

RSSIA 2016

Research Projects

RSSIA 2016 is financed by the National Research University Higher School of Economics and the Yegor Gaidar Foundation



NATIONAL RESEARCH
UNIVERSITY



**YEGOR
GAIDAR
FOUNDATION**

All research projects are in authors' edition

Contents

<i>Alburo, Ritchelle J.: An Empirical Analysis of the Ownership Influence on Water Utility Behaviour: The Philippine Experience.....</i>	5
<i>Arzumanyan, Mariam (with Mattias Polborn): Costly Voting with Multiple Candidates</i>	14
<i>Atmaca, Sümeysra (with Koen Schoors and Marijn Verschelde): The Time-Varying Relation Between Social Networks and Bank Loyalty: a Micro-Level Analysis, 2005-2012</i>	18
<i>Bocharova, Maria (with Ilya Prakhov): Socio-economic Predictors of Student Mobility.....</i>	23
<i>Davidson, Natalia (with Oleg Mariev): The Impact of Human Capital, Institutions and Spatial Concentration on Enterprise Productivity in Russia.....</i>	29
<i>Fedyunina, Anna (with Sergey Kadochnikov): Location Determinants of Fast-Growing Firms in Russia: the Role of High-Skilled Interregional Migration</i>	34
<i>Gimpelson, Nataliya: The Interaction between Formal Property Protection and Social Capital and Its Effects on Economic Performance</i>	38
<i>Gorelova, Olga: The Effects of Interinstitutional Mobility on Research Productivity of Academics in Russia»</i>	42
<i>Hussain, Mumtaz (with Nouman Saleem, Muhammad Muzammil Majeed and Shaoan Huang): The Impact of Transportation Investment on Economic Development: a Case study of Pakistan</i>	47
<i>Junio, Don Rodney Ong: Plugging into Regional Electronics Production Network: The Role of Industry Association in the Philippines</i>	56
<i>Khomik, Olesya (with Svetlana Avdasheva): Influence of Contracts with Grocery Retailers on the Performance of Food Suppliers Before and After of Law on Trade Adoption.....</i>	61
<i>Kinnunen, Jani: Economic Freedom Measures and Global Wealth Distribution.....</i>	67
<i>Konovalova, Marina (with Andrey Maksimov): The Analysis of the Determinants of Students` Time Allocation between Work and Study</i>	76
<i>Korovkin, Vasily (with Pasha Andreyanov and Alec Davidson): Corruption vs Collusion: Evidence from Russian Procurement Auctions.....</i>	81
<i>Kulikova, Yuliya: Health Policies and Intergenerational Mobility</i>	85
<i>Kulkova, Anna (with Ekaterina Borisova): Cultural Heterogeneity and Trust: Evidence from Naming Patterns in Russia</i>	90
<i>Lombardi, Claudio: Network Models for Digital Services: a Study on Market Power</i>	98

<i>Mitrokhina, Evgeniya M.</i> : How Political Business Cycles in Autocracies Depend on Institutions.....	104
<i>Nurbayev, Daniyar</i> : The Impact of Voice and Accountability on Economic Growth	109
<i>Ostapenko, Natalia</i> : The Distinction between the Impacts of Informal Institutions and Social Conditions on the Perceptions of Government Actions by Different Segments of the Population	114
<i>Raschupkin, Mikhail (with Maria Semenova)</i> : Informal Lending and Bank Competition: Lessons for Policy Makers.....	119
<i>Rudakov, Victor (with Igor Chirikov and Sergey Roshchin)</i> : Non scholae, sed vitae discimus? The Impact of Academic Achievement on Wages of Russian University Graduates.....	126
<i>Rusanov, Vasily</i> : Minorities and Business: the Case of Russian Old Believers	131
<i>Shestakov, Daniel</i> : Is God Dead? Persistent Effects of the Soviet 1930s Antireligious Campaign	140
<i>Sidorova, Elena E.</i> : Empirical Assessment of the Importance of the Factors Affecting the Litigation Antitrust Cases' Results	145
<i>Susin, Ivan</i> : Subcontracting Fees in Public Procurement	149
<i>Udrea, Cristina-Eliza</i> : Econometric Analysis of Non-performing loans in the European Region	153
<i>Valero, Mathilde (with Christophe Muller)</i> : Female Economic Rights and Human Capital Accumulation: An Application to Developing Countries.....	158
<i>Zakharov, Nikita</i> : Does Corruption Hinder Capital Investment? Evidence from Russian Regions	165
<i>Zubanov, Andrey</i> : Multiple Equilibria in Clubs with Club Good and Uncontrolled but Costly Entrance	172

Alburo, Ritchelle J.¹: An Empirical Analysis of the Ownership Influence on Water Utility Behaviour: The Philippine Experience

Abstract: This chapter empirically investigates the influence of ownership structure in the pricing, staffing and spending behaviour and concomitant financial and operational performance of water utilities in the Philippines. Using econometric tests and case studies, the paper finds systematic behavioural differences between private utilities and state-controlled utilities with the former demonstrating strong performance in overall cost efficiency and staff productivity underpinned by restrained profit orientation. Further, the corporatized water districts have shown to be a weak alternative to state-operated utilities necessitating reforms in their governance structure, particularly in terms of price regulation and financial assistance in order to curb excessive profit orientation and strengthen the incentive for cost efficiency.

Introduction

To improve water utility performance, the Philippine government has undertaken a series of reallocation of control rights away from the state and towards market-based arrangements. This was being done indirectly through regulatory and financing policies as it is the municipal governments which hold the control and decision rights over the organizational mode of water service delivery under a decentralized set-up of administration. In advancing corporatization back in the 1970s, for instance, the national government created the Local Water Utilities Administration by virtue of Presidential Decree 198 to provide financial and technical support to water utilities if they are corporatized by the municipal government. And in the last twenty years, private sector participation has been promoted by granting increasing legal protection to investors against regulatory risks and enhancing the capacities of local government units in contract design, negotiations and implementation.

While these policy efforts have increased the presence of private utilities and water districts in the water supply sector, state-run utilities continue to dominate the provision of water services, particularly in low-incomes areas. The desired ownership pattern has yet to be achieved and the performance of water districts and private utilities has been mixed. Generally, the introduction of water districts and private utilities into the water supply sector has yet to substantially improve the delivery of water services in the Philippines. The Philippines continues to lag behind other developing countries in water service coverage and efficiency, particularly in non-revenue water. We argue that the failure of the national government to achieve the desired ownership patterns and promote the proper functioning of each utility type can be partly remedied through a reorientation in the regulatory and financing policies to be complemented with the rationalization of the organizational and functional structure of each utility type so as to

¹ rjalburo@yahoo.com, European Doctorate in Law and Economics, University of Bologna, Italy

facilitate efficient ownership choices by the municipal governments.² To further explore our claims, we conduct an empirical investigation of the various aspects of the performance and behaviour of the utilities in light of their ownership and control structures.

Aim of the Project

Specifically, we seek to address three key interrelated questions:

- Is there a systematic difference in the pricing, staffing and spending behaviour of different ownership types of utilities?
- How do utility size, and cost and demand conditions affect the influence of ownership on the behaviour of the utilities?
- How do the pricing, staffing and spending behaviour of the utilities relate to their financial and operational performance?

The results and findings of the study are aimed at providing policy insights on the social desirability of the increasing involvement of the private sector in the urban water supply in the Philippines alongside the conversion of corporatized water districts to wholly state-owned and-operated utilities. We hope to present a nuanced, policy-oriented perspective on the dynamics of complementarity and substitutability between ownership structures in the Philippines in light of disparate market and political contexts of water service provision across local government units.

Hypotheses and Methodology

Hypotheses: Taking into account the regulatory environment of the Philippine water supply sector in the analysis of the empirical results, we test, among others, the following hypotheses:

In the absence of a well-functioning legal system that would effectively enforce laws and policies, privatization may not lead to the desired restructuring aimed at curbing political interference and establishing a hard budget constraint. Under such system, politicians can easily reclaim the control rights through public transfers from the private operator (Shleifer and Vishny, 1994). The continuance of public transfers under private ownership is argued to be particularly acute for larger firms that have more concentrated political influence and externalities from refinancing; hence, large private utilities are expected to marginally improve on the performance of state utilities, if at all (Qian and Roland, 1996);

² The arguments, which follow the analytical framework of transaction cost economics and political economy, are made in a separate chapter of the doctoral dissertation titled “The Legal Delimitation of Control Rights over Water Utilities in the Philippines: The Politician’s Choice and Responses. In said chapter, we find incoherence in the regulatory and financing policies of the national government which make state-run utilities sub-optimally attractive to self-interested local political authorities and generally bias against corporatized water districts. For corporatized water districts, however, to be a strong alternative to state-run utilities, organizational and functional reforms to address their internal contradictions and limitations will have to be instituted.

Relatedly, privatization may be a suitable arrangement for water service provision in affluent areas (Shleifer and Vishny, 1994). In such market, the political benefits of meddling in the price setting or staffing are low, the political cost of making a public transfer to a profitable utility is high, while the foregone private benefits [profits] to the owner-manager of accommodating political interference is high.

The introduction of commercial principles would have limited impact on the performance of corporatized public entities. For profit motive to effectively lead to a hard budget constraint and strengthen the incentive for efficiency, it would have to be pursued under private ownership. The incentives of an agent can be enhanced if the principal's objective function is less comprehensive than social welfare and thus less receptive to the private welfare of the agent (Dewatripont and Roland, 1999; Schmidt and Schnitzer, 1993).

To establish the influence of ownership structure on the pricing, staffing and spending behaviour and overall water utility performance of the utilities, we employ two methods: (i) statistical and econometric tests and (ii) case studies.

The empirical study is a cross-utility analysis made possible by the operation of different ownership types of utilities in the Philippines for a sufficiently long period of time. The data used in the **econometric tests** are drawn from the database of the International Benchmarking Network for Water and Sanitation (IBNET). These include 12 performance indicators of seven LGU-run utilities, eight private utilities and 20 water districts covering periods 2003, 2004, 2008 and 2009.

The case studies serve to further validate the results of the OLS estimation, which may not yield statistical significant results given the limited number of observations, particularly the utilities under full state control. The data were obtained from the financial reports submitted by the utilities to the regulatory agencies during period 2012. They include two LGU-run utilities, eight private utilities and nine water districts. These utilities operate in relatively high-income areas and geographically proximate provinces; they, thus, share similar water supply and demand circumstances thereby allowing us to focus on the management and operational aspect of the water utilities.

Preliminary Results

Estimation Results

The pricing, staffing and spending behaviour of the utilities systematically varies with the difference in their ownership structure largely in favour of private utilities from an efficiency standpoint³:

Water rates: Corporatized water districts, on the average, register the highest rates among the three ownership types with slightly better performance in water coverage, water availability and non-revenue water [with and without controlling for size and certain demand conditions]. Private utilities thus appear to offer more favourable trade-offs between price and quality of service.

³Further contextualization of the results of the econometric tests and case studies is being done incorporating an institutional analysis of the link between ownership choice and performance of water utilities in a larger legal, political and economic context.

Staff productivity: The remarkably high staff productivity of many private utilities, particularly the large ones, has shown to be a consequence of both their efficient spending and staffing behaviour. The improvement in the staff productivity of private utilities appears to be less reliant on wage increase implying other sources of improving staff productivity, while salary increases tend to be anchored on staff productivity improvement which serves to explain why salary increases are not accompanied by an increase in labour cost share.

Spending patterns: Unlike water districts, high operating cost coverage ratio of private utilities, meaning larger extra revenues for network upgrading and expansion, has a positive impact on water availability and a much larger role in reducing the unit operating cost of private utilities even if size and demand conditions are controlled for.

The inefficiency of LGU-run utilities does not appear to be diminished by improving demand conditions. While better demand conditions may ease the political pressure of keeping water rates unsustainably low, poor financial management and overstaffing appear to limit the impact of larger revenue streams on the financial and operational performance of these utilities.

Case Studies

Generally, the results of the case studies support the results of the econometric tests:

Water districts tend to be more profitable than private utilities but operational performance, particularly the number of new connections and non-revenue water of the former is inferior to the latter.

While water districts tend to charge slightly higher than the private utilities, they are more tolerant towards delayed payment as suggested by the low incidence of on-time payment. The high incidence of delayed payment appears to be a robust pricing attribute of water districts irrespective of the demand circumstances.

References

- Aghion, P. and R. Holden. 2011. Incomplete Contracts and the Theory of the Firm: What have we learned over the past 25 years? *Journal of Economic Perspectives*, 5(2), 181-197.
- Aghion, P. and J. Tirole. 1997. Formal and real authority in organizations. *Journal of Political Economy* 105(1): 1-29.
- Anwandter, L. and T. Ozuna. 2002. Can Public Sector Reforms Improve the Efficiency of Public Water Utilities? *Environment and Development Economics*, 7: 687-700.
- Alesina, A. and A. Drazen. 1991. Why are stabilizations delayed? *American Economic Review*, 81, 1170-88.
- Andres, L., J. Guasch and S. Straub. 2007. Do regulation and institutional design matter for infrastructure sector performance? *Policy Research Working Paper Series* 4378, The World Bank.
- Araral, E. 2008. The failure of water utilities privatization: Synthesis of evidence, analysis and implications. *Policy and Society*, 27(3), 221-228.

Armstrong, M. and Sappington, D. 2007. Recent developments in the theory of regulation. In M. Armstrong and R. Porter (eds), *Handbook of Industrial Organization*. Amsterdam: North-Holland.

Asian Development Bank. 2005. Rationalizing Tariffs for Private Water Utilities under the Water Resources Board – Final Report, ADB TA 6123-REG.

Barberis, N., M. Boycko, A. Shleifer, and N. Tsukanova. 1996. How Does Privatization Work? Evidence from the Russian Shops. *Journal of Political Economy*, 104 (8), 764–90.

Bardhan, P. Decentralization of Governance and Development. *Journal of Economic Perspectives*, 2002, 16(4), 185-205.

Barro, R., 1973. The control of politicians: an economic model. *Public Choice*, 14, 19-42.

Barzel, Y. 2006. Transaction Costs and Contract Choice. Retrieved from <http://econ.washington.edu/files/2013/05/Barzel-Transaction-Costs-and-Contract-Choice.pdf>

Becker, G. 1985. Public Policies, Pressure Groups, and Deadweight Costs," *Journal of Public Economics*, 28, 329-47.

Benitez, D., O. Chisari and A. Estache. 2003. Can the Gains from Argentina's Utilities Reform Offset Credit Shocks? in Ugaz C. Waddams Price (ed.), *Utility Privatization and Regulation: A Fair Deal for Consumers?* Northampton, MA: Edward Elgar.

Biais, B. and Perotti, E.. 2002. Machiavellian privatization. *American Economic Review*, 92, 240–258.

Birdsall, N. and J. Nellis. 2003. Winners and Losers: Assessing the Distributional Impact of Privatization. *World Development* 31 (10), 1617–33.

Bitrán, G. and E. Valenzuela. 2003. Water Services in Chile: Comparing Private and Public Performance Public Policy for the Private Sector. No 255 March. Retrieved from <http://rru.worldbank.org/PapersLinks/Open.aspx?id=1998> Calabresi, Guido and Douglas.

Bloom, N., R. Sadun, and J. Van Reenen. 2012. The Organization of Firms across Countries. *Quarterly Journal of Economics*, 1663–1705.

Bloom, N., R. Sadun and J. Van Reenen. 2009. Recent Advances in the Empirics of Organizational Economics. Retrieved from <http://web.stanford.edu/~nbloom/AR.pdf>

Burgess, S. and P. Metcalfe. 1999. Incentives in Organisations: A Selective Overview of the Literature with Application to the Public Sector, CMPO Working Paper Series No. 00/16.

B'orner, K. 2004. The political economy of privatization: why do governments want reforms? *Fondazione Eni*.

Bortolotti, B. and Siniscalco, D. 2004. The Challenges of Privatization. An International Analysis. Oxford: Oxford University Press.

Boycko, M., S., A. and Vishny, R.W. 1996. A theory of privatization. *The Economic Journal*, 106, 309–319.

Cavaliere, A. and S. Scabrosetti. 2008. Privatization and efficiency: from principals and agents to political economy. *Journal of Economic Surveys*, ____.

- Che, J. and Y. Qian. 1994. Boundaries of the firm and governance: understanding China's township and village enterprises, mimeo, Stanford University.
- Clarke, G., K. Kosec, and S. Wallsten. 2004. "Has Private Participation in Water and Sewerage Improved Coverage? Empirical Evidence from Latin America." Working Paper no. 04-02 (January), American Enterprise Inst.-Brookings Joint Center Regulatory Studies, Washington, DC.
- Crocker K. and S. Masten. 2002. Prospects for private water provision in developing countries: lessons from 19th-century America. In *Thirsting for Efficiency: The Economics and Politics of Urban Water Reform*, ed. M Shirley, pp. 317–47. London: Elsevier Sci.
- Crozier, Michel. 1964. *The Bureaucratic Phenomenon*. Chicago: University of Chicago Press.
- Danilenko, A., C. van den Berg, B. Macheve and L. Moffitt. 2014. The IBNET Water Supply and Sanitation Bluebook 2014. Washington, D.C. World Bank.
- Davis, Jennifer. 2005. *Private Sector Participation in Water and Sanitation Sector*. Cambridge, MA: MIT Press.
- Debande, O. and G. Fribel. 2003. A Theory of "Give Away" Privatization. Retrieved from <http://publications.ut-capitole.fr/id/eprint/2090>
- Debande O., and G. Fribel. 1999. A Positive Theory of Insider Privatization", Discussion Paper 99/05, Stockholm Institute of Transition Economics
- Debande, O. and G. Fribel. 1996. Privatization, employment and managerial decision-taking, mimeo, ECARE, Université Libre de Bruxelles.
- Dewatripont, M. and G. Roland. 1999. Soft budget constraints, transition and financial systems. ECARE, Université Libre de Bruxelles and CEPR.
- Donahue, J. 1989. Privatization and public spending. See Ref. 109. pp. 14– 33 55b.
- Donahue J. 1989. The evidence on efficiency. See Ref. 109. pp. 57–78.
- Donahue, J. 1989. *The Privatization Decision: Public Ends, Private Means*. New York: Basic Books.
- Dore M., J. Kushner and K. Zumer. 2004. Privatization of water in the UK and France: What can we learn? *Util. Policy* 12:41– 50.
- Dyck, A. and L. Zingales. 2002. Private benefits of control: an international comparison, NBER Working Paper n. 8711.
- Drometer, M. 2006. Hyperbolic Discounting and Politics: The Beneficial Effects of Bureaucrats. Bavarian Graduate Program in Economics.
- Enrico, M., B. Bortolotti and P. Pinotti. 2003. The political economy of privatization. *Nota di Lavoro* 45.2003, Fondazione Eni Enrico Mattei.
- Estache, A., A. Gomez-Lobo, and D. Leipziger. 2001. Utilities Privatization and the Poor: Lessons and Evidence from Latin America. *World Development*, 29 (7), 1179–98.
- Estache A, Rossi M. 2002. How different is the efficiency of public and private water companies in Asia? *World Bank Econ. Rev.*, 16(1), 139–48 55.
- Estache A, Kouassi E. 2002. Sector organization, governance, and the inefficiency of African water utilities. *Policy Res. Work. Pap. Ser.* 2890. World Bank, Washington, DC.

Frydman, R., C. Gray, M. Hessel, and A. Rapaczynski. 1999. When Does Privatization Work? The Impact of Private Ownership on Corporate Performance in the Transition Economies. *Quarterly Journal of Economics*, 114 (11), 1153–91.

Galiani, S., P. Gertler, E. Schargrodsky and F. Sturzenegger. 2005. The Benefits and Costs of Privatization in Argentina: A Microeconomic Analysis. In *Privatization in Latin America—Myths and Reality*, edited by Alberto Chong and Florencio Lopez-de-Silanes. Stanford, CA: Stanford Univ. Press.

Gallagher, M. 1991. Proportionality, disproportionality and electoral systems. *Electoral Studies*, 10, 33-51.

Garn, M., J. Isham and S. Kahkonen. 2002. Should We Bet on Private or Public Water Utilities in Cambodia: Evidence on Incentives and Performance from Seven Provincial Towns. Retrieved from <http://ideas.repec.org/p/mdl/mdlpap/0219.html>

Gassner, K., A. Popov and N. Pushak. 2009. Does Private Sector Participation Improve Performance in Electricity and Water Distribution. World Bank: Washington D.C.

Grossman, S. and Hart, O. 1986. The costs and benefits of ownership: a theory of vertical and lateral integration. *Journal of Political Economy*, 94, 691–719.

Gulick, Luther, and Lydal Urwick, eds. 1937. *Papers on the Science of Administration*. New York: Institute of Public Administration, Columbia University

Hall, D. and E. Lobina. 2006. Pipe Dreams: The Failure of the Private Sector to Invest in Water Services in Developing Countries. Public Services International. University of Greenwich, London. International Monetary Fund. Public-Private Partnerships12 March 2004.

Haltinwanger, J. And M. Singh. 1999. Cross-country evidence on public sector retrenchement, *The World Bank Economic Review*, 13:23-66.

Hart, O., A. Shleifer and R. Vishny. 1997. The proper scope of government: theory and an application to prisons. *Quarterly Journal of Economics*, 112(4), 1127–1162.

Hart, O. and B. Holmstrom. 2008. "Theory of Firm Scope." NBER Working Paper No. 14613 December 2008 JEL No. D23, L23.

Hart, O. 2002. Incomplete Contracts and Public Ownership: Remarks, and an Application to Public-Private Ownership. CMPO Working Paper Series No. 03/061.

Hall, D. and E. Lobina. 2006. Pipe Dreams: The Failure of the Private Sector to Invest in Water Services in Developing Countries. Public Services International. University of Greenwich, London. International Monetary Fund. Public-Private Partnerships12 March 2004.

Hall, R., E. Lobina, and R, de la Motte. 2005. Public Resistance to Privatization in Water and Energy. Retrieved from <http://www.psiru.org/reports/2005-06-W-E-resist.pdf>.

Kornai, J. 1986. The soft budget constraint. *Kyklos* 39: 3–30.

Lee, T. and S. Jouravlev. 1998. Regulating the private provision of drinking water and sanitation services. *CEPALRev*.65:155– 68

Li, D. 1995. A theory of ambiguous property rights in transition economies », mimeo, University of Michigan.

