to the Beginning: Persistence and the Cross-Section of Corporate Capital Structure, 2008, M.L. Lemmon, M. R. Roberts and J.F. Zender, *The Journal of Finance*, 63, 1575–1608

Corporate finance theory: Introduction to special issue, 2014, Itay Goldstein and Dirk Hackbarth, *Journal of Corporate Finance*, 29, 535-541