- McCubbins, M. and T. Schwartz. 1984. Congressional Oversight Overlooked: Police Patrols versus Fire Alarms. *American Journal of Political Science* 28 (2), 165–79.
- McKenzie, D., and D. Mookherjee. 2003. The Distributive Impact of Privatization in Latin America: Evidence from Four Countries. *Economia*, 3 (Spring), 161–218.
- McIntosh A. and C. Yniguez. 1997. Second Water Utilities DataBook: Asian and Pacific Region. Manila: Asian Dev. Bank.
- Megginson, W. R. Nash, J. Netter, and A. Poulsen. 2000. The choice between private and public markets: evidence from privatizations, Working paper, Athens, University of Georgia.
- Megginson, W. R. Nash, and M. van Randenborgh. 1994. The financial and operating performance of newly privatized firms: An international empirical analysis, *Journal of Finance*, 49, 403-452.
- Megginson, W. and J. Netter. 2001. From State to market: a survey of empirical studies on privatization. *Journal of Economic Literature*, 39, 321-389.
- Meier, Kenneth J., and L. G. Nigro. 1976. "Representative Bureaucracy and Policy Preferences: A Study in the Attitudes of Federal Executives." *Public Administration Review* 36:458–69.
- Menard, C. and M. Saleth. 2011. The Effectiveness of Alternative Water Governance Arrangements. *Investing in Water for a Green Economy. Services, infrastructure, policies and management*, United Nations Environment Program/Routledge, pp.152-174, 2012, 978-0415-50126-2. <halshs-00624250>
- Noll, R., M. Shirley, and S. Cowan. 2000. Reforming Urban Water Systems in Developing Countries. In *Economic Policy Reform: The Second Stage*, edited by Anne O. Krueger. Chicago: Univ. Chicago Press.
- Persson, T. and G. Tabellini. 2001. Political institutions and policy outcomes: What are the stylized facts?, Bocconi University, mimeo.
- Persson, T. and G. Tabellini. 2000. *Political economics: explaining economic policy*, Cambridge (MA), The MIT Press.
- Pérard, Edouard. 2008. "Private Sector Participation and Regulatory Reform in Water Supply: The Southern Mediterranean Experience." Working Paper 265, OECD Development Center, Paris.
- Prasad, Naren. 2006. Privatisation Results: Private Sector Participation in Water Services After 15 Years. *Development Policy Review*, 2006, 24 (6), 669-692.
- Qian, Y. and G. Roland. 1996. The Soft Budget Constraint in China, Japan and the World Economy 8, 207-223.
- Qian, Y. and G. Roland. 1998. Federalism and the Soft Budget Constraint, *American Economic Review* 88, 1143-62.
- Saal, D. and D. Parker. 2000. The Impact of Privatization and Regulation on the Water and Sewerage Industry in England and Wales: A Translog Cost Function Model. *Managerial and Decision Economics*, 21: 253-268.
- Sappington, D.E.M. and Stiglitz, J.E. 1987. Privatization, information and incentives. *Journal of Policy Analysis and Management*, 6(4), 567–582.

- Schmidt, K.M. 1996a. The costs and benefits of privatization – an incomplete contracts approach. *Journal of Law, Economics and Organization*, 12, 1–24.
- Schmidt, K.M. 1996b. Incomplete contracts and privatization. *European Economic Review* 40: 569–579.
- Schmidt, K. and M. Schnitzer. 1993. Privatization and Management Incentives in the Transition Period in Eastern Europe. *Journal of Comparative Economics*, 17, 264-287.
- Segal, I. 1998. Monopoly and soft budget constraint. *RAND Journal of Economics*, 29, 596–609.
- Shapiro, C. and Willig, R.D. (1990) Economic rationales for the scope of privatization. In E.N. Suleiman and J. Waterbury (eds), *The Political Economy of Private Sector Reform and Privatization*. Boulder, CO: Westview Press.
- Sheshinski, E. and Lopez-Calva, L.F. 2003. Privatization and its benefits: theory and evidence. *CESifo Economic Studies* 49: 429–459.
- Shirley, M.M. and Walsh, P. 2004. Public versus Private Ownership: The Current State of the Debate. Washington, DC: The World Bank.
- Shleifer, A. and R.Vishny. 1994. Politicians and Firms. *Quarterly Journal of Political Economy*, 109 (11), 995–1025.
- Shleifer, A. 1998. State versus private ownership. *Journal of Economic Perspectives*, 12(4), 133–150.
- Shleifer, A. and Vishny, R.W. 1994. Politicians and firms. *Quarterly Journal of Economics*, 109, 995–1025.
- Stigler, G. 1971. The Economic Theory of Regulation. *Bell Journal of Economics*. 2:3-21.
- Tirole, J. 1986. Hierarchies and Bureaucracies. *Journal of Law Economics and Organization*, 2, 181-214.
- Tullock, Gordon. 1965. *The Politics of Bureaucracy*. Washington, DC: Public Affairs Press.
- Vickers, J. and G. Yarrow. 1988. *Privatization: an economic analysis*, Cambridge (MA), MIT Press.

Arzumanyan, Mariam¹ (with Mattias Polborn²): Costly Voting with Multiple Candidates

Abstract: We analyze a costly voting model with more than three candidates. We show that there are two different types of equilibria. In the first one, all candidates receive votes and have an equal chance of winning, independent of their popular support levels. In the second type of equilibrium, only two candidates receive votes and have a positive winning probability. Furthermore, in both types of equilibria, all voters who cast votes do so for their most preferred candidate (i.e., there is no "strategic voting").

Introduction

The literature analyzing the decision whether or not to vote when voting is costly generally focuses on settings in which there is an election between exactly two candidates. The advantage of assuming that only two candidates compete in the election is that there are only two weakly undominated strategies for each citizen: Abstain, or vote for one's favorite candidate.

However, many real-life elections involve competition between more than two parties or candidates. In this paper, we analyze a costly voting model with multiple candidates, in which citizens' preferences over candidates are drawn from a distribution that is common knowledge, but each citizen only knows his own realized type. Citizens decide strategically whether to vote at all (taking this action requires a citizen to pay a voting cost c), and if they choose to vote, also which candidate to vote for.

This is a potentially very complicated setting because, in addition to the participation decision, we allow for citizens to vote strategically for other candidates than their most preferred one, and it is well known that only voting for one's least-preferred candidate is a dominated strategy in a multi-candidate election. In spite of this, the model remains surprisingly tractable. Our analysis focuses on the case of three candidates, but it will be clear that our qualitative results generalize to the general case of m candidates.

Aim of the Project

In most countries and in different elections we usually see more than two major parties that try to receive majority votes. Current paper presents a model of three candidate elections with costly voting.

Having three candidates adds extra difficulties to the analysis of election outcome and voter participation decision. In the two candidate elections with cost, voting for the second preferred candidate is obviously dominated by the abstaining. Hence, with two candidates, citizens who vote do that for their most preferred candidate. But in the three candidate elections with cost, only voting for the least preferred candidate is dominated by abstaining. Therefore, citizens instead of deciding whether to vote or not should also decide to vote for their most preferred candidate, or for their second preferred candidate.

¹ arzumanyan.mariam.cba@gmail.com, Economic Research Department, Central Bank of Armenia

² polborn@uiuc.edu, Department of Economics and Department of Political Science, University of Illinois

The main contribution of this paper is to show that in large elections with costly voting, strategic voting disappears, i.e. since citizens incur cost, they vote only for their most preferred candidate. This confirms the intuition, because in order to vote, voters should bear cost, but voting for the second preferred candidate is not as desired as voting for the most preferred candidate. Consequently, if their most preferred candidate does not have a chance to win, they would rather to abstain than vote.

Sincere voting usually is not the case in the probabilistic voting games without cost. In Myerson (1993) model, voters calculate their probabilities to affect the outcome of game and the probability of each candidate being pivotal, and then vote for the candidate who maximizes the expected benefit of voting. Even in the cases when for some voters their most preferred candidate does not have a chance to win, they deviate and vote for another candidate. This effect is absent in our model. Deviating and voting for second preferred candidate will be reasonable only if the benefit of doing so exceeds the cost of doing so. But, since the voting is costly, the types who have the same candidate as their favorite one are already indifferent between voting or not. So their benefit is equal to their cost. When it comes to the voters for whom that candidate is the second preferred, definitely their benefit of voting is lower, but they still need to incur the same cost. So, it is much better for them to abstain rather than to vote.

Hypotheses and Methodology

We consider an election game with three candidates whom we call A , B and C . The voting system is plurality rule, i.e., there is a single round of voting, and the candidate who receives the most votes is elected.

The players of our game are N citizens (to avoid confusion, we reserve the term "voter" to a citizen who chooses to actually vote). Each citizen decides simultaneously whether to abstain or to vote, and if he votes, which candidate to vote for. Voters receive different utilities from different candidates. A citizen of type ij receives a benefit of 1 if his most preferred candidate i wins the election, λ if his second preferred candidate j wins, and 0 if his least preferred candidate $k \neq i, j$ wins. Table 1 shows the six possible voter preference types and their payoffs.

Table 1: Preference Types

Preferences	ABC	ACB	BAC	BCA	CAB	CBA
A	1	1	λ	0	λ	0
B	λ	0	1	1	0	λ
C	0	λ	0	λ	1	1

Following Myerson (2000), we assume that the number of citizens of type ij is drawn from a Poisson distribution with parameter N_{ij} , for all types ij . Note that N_{ij} is the expected number of citizens of type ij . The analytical advantage of the Poisson game assumption is that, from the point of view of a particular citizen of type ij , the number of other citizens of type ij is still Poisson distributed with parameter N_{ij} .

Our equilibrium concept is a quasi-symmetric (mixed strategy) equilibrium, that is, a strategy profile in which all players of preference type ij participate with the same

probability p_{ij} and vote for the same candidate (not necessarily their most preferred candidate, although we will show that, in any equilibrium, they will vote for candidate i). Note that, while we look for an equilibrium in which voters of the same type play the same strategy, the deviations that we consider are, of course, unilateral deviations by one voter (both with respect to participation, and with respect to which candidate to vote for in case of participation).

Results

We show that two structurally types of equilibria arise when the number of voters is large.

In the first one, all three candidates receive the same positive expected number of votes, and each wins with probability 1/3.

In the second type of equilibrium, only two candidates receive a positive expected number of votes, and each of these relevant candidates wins with probability 1/2; there are three different equilibria of this second type equilibrium, one for each subset of two candidates (i.e., one in which candidates A and B are the relevant candidates; another one in which A and C are the relevant candidates, and a last one in which B and C are the relevant candidates). Interestingly, in all equilibria, all voters vote sincerely, that is, for their most preferred candidate.

This result contrasts with the literature on strategic voting in settings where the set of participating voters is exogenous (see Myerson and Weber 1993; Messner and Polborn 2011) and where there are generally many equilibria in which strategic voting occurs.

Intuitively, the reason for our result that "strategic voting" (i.e., voting for a candidate who is not the voter's most preferred one) does not occur in equilibrium when voting is costly and society is large is as follows: A voter who votes strategically for his second-most preferred candidate has a lower marginal benefit from voting than a voter who votes for the same candidate, but ranks him highest among the candidates. Because the strategic voter has to be at least indifferent between voting and not voting, the second type of voter must strictly prefer participation over abstention. When the number of citizens is large, this cannot be the case, because then, the number of participating voters would be very high, and consequently, the probability that each voter is pivotal would be very close to zero.

References

- Börgers, T. (2004). Costly voting. *American Economic Review* 94(1), 57-66.
- Feddersen, T. and A. Sandroni (2006). A theory of participation in elections with ethical voters. *American Economic Review* 96, 1271-1282.
- Herrera, H. and C. Martinelli (2006). Group formation and voter participation. *Theoretical Economics* 1, 461-487
- Krasa, S. and M.K. Polborn (2009). Is mandatory voting better than voluntary voting? *Games and Economic Behavior* 66(1), 275-291.
- Ledyard, J. (1984). Pure theory of two-candidate competition. *Public Choice* 44, 7-41.

- Messner, M. and M. K. Polborn (2011). Miscounts, Duverger's law and Duverger's hypothesis. IGIER Working Paper.
- Messner, M. and M. K. Polborn (2007). Strong and coalition-proof political equilibria under plurality and runoff rule. *International Journal of Game Theory* 35(2), 287-314.
- Myerson, R. B. (2000). Large Poisson games. *Journal of Economic Theory* 94(1), 7-45.
- Myerson, R. B. and R. J. Weber (1993). A theory of voting equilibria. *American Political Science Review* 87(1), 102-114.
- Palfrey, T. R. and H. Rosenthal (1983). A strategic calculus of voting. *Public Choice* 41, 7-53.
- Palfrey, T. R. and H. Rosenthal (1985). Voter participation and strategic uncertainty. *American Political Science Review* 79, 62-78.

Atmaca, Sümeyra¹ (with Koen Schoors² and Marijn Verschelde³): The Time-Varying Relation Between Social Networks and Bank Loyalty: a Micro-Level Analysis, 2005-2012

Abstract: We consider how the intensity and channels of the relation between social networks and bank loyalty vary over time. We analyze bank leaving over the period 2005-2012 for over 300,000 retail clients of a commercial bank that experienced a bank run in 2008. The unique and rich data we constructed in close collaboration with the bank enables us to distinguish different sorts of family networks from neighborhood networks, while controlling for a wide range of client-level and branch-level characteristics and events. Using a proportional hazards model, we show the importance of family networks. In times of financial distress, family networks become even more important and retail clients take weaker, less direct social relationships into account.

Introduction

Decisions are hardly ever made in vacuum. Taking choices of others into account is common for any form of decision making, including decisions with regard to banking. From a theoretical perspective, we study endogenous peer effects (Manski, 1993), meaning that the agents influence each other's decision making. Each network channel is expected to have a different, endogenous effect, depending on the network structure. First, denser networks enhance information diffusion (Granovetter, 2005; Jackson, 2014). Second, the peer effect depends on the type of edges. Ties are distinguishable on their strength. Strong ties are characterized by more communication between the connected agents and this increases the probability of contagion (Bakshy et al., 2012). Nevertheless there is a higher likelihood that strong ties are connected among each other - greater overlap of social networks - than weak ties. This implies that the agents forming the strong ties have comparable information (Granovetter, 1973). Hence weak ties transmit novel information which can induce a change in behavior.

Both experiments (Garratt and Keister, 2009; Schotter and Yorulmazer, 2009; Kiss et al., 2014) and observational evidence confirm the importance of peers' actions for bank decisions (Kelly and Gráda, 2000; Starr and Yilmaz, 2007; Iyer and Puri, 2012).

Next to our contribution to the literature on social networks and their relation to banking loyalty decisions, we contribute to our understanding of bank runs and financial stability. Bank runs can be driven by either a coordination problem (Diamond and Dybvig, 1983; Ennis and Keister, 2009) or bad (signals of) bank fundamentals (Jacklin and Bhattacharya, 1988; Allen and Gale, 1998). Both views can incorporate peer effects. The major commercial bank under study faced a bank run in the Belgian retail market in 2008 after disclosure of information on very bad fundamentals (i.e., solvency issues). This public disclosure of information, triggered endogenous peer effects on bank loyalty,

¹ Sümeyra.Atmaca@UGent.be, Department of General Economics, Ghent University

² CERISE, Department of General Economics, Ghent University

³ Department of Economics and Quantitative Methods, IÉSEG School of Management

consistent with the theory of informational differences and social learning (Banerjee, 1992; Welch, 1992; Bikhchandani et al., 1998), negative payoff externalities (Bikhchandani and Welch, 2000), and blind imitation (Devenow and Welch, 1996).

Aim of the Project

Literature shows that agents do influence each other's behavior, with the peer effect depending on the network structure (see e.g. Granovetter, 1978; Granovetter, 2005; Jackson, 2014). Economic theory does not impose the relation between social networks and decision making to be stable over time. However, in empirical research, this assumption is commonly maintained. In this paper, we study how the intensity and channels of social network effects vary over three considered time periods: pre-crisis, crisis and post-crisis.

Hypotheses and Methodology

We constructed in close collaboration with the anonymous commercial bank a data set that enables us to study the relation between bank loyalty, different sorts of family networks and neighborhood networks, while controlling for client-level and branch-level characteristics and events. The data set covers December 2005 until November 2012 and contains monthly data per customer. There are 307,801 customers but only 10,000 of these are randomly drawn customers from the total set of customers of the bank in the period 2005-2012. The other 297,801 customers are family (15 percent) or neighbors (i.e. having the same sub-street code, 85 percent) of the 10,000 customers that are also clients of the bank.

The dependent variable *revealedexit* considers the scope of the bank services. The bank classifies client relations in five domains: Daily Banking, Deposits&Investments, Loans&Credits, Insurance and Online Banking. The customer is considered as *revealedexit*=1 from when the customer is no longer active in any domain. We consider the influence of the social network on bank loyalty by the number of individuals with the status *revealedexit* in an individual's social network (see figure 1). First of all, we make a distinction between family and neighbors. The variable *family* consist of *first order* and *second order* family members. The first order links of the 10,000 customers consist of the partner, children, parents, brothers, sisters, while for instance in-laws, grandparents, uncles, aunts and cousins are part of the second order links. Furthermore, these links are distinguished depending on the distance to the individual. A link is defined as *close* if the peer has the same sub-street code as the individual and *far* otherwise.

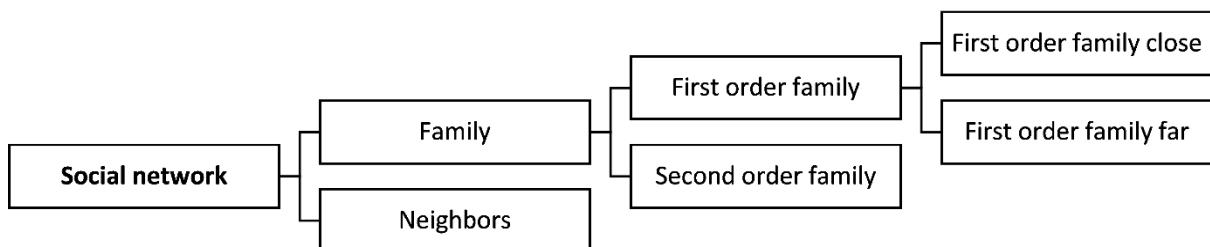


Figure 1: Social network variables

We use the proportional hazards model (Cox, 1972) to analyze the effect of peers' exit and other covariates on the probability that the individual will close his/her account with the bank:

$$h_j(t) = h_0(t) \exp(\beta_0 + \beta_1 \text{family}_j + \beta_2 \text{neighbors}_j + \alpha \mathbf{Z}_j) \quad (1)$$

$$h_j(t) = h_0(t) \exp(\beta_0 + \beta_1 \text{first order family close}_j + \beta_2 \text{first order family far}_j + \beta_3 \text{first order family div}_j + \beta_4 \text{second order family}_j + \beta_5 \text{neighbors}_j + \alpha \mathbf{Z}_j) \quad (2)$$

The dependent variable *revealedexit* is equal to 1 if individual j exits all bank domains and 0 otherwise. \mathbf{Z} includes customer characteristics, branch characteristics, client events and branch events. Model (1) considers the effect of the number of exiting family and neighbors and the second model measures the impact of different kinds of family. Each equation is executed before, during and after the considered crisis period of March 2008 to February 2009.

Results

Columns 1-3 in table 1 contain the results of model (1) and columns 4-6 of model (2). We find for the three periods (pre-crisis, crisis, post-crisis) a relation between the behavior of the agent's family and the agent's behavior. Before and after the crisis period, a unit increase in the number of family members exiting the bank leads to an increase of the hazard by 200 to 300 percent. During the crisis period, a unit change increases the hazard by 500 percent. Stated differently, an agent with one additional bank leaver in his/her network is on average 5 times more likely to exit the bank.

Table 1: Social network and bank exit

	(1) pre-crisis	(2) crisis	(3) post-crisis	(4) pre-crisis	(5) crisis	(6) post-crisis
family	2.791*** (0.654)	4.932*** (0.907)	2.129*** (0.418)			
first order family close				3.589*** (0.885)	5.614*** (1.506)	2.579*** (0.564)
first order family far				0.184*** (0.0875)	3.697*** (1.430)	1.661 (0.724)
second order family				2.911 (3.046)	4.959** (3.127)	0.797 (0.746)
neighbors	1.044 (0.0963)	1.066 (0.102)	0.944 (0.0499)	1.044 (0.0960)	1.067 (0.102)	0.944 (0.0499)
control variables	YES	YES	YES	YES	YES	YES
observations	205,316	93,519	303,129	205,316	93,519	303,129

Notes: The dependent variable *revealedexit* is equal to 1 if the agent exits all bank domains and 0 otherwise. In all regressions we control for client-level, branch-level and district-level characteristics and events. Clustered standard errors reported in parentheses; *** p < 0.01, ** p < 0.05, * p < 0.1.

The strength of the social network effect is thus varying over the time periods and especially in times of crisis agents attach more importance to their peers' decisions. In contrast to family, we find no supportive evidence that neighbors significantly affect the agent's probability of exiting the bank. These findings indicate that the type of relationships determine the likelihood of contagion.

At disaggregated level, first order family close has a significant impact on *revealedexit* in each period. Further, the decisions of first order family far and second order family are also taken into account during the crisis. During crisis social network effects do not only become stronger in decision making, but agents do as well take more kinds of relationships into account.

References

- Allen, F., Gale, D., 1998. Optimal financial crises. *Journal of finance*, 1245-1284.
- Bakshy, E., Rosenn, I., Marlow, C., Adamic, L., 2012. The role of social networks in information diffusion. In: Proceedings of the 21st international conference on World Wide Web. ACM, pp. 519-528.
- Banerjee, A. V., 1992. A simple model of herd behavior. *The Quarterly Journal of Economics*, 797-817.
- Bikhchandani, S., Hirshleifer, D., Welch, I., 1998. Learning from the behavior of others: Conformity, fads, and informational cascades. *The Journal of Economic Perspectives*, 151-170.
- Bikhchandani, S., Sharma, S., 2000. Herd behavior in financial markets. *IMF Staff papers*, 279-310.
- Cox, D. R., 1972. Regression models and life-tables (with discussion). *Journal of the Royal Statistical Society, Series B* 34, 187-220.
- Devenow, A., Welch, I., 1996. Rational herding in financial economics. *European Economic Review* 40 (3), 603-615.
- Diamond, D. W., Dybvig, P. H., 1983. Bank runs, deposit insurance, and liquidity. *The journal of political economy*, 401-419.
- Ennis, H. M., Keister, T., 2009. Bank runs and institutions: The perils of intervention. *The American Economic Review*, 1588-1607.
- Garratt, R., Keister, T., 2009. Bank runs as coordination failures: An experimental study. *Journal of Economic Behavior & Organization* 71 (2), 300-317.
- Granovetter, M., 2005. The impact of social structure on economic outcomes. *Journal of economic perspectives*, 33-50.
- Granovetter, M. S., 1973. The strength of weak ties. *American journal of sociology*, 1360-1380.
- Iyer, R., Puri, M., 2012. Understanding bank runs: The importance of depositor-bank relationships and networks. *American Economic Review* 102 (4), 1414-1445.
- Jacklin, C. J., Bhattacharya, S., 1988. Distinguishing panics and information-based bank runs: Welfare and policy implications. *The Journal of Political Economy*, 568-592.

- Kelly, M., Gráda, C. Ó., 2000. Market contagion: Evidence from the panics of 1854 and 1857. *American Economic Review*, 1110-1124.
- Kiss, H. J., Rodriguez-Lara, I., Rosa-García, A., 2014. Do social networks prevent or promote bank runs? *Journal of Economic Behavior & Organization* 101, 87-99.
- Jackson, M. O., 2014. Networks in the understanding of economic behaviors. *The Journal of Economic Perspectives*, 3-22.
- Manski, C. F., 1993. Identification of endogenous social effects: The reflection problem. *The review of economic studies* 60 (3), 531-542.
- Schotter, A., Yorulmazer, T., 2009. On the dynamics and severity of bank runs: An experimental study. *Journal of Financial Intermediation* 18 (2), 217-241.
- Starr, M. A., Yilmaz, R., 2007. Bank runs in emerging-market economies: evidence from turkey's special finance houses. *Southern Economic Journal*, 1112-1132.
- Welch, I., 1992. Sequential sales, learning, and cascades. *Journal of Finance*, 695-732.

Bocharova, Maria¹ (with Ilya Prakhov²): Socio-economic Predictors of Student Mobility

Abstract: Student mobility in Russia became more widespread since the introduction of the Unified State Exam (the USE) instead of high school exit exams and university-specific entry exams. Such institutional transformation of the admission to higher education in Russia can widen the opportunities for the university applicants. Moreover, this would contribute to migration to the regions with highly developed higher education markets. The aim of the study is to estimate the determinants of the probability of decision to move in order to study in the university. The empirical part of the study is based on the data from nationally representative longitudinal panel survey, which started in 2011 with students of 9th grade and include the data of TIMSS (2011) and PISA (2012) international comparative studies. The Probit regression models were estimated separately for two types of educational mobility: internal (students move to another city within the same region) and external (they move to either neighboring or farther region). The independent variables include individual characteristics of university applicants, school and family factors, as well as institutional determinants, which reflect economic and educational status of regions.

Introduction

The empirical investigation of student mobility is of the interest during last two decades. Since it represents an important component of the overall migration stream such trends could be valuable for government in implementing new educational policies. Additionally, student's out-migration provides a signal for government in two different ways. On the one hand, out-migration rates could show the quality of regional educational system (unsavoriness of regional institutes). On the other hand, this also shows the accessibility of higher education in the region. Students with low-abilities are excluded from educational process because of too high educational standards. For all these reasons, investigation of the determinants of student mobility is a major research question in presented prospect.

Overall, the majority of studies in this field is focused on economic factors. The goal of this study is to analyze the factors, which drive the students' choice whether to move to another region to study in the university or to stay in the home region. The assumptions of the human capital theory and models of college choice (decision-making models) states that individual (ability, gender) and family (parental education, income) factors affect such a decision. Moreover, Russia represents an interesting case for the analysis of student mobility, as this is a country, which consists of more than 80 regions with highly differentiated economic conditions and various regional higher education markets. Thus, institutional characteristics of regions, where the applicant has graduated from the high school, and those of the region where the university is located, can also be the important

¹ mbocharova@hse.ru, International Research Laboratory for Institutional Analysis of Economic Reforms, CInSt, HSE.

² ipra@inbox.ru, International Research Laboratory for Institutional Analysis of Economic Reforms, CInSt, HSE.

predictors of educational migration, and in some cases still can restrict the level of mobility despite the unification of the admission procedures.

Aim of the Project

One of the aims of the recent institutional transformation of the admission to higher education in Russia was a decrease in transaction costs concerning the process of application to universities and the enforcement of student mobility. Indeed, the unification of exit and entry examinations and the introduction of the Unified State Exam (the USE) instead of high school exit exams and university-specific entry exams can widen the opportunities for the university applicants. Moreover, now prospective students may choose up to 5 different universities where to apply without visiting the admission office, simply by sending their certificates with the USE scores. This would contribute to migration to the regions with highly developed higher education markets.

The goal of this study is to analyze the factors which drive the students' choice whether to move to another region to study in the university or to stay in the home region. In other words, we estimate the determinants of the probability of student's decision to move. Using the assumptions of the human capital theory and models of college choice (decision-making models), we claim that individual (ability, gender) and family (parental education, income) factors affect such a decision. Moreover, Russia represents an interesting case for the analysis of student mobility, as this is a country, which consists of more than 80 regions with highly differentiated economic conditions and various regional higher education markets. Thus, institutional characteristics of regions, where the applicant has graduated from the high school, and those of the region where the university is located, can also be the important predictors of educational migration, and in some cases still can restrict the level of mobility despite the unification of the admission procedures. In this study we evaluate the determinants of educational migration under the unified examination system and focus on the importance of socio-economic characteristics of households and regions in this process and argue that even under the system of the USE, but in the absence of the appropriate mechanisms of student support educational mobility can be limited.

Hypotheses and Methodology

The theoretical approach is based on the grounds of the human capital theory applied to the higher education market, when the applicant compares potential benefits and costs, caused by the migration to other region. We use the assumptions of the combined models of college choice when include different sets of factors which influence the decision. We group there determinants by the different levels: individual, family, school, educational (i.e. the characteristics of regional higher education markets), and regional (socio-economic differences in average income and minimum wages in 'school' and 'university' regions).

The empirical part of the study is based on the data from Trajectories in Education and Career project, which is a national representative longitudinal study devoted to investigation of educational trajectories of youth. The data for economical characteristics

(subsistence rate; average remuneration), Herfindahl-Hirschman index for the regional markets of higher education and distance of student mobility was also included to the database.

We estimate the models of binary choice, where the dependent variable reflects the mobility of the students, while the independent variables include individual characteristics of university applicants, school and family factors, as well as institutional determinants which reflect economic and educational status of regions (according to the models of college choice). The first model represents the probability of internal (1) mobility (students move to another city within the same region) and the second one counts the probability of external mobility (they move to either neighboring or farther region).

The design of these probit regression models is the following:

$$\text{Prob}(\text{P_Mobility}=1) = f(X_{ci}; F_{ci}; S_i; R_i) \quad (1)$$

$$\text{Prob}(\text{OutOfRegionMobility}=1) = f(X_{ci}; F_{ci}; S_i; R_i; \theta) \quad (2)$$

where:

$\text{Pr}(\text{Mobility}=1)$ – probability that students move to another city within the same region;

$\text{Pr}(\text{OutOfRegionMobility}=1)$ – probability that students move to either neighboring or farther region

Several groups of independent variables are included:

X – vector of the individual characteristics of student (gender, USA results, mother/father education, single-parent family, family income, cultural capital)

S – vector of school characteristics (school type, class specialization, quantitative characteristics from TIMSS)

R – vector of regional institutional factors: regional educational characteristics (number of universities, number of students, difference between the regions, Herfindahl-Hirschman index for the regional markets of higher education), economical characteristics (difference in average wages , difference in minimum of subsistence).

c – student index;

i – region index.

The second model presents the main focus of this study. It also includes control variables associated with the move to the neighboring region (to test the hypothesis of the possibility to get higher education in the region that provides more choice) and the distance. Regression models will be estimated on the whole array, as well as on sub-sample without observations of students from Moscow and sub-sample of A level student, who gets more than 80 point out of 100 at the USE.

In addition to these two models this survey includes a linear model where the distance of mobility is used as a depended variable. The design of this linear regression model is the following:

$$\text{Distance} = \alpha + \beta \cdot X_{ci} + \gamma \cdot R_{ci} + \varepsilon$$

where: X – vector of the individual characteristics of student (gender, USA results, mother/father education, single-parent family, family income, cultural capital); R – vector of regional institutional factors: regional educational characteristics (number of universities, number of students, difference between the regions, Herfindahl-Hirschman index for the regional markets of higher education), economical characteristics (difference in average wages, difference in minimum of subsistence); c – student index; i – region index; ε - error.

The aim of estimating this model is to figure out what motivate students to migrate on long distance.

Results

As a result, the estimations of marginal effects: the magnitude of influence of different factors on the student's decision to move will be received. The hypothesis that most important determinants of student mobility are the financial characteristics of the household, as well as regional economic conditions will be argued. This means that financial aspects matter even under the unified admission process, and decreased transaction costs concerned with university entry. The second result is the significant influence of regional educational characteristics: unequal distribution and development of higher education institutions across regions is a driver of student mobility.

The regional differences in characteristics of higher education markets raise questions about equality of educational opportunity. On the one hand, there are regions which are characterized by the high levels of university concentration and, consequently, wider opportunities of university choice (Moscow, St. Petersburg); on the other hand, there are regions with a few local higher education institutions. Together with the importance of the financial aspects, the regional differentiation of the higher education markets creates unequal conditions for applicants from different regions. Thus, the USE only partially solves the problem of equality of accessibility of higher education.

References

Alecke B., Burgard C., Mitze T. The Effect of Tuition Fees on Student Enrollment and Location Choice–Interregional Migration, Border Effects and Gender Differences //Ruhr Economic Paper. – 2013. – №. 404.

Becker G. S., Hubbard W. H. J., Murphy K. M. Explaining the worldwide boom in higher education of women //Journal of Human Capital. – 2010. – Т. 4. – №. 3. – С. 203-241.

Brezis E. S., Soueri A. Mobility of students and quality of higher education: An empirical analysis of the "Unified Brain Drain" model. – Working Papers, Bar-Ilan University, Department of Economics, 2013. – №. 2013-11.

Chronister J. L., Martin E. D. Nonresident Student Enrollment in State Institutions of Higher Education: An Overview. – 1975.

Etzioni A. Interstate integration of students //The Educational Forum. – Taylor & Francis Group, 1974. – T. 38. – №. 2. – C. 223-224.

Fenske R. H. et al. College Student Migration. – 1972.

Fenske R. H., Scott C. S., Carmody J. F. Recent trends in studies of student migration //The Journal of Higher Education. – 1974. – C. 61-74.

Galotti K. M., Mark M. C. How do high school students structure an important life decision? A short-term longitudinal study of the college decision-making process //Research in Higher Education. – 1994. – T. 35. – №. 5. – C. 589-607.

Gossman C. S. et al. Migration of College and University Students in the United States. – 1967.

Hübner M. Do tuition fees affect enrollment behavior? Evidence from a ‘natural experiment’ in Germany //Economics of Education Review. – 2012. – T. 31. – №. 6. – C. 949-960.

Johns V., Viehland D. W. Migration patterns of first-time freshmen in the United States //Research in Higher Education. – 1989. – T. 30. – №. 5. – C. 485-502.

Kyung W. In-migration of college students to the state of New York //The Journal of Higher Education. – 1996. – C. 349-358.

Leshukov O. and Lisutkin M., (2014), Modern Approaches To The “Regionalization” Of Federal Policy In Russian Higher Education, No WP BRP 21/PA/2014, HSE Working papers, National Research University Higher School of Economics

Linney T. Interstate Migration of College Students (AAHEERIC Higher Education Research Currents) //Washington, DC: American Association for Higher Education (ERIC Document Reproduction Service No. ED 180 327). – 1979.

Mak J., Moncur J. E. T. Interstate migration of college freshmen //The Annals of Regional Science. – 2003. – T. 37. – №. 4. – C. 603-612.

McHugh R., Morgan J. N. The determinants of interstate student migration: A place-to-place analysis //Economics of Education Review. – 1984. – T. 3. – №. 4. – C. 269-278.

Pekkarinen T. Gender differences in higher education. – IZA Discussion Paper, 2012. – №. 6390.

Steahr, Thomas E., and Schmid, Calvin F. (1972, June). College student migration in the United States. Journal of Higher Education 43(6): 441-463.

Tuckman H. P. Determinants of college student migration //Southern Economic Journal. – 1970. – C. 184-189.

Williams R. L. The nonresident student //College and University. – 1964. – T. 39. – №. 2. – C. 161-169.

Wooldridge J. What’s new in econometrics? Lecture 10 difference-in-differences estimation //NBER Summer Institute, available at: www.nber.org/WNE/Slides7-31-07/slides_10_diffindiffs.pdf, accessed April. – 2007. – T. 9. – C. 2011.

Вакуленко Е., Фурманов К., Мкртчян Н. Моделирование регистрируемых миграционных потоков между регионами Российской Федерации. – Litres, 2014.

Прахов И. А. Динамика инвестиций и отдача от дополнительной подготовки к поступлению в вуз // Прикладная эконометрика. 2015. № 37(1). С. 107-124.

Юрко А.В. Доклад: «Последствия ЕГЭ: мобильность выпускников школ» // Совместный семинар Лаборатории исследований рынка труда (ЛИРТ) и Центра трудовых исследований (ЦеТИ), Москва 2015

Davidson, Natalia¹ (with Oleg Mariev²): The Impact of Human Capital, Institutions and Spatial Concentration on Enterprise Productivity in Russia

Abstract. *Regions and cities differ in their initial opportunities and economic development. Our objective is to reveal the channels, by which regions and cities can develop, keeping in mind their unchangeable geographical features. We assume that regional development is interconnected with productivity of enterprises, and in their turn, human capital and institutions significantly affect enterprise performance. Special attention is paid to finding appropriate indicators of agglomeration levels, human capital development and institutional environment. ORBIS firm level data for the years 2005-2013, augmented with city and regional data is employed. Preliminary results show positive impact of human capital and business potential on enterprise performance. Home market potential and urbanization level are found to have positive impact on enterprise productivity as well, while economies arising from specialization have an inverted U shape. We study specific industries, regions and cities, and firms with various characteristics. The issues of particular interest are dynamics of regional development, and the role of geographical factors vs. regional characteristics that can be affected by economic policy.*

Introduction.

Regions and cities differ in their initial opportunities and economic development. Policy alternatives favor spatial concentration or equal distribution of economic activities, the choice being affected by benefits of spatial concentration, i.e. agglomeration economies. Human capital and institutions are interrelated with agglomeration levels; together they play an important role in success of enterprises and therefore of local and national economy.

We study the determinants of enterprise productivity using micro level data and taking into account characteristics of firms, industries, regions and cities. Possibilities to account for human capital, agglomeration level and institutions are analyzed. The nature of relations between human capital, development of institutions and enterprise productivity in the regions and cities is of a particular interest.

Aim of the Project.

Our *objective* is to reveal the channels, by which regions and cities can develop, keeping in mind their unchangeable geographical features. We assume that regional development is interconnected with productivity of enterprises, and in their turn, human capital, institutions and agglomeration levels significantly affect enterprise productivity.

Existing research

¹ natalya.davidson@gmail.com, Graduate School of Economics and Management, Ural Federal University, Ekaterinburg, Russia

² o.s.mariev@urfu.ru, Graduate School of Economics and Management, Ural Federal University, Ekaterinburg, Russia

Spatial concentration of economic activity is reflected in the term *agglomeration* (Marshall, 1920). *Agglomeration externalities (or economies)* are positive and negative effects of scale and scope resulting from such concentration (Neffke, 2009). *Specialization or localization economies* are associated with concentration of economic activity in the same industry in a city (Marshall, 1920). *Diversity economies* are externalities from concentration of economic activity in a city outside the own industry (Jacobs, 1969). *Urbanization economies* are associated with the city size (Rosenthal and Strange, 2004). Demand side is reflected by *home market potential* (HMP). Agglomeration economies arise because of opportunities for knowledge spillovers, input sharing and labor market pooling (Duranton and Puga, 2004). Estimation of agglomeration economies is important for development and analysis of regional policy (Fontagné et al., 2013).

Evidence on agglomeration externalities is contradictory (Beaudry and Schiffauerova, 2009; De Groot et al., 2009). Brunow and Blien (2014) conclude that the effect of concentration of economic activity on enterprise productivity remains after controlling for enterprise and industry level specific features, both localization and diversity economies being important. Doubling city size increases firms' productivity by 5% in Russia (Russian Manufacturing Revisited, 2010). Plants in urban agglomerations have 17-21% higher labor productivity; regional own-industry clustering satisfactorily explains the productivity premium (Gonchar and Ratnikova, 2012). The determinants of spatial concentration and regional disparities in Russia are population density, size and accessibility of markets, and the level of diversification (Kolomak, 2014).

Human capital externalities are analyzed among the factors determining local productivity; the share of skilled workers in local employment or the local ratio between the numbers of skilled workers and unskilled workers being an indicator of local human capital (Combes and Gobillon, 2014). Based on data from Russia Longitudinal Monitoring Survey, Muravyev (2008) studies human capital externalities in Russia and finds that increase in the college share in a city by 1 percent leads to the increase in wages by 1-2 percent.

Hypotheses and Methodology

Presumably human capital and institutions, as well as urbanization level (measured based on enterprise revenue), population density and home market potential (HMP) positively affect enterprise performance, while specialization economies are positive and start declining after some point due to congestion and excessive competition. Results are assumed to vary among different firms, industries, regions and cities.

ORBIS firm level data provided by Bureau van Dijk is employed. Data covers 12090 firms over the years 2005-2013. This data is augmented with city and regional data provided by Rosstat, data on characteristics of the Russian regional economics, politics and social development of the International Center for the Study of Institutions and Development, and with investment potential index of the Analytical center 'Expert'.

The following model is estimated:

$$\ln(\text{revenue})_{ti}^{jz} = \beta_0 + \beta_1 X_{ti}^{jz} + \beta_2 Y_t^z + \beta_3 I_t^r + \varphi_i + \varepsilon_{ti}, \quad (1)$$

where j is industry index, z is city index, r is regional index, i is firm index and t is time; X_{it}^{jz} are enterprise level characteristics (labour, capital and cost of goods sold), Y_t^z are city level characteristics, and I_t^r are indicators measured on the regional level. City and regional characteristics include agglomeration indexes, indicators of human capital, regional business potential and regional openness. Agglomeration indexes are calculated on 3-digit industry classification level (Henderson, 2003; Vakhitov, 2008; Beaudry and Schifaerova, 2009).

Fixed effects are introduced to deal with endogeneity. Specific features of industries and territories not included into the regression are reflected in the enterprise fixed effects, as in the sample, firms do not change location or industry. This estimation technique is compared with the approach of Levinsohn and Petrin to estimation of production function (Martin, Mayer and Mayneris, 2011; Levinsohn and Petrin, 2003).

Specialization is reflected in *core* index, a share of an industry j in the total revenue in a city z :

$$\text{core}_t^{jz} = \frac{\text{revenue}_t^{jz}}{\text{revenue}_t^z},$$

where revenue_t^{jz} – revenue of all firms belonging to an industry j and located in a city z ; revenue_t^z - revenue of all firms in a city z ; t is time.

To account for *urbanization* we use index that measures total revenue of firms belonging to all industries in a city, except for the industry under consideration:

$$\ln(\text{urb})_t^z = \ln(\text{revenue}_t^z - \text{revenue}_t^{jz} + 1).$$

Home market potential (HMP) index for the cities and for the regions reflects HMP of a territory z and HMP of all other territories weighted by their distances from the territory z (Combes et al., 2008).

Human capital is measured using ‘share of population with higher education in the region’ and ‘city average wage’ as a proxy for human capital, interchangeably. Besides, the level of human capital affects *matching* on the labor market, i.e. firms’ possibilities to find workers with needed qualifications, and workers’ possibilities to find suitable jobs. It is also associated with *knowledge spillovers* among enterprises. In other words, the effects of human capital and of agglomeration levels on enterprise productivity are interrelated.

Regional investment potential is represented as a share in the investment potential of Russia, a quantitative characteristic containing nine potentials: natural resources; labour; production; innovation; institutional; infrastructure; financial; consumption; tourist. Openness of a region is a share of export and import in GRP.

Results

Preliminary results show positive effects of specialization, urbanization level (measured based on enterprise revenue), population density and HMP on firm productivity. Positive effect of HMP implies possibility to increase productivity by improving access to markets due to infrastructure development, communication

technologies and other measures. Human capital reflected with a share of university graduates and with wage as a proxy shows positive and significant impact on productivity. The impact of business climate and openness proved to be positive and significant in the majority of specifications.

In the agglomeration centers and cities within agglomerations effects arising from concentration of business activity are relatively higher than in the other cities. The effect of human capital reflected by wage as a proxy is positive and significant for the majority of specifications, being relatively higher for cities belonging to agglomerations.

Acknowledgements

We thank Andrey Pushkarev for his valuable help. Comments from Hubert Jayet, Sergey Kadochnikov, Volodimir Vakhitov, Pavel Vorobyev, Pavel Kusnetsov, Nadezhda Kislyak, participants of ReSET project 'Spatial Economics: How Geography Matters for Economics' (NES, Moscow), Summer school 'Spatial Economics and Imperfect Markets: Empirical Research' (CMSSE, HSE, St. Petersburg), and members of laboratory EQUIPPE, University of Science and Technology of Lille, were valuable for this research. Any remaining errors are our own.

References

- Beaudry, C. and Schiffauerova, A. (2009) 'Who's right, Marshall or Jacobs? The localization versus urbanization debate', *Research Policy*, No 38, pp 318-337.
- Brunow, S. and Blien, U. (2014) 'Agglomeration effects on labor productivity: An assessment with microdata', *Norface Migration DP*, No. 2014-06.
- Combes, P.-Ph. and Gobillon, L. (2014) "The Empirics of Agglomeration Economies," IZA Discussion Papers 8508, Institute for the Study of Labor (IZA).
- Davidson, N. (2013) The impact of spatial concentration on enterprise performance and location choice in Russia. Ph.D. Dissertation, University of Science and Technology of Lille, Supervisors: H. Jayet and S. Kadochnikov.
- De Groot, H., Poot, J., and Smit, M.J. (2009) 'Agglomeration externalities, innovation and regional growth: theoretical perspectives and meta-analysis', in Capello, R. and Nijkamp, P. (Eds.), *Handbook of Regional Growth and Development Theories*, Cheltenham: Edward Elgar, pp.256-281.
- Duranton, G. and Puga, D. (2004) 'Micro-foundations of urban agglomeration economies', in V. Henderson and Thisse, J. (Eds.), *Handbook of Urban and Regional Economics*, 4, pp 2063-2117.
- Fontagné, L., Koenig, P., Mayneris, F. and Poncet, S. (2013) Cluster policies and firm selection: evidence from France, *Journal of Regional Science*, Wiley Blackwell, vol. 53(5), pp. 897-922.
- Gonchar, K. and Ratnikova T. (2012) 'Explaining the productivity advantages of manufacturing firms in Russian urban agglomerations', *NRU-HSE WP BRP 22/EC/2012*.
- Jacobs, J. (1969) *The economies of cities*, New York, Random House.

Kolomak, E. (2014) 'Spatial evolution of economic activity in Russia: New economic geography perspective', *ERSA conference papers ersa14p95*, European Regional Science Association.

Marshall, A. (1920) *Principles of Economics*, 8th ed., London, Macmillan and Co.

Neffke, F. (2009) Productive places. The influence of technological change and relatedness on agglomeration externalities, Faculty of Geosciences, Utrecht University, the Netherlands.

Martin, P., Mayer, T. and Mayneris F. (2011) 'Spatial concentration and plant-level productivity in France', *Journal of Urban Economics*, No. 69, pp 182–195.

Muravyev, A. (2008) Human capital externalities evidence from the transition economy of Russia, *Economics of Transition*, Vol. 16, Issue 3, pp 415-443, July 2008.

Petrin, A., B.P. Poi and J. Levinsohn (2004) Production function estimation in Stata using inputs to control for unobservables, *The Stata Journal*, 4, No. 2, pp. 113–123.

Rosenthal, S. S. and Strange W. C. (2004) Evidence on the nature and sources of agglomeration economies, in V. Henderson and Thisse, J. (Eds.), *Handbook of Urban and Regional Economics*, Vol. 4, pp 2119-2171.

'Russian Manufacturing Revisited: two Rounds of Surveying Russian Enterprises in 2005–2009', *HSE Policy Paper*, SU-HSE, Moscow, 2010.

Vorobyev P.V., Davidson N.B., Kislyak N.V. and Kuznetsov P.D. (2014) 'Industrial diversity and concentration in the Russian cities as factors of economic efficiency', *Vestnik UrFU*, No 6, pp 4–18.

Fedyunina, Anna¹ (with Sergey Kadochnikov²): Location Determinants of Fast-Growing Firms in Russia: the Role of High-Skilled Interregional Migration

Abstract: In this paper, we empirically estimate the relationship between high-skilled migration and the existence of fast-growing firms across Russian regions. We proxy high-skilled migration flows by data on employment of students graduated from Top-100 Russian universities and higher education institutions. We control for agglomeration economies and fixed effects at the regional level. We employ zero binomial estimation procedure and check the robustness with zero-inflated estimation. An empirical analysis suggests that higher number of students graduated from Top-100 Russian universities and employed in a region is associated with higher number of fast-growing firms in that region. This could be an evidence of the fact that high-skilled migrants are concentrated in regions with high entrepreneurial potential and can be viewed as channels for knowledge diffusion.

Introduction

Fast-growing firms attract the interest of academics and policymakers since they generate positive spillovers for the whole economy and provide higher economic growth rate. In particular, results of a recent meta-study that covers twenty empirical papers on fast-growing firms between 1994-2008 suggests that net employment growth across industries and countries is generated by a small number of high-growth firm (Henrekson & Johansson 2010). This finding supports an early evidence that not new firms in general, but only new fast growing firms, provide all or a large share of new jobs created (Westhead & Cowling 1995; Wong et al. 2005). Moreover, it was found, that the existence of fast-growing firms provides path-dependence for the further economic growth. Indeed, (Bos & Stam 2013) study the impact of gazelles in the Netherlands at the industry level 1997-2008 and found that the higher the number of gazelles in an industry the higher the subsequent industry economic growth rates.

Although there is a possibility that fast-growing firms will decrease theirs local or regional involvement and more overseas, looking for bigger markets and efficiency seeking, most of them will mature into medium-sized enterprises with strong involvement into regional economy (Li et al. 2015). This, in turn, allows associating the future prosperity of a region with the success of its most dynamic firms or firms with relatively higher entrepreneurial potential.

Aim of the Project

The aim of the project is to empirically test whether knowledge diffusion driven by students graduated from Top-100 universities can explain entrepreneurial activity and higher numbers of fast-growing firms across Russian regions.

¹ afedyunina@hse.ru, National Research University Higher School of Economics, St. Petersburg, Russia

² skadochnikov@hse.ru, National Research University Higher School of Economics, St. Petersburg, Russia

Hypotheses and Methodology

Our main hypothesis suggests that students graduated from Top-100 Russian universities and higher education institutions are strong and robust driver of knowledge diffusion across Russian regions and that the pattern of employment of graduates from Top-100 Russian universities explains the pattern of the distribution of fast-growing firms across Russian regions.

In order to explore the link between fast-growing firms and high-skilled migration in Russian regions we compile a dataset that covers measures of the number of fast-growing firms and socio-economic variables at the level of the region. We drew on five data sources: (1) Ruslana database; (2) Russian State Statistics Agency; (3) Expert RA regional database; (4) Russian Federal Customs Service database; (5) Database built on the data of Monitoring of the quality of enrolment in Russian universities provided by Federal State Unitary Enterprise “Rossiya Segodnya” and National Research University Higher School of Economics and Monitoring of employment of Russian university graduates provided by the Ministry of Education of the Russian Federation.

Our basic model for fast-growing firms and graduates migration is specified as:

$$Prob(y_i = x_i) = f(Reg_i, Grad_i, Wage_i)$$

where fast-growing firms occurrence in region i is denoted as y_i , which takes values 0,1,2...; Reg_i – set of socio-economic characteristics of region i , $Grad_i$ – variables of interest reflecting number of graduates employed in region i , $Wage_i$ - variables reflecting wage of graduates employed in region i .

We run a Poisson regression with robust standard errors and negative binomial regression with basic specification and compare the results. We expect to get similar results. In addition, we run the likelihood ration test to check whether the errors in the regression exhibit overdispersion. The null hypothesis of the LR-test is that the errors are equidispersed. If this rejects the null hypothesis, we should reject the poisson regression model (with no limitations on error distribution) in favor of the negative binomial regression.

Second, we check the robustness of the results and regress the number of fast-growing firms under the strong criterion on the independent variables using ZINB. We employ Vuong and ZIP tests to statistically check our assumptions.

Results

Table 1 presents regression results for determinants of fast-growing firms across Russian regions. Note, that the coefficients are similar between the Poisson regression and negative binomial regression models.

Controlling for the capital regions and fixed effects for less developed territories, we find that firms grow with higher rates in those regions that initially have larger markets (higher GRP per capita). Simultaneously, we do not find evidence that the growth of a region (in terms of GRP per capita and population growth) positively connected with the number of fast-growing firms.

Table 1. Determinants of fast-growing firms across Russian regions according to the weak criterion, 2013

	Poisson regression with robust standard errors				Negative binomial regression			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
GRP per capita, 2002, log	0.4498*** (0.1586)	0.2893 (0.2012)	0.342** (0.1543)	0.2484* (0.1378)	0.5295** (0.1895)	0.698* (0.2691)	0.4772** (0.1882)	0.3379** (0.169)
GRP per capita growth rate, 2002-2013	0.0207 (0.0313)	-0.0058 (0.0335)	0.0087 (0.029)	-0.0608 (0.0412)	-0.0124 (0.0536)	0.021 (0.0637)	-0.0153 (0.0524)	-0.0783 (0.0528)
Population growth rate, 2002-2013	1.0883 (1.3978)	0.9809 (1.3867)	1.1181 (1.4012)	0.1037 (1.4085)	-0.3819 (1.2796)	-0.2853 (1.2637)	-0.9018 (1.2789)	-1.4433 (1.3173)
Dummy if capital city (=1 if capital, =0 otherwise)	0.6688*** (0.2216)	0.5592** (0.2305)	0.6883*** (0.1992)	1.0823*** (0.2069)	0.7852** (0.383)	0.9176** (0.4213)	0.6962* (0.3898)	1.0844** (0.3547)
Establishments per 10,000 People	0.0028 (0.0036)	0.003 (0.0033)	0.0036 (0.0035)	0.0038 (0.007)	0.0028 (0.0072)	0.0045 (0.0071)	0.0000 (0.006)	0.0018 (0.006)
Relative wage of graduates	0.7617** (0.3259)		1.0724*** (0.3083)	0.8991*** (0.2849)	1.0964** (0.3486)		0.9466** (0.3705)	0.6771** (0.3258)
Average wage of graduates employed in a region (log)		0.9548*** (0.3271)				1.2112** (0.3426)		
Average wage in a region (log)		-0.5594 (0.5348)				-1.7368** (0.7144)		
Graduates with technical and non-technical degree (log)	0.405*** (0.059)	0.4068*** (0.0562)			0.4042** (0.0515)	0.4081** (0.0508)		
Graduates with non-technical degree (log)			0.3782*** (0.0566)	0.3564*** (0.0459)			0.3088** (0.0503)	0.3074** (0.0461)
Graduates with technical degree (log)			0.0536 (0.042)	0.0162 (0.0522)			0.1544** (0.0519)	0.079* (0.048)
Road density 2010 (log)	0.1026** (0.0503)	0.1125** (0.0496)	0.091** (0.046)	0.0679 (0.0572)	0.1261* (0.0644)	0.0967 (0.0752)	0.1190* (0.065)	0.055 (0.0696)
Export similarity index	2.4559** (1.2316)	2.7642** (1.1934)	2.3898* (1.2316)	1.2653 (1.0878)	2.8252** (1.1314)	2.5095** (1.1852)	2.3405** (1.1344)	0.2619 (1.0998)
Dummy for Less Developed territories	-0.1898 (0.2834)	-0.1625 (0.269)	-0.0632 (0.2838)	-0.1359 (0.2746)	-0.2049 (0.2738)	-0.1312 (0.2751)	-0.02653 (0.2816)	-0.4311* (0.255)
Legislative risk			0.0003 (0.0016)					-0.0000 (0.0022)
Social risk			0.0007 (0.0018)					-0.0002 (0.0021)
Economic risk			-0.0049* (0.0025)					--0.0055* (0.003)
Financial risk			-0.0027 (0.0034)					-0.0059** (0.0029)
Crime risk			-0.0033* (0.0018)					-0.0041* (0.0022)
Ecological risk			0.0036 (0.0028)					0.0018 (0.003)
Regulatory risk			-0.0072** (0.0029)					-0.0078** (0.0026)
Cons	-6.6256*** (1.5282)	-8.0525*** (2.6956)	-5.6643*** (1.3664)	-1.987 (1.8392)	-6.4509** (2.2646)	-1.9006 (4.9301)	-5.0241** (2.2920)	-0.4317 (2.4013)
Likelihood-ratio test (prob)					487.55 (0.000)	456.25 (0.000)	451.33 (0.000)	296.79 (0.000)
Number of regions	77	77	77	77	77	77	77	77
Incl. less developed territories	8	8	8	8	8	8	8	8

Note: ***p<0.01, **p<0.05, *p<0.1, robust standard errors estimator

Among our agglomeration variables, only the density of automobile roads positively related to higher number of fast-growing firms. Further, we find that higher risk of doing business in a region, in particular, economic, crime and financial risks, as well the quality

of regional governance (regulatory risk) are significant determinants for the number of fast-growing firms.

With regard to the variables on mobility of graduates, we find that higher number of graduates with technical and non-technical degree in a region predicts higher number of fast-growing firms in that region. This fact could be an evidence of higher entrepreneurial and innovation potential of regions which host Top-100 Russian universities (at least according to the students' enrollment state unified exam results) and which attract graduates from Top-100 Russian universities and higher education institutions. Moreover, fast-growing firms tend to exist in regions, which provide higher wage premium for students graduated from Top-100 Russian universities relative to the average regional wage.

Our results suggest that number of graduates with technical and non-technical degree employed in a region is a good predictor for number of fast-growing firms in a region. Another key finding is that higher number of fast-growing firms is located in those regions that offer higher wage premium for university graduates relative to average regional wage.

Based on our results and with regard to the perspectives of less developed territories, we argue that policymakers should not overlook the potential of fast-growing firms in Russian regions with low market and growth potential. In order to better exploit such opportunities, they need to create more incentives for young high-skilled population to migrate to less developed regions and encourage entrepreneurship potential.

References

- Bos, J.W.B. & Stam, E., 2013. Gazelles and industry growth: a study of young high-growth firms in The Netherlands. *Industrial and Corporate Change*, p.dtt050.
- Henrekson, M. & Johansson, D., 2010. Gazelles as job creators: a survey and interpretation of the evidence. *Small Business Economics*, 35(2), pp.227–244.
- Li, M. et al., 2015. Location determinants of high-growth firms. *Entrepreneurship & Regional Development*, pp.1–29.
- Westhead, P. & Cowling, M., 1995. Employment change in independent owner-managed high-technology firms in Great Britain. *Small Business Economics*, 7(2), pp.111–140.
- Wong, P.K., Ho, Y.P. & Autio, E., 2005. Entrepreneurship, innovation and economic growth: Evidence from GEM data. *Small Business Economics*, 24(3), pp.335–350.

Gimpelson, Nataliya¹: The Interaction between Formal Property Protection and Social Capital and Its Effects on Economic Performance

Abstract: My project explores how the institutions of property rights and social capital of individuals can interact. Outcomes of the interaction affects whether economic agents choose to work formally (following written formal rules) or informally (based on personal relations, nepotism, etc). The choice between formality/informality affects economic performance. I hypothesize that both institutions and social capital are heterogeneous in their quality ("good"/"bad" institutions and "civic"/"non-civic" social capital). In the process of production they interact selectively and can be either complements or substitutes depending on their characteristics. We might think of two possible equilibria when one implies the combination of "civic" social capital with "good" institutions, which results in low level of shadow economy, while the other one is made of the combination of "non-civic" social capital with "bad" formal institutions. Outcome of this match is higher level of informality. The project is related to three streams of literature: on institutions, on social capital and on informality. My goal is to explain the interaction between social capital and formal institutions within the game-theoretic framework. As a result, I expect to contribute (theoretically and empirically) to explanations of cross-country variation in informality and economic performance.

Introduction

Scholars have proposed different explanations of why some countries remain poor, while others prosper. One of the well-established points of view is concerned with institutions and how they affect economic and political development (Acemoglu, Johnson, & Robinson, 2000, 2005; North, 1990). Institutions of property rights – rules and regulations describing how the property can be acquired, protected, used and transferred - can be placed among the most important economic institutions (Acemoglu & Johnson, 2003).

There are many reasons to support the idea that property rights institutions are ubiquitous. On the one hand, they protect productive inputs and outputs from expropriation and secure returns to investors, thus encouraging investments. On the other hand, via protecting property they enhance credit markets because secured assets can be used as collaterals. According to De Soto, lack of formal legal protection in developing countries is detrimental to economic growth because immovable property and equipment cannot become units of capital and remain invisible for the economy (de Soto, 2000). Multiple studies of informal production demonstrate that informal businesses are on average smaller and less efficient in comparison with formal ones (La Porta & Shleifer, 2014), which can partly be due to the absence of formal protection.

Inefficiency and vulnerability of informal production raise the questions of why such a large share of firms and households choose to operate underground and how they

¹ n.gimpelson@gmail.com, ICEF, Higher School of Economics, Moscow, Russia

manage to survive in the absence of formal protection. The existing literature provides a number of ways to analyze the choice between formality and informality. The factors such as entry barriers (López de Silanes, Djankov, La Porta, & Shleifer, 2002), level of taxes and trust to government (Saavedra & Tommasi, 2007), social capital (Annen, 2013), availability of human capital (Porta & Shleifer, 2014) are considered among the key determinants of the informality expansion.

Closely related to this is the question of how institutions of property rights affect the decision to become formal and, hence, the level of informality. There exist conflicting views of how the interaction of formal institutions and social capital affects economic performance. For example, some studies indicate that there is complementarity relationship between trust (which is considered a component of social capital) and formal institutions (D'Hernoncourt & Méon, 2012). The opposing view states that social capital works as a substitute for formal protection because it provides necessary accessibility and basic protection to firms in poor countries (Annen, 2013).

Aim of the Project

The project aims at developing a game-theoretic framework that explains the interaction of formal institutions and social capital and its effect on the level of shadow economy. This approach helps to reconcile the opposing views on interrelationships between the formal protection and social capital. **The idea of the research project** is to show that the level of informality is determined by joint effect of social capital and quality of formal institutions. Within this framework, different types of social capital and formal protection selectively interact and can be either complements or substitutes depending on their characteristics. This duality results in multiple equilibria associated with either high or low levels of informality.

Hypotheses and Methodology

Social capital is a broad term, which often includes general trust, social connections and cultural characteristics. While we generally assume that the increase in social capital positively affects the economic performance (Zak & Knack, 2001), the increase in the level of social capital may have different impacts on the level of informality. In particular, we can distinguish between civic social capital - compliance with laws and unwillingness to free ride (Algan, Cahuc, & Sangnier, 2016), and non-civic social capital which includes nepotism, corruption and cronyism.

The hypothesis is that economic agents decide what sector to operate in based on their own civicness, based on the distribution of civicness among other agents and the level of formal protection. When the quality of formal institutions is low, strong non-civic social capital may provide protection without costs of formalization and it makes informal sector relatively more attractive because the opportunity costs (in terms of formal protection) and entry costs are lower.

On the contrary, when the quality of formal protection is sufficiently high, civic social capital will have positive spillover effects on formal sector as it may stimulate trust to formal institutions. Moreover, firms and individuals would lose significantly if they

neglect formal regulations, because unlike informal sector, formal sector provides not only protection but also facilitates the access to financial system. If the level of formal protection is high enough, the benefits outweigh the costs associated with taxation and regulation. Hence, in the former case social capital substitutes formality if accompanied by weak formal protection: this may explain why a study conducted for Bolivian firms found substitutability of formal protection and social capital (Annen, 2013). In the latter case the effect is the opposite: high level of civicness makes formal protection stronger and decreases the incentives to move underground – this is compatible with generalized trust being associated with the decrease in level of informality (D'Hernoncourt & Méon, 2012).

As a result, we might think of two possible equilibria based on two dimensions: level of formal protection and type of social capital. One equilibrium is associated with combination of high level of civic social capital, high level of formal protection and low level of shadow economy, while the other one – with high level of non-civic social capital, poor formal protection and high level of informality. Although both equilibria provide some basic level of protection, the second outcome is less efficient than the first one, because, as was discussed above, it does not allow to expand production and to make large investments. Other two options result in unstable outcomes, which tend to change dynamically depending on their characteristics.

I am going to approach the question via constructing a game-theoretic conceptual framework. The formal analysis is still on its first stage of being developed, but it will address the idea described above. To delineate the general set-up of the model, we can refer to the model suggested by Loyaza (Loayza, 1997) and consider two private agents or two firms, interacting with each other and with the government.

A head of each firm compares the costs and benefits associated with formality. The choice between two sectors of economy also depends on the type of social capital prevailing in the society. It takes into account the average propensity to free-ride and the extent to which personal relations and nepotism may solve the problem of coordination and protection.

The analysis will then proceed to how exactly the access to informal and formal practices affect the propensity to move to shadow economy and what equilibrium will be attained after dynamic adjustments.

Expected results

As a result, I expect to be able to predict the outcome of the interaction between formal and informal institutions and to demonstrate the possibility of various institutional environments across the world. I expect to merge seemingly unrelated and to a large extent contradicting streams of literature by employing the idea of substitutability/complementarity. Besides that, the analysis will provide testable hypotheses for further empirical analysis.

References

- Acemoglu, D., & Johnson, S. (2003). *Unbundling institutions*. National Bureau of Economic Research. Retrieved from <http://www.nber.org/papers/w9934>
- Acemoglu, D., Johnson, S., & Robinson, J. A. (2000). *The colonial origins of comparative development: an empirical investigation*. National bureau of economic research. Retrieved from <http://www.nber.org/papers/w7771>
- Acemoglu, D., Johnson, S., & Robinson, J. A. (2005). Institutions as a fundamental cause of long-run growth. *Handbook of Economic Growth*, 1, 385–472.
- Algan, Y., Cahuc, P., & Sangnier, M. (2016). Trust and the welfare state: The twin peaks curve. *The Economic Journal*. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1111/ecoj.12278/full>
- Annen, K. (2013). Social capital as a substitute for formality: Evidence from Bolivia. *European Journal of Political Economy*, 31, 82–92. <http://doi.org/10.1016/j.ejpoleco.2013.04.002>
- de Soto, E. (2000). *The Mystery of Capital: Why Capitalism Triumphs in the West and Fails Everywhere Else*.
- D'Hernoncourt, J., & Méon, P.-G. (2012). The not so dark side of trust: Does trust increase the size of the shadow economy? *Journal of Economic Behavior & Organization*, 81(1), 97–121.
- Loayza, N. (1997). The economics of the informal sector: A simple model and some empirical evidence from Latin America. *World Bank Policy Research Working Paper*, (1727). Retrieved from http://papers.ssrn.com/sol3/papers.cfm?abstract_id=614945
- López de Silanes, F., Djankov, S., La Porta, R., & Shleifer, A. (2002). The Regulation of Entry. *Quarterly Journal of Economics*, 118, 1–37.
- North, D. C. (1990). *Institutions, institutional change and economic performance*. Cambridge university press. Retrieved from <http://www.google.com/books?hl=ru&lr=&id=oFnWbTqgNPYC&oi=fnd&pg=PR6&dq=institutions,institutional+change&ots=sYiqUaHhR8&sig=FZ7R-CvCWg-InriJgvdSVhM2Sus>
- Porta, R. L., & Shleifer, A. (2014). *Informality and Development* (Working Paper No. 20205). National Bureau of Economic Research. Retrieved from <http://www.nber.org/papers/w20205>
- Saavedra, J., & Tommasi, M. (2007). Informality, the State and the social contract in Latin America: A preliminary exploration. *International Labour Review*, 146(3-4), 279–309.
- Zak, P. J., & Knack, S. (2001). Trust and growth. *The Economic Journal*, 111(470), 295–321.

Gorelova, Olga¹: The Effects of Interinstitutional Mobility on Research Productivity of Academics in Russia»

Abstract: The research lies at the intersection of two spheres: sociology of professions and educational studies. The project deals with the problem of interinstitutional mobility of academics. Numerous previous studies show that there is no commonly accepted opinion whether mobility is good or bad for academics and their productivity (one of the main indicators of academics' success), although mobility is generally perceived as a positive phenomenon. The general purpose of this research is to study the interrelation between mobility and publishing productivity of faculty members in Russian universities, where the overall level of mobility is low. A causal-investigatory link between mobility and scientific productivity will be modeled with the help of econometric instruments. In this study bibliometric s data from Scopus are used, as they provide precise and objective information on the productivity of academics in form of publishing, although publication and research activity is not limited to peer-reviewed publications. It is anticipated that the results of this study will allow an understanding, whether mobility may be useful for the stimulation of the research productivity of faculty members and for the correction of university policies in Russia.

Introduction

Organizations, where faculty members work, may influence their research productivity, opinions about academic norms, perception of professional practices, professional interests and main research approaches. The change of workplace may lead to the change of these opinions, practices, and scientific knowledge. Thus, interinstitutional mobility is generally regarded as a positive phenomenon, as it allows academics to enhance their social capital and widen their research outlook through getting additional experience (Horta & Yonezawa, 2013). Mobility helps to prevent knowledge stagnation within organizations, as academics with such external to the employing institution experience, bring fresh ideas and stimulate their circulation (Pelz & Andrews, 1966). At the same time, immobile academics usually tend to reproduce ideas of their supervisors and older colleagues, and this may have negative influence on the scientific development of their department, institution, region and the whole country, if the national level of academic mobility is quiet low.

In this context Russia seems to be an interesting example for research, as historically the level of mobility was very low. Nevertheless, results of previous studies show, that academics themselves do not see any problem in immobility and consider it to be a "norm" in their professional society (Sivak & Yudkevich, 2015). This situation was also aggravated by the absence of real academic labour market and open competition in post-Soviet Russia, where they existed only nominally. In reality, the main role in the selection and hiring process played social ties (Yudkevich, 2014). Open competition even was not

¹ ogorelova@hse.ru, Laboratory for Institutional Analysis, National Research University Higher School of Economics, Moscow, Russia

announced in universities till recently – new faculty members were hired from former graduates or via personal contacts. Contracts were extended practically automatically without real competition. This also led to the spread of inbreeding phenomenon in Russia (hiring own graduates by universities) - the most extreme form of faculty immobility. Nevertheless, recent decrees have begun to change the situation. Since 2012 open competition and public announcements of vacancies became obligatory and academic performance started to be evaluated in the promotion and contract extension processes. Number of peer-reviewed publications in Scopus and Web of Science became important indicators of competitiveness of academics and higher educational institutions. These reforms started to make academic practices more competitive and stimulate mobility. Thus, it is interesting to study academic mobility in Russia and its interrelation with research productivity in this changing social context, to understand, whether current reforms are really necessary and whether they really work.

Moreover, it is interesting to study interinstitutional mobility in Russia, as there were practically no studies of this type of mobility in the country before. At the same time, in other countries interinstitutional mobility and, particularly its correlation with research productivity was studied, but there is no one commonly accepted opinion on the character of this link. First, there are few papers, considering causal-investigatory link between mobility and productivity of academics. Some of them show that mobility is the prerequisite of publishing productivity (Deville et al., 2014; Long, 1978), while others, on the contrary, show that increase in publication activity is necessary for the possibility of workplace change (Allison & Long, 1987; Fernández-Zubieta, Geuna, & Lawson, 2013). Second, there are disputes, whether the interrelation between mobility and productivity is positive or negative or it is non-linear and depends on some other factors.

It follows from the above, that the **problem** of the present research is the lack of knowledge on the character and direction of interrelation between interinstitutional mobility and research productivity of academics in Russia in the context of mobility's general desirability but low-spread in the country.

Aim of the Project

Thus, **aim of the project** is to define the character and direction of this link. Reaching this aim presupposes answering several **research questions**:

Can academic mobility be regarded as a stimulus for enhancing productivity of faculty members in Russia?

Can the interrelation between mobility and productivity of researches mediated by any socio-economic and institutional factors or by the characteristics of academic system in the country?

How have recent decrees in higher education changed mobility and research productivity of faculty members in Russia?

Hypotheses and Methodology

We suppose that:

- academic mobility is one of the important factors, influencing research productivity of academics;
- academic mobility has positive impact on research productivity of academics: enhance number and quality of publications, academics have: papers of mobile academics are expected to be published in more prestigious journals and be better cited;
- quality of institutions and departments, where academics work, is expected to influence their publishing productivity;
- move to more prestigious department is expected to enhance number and quality of publications of academics;
- there exists such phenomenon as “overload of mobility”: positive effects of mobility decrease if academic changes the work too often and too many times during career;
- international mobility is expected to have more positive effects rather than mobility within country borders;
- socio-demographic characteristics of academics may influence the interrelation between mobility and productivity;
- recent decrees in higher education in Russia are expected to stimulate mobility and enhance its positive effect on productivity.

The sample for this research will be drawn from one of the bibliometric databases – Scopus or Web of Science. The general population comprises all authors of peer-reviewed publications on mathematics with affiliation of Russian higher educational institutions in these databases. We are going to include in our sample only authors of papers, published after 1986. Among these authors we pick out only those, who did not have publications before 1986. We define faculty as Russian, if he/she has started academic career in Russia (affiliation of first publication is in Russia), even if later on the academic moved abroad. At the same time, we do not take into account the incoming mobility of foreign faculty (if academic has started career abroad and then moved to Russia).

We include in the sample only academics, working in higher educational institutions as these organizations are regulated by unified formal and informal laws, norms and traditions and is distinct from other sectors. We choose scholars of only one specific discipline – mathematics for two reasons. First, journals on STEM disciplines are better represented in bibliometric databases and Russian scientists published there even in Soviet times. Second, among STEM fields, mathematics is the discipline with minimum co-authors in publications (Batista, Campiteli, Kinouchi, & Martinez, 2006; Glanzel, 2002; Porter & Rafols, 2009) and it is important for us to study individual impact of authors. We limit results to 1986-2016 as since during this period, the number of papers, affiliated with Russia, started to show constant and significant growth, that may be connected to migration processes during Perestroika.

The use of bibliometric data will allow us to track the interdependence between career moves and increases / decreases in number of publications by each author in chronological order. allows to build an econometric model to design the causal-investigatory link between mobility and productivity of academics by building an

econometric model. Our methodology is close to that, used by Deville et al., 2014 in their recent paper on mobility and productivity of physisits.

Of course, the use of bibliometrics data has some limitations. First, research productivity of academics does not limit to peer-reviewed publications (it also includes other types of publications), although it allows to control for publication quality. Second, such data does not provide information about the author's education and does not allow to identify inbreeding. Third, bibliometric data contains the problem of namesakes and, moreover full namesakes (when initials are also the same).

Thus, bibliometrics approach, used in this research has both its advantages and limitations. On the one hand, it provides good possibilities for research and is rather new, especially for Russian studies of mobility. On the other hand it still has some limitations, some of which are rather difficult to be dealt with.

Expected results

We expect to understand the causal-investigatory link between mobility and productivity of academics in Russia and to explain it through institutional characteristics of academic system in Russia. It is anticipated that results of this study will allow to understand whether mobility issues may be useful for stimulation research productivity of university faculty members and for correction of university policies in Russia.

References

- Allison, P. D., & Long, J. S. (1987). Interuniversity Mobility of Academic Scientists. *American Sociological Review*, 52(5), 643–652. doi:10.2307/2095600
- Batista, P. D., Campiteli, M. G., Kinouchi, O., & Martinez, A. S. (2006). Is it possible to compare researchers with different scientific interests? *Scientometrics*, 68(1), 179–189. doi:10.1007/s11192-006-0090-4
- Deville, P., Wang, D., Sinatra, R., Song, C., Blondel, V. D., & Barabási, A.-L. (2014). Career on the move: geography, stratification, and scientific impact. *Scientific Reports*, 4, 4770. doi:10.1038/srep04770
- Dutton, J. K. (1980). *The impact of Inbreeding and Immobility on the Professional Role and Scholarity Performance of Academic Scientists*. Boston. Retrieved from <http://eric.ed.gov/?id=ED196714>
- Fernández-Zubieta, A., Geuna, A., & Lawson, C. (2013). *Researchers' mobility and its impact on scientific productivity* (No. 06/2013). Turin (Italy).
- Glanzel, W. (2002). Coauthorship patterns and trends in the sciences (1980-1998): A bibliometric study with implications for database indexing and search strategies. *Library Trends*, 50(3), 461–473. Retrieved from http://apps.webofknowledge.com/full_record.do?product=UA&search_mode=GeneralSearch&qid=19&SID=P1btm4QggziYOhR779N&page=1&doc=1
- Horta, H., & Yonezawa, A. (2013). Going places: exploring the impact of intra-sectoral mobility on research productivity and communication behaviors in Japanese academia. *Asia Pacific Education Review*, 14(4), 537–547. doi:10.1007/s12564-013-9279-4
- Long, J. S. (1978). Productivity and Academic Position in the Scientific Career. *American Sociological Review*, 43(6), 889–908.

- Pelz, D. C., & Andrews, F. M. (1966). *Scientists in organizations*. New York: Wiley.
- Porter, A. L., & Rafols, I. (2009). Is science becoming more interdisciplinary? Measuring and mapping six research fields over time. *Scientometrics*, 81(3), 719–745. doi:10.1007/s11192-008-2197-2
- Sivak, E., & Yudkevich, M. (2015). Academic Immobility and Inbreeding in Russian University Sector. In M. Yudkevich, P. G. Altbach, & L. E. Rumbley (Eds.), *Academic Inbreeding and Mobility in Higher Education. Global Perspectives* (pp. 130–155). Palgrave Macmillan.
- Velho, L., & Krige, J. (1984). Publication and Citation Practices of Brazilian Agricultural Scientists. *Social Studies of Science*, 14(1), 45–62. Retrieved from <http://www.jstor.org/stable/284701>
- Yudkevich, M. (2014). The University Sector in Russia: Young Romantics and Losers Welcome? In M. Yudkevich, P. G. Altback, & L. E. Rumbley (Eds.), *The Future of the Academic Profession: Young Faculty in International Perspective*.

Hussain, Mumtaz¹ (with Nouman Saleem², Muhammad Muzammil Majeed³ and Shaoan Huang⁴): The Impact of Transportation Investment on Economic Development: a Case study of Pakistan

Abstract: This study is conducted to evidence the impact of transportation investment on economic development of Pakistan using time series data for the periods of 1981 to 2014. To undertake this analysis, Johansen Juselius (1990) co-integration, vector error correction model and Granger causality (1987) tests were employed within a multivariate framework. The co-integration analysis evidences the existence of long-run relationship between transportation investment and economic development of Pakistan. However, in vector error correction analysis the error correction term is turned out as negative but statistically insignificant. The negative sign implies that the convergence towards long-run equilibrium state exists but rate of convergence is slow and insignificant. Moreover, uni-directional causation has found that runs from transportation investment (roads) to economic development. Finally, the OLS regression estimates of Solow growth model revealed that capital, labor and transportation investment (roads) have highly positive impact on the economic development of Pakistan. The long-run output (economic growth) elasticity with respect to capital, labor and transportation investment (roads) is 0.219, 0.956 and 0.383 respectively.

Introduction

1.1 Introduce the Problem

Efficient transportation sector is very important for the economic development and growth of a country. Transportation sector has direct and indirect linkages among all other sectors of economy. An efficient transportation system lowers the production cost and achieves the economies of scale in the production process through the timely delivery of raw materials and finished goods among different sectors and markets of the economy. It also provides the sufficient amount of employment opportunities to the lower class of the society who are unable to find the good employment opportunities due to lack of skills and education (Ministry of Finance, 2015).

However, the investment on transportation directly affects the economic growth as it reduces the transportation cost and time, generates employment, establishes a well connection between different markets, enhances trade opportunities at local and international level. It also allows the producers to not only find the inputs easily but also offer them an easy access to the markets for their final goods as well. Therefore, a modern transportation network is a vital tool and prerequisite for any economy's economic growth as it increases the productivity level through different channels.

¹ mumtazkherani@hotmail.com, Center for Economic Research Shandong University Jinan, P.R. China

² Forman Christian College (A chartered University), Lahore, Punjab, Pakistan

³ Rhine-Waal University of Applied Sciences Kleve, Germany

⁴ Center for Economic Research, Shandong University Jinan, P.R. China

1.2 Purpose of Research

As stated in previous section that the transportation investment acts as a catalyst for economic development. It has positive impacts on economic development through integrated economies, lower transport costs, time saving and easy access to inputs. Therefore, the determination of this study is to find the impacts of transportation investment on the economic development of Pakistan using Johansen and Juselius (1990) Co-integration and Granger (1980) Causality test analysis.

Data and Methodology

The annual time series data of real GDP, gross fixed capital formation at constant prices, employed labors and length of roads for the Periods of 1981-2014 accounted in this study.

2.1 Model Specification

By following Faridi *et.al* (2011) and Uma *et.al* (2014), this study uses the long-run growth model which is commonly known as Solow (1956) growth model. Furthermore, the present study modified and extended the conventional Solow growth model by adding length of roads as another input. The general form of the model is as follows:

$$Y_t = f(K_t, L_t, R_t)$$

The Cobb-Douglas (1928) form of the production function is defined as:

$$Y_t = AK^\alpha L^\beta R^\gamma \quad (1)$$

In equation (1) α , β and γ are output (economic growth) elasticities of capital, employed labors and transportation investment (roads) respectively and A is total factor productivity. The natural log of equation (1) is required to convert the Cobb-Douglas form of the model into linear form. After log transformation the linear form of the model is given in equation (2):

$$\ln(Y_t) = \ln(A) + \alpha \ln(K_t) + \beta \ln(L_t) + \gamma \ln(R_t) + \mu_t \quad (2)$$

In equation (2) α , β and γ are coefficients of independent variables which are known as output (economic growth) elasticities with respect to capital, employed labor and transportation investment (roads). Furthermore, μ_t is error term and it is assumed to be white noise i.e. $\mu_t \sim N(0, \sigma^2)$.

2.2 Estimation Techniques

In this study five estimation techniques are involved in estimation process. First of all, to check the stationarity of the given series, an Augmented Dicky-Fuller (1981) and Phillip Perron (1988) tests of unit root are applied. VECM is formulated in terms of first

difference that eliminates the trend from the variables. The general form of VECM model can be expressed as:

$$\Delta Y_t = \alpha + \pi \mu_{t-1} + \sum_{i=1}^{n-1} \beta_i \Delta Y_{t-i} + \sum_{i=1}^{m-1} \gamma_i \Delta X_{t-i} + \varepsilon_t \quad (3)$$

In equation (3), $\pi \mu_{t-1}$ is an error correction term and the coefficient of error correction term should be negative and significant. The coefficient of error term shows the speed of convergence towards a long-run equilibrium state.

However, it is important to note that the co-integration only shows the long-run association among variables but it fails to explain the direction of causality. In the fourth step, therefore Pairwise Granger Causality (1980) test is applied to check the direction of causality of long-run variables.

The general form of the equations of Pairwise Granger Causality test is as follows:

$$Y_t = \alpha_1 + \sum_{i=1}^m \beta_i X_{t-i} + \sum_{j=1}^m \gamma_j Y_{t-j} + \varepsilon_t \quad (4)$$

$$X_t = \alpha_2 + \sum_{i=1}^m \delta_i X_{t-i} + \sum_{j=1}^m \lambda_j Y_{t-j} + \mu_t \quad (5)$$

In equation (4), X_t doesn't cause Y_t if $\beta_1 = \beta_2 = \beta_3 = \dots = \beta_m = 0$.

Results and Discussion

In this chapter the results of unit root tests, Johansen-Juselius (1990) Cointegration, Vector error correction model, Pairwise Granger Causality (1980) and OLS regression are presented.

Table 3.1: Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) Unit Root Test

Variable	ADF Statistic (Level)	PP Statistic (Level)	ADF Statistic (1 st Difference)	PP Statistic (1 st Difference)
<i>ln(Y_t)</i>	-3.653730* -2.957110** -2.617434*** (-1.452697) [0.5442]	-3.646342* -2.954021** -2.615817*** (-2.430779) [0.1414]	-3.653730* -2.957110** -2.617434*** (-3.351082) [0.0207]	-3.653730* -2.957110** -2.617434*** (-3.325123) [0.0220]
<i>ln(K_t)</i>	-3.646342* -2.954021** -2.615817*** (-2.992852) [0.0460]	-3.646342* -2.954021** -2.615817*** (-2.806040) [0.0683]	-3.653730* -2.957110** -2.617434*** (-4.253046) [0.0022]	-3.653730* -2.957110** -2.617434*** (-4.261840) [0.0021]
<i>ln(L_t)</i>	-3.646342* -2.954021** -2.615817*** (0.431459) [0.9814]	-3.646342* -2.954021** -2.615817*** (0.644645) [0.9889]	-3.653730* -2.957110** -2.617434*** (-6.102889) [0.0000]	-3.653730* -2.957110** -2.617434*** (-6.141191) [0.0000]
<i>ln(R_t)</i>	-3.653730* -2.957110** -2.617434*** (-2.020378) [0.2771]	-3.653730* -2.957110** -2.617434*** (-1.776835) [0.3847]	-3.653730* -2.957110** -2.617434*** (-4.236299) [0.0023]	-3.646342* -2.954021** -2.615817*** (-4.866786) [0.0004]

* (**) *** shows the critical values of ADF and PP at 1%, 5% and 10% level of significance, whereas t-statistic of ADF.

3.1 Unit Root Results

The results of Augmented Dickey-Fuller (ADF) (1981) and Phillips-Perron (PP) (1988) for unit root test are given in table 3.1.

3.2 Cointegration Test Results

The Johansen cointegration technique is applied on level series and it uses two test statistics; trace test and maximum Eigenvalue test. In table 4.2 and table 4.3, none* states the null hypothesis of no cointegration, whereas at most 1, at most 2 and at most 3 represents one, two and three co-integrating vectors or relations respectively.

Table 3.2: Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Probability
None *	0.732514	62.54156	47.85613	0.0012
At most 1	0.312931	21.66221	29.79707	0.3177
At most 2	0.271068	10.02726	15.49471	0.2786
At most 3	0.007259	0.225853	3.841466	0.6346

Trace test indicates 1 co-integrating equation at the 5% level and * denotes rejection of the hypothesis of no cointegration at the 5% level.

Table 3.3: Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max - Eigen Statistic	0.05 Critical Value	Probability
None *	0.732514	40.87935	27.58434	0.0006
At most 1	0.312931	11.63495	21.13162	0.5839
At most 2	0.271068	9.801407	14.26460	0.2253
At most 3	0.007259	0.225853	3.841466	0.6346

Max-Eigen test indicates 1 co-integrating equation at the 5% level and * denotes rejection of the hypothesis of no cointegration at the 5% level.

The results of ADF and PP unit root tests for error term are given in table 3.4.

Table 3.4: Unit Root Test for Error Term

Variable	ADF Statistic (Level)	PP Statistic (Level)
Error Term (μ_t)	-3.646342* -2.954021** -2.615817*** (-2.997101) [0.0455]	-3.646342* -2.954021** -2.615817*** (-2.997101) [0.0455]

Null Hypothesis: Error Term has a Unit Root. * (**) *** shows the critical values of ADF and PP at 1%, 5% and 10% level of significance.

3.5 Granger Causality Test

The previous section has analyzed the long-run and short-run relationship between economic growth and the given independent variables (capital, employed labor and transportation investment (roads)).

Table 3.5: Pairwise Granger Causality

Null Hypothesis	F-Statistic	Prob.	Decision
Capital does not Granger cause the Economic Growth	2.85097	0.05084***	Reject H_0
Economic Growth does not Granger Cause Capital	3.91550	0.01659**	Reject H_0
Labor does not Granger cause the Economic Growth	0.97684	0.38989	Do not Reject H_0
Economic Growth does not Granger Cause Labor	0.80828	0.45651	Do not Reject H_0
Transportation Investment does not Granger Cause Economic Growth	4.61909 0.41131	0.00864* 0.85945	Reject H_0 Do not Reject H_0
Economic Growth does not Granger Cause Transportation Investment			
Capital does not Granger Cause Labor	0.68210	0.51437	Do not Reject H_0
Labor does not Granger cause Capital	3.30262	0.05271***	Reject H_0
Labor does not Granger Cause Transportation	1.38957	0.26708	Do not Reject H_0
Transportation does not Granger cause Labor	0.68661	0.51218	Do not Reject H_0
Capital does not Granger cause Transportation	0.45259	0.64089	Do not Reject H_0
Transportation does not Granger cause Capital	1.53482	0.23439	Do not Reject H_0

* (**) *** shows the 1%, 5% and 10% level of significance respectively

3.4 OLS Regression Results

According to Stock (1987) if all the series are $I(1)$ and error term is $I(0)$ then the OLS estimates are super consistent. Therefore, by considering these facts OLS regression estimates were obtained and presented in table 3.6.

Table 3.6: OLS Regression Results

Dependent Variable = $\ln(Y_t)$

Variable	Coefficients	Standard Error	t-Statistic	Prob.
C	1.900641	0.407674	4.662158	0.0001
$\ln(K_t)$	0.219022	0.112349	1.949483**	0.0621
$\ln(L_t)$	0.956020	0.079282	12.05848*	0.0000
$\ln(R_t)$	0.383976	0.078531	4.889501*	0.0000
ECT-1	-0.180138	0.518052	-0.347722	0.7346
R-squared	0.995289	F-statistic	1098.705	0.000000
Adjusted R-squared	0.994384	D-W Stat	1.919347	--

*(**) shows 1% and 5% level of significance respectively

The rest of the diagnostic tests are given in table 3.7.

Table 3.7: Diagnostic Tests of OLS

Test Name	Test Type	Test-Statistic	Prob.
White Heteroscedasticity Test	Obs*R-squared	7.350429	0.289652
BGLM Serial Correlation Test	Obs*R-squared	1.131909	0.567818
Ramsey RESET Test	Log likelihood ratio	0.074436	0.784984
Jarque - Bera Normality Test	Jarque-Bera	0.694092	0.706773

Finally, the CUSUM test applied to check the stability of the coefficients of the regression model. So, after all the diagnostic tests it is concluded that the estimated model is free from all serious problems.

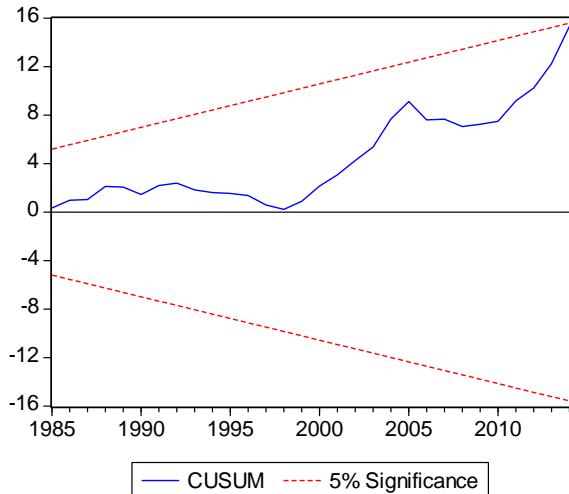


Figure 1.CUSUM Test Result

The results of the study revealed that all the series are integrated of order one $I(1)$ and the error term generated from the regression model is stationary at level i.e. $I(0)$. The cointegration analysis then found that the long-run relationship exists among all variables. This implies that capital, labor, transportation investment and economic growth are cointegrated. In VECM analysis the error correction term is turned out as negative but statistically insignificant.

Furthermore, the results of Granger causality test shows that there is a bi-directional causation between capital and economic growth. It means that there is a two-way relationship between capital and economic growth. This shows that capital is a cause of high economic growth and high economic growth also boosts the economy to employ more capital in Pakistan. Finally, the OLS regression estimates of Solow growth model revealed that capital, labor and transportation investment (roads) have positive impact on economic growth of Pakistan. Thus, the long-run output (economic growth) elasticity with respect to capital, labor and transportation investment (roads) is 0.219, 0.956 and 0.383 respectively.

References

- Aschauer, D. A. (1989). Is public expenditure productive?. *Journal of monetary economics*, 23(2), 177-200.
- Ashipala, J., & Haimbodi, N. (2003). *The impact of public investment on economic growth in Namibia* (No. 88). Namibian Economic Policy Research Unit.
- Banerjee, A., Duflo, E., & Qian, N. (2012). *On the road: Access to transportation infrastructure and economic growth in China* (No. w17897). National Bureau of Economic Research.
- Barro, R. J. (1990). Government Spending in a Simple Model of Endogenous Growth. *The Journal of Political Economy*. 98(5), S103-S125
- Boopen, S. (2006). Transport infrastructure and economic growth: evidence from Africa using dynamic panel estimates. *The empirical economics letters*, 5(1), 37-52.

- Easterly, W., & Serven, L. (Eds.). (2003). *The limits of stabilization: infrastructure, public deficits and growth in Latin America*. World Bank Publications.
- Canning, D., & Fay, M. (1993). *The Effects of Transportation Networks on Economic Growth*. Working Paper No.653a. Columbia University Academic Commons.
- Canning, D., & Pedroni, P. (1999). Infrastructure and long run economic growth. *Center for Analytical Economics working paper*, 99, 09.
- Cobb, C. W., & Douglas, P. H. (1928). A theory of production. *The American Economic Review*, 18(1), 139-165.
- De la Fuente, A. (2000). Infrastructures and productivity: a survey. *Instituto de Análisis Económico, Barcelona (mimeo)*.
- Dickey, D. A., & Fuller, W. A. (1981). Likelihood ratio statistics for autoregressive time series with a unit root. *Econometrica: Journal of the Econometric Society*, 1057-1072.
- Eberts, R. W., & McMillen, D. P. (1999). Agglomeration economies and urban public infrastructure. *Handbook of regional and urban economics*, 3, 1455-1495.
- Engle, R. F., & Granger, C. W. (1987). Co-integration and error correction: representation, estimation, and testing. *Econometrica: journal of the Econometric Society*, 251-276.
- Faridi, M. Z., Malik, M. S., & Bashir, F. (2011). Transportation, telecommunication and economic development in Pakistan. *Interdisciplinary Journal of Research in Business*, 1(7), 45-52.
- Fernald, J. G. (1999). Roads to prosperity? Assessing the link between public capital and productivity. *American Economic Review*, 619-638.
- Fox, W. F., & Porca, S. (2001). Investing in rural infrastructure. *International Regional Science Review*, 24(1), 103-133.
- Fujita, M., Krugman, P. R., & Venables, A. (2001). *The spatial economy: Cities, regions, and international trade*. MIT press.
- Gibbonsab, S., Lyytikäinenac, T., Overmana, H., & Sanchis-Guarnerad, R. (2012). *Road Transport: The Effects on Firms*. Preliminary Draft. London School of Economics & Spatial Economics Research Centre, London, United Kingdom.
- Granger, C.W.J. (1980). Testing for Causality: A Personal Viewpoint. *Journal of Economic Dynamics and Control*, 2(4), 329-352
- Iacono, M., & Levinson, D. (2013). *Case Studies of Transportation Investment to Identify the Impacts on the Local and State Economy*. Minnesota: Minnesota Department of Transportation Research Services
- Johansen, S. (1988). Statistical analysis of cointegration vectors. *Journal of economic dynamics and control*, 12(2), 231-254.
- Johansen, S., & Juselius, K. (1990). Maximum likelihood estimation and inference on cointegration—with applications to the demand for money. *Oxford Bulletin of Economics and statistics*, 52(2), 169-210.
- Keho, Y., & Echui, A. D. (2011). Transport Infrastructure Investment and Sustainable Economic Growth in Côte d'Ivoire: A Cointegration and Causality Analysis. *Journal of Sustainable Development*, 4(6), 23.

- Kustepeli, Y., Gulcan, Y., & Akgungor, S. (2008). *Transportation Expenditures, Growth and International Trade*. Discussion Paper Series No. 08/03. Faculty of Business, Department of Economics, Dokuz Eylul University.
- Marshall, A. (1890). *Principles of Economics*, London: Macmillan and Co., Ltd: 1890
- Melo, P., Graham, D., & Canavan, S. (2012). Effects of Road Investments on Economic Output and Induced Travel Demand: Evidence for Urbanized Areas in the United States. *Transportation Research Record: Journal of the Transportation Research Board*, (2297), 163-171.
- Phillips, P. C., & Perron, P. (1988). Testing for a unit root in time series regression. *Biometrika*, 75(2), 335-346.
- Pradhan, R. P. (2010). Transport infrastructure, energy consumption and economic growth triangle in India: cointegration and causality analysis. *Journal of Sustainable Development*, 3(2), 167.
- Romer, D. (2001). *Advanced Macroeconomics*. New York: McGraw-Hill.
- Rosenthal, S.S., and Strange, W.C. (2004). Evidence on the Nature and Sources of Agglomeration Economies. In J.V. Henderson and J.F. Thisse (eds), *Handbook of Urban and Regional Economics* (pp. 2119-71). New York: North-Holland
- Sahoo, P., & Dash, R. K. (2012). Economic growth in South Asia: Role of infrastructure. *The Journal of International Trade & Economic Development*, 21(2), 217-252.
- Sanchez-Robles, B. (1998). Infrastructure Investment and Growth: Some Empirical Evidence. *Contemporary Economic Policy*. 16(1), 98-108.
- Shah, A. (2006). *National Trade Corridor*. Pakistan Development Forum, Islamabad.
- Shephard, R. W. (1953). Cost and Production Functions. Princeton, NJ: Princeton University Press.
- Snieska, V., & Simkunaite, I. (2009). Socio-economic impact of infrastructure investments. *Inzinerine Ekonomika-Engineering Economics*, (3), 16-25.
- Solow, R. M. (1956). A Contribution to the Theory of Economic Growth. *Quarterly Journal of Economics*, 70(1), 65-94.
- Stock, J.H. (1987). Asymptotic Properties of Least Squares Estimators of Cointegrating Vectors. *Econometrica*, 55(5), 277-302.
- Straub, S. (2008). *Infrastructure and Growth in Developing Countries* (Vol. 4460). World Bank Publications.
- The White House (2014). *An Economic Analysis of Transportation Infrastructure Investment*. Washington: National Economic Council and the President's Council of Economic Adviser.
- Uchimura, K., & Gao, H. (1993). The importance of infrastructure on economic development. *Latin America and Caribbean Regional Office, World Bank, Washington DC*.
- Uma, K.E., Ogbonna, B.M., & Hyacinth, A.N. (2014). Does Transportation Sector Have Any Impact on Economic Development? A Time Series Assessment with Nigeria in Focus. *International Journal of Economics, Commerce and Management*, II (8), 1-15
- Ahmed, V., Abbas, A., & Ahmed, S. (2013). Public infrastructure and economic growth in Pakistan: a dynamic CGE-microsimulation analysis. In *Infrastructure and Economic Growth in Asia* (pp. 117-143). Springer International Publishing.

- Weisbrod, G. & Weisbrod, B. (1997). Assessing the Economic Impact of Transportation Projects, *Transport Research Circular*, 477, 1-34.
- World Bank (1994). *World Development Report 1994: Infrastructure for Development*. New York: Oxford University Press.
- World Bank (2007). *A Decade of Action in Transport—An Evaluation of World Bank Assistance to the Transport Sector 1995-2005*, Washington: World Bank.

Junio, Don Rodney Ong¹: Plugging into Regional Electronics Production Network: The Role of Industry Association in the Philippines

Abstract: This paper examines the role of an industry association in connecting domestic firms to regional production networks using the case of the Semiconductor and Electronics Industries in the Philippines, Inc. (SEIPI) as the unit of analysis. This process is analysed using the theoretical framework of the New Institutional Economics school of thought. A qualitative review of secondary materials on the history, milestone, organization structure of SEIPI, and the industry in general is complemented with an open ended key-person interview of officials of SEIPI to flesh out the narrative of the research. In broad terms, this research will contribute to the growing literature on production networks in Southeast Asia and the role of industry associations in improving regional economic connectivity and development, specifically in fostering the viability of regional production networks among others.

Introduction

Globally, trade in intermediate goods and services that are incorporated at various stages in the production process of goods for final consumption reached to about 60% of global trade (UNCTAD, 2013). In East Asia, trade in intermediate goods via production networks have become a prominent feature of trade. This was facilitated by the deliberate push of countries in the region for a more liberalized trade and investment regimes over the years. The diminished trade and investment barriers in the region were also complemented by a substantial decline in transport and communications costs brought by technological advancements. All these trends enabled transnational companies to organize extensive production networks across the region. As a result, it is widely recognized that international production networks are most advanced and sophisticated in East Asia (Kimura and Obashi, 2011). Because of the economic development potential brought about by participation in these production networks (such as industrial and social upgrading, value creation, and value enhancement among others), countries in the region have instituted policies aimed at increasing their participation rate in production-network-type of trade. Numerous studies have examined the role of governments in linking their economies to global production networks (see Parrilli, Nadvi and Yeung, 2013; Yeung, 2010, Kuroiwa, 2009, for example). This research proposal aims to examine under what conditions industry associations can increase the participation of domestic firms to regional production networks by examining the electronics industry association in the Philippines.

Overview of Production Networks

New trends in international trade show that traditional trade theories such as the Ricardian model and Heckscher-Ohlin type of trade models are no longer sufficient to

¹ don.junio.36m@st.kyoto-u.ac.jp, Graduate School of Economics, Kyoto University, Kyoto, Japan

adequately explain contemporary trade patterns. One of the reasons for this is trade fragmentation. The fragmentation theory illustrates that goods can be fragmented into parts and components that can be relocated to various production blocks or countries and brought together to produce a final good through service links. The development of trade fragmentation theory was pioneered by Jones and Kierzkowski in 1990. The fragmentation theory, alongside other theories (such as agglomeration theory) have become useful lens to examine global production networks.

According to the United Nations Conference on Trade and Development (UNCTAD), Global Value Chains/ Production Networks are defined by *fragmented* supply chains, with internationally dispersed tasks and activities coordinated by a lead firm (a transnational company). This trend is not new but increased cross-border trade since 2000 have led to the increase in the number of production networks worldwide. East Asia is leading the world in terms of development of global production networks (Kimura and Obashi, 2011). Various studies have examined the features, processes, and economic development impact of production networks in the region in various industries including in machinery (Kimura and Obashi, 2010) and hard disk drive (Hiratsuka, 2011) among others.

Electronics Industry in Southeast Asia

The electronics sector is one of the identified Priority Integration Sector in ASEAN along with agro-based, rubber-based, wood-based, fisheries, textiles and apparels, and the automotive sector. There is a growing regional electronics production network in the region. This can be observed from the growing volume and value of electronics cross-border trade in the region. Exports of electronics (including both intermediate and final products) almost reached US\$200 billion while imports of electronics reached US\$178 billion in 2013.²

Industry Associations and Economic Development

Empirical research on the functions of industry associations has revealed the positive roles they play in promoting economic development primarily through the promotion of market efficiency in both developing and developed country settings. However, the current body of research on this topic has been unsystematic to provide a general understanding on how these industry associations connect firms to production networks. This difficulty is compounded by the fact that the institutional set up in developing and developed countries gives rise to different functions that an industry association plays. Industry associations in developing countries deal with different environmental and institutional conditions compared to those operating in developed countries. For instance, in a developing country setting, industry associations operate in an environment where state and market failure exist so the goal of most industry associations there is to overcome these market failures while in developed countries, industry associations are more concerned with problems of expropriation and property rights enforcement. Doner and Schneider (2000) highlighted the various market

² <http://www.asean.org/resources/publications/asean-publications/item/asean-community-in-figures-special-edition-2014>

complementing functions of business associations which include: macroeconomic stabilization and reform; horizontal coordination; vertical coordination; lowering the cost of information; setting standards; and quality upgrading.

This research proposal will test whether this list can be expanded to include production network coordination as one key function industry associations can play in an increasingly global-production-network-dominated economic order even in a developing country setting such as the Philippines.

Aim of the Project

A number of empirical studies have been produced looking at regional production networks in specific industries. These studies look at the flow of products in a production network and the structure of these production networks with the role of industry associations assumed to be positive. This proposed research study will systematically examine whether this assumption is empirically tenable at least for the electronics industry in the Philippines. Specifically, the following research questions will be expounded in this research:

How relevant are industry associations in plugging domestic firms to regional production networks?

What are the modalities industry associations use to connect domestic firms to regional production networks and how effective are these?

What lessons can we draw from the experience of industry associations in the Philippines in connecting domestic companies to regional production networks?

This research will contribute to the growing literature on production networks in East Asia and the role of industry associations in improving regional economic connectivity and development, specifically in fostering the viability of regional production networks. The empirical validity of the findings of this research will have substantial policy implications. One such policy implication is in designing the configuration of public-private partnerships through industry associations of plugging the domestic economy to regional production networks. In addition, findings of this research can give insights to developing economies in East Asia on how to design domestic policies for their electronics sector should they choose to integrate to regional electronics production networks as an option to pursue its sustainable economic development agenda.

Hypotheses and Methodology

In broad terms, this paper will use the case study method to examine the context and understand the roles played by the Semiconductor and Electronics Industries in the Philippines, Incorporated (SEIPI) in connecting firms operating in the Philippines and Singapore to the regional electronics production network. SEIPI is selected because it is the apex electronics industry association in the Philippines. The institutional setup at the macro level and at the industry level will be analysed in fleshing out the narrative of this proposed research using the theoretical framework from New Institutional Economics school of thought.

The case study method will be supplemented by an interview survey of executive officers of the SEIPI. Primary data collected from the interview surveys will be complemented by a review of the institutional setup (broadly defined using the new institutional economics framework) of the electronics industry in Singapore and the Philippines using a meta-analysis and qualitative content review of relevant secondary materials related to the electronics industry including the history, membership, milestones, and organizational structure among others of SEIPI.

Expected Results

This research is still in the early stage of conceptualization with field work and data gathering expected to be completed by the second half of 2016. Preliminary review of collected materials show that the formal institutional structure of SEIPI, proactive stance of the organization in upgrading the electronics industry by pushing for industrial clustering, a heuristic awareness on production-network-trade from within the organization, a strong representation in government policymaking for the electronics sector contributed to the effectiveness of SEIPI in plugging the domestic industry to the electronics regional production network.

References

- ASEAN Secretariat (2014), *ASEAN Community in Figures Special Edition 2014*, ASEAN: Jakarta.
- ASEAN Secretariat (2008), *ASEAN Economic Community Blueprint*, ASEAN: Jakarta.
- Doner, Richard and Ben Ross Schneirder (2000), 'Business Associations and Economic Development: Why Some Associations Contribute More than Others', *Business and Politics*, Vol 2(3), pp 261-288.
- Hiratsuka, Daisuke (2011), 'Production Networks in Asia' *ADBI Working Paper Series* No. 301, ADBI: Tokyo.
- Jones, RW and H Kierzkowski (1990), 'The Role of Services in Production and International Trade: A Theoretical Framework' in RW Jones and AO Krueger (eds.) *The Political Economy of International Trade: Essays on Honor of Robert E Baldwin*, Basir Blackwell: Oxford.
- Kimura, Fukunari, and Ayako Obashi (2011), 'Production Networks in East Asia: What We Know So Far' *ADBI Working Paper Series* No. 320, ADBI: Tokyo.
- Kimura, Fukunari, and Ayako Obashi (2010), 'International Production Networks in Machinery Industries: Structure and Its Evolution' *ERIA Discussion Paper Series* No. 2010-09, ERIA: Jakarta.
- Kuroiwa, Ikuo (ed.) (2009), *Plugging Into Production Networks, Industrialization Strategy in Less Developed Southeast Asian Countries*, ISEAS: Singapore.
- Parrilli, Mario Davide, Nadvi, Khalid and Yeung, Henry Wai-chung (2013), 'Local and regional development in global value chains, production networks and innovation networks: a comparative review and the challenges for future research', *European Planning Studies*, Vol.21(7), pp.967-88.

Yeung, Henry Wai-chung (ed.) (2010), *Globalizing Regional Development in East Asia: Production Networks, Clusters, and Entrepreneurship*, Regions and Cities Series No.41, London: Routledge.

UNCTAD (2013) *World Investment Report 2013: Global Value Chains – Investment and Trade for Development*, United Nations: New York.

Khomik, Olesya¹ (with Svetlana Avdasheva²): Influence of Contracts with Grocery Retailers on the Performance of Food Suppliers Before and After of Law on Trade Adoption

Abstract: There is no strong consensus among the researches worldwide on the nature and the impacts of the vertical restraints instruments initiated by both parties in the contract between retailer and supplier. During the past 15 year with the modern trade evolvement the topic has become also relevant for Russia. With the introduction of the Trade law the discussion become even hotter. The current work sheds light on the nature of the supplier-retailer relations in Russia and the effects of the regulation introduced via empirical study of the producers' financial performance data and the concentration dynamics in consumer goods industries. The results overall are supporting the idea that the Law was designed in non-constructive way thus providing very low effect on the market situation. Indeed, while the commercial expenses (which are largely driven by the payments of the supplier to retailer) continue to grow especially for big suppliers the latter ones are not suffering neither from profit deterioration nor from concentration increase. On the opposite side the small suppliers of food consumer goods, which were the target beneficiaries of the regulation introduced, do not enjoy any benefits from the law introduction (no signs of additional profit growth or concentration decrease).

Introduction

Retailer-supplier relations are subject to high interest from different researches worldwide. The instruments used to organize the relations effectively are perceived as vertical restraints [Rey, Tirole, 1986]. There's no consensus whether these instruments are the means of the retailer market power exercise or a utility to increase coordination efficiency, insure against opportunism of deal parties and finally a solution to drive profitability of both retailer and supplier [Ailawadi, 2001; Ailawadi, Harlam, 2004; Corstjens, Steele, 2008; Hays, 1993; Klein, Wright, 2007; Srinivasan et al., 2004; Wright, 2007].

Russian antitrust authority took the approach that the instruments are influencing consumer goods producers negatively (especially the small ones) and as of 2010 introduced a regulation which among other consequences limited the usage of specific instruments (bonus, market payments), facilitated the retailers to set up more transparent supplier search procedures and enforced close link between supplier payment terms and products effective life [Daugavet, 2011].

While the regulation seems to contradict with the conclusion of vertical restraints theory (with the thesis that discounts are always better than retro-bonus) and also provides low simplification into the overall environment in which business operates by default (due to limited object of regulation) – it would be hard to finally conclude on the regulation effectiveness and efficiency without thorough empirical research. On top of

¹ khomik-os@yandex.ru, Procter and Gamble

² avdasheva@hse.ru, HSE, Moscow, Russia

that the fact of regulation introduction provides unique opportunity to really understand what are the effects of retailers' influence on the suppliers' performance: the event of the law introduction provides a point of dynamics change which allows room for the comparative econometrics studies (difference in difference approach).

Aim of the Project

To test hypotheses of the impact of contract terms with grocery retail chain on the performance and marketing cost of food suppliers, and on comparative advantages of large suppliers vis-a-vis small ones, using kind of 'difference-in-difference' empirical analysis leveraging the fact of the adoption of regulation of vertical contracting in the industry.

Hypotheses and Methodology

Suppliers' performance can be approximated either via financial indicators (expenses or benefits resulting from the business with retailers) or concentration dynamics (final result of the comprehensive factors). Retailer influence is unobservable in nature thus it can be approximated high level only: % share of modern trade and value of retail sales in respective region.

The key underlying idea of the research is to leverage difference in difference approach, i.e. to spot the difference in the supplier welfare indicators dependency from retailers' impact dummies before and after regulation introduction and also for impacted and non-impacted industries.

The research consists of 2 layers:

Layer 1. Impact of the retailers on the supplier financial performance data. Data set of financial performance indicators (commercial expenses, sales, operating profit) of 202 companies with yearly sales of more than 1bln RUR in 4 industries: food consumer goods (milk, meat) and non-food consumer goods (paper, chemicals), for the period 2006-2012. The key source – Spark data base. Additional data on modern trade share, retail sales in region where obtained from Official Russian Statistics portal.

$$\begin{aligned} \text{Dependent}_{it} = & \text{Const} + \beta_1 \cdot \ln(\text{Sales})_{it} + \beta_2 \cdot \text{mt_share}_{jt} + \beta_3 \cdot \ln(\text{R_Sales})_{jt} + \\ & + \beta_4 \cdot \text{CR4}_{jt} + \sum_{ind} \beta_{ind} \cdot D_{it}^{ind} + \sum_{year} \beta_{year} \cdot D_{it}^{year} + \sum_{year} \beta_{year_prod} \cdot D_{it}^{year} \cdot D_{it}^{prod} + \\ & + \sum_{year} \beta_{year_sales} \cdot D_{it}^{year} \cdot \ln(\text{Sales})_{it} + \varepsilon + \nu \end{aligned} \quad (1.1)$$

where Dependent_{it} — dependent variable: Comm_Sales_{it} ; Ebit_Sales_{it} , AR_Sales_{it} :

Comm_Sales — supplier commercial expenses % sales,

Ebit_Sales — supplier operating profit % sales,

AR_Sales — supplier account receivables turnover in days of sales.

Independent variables:

Sales — supplier revenue in bln. Rur, nominated in prices of 2006;

Mt_Share — share of modern trade in region;

R_{Sales} — cumulative retail sales in region, bln. Rur., nominated in prices of 2006.
 $CR4$ — market share of 4 biggest producers within respective industry in region, %.
 D_{Year} — dummy of the year, 2007–2012.
 $D_{Industry}$ — dummy of the industry (milk, meat, paper, chemics);
 D_{Prod} — dummy of the food consumer industry;
 ε, ν - model mistakes, i - company index, j - region index, t - period index.
 $\beta_1, \beta_2, \beta_3, \beta_{46}, \beta_{year}, \beta_{ind}, \beta_{year_prod}, \beta_{year_prod_sales}$ — coefficients of the model.

6 hypotheses where developed and tested further:

H1: Commercial expenses of the food consumer goods producers should decrease more vs non-food consumer goods producers after the Law introduction.

H2: Commercial expenses of the small food consumer goods producers should decrease more vs big food consumer goods producers after the Law introduction.

H3: Accounts receivable turnover of the food consumer goods producers should increase more vs non-food consumer goods producers after the Law introduction.

H4: Accounts receivable turnover of the small food consumer goods producers should increase more vs big food consumer goods producers after the Law introduction.

H5: Operating profit of the food consumer goods producers should increase more vs non-food consumer goods producers after the Law introduction.

H6: Operating profit of the small food consumer goods producers should increase more vs big food consumer goods producers after the Law introduction.

Layer 2. Retailers impact on the producers' concentration. Data set of the concentration of 4 industries across 82 Russia regions developed based on sales data from Spark. Additionally retail sales in region, share of modern trade, share of city population and individual income extracted from Official Russian Statistics portal.

$$Mt_share^*_{jt} = Const + \gamma_1 \cdot Citypop_{jt} + \gamma_2 \cdot \ln(Population)_{jt} + \varepsilon + \nu, \quad (2.1)$$

$$\begin{aligned} CR4_{jt} = & const + \delta_1 \cdot Mt_share^*_{jt} + \delta_2 \cdot \ln(Incrome)_{jt} + \\ & + \sum_{year} D_{year} \cdot \delta_{year} + \sum_{year} D_{year} \cdot D_{prod} \cdot \delta_{year_prod} + \varepsilon + \nu \end{aligned} \quad (2.2)$$

Mt_Share — share of modern trade in region;

$Citypop$ — share of population living in cities in the region, %;

$Population$ — total number of population in region;

$Income$ — individual income per year in the region, mrur;

$CR4$ — market share of 4 biggest producers within respective industry in region, %.

D_{Year} — dummy of the year, 2007–2012.

D_{Prod} — dummy of the food consumer industry;

ε, ν - model mistakes, j - region index, t - period index.

$\delta_1, \delta_2, \delta_{year}, \delta_{year_prod}$ — model coefficients.

2 hypotheses developed:

H7: Concentration within consumer goods industries in the region growth with the increase of the modern trade share in the region.

H8: Concentration within food consumer goods industries decreases after the Trade antitrust law introduction.

The hypothesis from both layers are tested via panel data models, the 2nd layer is enhanced with the 2-step approach to ensure the accurate factor vs results separation (1.1; 2.1-2.2). The random effects panel data model coefficients are preferred for the conclusions formulation based on tests [Greene, 2012; Magnus, Katishev, 2004]. The Layer 1 model is test in 15 configurations to achieve more sustainable results.

Results and Discussion

All the hypotheses are declined except for hypothesis H2. This means that Commercial expenses of food consumer goods producers are not decreasing except for the small ones. No positive dynamics in AR turnover is also seen, the same for operating profit. We also do not see no deterioration in concentrations of the producers, neither food or non-food goods.

These results show that the smaller producers which are spending less vs the big ones after the regulation introduction are not receiving any incremental profits. The bigger suppliers are even spending more after the regulation introduction which proves the idea that these costs are perceived as efficient instrument of business development. All in all these proves the idea that the instruments are not exploiting by nature and can be beneficial both for the suppliers and retailers.

Finally we want to conclude that the introduced regulation does not drive any significant change in the environment. The regulation is not based on the correct assumption because any analysis of the contract instruments effects on the parties involved should be concentrate both on allocation and distributive effects, as any change can move the total amount of benefits in industry, not only the portion of benefits received by each party. Vertical restraints indeed can be initiated by both parties of the contract thus there's no benefit in regulatory protection of particular party of the contract.

The results obtained are generally corresponding with the results of the supplier / retailer surveys conducted by Laboratory for Studies in Economic sociology (HSE) through 2010-2012 [Radaev 2011, 2012a, 2012b, 2014; Radchenko et al., 2013]. The overall conclusion is also consistent with international research findings [Bertrand, Kramarz, 2002; Sadun, 2014; Viviano, 2008], i.e.: vertical restraints are generally effective instrument of market coordination within retailer-supplier interaction framework, there's no victim by default as each party is gaining benefits from this: supplier – marketing services, retailer – margin sweetener (for example). The regulation in this sphere should mostly focus on driving transparency of the interactions, fair competition and limiting discrimination but not providing too much prescriptive guidance on interaction organization.

References

- Ailawadi K.L. 2001. The retail power-performance conundrum: What have we learned? *Journal of Retailing* 77 (3): 299–318.
- Ailawadi K.L., Harlam B. 2004. An empirical analysis of the determinants of retail margins: The role of store-brand share. *Journal of Marketing* 68 (1): 147–165.
- Bertrand M., Kramarz Fr. 2002. Does entry regulation hinder job creation? Evidence from the French retail industry. *The Quarterly Journal of Economics* 117 (4): 1369– 1413.
- Corstjens M., Steele R. 2008. An international empirical analysis of the performance of manufacturers and retailers. *Journal of Retailing and Consumer Services* 15 (3): 224–236.
- Daugavet D. 2011. The market power of retail chains: What's changed the law on trade. *Ekonomicheskaya politika* (4): 80–95.
- Greene W. H. 2012. *Econometric Analysis*. 7th ed. Pearson Education. Gundlach G.T., Bloom P. N. 1998. Slotting allowances and the retail sale of alcohol beverages. *Journal of Public Policy & Marketing* 17 (2): 173–184.
- Hays C.L. 2002. Retailer deals for cash back from suppliers draw attention. *New York Times* (May II): B1. Hoch St.J., Banerji Sh. 1993. When do private labels succeed? *Sloan Management Review* 34 (4): 57–67.
- Klein B., Wright J. 2007. The economics of slotting contracts. *Journal of Law & Economics* 50 (3): 421–454.
- Magnus J.R., Katishev P.K. 2004. *Econometrics. Basic Course*. 6th ed. M.: Case. GF
- Radaev V. V. 2014. Would time show? The mid-term effects of the trade law. *Ekonomicheskaya politika* (5): 75–98.
- Radaev V.V. 2011. The return of state to the regulation of domestic trade in Russia: Analysis of development process, discussion and first consequences of the Federal trade law. In: Radaev V. (ed.). *State regulation of commercial networks: Fundamentals and contradictions*. Vol.8. M.: Publishing House of HSE: 8–71.
- Radaev V.V. 2012a. Are there any changes brought by the trade law: An analysis of quantitative data. *Ekonomicheskaya politika* (1): 118–140.
- Radaev V.V. 2012b. Who benefited from the new trade law? *Voprosy gosudarstvennogo i munitsipal'nogo upravleniya* (2): 33–59.
- Radchenko T.A., Avdasheva S.B., Kurdin A.A., Shastitko A.E. 2013. The practice and possible consequences of antitrust regulation of the trade policy of a private company. M.: MAX Press.
- Rey P., Tirole J. 1986. The logic of vertical restraints. *The American Economic Review* 76 (5): 921–939.
- Sadun R. 2014. Does planning regulation protect independent retailers? *Review of Economics and Statistics*, 2014.
- Srinivasan Sh., Pauwels K., Hanssens D.M., Dekimpe M.G. 2004. Do promotions benefit manufacturers, retailers, or both. *Management Science* 50 (5): 617–629.
- Symeonidis G. 2000. Price competition and market structure: The impact of cartel policy on concentration in the UK. *The Journal of Industrial Economics* 48 (1): 1–26.

- Viviano E. 2008. Entry regulations and labor market outcomes: Evidence from the Italian retail trade sector. *Labour Economics* 15 (6): 1200–1222.
- Wright J. D. 2007. Slotting contracts and consumer welfare. *Antitrust Law Journal* 74 (2): 439–472.

Kinnunen, Jani¹: Economic Freedom Measures and Global Wealth Distribution

Abstract: *Global inequality is inherently a hot topic of economic and political debates. Attitudes towards wealth and income inequalities depend radically on the point of view: some think that some intervention by a state or supra-national actors is required; others think that regulation and lack of free trade have caused the inequalities, while the inequalities are rather seen as incentives. This study focuses on the relationship between global wealth inequalities and economic freedom variables using clustering analysis. The starting point is Credit Suisse's global wealth data and the ten variables behind the Wall Street Journal's and Heritage Foundation's Index of Economic Freedom: property rights, freedom from corruption, fiscal freedom, government spending, business freedom, labor freedom, monetary freedom, trade freedom, investment freedom, and financial freedom. The freedom as well as the wealth data are averaged over three years 2013-2015 to get better generalizability. Firstly, the economic freedom indicators, which go hand in hand with the country-specific wealth measures, are identified. Secondly, the relationship of the economic freedom and wealth distribution is under study.*

Introduction

This introductory section lays down the background of the study by, firstly, discussing shortly the issues in current global inequality discourse.

The motivation of the study arises from the recently soared public and academic discussion on measures of economic inequality cf. Piketty [20] and Piketty phenomenon [22] in general, competition aspects and many other perspectives [3], [5-11], [18-19]. Typically used wealth measure is the discussion has been net wealth, but it has problems, e.g. levered western individuals are seen less wealthy than some poor in less developed countries without or with limited access to credit [13]. Thus, we include also gross wealth and debt in the analysis.

The study includes 166 countries with variables: 10 for economic freedoms versus Gini coefficients, Shares of top-10% and top-1% earners per country, Gross and Net wealth and Debt (on household level). The data is for years 2013-2015 and we use averages over the three years for freedom and wealth variables, while wealth distribution variables are only from year 2015. The averaging is done to smooth out yearly changes to get more generalizable results. On the cleaned data, k-means clustering analysis is performed.

The rest of this paper is organized as follows. Section 2 presents the aims of the study. Section 3 describes hypothesis and the methodology (the applied k-means clustering method), variables, and the used data of which we already note that the data is not unproblematic, e.g., due to partly lacking wealth data, which has been replaced by estimations and because the used variables of economic freedom include both qualitative

¹ jpkinnunen@gmail.com, Åbo Akademi University, Institute for Advanced Management Systems Research, Turku, Finland

and quantitative variables, which all have been further scaled to 1-100. Section 4 discusses the results, while selected references are found in Section 5.

Aim of the Project

The aim of this project can be divided into three areas of focus: Firstly, to identify the economic freedom indicators, which go hand in hand with the country-specific wealth measures. Secondly, we study the relationship of the economic freedom variables and three measures of wealth distribution: Gini coefficient and country-specific shares of global top-10% and top-1%. This approach extends the approach of Kinnunen & Georgescu [13] by considering several years instead of simple cross-sectional data and by including measures of wealth distributions into the clustering analysis. Finally, the results will be discussed using the rationales presented in previous literature including, such as, cross-border free trade and the movement between wealth deciles within countries (e.g., [1], [2], [4], [11], [16], [21]).

Hypotheses, Methodology and Data

3.1 Hypothesis and Methodology

The applied clustering method is k-means clustering method and it will be supported by regression analysis on the selected variables based on the clustered groups of countries. Cf. Section 4. Results.

Generally, by the applied clustering procedure, the data is organized into groups so that a set of variables are close to the center. Clustering methods define how to measure “close” and how to form groups. Then, groupings are visualized and finally interpreted.

Clustering results are discussed and additional regressions are run on selected variables/set of countries to support the interpretation of cluster results.

No specific formalized hypothesis is tested, but the significant relationships between the freedom variables and the inequality measures was expected based, e.g., on [13]. Further, freedom variables are found to primarily positively correlate, not all, with GDP and other welfare measures, but the relationship to inequality measures requires further cluster-wise analysis.

3.2 Wealth Data and Variables of Economic Freedom

Wealth Data: Credit Suisse [5-10] and Oxfam [18-19] discusses and presents data for the following wealth components: (Net) Wealth = Financial Assets + Non-financial Assets – Debts, i.e. net wealth is the sum of financial and non-financial asset less debt, while gross wealth represents Total Wealth, which consists of Financial Assets + Non-financial Assets including Debts.

The data from Credit Suisse’s yearly Wealth Databooks [12] is matched with the Heritage freedom data leaving us with 166 countries.

Variables of Economic Freedom: Heritage Foundation’s index of economic freedom (cf. <http://www.heritage.org/index/book/methodology>) published by Wall Street Journal and Heritage Foundation for years 2013-2015 is used (published in 2014-2016 for respective years [12]). It calculates an index score value for economic freedom based on

ten quantitative and qualitative variables, which are grouped into four broad categories (cf. <http://www.heritage.org/index/about>):

Rule of Law (variables: 1. property rights, 2. freedom from corruption);

Limited Government (variables: 3. fiscal freedom, 4. government spending);

Regulatory Efficiency (variables: 5. business freedom, 6. labor freedom, 7. monetary freedom); and

Open Markets (variables: 8. trade freedom, 9. investment freedom, 10. financial freedom).

Each of the ten economic freedom variables is graded on a scale of 0 to 100. A country's overall score is derived by averaging these ten economic freedoms with equal weight being given to each of them.

The ten economic freedom variables of Heritage index of economic freedom, 2014-2016, and the wealth variables for gross wealth, net wealth, and debt per adult and GDP per capita (Credit Suisse [5-10] are averaged over the three years 2013-2015 so that only one number is used in analysis per each variable. The three wealth distribution variables of Gini coefficient and the countries' shares of earners in global top-10% and top-1% represent only year 2015 [9-10].

Results

With k-means we grouped the 166 countries into 6 clusters. Appendix A shows the countries and Appendix B shows summary statistics and Appendix C (Appendices are omitted from this short version) plots all the freedom variables against gross and net wealth, debt, as well as, Gini coefficient. Figure 1 shows pairwise plots of the total economic freedom index (Score_Avg), per capita GDP, gross wealth, debt, net wealth, Gini coefficient, and a countries' shares of global top10% global earners, and selected individual components of economic freedom (Freedom from corruption, business freedom, Trade Freedom and Investment Freedom). Gross wealth, debt, net wealth, Gini coefficient are not shown as the correlations were not so clear with the averaged data although with cross-sectional data the correlations were more clear.

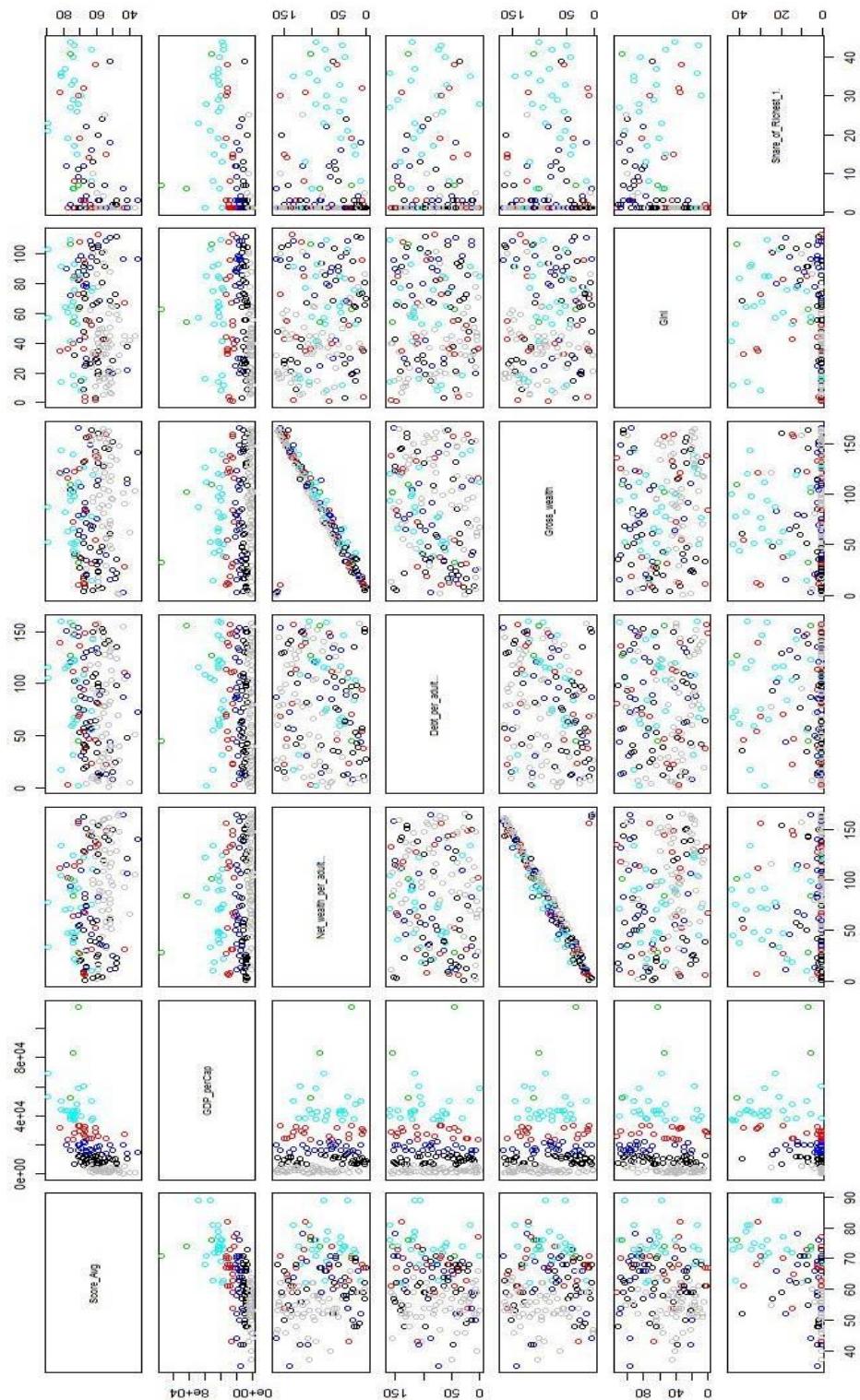


Figure 1: Index of economic freedom, GDP per capita, gross wealth/net wealth/ per adult, debt, Gini coefficient, and shares of top 1% earners

The clustering outputs:

Next we report the specific outputs from running the k-means analysis on our total 24 variables for all the 166 countries shown in Table 1.

Table 1. All variables used in clustering

Freedom variables	Wealth & GDP variables	Inequality variables
Score_Avg	GDP_5yr_Growth	Gini
Property_Rights	GDP_perCap	Share_of_Richest_10%
Freedom_from_Corruption	Total_wealth(\$bn)	Share_of_Richest_1%
Fiscal_Freedom	Share_of_wealth(%)	
Gov't_Spending	Net_wealth_per_adult(\$)	
Business_Freedom	Financial_wealth_per_adult(\$)	
Labor_Freedom	Non-financial_wealth_per_adult(\$)	
Monetary_Freedom	Debt_per_adult(\$)	
Trade_Freedom	Median_wealth_per_adult	
Investment_Freedom	Gross_wealth	

K-means clustering with 6 clusters of sizes 14, 11, 9, 42, 79, 11 countries. Below we skip cluster means to save space. However, R reports the cluster means and within cluster means sum of squares both for the 6 clusters, centers for all variables of Table 1, and the detected outliers.

Then we take a closer look at the selected pairwise relations of the key variables. This means focusing on plots to describe:

A) relationships of all the components of the economic freedom index and the wealth & GDP measures; and

B) relationships of freedom variable and inequality measures (Gini coefficients and shares of global top earners).

Variables are plotted pair-wise, e.g.:

Plotting Economic freedom index (Score_Avg) against other selected variables:

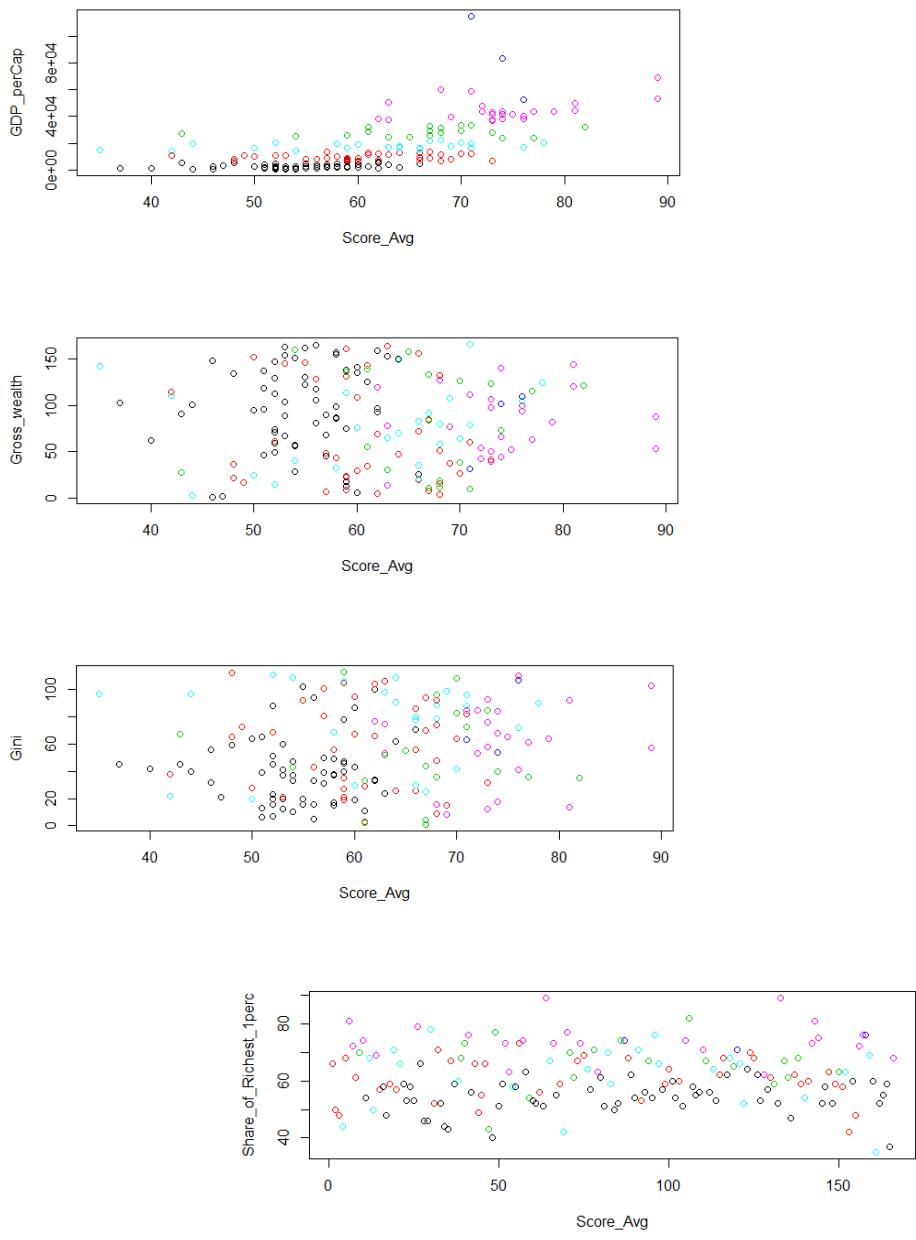


Figure 2: Freedom index versus selected wealth and inequality variables with 3-yrs average data

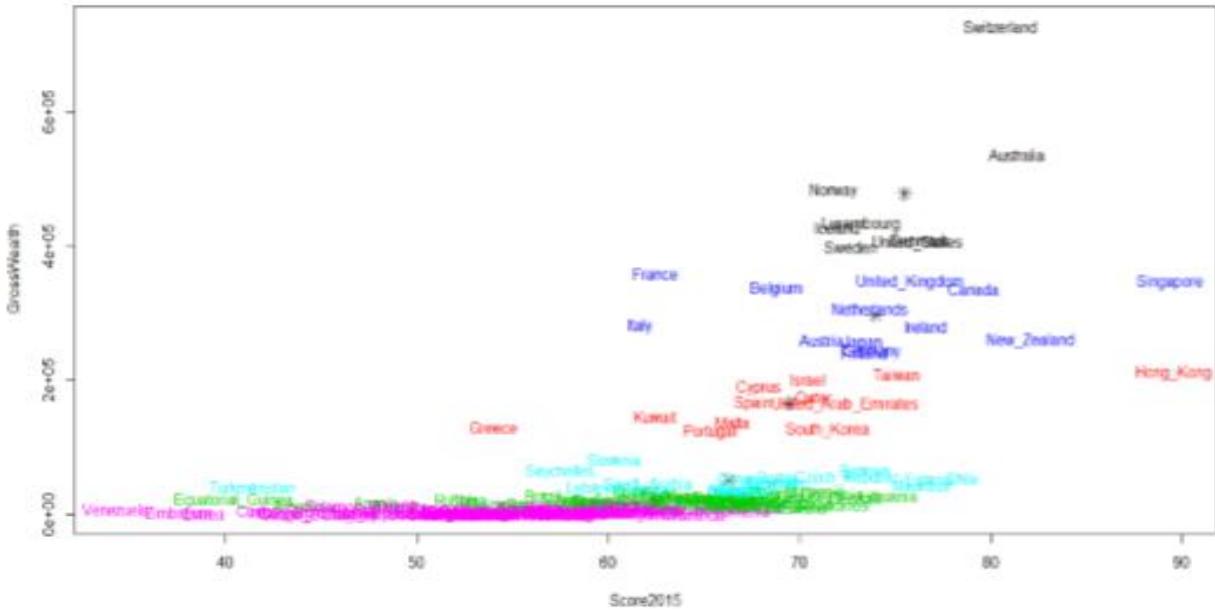


Figure 3: Freedom index against wealth in cross-section shows clear correlation

Significant relationships between some variables and inequality measures were found. The freedom variables were positively correlated with GDP per capita and wealth measures measures, when cross-section was under study, while when averaging over the three years, correlations were not as clear.

References

- Anand, Sudhir, Paul Segal, 2008: "What Do We Know about Global Income Inequality?" Journal of Economic Literature 46(1): 57–94.
- Autor, David, David Dorn, Gordon Hanson, 2013: Untangling Trade and Technology: Evidence from Local Labor Markets. National Bureau of Economic Research. Accessed Jan 2015. <http://www.nber.org/papers/w18938>.
- Azerrad, David, Rea S Hederman Jr, 2012: Defending the Dream: Why Income Inequality Doesn't Threaten Opportunity. The Heritage Foundation. Accessed Jan 2015. <http://report.heritage.org/sr119>.
- Borjas, George, 2013: Immigration and the American Worker: A Review of the Academic Literature. Center for Immigration Studies. Accessed Jan 2015. <http://cis.org/immigration-and-the-american-worker-review-academic-literature>.
- Credit Suisse, 2013a: Global Wealth Databook 2013. Credit Suisse AG Research Institute. Accessed May 2016. <https://publications.credit-suisse.com/tasks/render/file/?fileID=1949208D-E59A-F2D9-6D0361266E44A2F8>
- Credit Suisse, 2013b: Global Wealth Report 2013. Credit Suisse AG Research Institute. Accessed May 2016. <https://publications.credit-suisse.com/tasks/render/file/?fileID=BCDB1364-A105-0560-1332EC9100FF5C83>

Credit Suisse, 2014a: Global Wealth Databook 2014. Credit Suisse AG Research Institute. Accessed May 2016. <https://publications.credit-suisse.com/tasks/render/file/?fileID=5521F296-D460-2B88-081889DB12817E02>

Credit Suisse, 2014b: Global Wealth Report 2014. Credit Suisse AG Research Institute. Accessed May 2016. <https://publications.credit-suisse.com/tasks/render/file/?fileID=60931FDE-A2D2-F568-B041B58C5EA591A4>.

Credit Suisse, 2015a: Global Wealth Databook 2015. Credit Suisse AG Research Institute. Accessed May 2016. <http://publications.credit-suisse.com/tasks/render/file/index.cfm?fileid=C26E3824-E868-56E0-CCA04D4BB9B9ADD5>

Credit Suisse, 2015b: Global Wealth Report 2015. Credit Suisse AG Research Institute. Accessed May 2016. <https://publications.credit-suisse.com/tasks/render/file/?fileID=F2425415-DCA7-80B8-EAD989AF9341D47E>

Economist, 2015: "Global inequality: The wrong yardstick." Jan 22. Accessed Jan 2015. <http://www.economist.com/news/finance-and-economics/21640444-oxfam-causes-stir-stat-wrong-yardstick>.

Heritage Index of Economic Freedom 2014-2016. Accessed May 2016. <http://www.heritage.org/index/download>

Kinnunen, Jani, Irina Georgescu, 2015: Global Inequality, Economic Freedoms, and Real Options Thinking. Unpublished working paper presented in the 19th Annual International Conference on Real Options, Athens, Greece, 17-20 June.

Klein, Ezra, 2015: "Be careful with that viral statistic about the top 1% owning half the world's wealth." 22. Accessed Jan 2015. <http://www.vox.com/2015/1/22/7871947/oxfam-wealth-statistic>

Lakner, Christoph, Branko Milanovic, 2013: Global income distribution: from the fall of the Berlin Wall to the Great Recession. Working Paper, World Bank. Accessed Jan 2015. <http://www-wds.worldbank.org/external/default/WDSContentServer/IW3P/IB/2013/>.

Miller, Terry, Anthony B Kim, 2015: 2015 Index of Economic Freedom: Promoting Economic Opportunity and Prosperity. The Heritage Foundation and Dow Jones & Company, Inc. Accessed Jan 2015. <http://www.heritage.org/index/downloadform>.

Miller, Terry, Anthony B Kim ja Kim R Holmes, 2014: 2014 Index of Economic Freedom. The Heritage Foundation and Dow Jones & Company, Inc. Accessed Jan 2015. http://www.heritage.org/index/pdf/2014/book/index_2014.pdf.

Oxfam, 2015a: "Richest 1% will own more than all the rest by 2016." Jan 19. Accessed Jan 2015. <http://www.oxfam.org/en/pressroom/pressreleases/2015-01-19/richest-1-will-own-more-all-rest-2016>.

Oxfam, 2015b: Wealth: Having It All and Wanting More. Oxford, UK: Oxfam GB. Accessed Jan 2015. http://www.oxfam.org/sites/www.oxfam.org/files/file_attachments/ib-wealth-having-all-wanting-more-190115-en.pdf.

Piketty, Thomas, 2014: Capital in the Twenty-First Century. Cambridge: Harvard University Press.

Rector, Robert, Rachel Sheffield, 2014: "The War on Poverty After 50 Years." Backgrounder, Sept 15. Accessed Jan 2015. <http://report.heritage.org/bg2955>.

Wade, Robert H, 2014: "The Piketty phenomenon and the future of inequality." Real-World Economics Review 7 (69): 2-17. Accessed Jan 2015. <http://www.paecon.net/PAEReview/issue69/Wade69.pdf>.

Konovalova, Marina¹ (with Andrey Maksimov²): The Analysis of the Determinants of Students` Time Allocation between Work and Study

Abstract: Deciding on the effectiveness of time allocation requires an individual approach. Nevertheless, students` decisions to apply for a job during semesters are usually backed by common reasons. This paper is a theoretical and empirical examination of determinants of students` decisions to dedicate more or less time to study and to work. On the one hand, if a student decides to work more, he is able to increase his current consumption, on the other hand, if he decides to dedicate more time to work and decrease the amount of time to study, he will get lower wages so that this decision will affect negatively student's future consumption. The authors scrutinize this tradeoff and formulate it in terms of the utility maximization problem. According to the results, student's decision about the amount of time to allocate to study and to work is determined by the level of consumption he got accustomed to, the amount of scholarship, tuition fee, the amount of money he receives from parents, the quality of university, the wage he is offered during the study time and the expected wage after graduation.

Introduction

Becoming a student an individual receives much greater freedom in his decisions and actions as far as control from parents becomes lower. One of the key decisions concerns time allocation to study, leisure and work if he chooses to apply for a job.

Nevertheless, Stevens, Weale (2004) (Britain students) as well as Roshchin, Rudakov (2014), Yanbarisova (2014) (Russian students) have found quite a lot of common features of student's allocation of time between study, work and leisure. They are the following:

Students expecting to get high wages with the help of relatives or acquaintances tend to dedicate less time to study [Stevens, Weale (2004)]

The cost of education negatively affect the amount of time to study [Stevens, Weale (2004)]

Men are more prone to work during study time than women [Roshchin, Rudakov (2014)]

Bachelor students of the 3,4 years of studing, specialists of 4,5 years of studing and masters students more often combine work and study than students of earlier years of studing [Roshchin, Rudakov (2014)]

Students of high quality universities which study is financed by the government are more inclined to work during study time [Roshchin, Rudakov (2014)]

The highest academic achievements are demonstrated by students that do not work or have part-time job [Yanbarisova (2014)]

The influence of full time job connected with student's specialty on his academic performance is insignificant [Yanbarisova (2014)].

¹ m.s.konovalova@mail.ru, National Research University Higher School of Economics, Nizhny Novgorod, Russia

² amaksimov@hse.ru, National Research University Higher School of Economics, Nizhny Novgorod, Russia

It is necessary to notice that the abovementioned authors singled out just main tendencies that students demonstrate in their application for a job during study time, the influence on their academic achievement; Stevens, Weale (2004) highlighted the influence of *quite several* factors on students' decisions to allocate more or less time to study.

Aim of the Project

The aim of the research is to define the determinants of the amount of time Russian students allocate to study and to work using an economic theory of utility maximization as a basic rationale. **The motivation** of the research is as follows. The point is that the less time students devote to study, the less quality of knowledge they have, the worse they are as specialists. Nowadays as far as there are quite few universities in Russia put this issue under control, the overall quality of graduates on the labor market has became significantly lower than it used to be. Thus, the competitiveness of our country in terms of goods and services produced can become lower in the nearest future. That is why the issue of defining the determinants of student's time allocation and putting them under control by universities is of great importance.

We have found that

the year of study has negative influence on the amount of time dedicated to study;

the higher the quality of university, the more time its students allocate to study;

the more the amount of money students receive from parents (if they live separately), the less time they spend on their studing;

the higher the level of consumption an individual got accustomed to, the less time he dedicates to study and more time to work;

the higher the cost of education, the more time a student devotes to study.

The rest of the paper is organized as follows: in section 2 hypothesis and methodology of the research are formulated, in section 3 the data is described and the results are presented, section 4 concludes.

Hypothesis and Methodology

The hypothesis of the research is that universities are able to control the amount of time their students allocate to study. In other words, having singled out the determinants of students' time allocation decisions we expect to find among them a lot of those that are under control of universities.

The methodology of the research includes formulating the problem of student's time allocation as an intertemporal utility maximization problem with time and budget constraints.

Assumptions:

1). Two periods of life of an individual are considered in the model: during the first period he is studing in the university, in the second one he is working. In the beginning of each period an individual decides how much time to spend on studing, working and leisure in the first period and working and leisure in the second period.

2). Preferences of an individual do not change.

3). Leisure is considered not only as a free time but also as a time when an individual consumes entertainment services. Thus, leisure has also its own cost p_L .

4). An individual is associated with level of consumption c which he wants to be constant all lifelong.

5). If a student decides to work in the first period, he finds job not according to his specialty because he does not have enough knowledge. Employers do not distinguish working students and offer them the same wage w_1 .

6). After graduation an individual either gets a job according to his specialty or not with probability p . An individual continues to work on this job to the end of the second period.

7). The probability of being employed and the wage an individual receives on a job according to his specialty both depend on the quality of university an individual has graduated from and on the amount of time he dedicated to study in the following way

$$pr = pr_0 + 0,09 * q + 0,055 * \frac{t_e}{T_1} \quad [\text{Roshchin,S., Rudakov,V. (2015)}]$$

$$w_{21} = w_{0\ sp} + 0,09 * q * w_{0\ sp} + 0,055 * \frac{t_e}{T_1} * w_{0\ sp}$$

where pr_0 is a external probability of *any* student of being employed according to his specialty

$w_{0\ sp}$ is a basic starting wage offered to any worker in a particular specialty

8). In the first period an individual gives all his savings to his parents, in the second – to his children.

$$\left\{ \begin{array}{l} u_1 + \beta^{T_1+1} u_2 \rightarrow \max c, t_{L1}, t_e, t_{W1}, t_{L2}, t_{W2} \\ t_{L1} + t_e + t_{W1} = T_1 \\ t_{L2} + t_{W2} = T_2 \\ w_1 t_{W1} + s + p = c + e + p_L t_{L1} + savings_1 \\ (pr * w_{21} + (1 - pr) w_{20}) t_{W2} = c + p_L t_{L2} + savings_2 \end{array} \right.$$

where $u_1 = \alpha_1 c^{\rho_c} + \alpha_2 t_{L1}^{\rho_{t_L}} + \alpha_3 t_e^{\rho_{t_e}} + \alpha_4 t_{W1}^{\rho_{t_W}}$, $u_2 = \beta_1 c^{\rho_c} + \beta_2 t_{L2}^{\rho_{t_L}} + \beta_3 t_{W2}^{\rho_{t_W}}$

u_i - utility in the i-th period

c – the level of consumption

t_{Li} - the amount of time devoted to leisure in the i-th period

t_e - the amount of time devoted to study

t_{Wi} - the amount of time devoted to work in the i-th period

β - annual subjective discount factor

T_i - the length of the i-th period

w_1 - the wage offered to students willing to work

s - the amount of scholarship

p – the amount of money a student receives from parents

e - cost of education

p_L - cost of leisure

pr - probability of a graduate to get a job according to his specialty

w_{21} - the wage a graduate receives if he works according to his specialty

w_{20} - the wage a graduate receives if he does not work according to his specialty.

Having solved this optimization problem we got an indirect expressions for optimal values of $c, t_{L1}, t_e, t_{W1}, t_{L2}, t_{W2}$. Equation for the optimal value of t_e is of primary importance as far as it allows to single out the determinants of student's time allocation decisions concerning time devoted to study.

Results

We use the data of a survey of Monitoring of Economics of Education conducted by the Higher School of Economics of university students in Moscow region in 2006. The results of the regression analysis are presented in the following table.

Table 1. The results of regression analysis

. regress te q1_2 s q p w0 yd e if q_ro==27, vce(robust)						
Linear regression						
te	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
q1_2	-6.070742	2.248071	-2.70	0.008	-10.52875	-1.612733
s	-.0058974	.0009849	-5.99	0.000	-.0078504	-.0039443
q	1.221594	.3845349	3.18	0.002	.4590464	1.984141
p	-.0002545	.0001904	-1.34	0.184	-.000632	.000123
w0	.0234171	.0061956	3.78	0.000	.011131	.0357031
yd	-1.101073	1.164941	-0.95	0.347	-3.411194	1.209048
e	.0398639	.0959925	0.42	0.679	-.1504929	.2302207
_cons	24.65877	21.5319	1.15	0.255	-18.0398	67.35734

Thus, the number of years of studying (q1_2), the amount of scholarship, the amount of money an individual receives from his parents and disposal income (yd, it is considered as a proxy for consumption) have negative influence on the amount of time a student decides to spend on study, whereas a quality of university, wage rate offered to students on a labor market stimulates a student to study harder. The signs of coefficients can be easily explained in terms of the economic theory.

In this paper we propose a model of how students make a decision concerning their time allocation. Having analyzed it we distinguished the basic factors influencing the amount of time a student devotes to study. Universities are suggested to take into consideration these factors in order to increase the quality of its graduates and, thus, the quality of labor on the labor market.

References

- Aistov, A. (2012). Is education a signal on the Russian labor market? *WP BRP 05/EDU/2012*.

- Becker,G. (1965). A theory of the allocation of time. *The economic journal*, 75(299), 493-517.
- Bratti, M., Staffolani, S. (2002). Student time allocation and educational production functions. *Quaderni di Ricerca*, 170, 1-27.
- Curtis, S., Lucas, R. (2001). A coincidence of needs? Employers and full-time students. *Employee relations*, 23(1), 38-54.
- Dolton, P., Marcenaro, O.D., Navarro, L. (2001). The effective use of student time: a stochastic frontier production function case study. *Center for the economics of education London school of economics and political science*.
- Ehrenberg, R.G., Sherman, D.R. (1987). Employment while in college, Academic achievement and Postcollege outcomes. *The journal of human resources*, 22(1), 1-23.
- Foley, M. (1997). Determinants of employment duration in Russia. *Center Discussion Paper*, 779.
- Heckman, J., Loschner, L., Todd, P. (2003). Fifty years of Mincer earnings regressions. *NBER Working Paper № 9732*.
- Kavkler, A., Danacica, D., Babucea, A., Bicanic, I., Bohm, B., Tevdovski, D., Tosevska, K., Borsic, D. (2009). Cox regression Models for unemployment duration in Romania, Slovenia, Croatia&Macedonia. *Romanian journal of economic forecasting*, 2,81-104.
- Klein C. (2007). The economics of time as a resource. *Department of economic and finance working paper series*.
- Kosh, C., Kleinmann, M. (2002). A stitch in time saves nine: Behavioral decision-making explanations for time management problems. *European journal of work and organizational psychology*, 11(2), 199-217.
- Oschepkov, A. (2006) Gender differences in wages in Russia. *Economic journal of HSE*, 4, 590-619.
- Roshchin, S., Rudakov, V. (2015). Do graduates wages measure the quality of education? A review of existing studies. *Voprosy obrazovaniya/Educational Studies*, 1, 138-171.
- Sabelis, I. (2001). Time management paradoxes and patterns. *Time and society*, 10(2/3), 387-400.
- Stevens, P., Weale, M. (2004). Lazy students? A study of student time use. *National Institute of economic and social research*.
- Varian, H. (1992). *Intermediate microeconomics: A modern approach*. New York: W.W. Norton&Company.
- 17 . Yanbarisova, D.M. (2014). Combining university studies with work: influence on academic achievement. *WP BRP 21EDU/2014*.

Korovkin, Vasily¹ (with Pasha Andreyanov² and Alec Davidson³): Corruption vs Collusion: Evidence from Russian Procurement Auctions

Abstract: This paper uses a unique data set of Russian procurement auctions to test a new method of detecting corruption and collusion. Collusion is a horizontal agreement between two or more bidders, and corruption is a vertical agreement between a bidder and an auctioneer. In both cases the contract is typically won at a higher price (in a descending auction) than it should have been in a competitive scenario. The data comes from a digital registry of sealed bid first price auctions for a wide spectrum of government-paid contracts in a period that starts from 2011. A distinct feature of this data is that it contains the precise timing of each bid. We find special patterns in the distribution of bid timings that are consistent with several known collusive and corruptive schemes. Based on these patterns we propose a method that allows us to detect fake firms that are only created for bidding purpose, firms belonging to a cartel and firms – auctioneers pairs that are involved in corruption. Using the information on final prices in the auctions we discuss the welfare implications of each type of illegal activity.

Introduction

The adoption of the Sherman Act in 1890 has deemed any behavior that is targeted on reducing competition as unlawful in the US, and similar antitrust laws were later adopted in most countries including Russia. Since then scholars and practitioners have been developing tools to measure the extent of anti-competitive agreements and the associated damages. In the context of procurement auctions these agreements can be sorted into two broad categories: corruption and collusion. Collusion is a horizontal agreement between two or more bidders and corruption is a vertical agreement between the auctioneer and one of the bidders. In both scenarios the competition between the bidders is reduced and the cost of procurement goes up.

The phenomenon of collusion is well understood in economics and was thoroughly investigated by theorists as well as empiricists. In the context of auctions, detection of collusion was studied in numerous papers (see Porter, 2005 for a review). Corruption in such contexts is severely understudied. At the same time, it may lead to losses comparable with that of collusion. For example, in Menezes and Monteiro (2006) an auctioneer can approach the winner and offer him to match the bid of the loser. The generated surplus then can be split between the two. To our best knowledge no study has attempted to look for an evidence of such practices on a micro level.

The paper that is closest to ours in its spirit is Kawai and Nakabayashi (2014). The authors use data on procurement construction auctions in Japan to verify a new method of detection. They are using re-auction data to show that in all the re-auction rounds the

¹ vaskorovkin@gmail.com, UCLA Anderson School of Management

² UCLA

³ UCLA

same firm tends to win. They control for potential costs confounding by concentrating only on the subsample of firms with close bids in the initial auction. They use a theoretical model to justify this regression discontinuity style analysis.

Another strand of literature that we contribute to is literature on corruption in procurement. Most of this literature is dedicated to the countries with weaker institutions (Di Tella and Schargrodsy (2003); Ferraz and Finan (2008); Bandiera et al. (2009); Lewis-Faupel et al. (2014); Mironov and Zhuravskaya (2014)). Our paper is the first to describe how the incentives of collusive firms and the incentives of corrupt public bodies together shape the welfare loss on a scale of the whole economy by using the insights from this literature and from the auction theory.

Aim of the Project

The aim of the project is thus twofold. The first is to develop and use a new method of detection and derive measures of welfare from it. This is a theoretical aim. At the same time we want to derive the policy implications if we succeed with the first aim. In other words we want to implement the detection procedure and to design the mechanisms that are more robust to the types of violations that we study.

Hypotheses and Methodology

In this paper we detect two scenarios: a classic collusive, and a corruptive scenario. We use a novel data set of a wide spectrum of procurement auctions in Russia spanning the years 2011-2015. This data set contains detailed descriptions of the contracts, as well as quotes and timings of each bidder. The key insight is that while in a competitive setting time is payoff-irrelevant, in collusive and corruptive scenarios it may serve as a natural coordination device. Therefore by observing the timings of bids of multiple similar auctions one can statistically measure the frequency at which corruptive and collusive schemes are exercised.

Our first assumption is that if bidders bid extremely close in time, there is a high chance that they are just putting their bids together while monitoring each other's actions. In the absence of credible commitment devices, that might be a plausible strategy. We observe a strong statistical pattern indicative of this scenario. Under the assumption that competitive bids are independent and timing is independent of bid strength, we come to a conclusion that 1 out of 10 auctions involve collusion.

Our second assumption is that for the auctioneer to be able to help his preferred bidder, he has to wait for all other bidders to complete their bids. We assume that the auctioneer cannot alter the bids, but he can communicate information freely to his preferred bidder. We also observe a strong pattern indicative of this scenario. Under the same assumptions we estimate that 1 out of 10 auctions involve corruption.

The firms that we determine as being collusive can be of two types. Some firms are created exclusively for bidding purpose and are not involved in any kind of productive activity. Another firms are actually competitive firms that bid together in order to sustain a cartel agreement. Our methodology allows distinguishing between the two. We can split the sample of firms and the sample of public bodies into the four groups. The first group

contains honest public bodies and competitive firms. The second one consists of a competitive firm and a fake firm. The third group is a group of real firms that compete with each other, but are also involved in a cartel behavior. Finally we document the firms -- public bodies pairs that are likely to participate in information leakage schemes.

Below I list the exact hypotheses that we test.

There is an abnormal correlation in the hour and minute of bids placed at the same day as compared to the bids that are separated by one or several days.

There is an abnormal number of auctions with winner bidding later than any of the other participants and the winner bidding at the very last hour compared to the auctions where the winner is not the latest, while one of the other participants still bids at the last hour.

Abnormal correlation in timings leads to higher prices in auctions, either because of cartel or because of the fake bidders.

Abnormal last moment bidding for the winners will lead to lower difference in bids.

Preliminary Results

Testing the first two hypotheses lead us to the estimates that at least 10% of auctions are collusive and 10% are corrupt out of 2 million procurement auctions in our sample. We build a structural model based on the assumptions about timing irrelevance. The model helps us to identify around 200 firms participating in cartel activities and around 4,000 fake firms out of around 100,000 firms that participated at least in a three auctions.

The prices that are paid in the auctions that involve cartel activity are 3-7% higher than in regular auctions and the effect for the fake firms is comparable to the cartels. The effect of vertical agreements between a bidder and an auctioneer on the difference in bids is around 3-5% of the initial difference in bids. This effect, although not extremely large in relative numbers represents losses of millions of dollars.

References

- Bandiera, O., Prat, A., & Valletti, T. (2009). Active and Passive Waste in Government Spending: Evidence from a Policy Experiment. *American Economic Review*, 99(4), 1278-1308.
- Di Tella, R., & Schargrodsky, E. (2003). The role of wages and auditing during a crackdown on corruption in the city of buenos aires*. *Journal of law and economics*, 46(1), 269-292.
- Ferraz, C., & Finan, F. (2008). Exposing Corrupt Politicians: The Effects of Brazil's Publicly Released Audits on Electoral Outcomes. *The Quarterly Journal of Economics*, 123(2), 703-745.
- Kawai, K., & Nakabayashi, J. (2014). Detecting Large-Scale Collusion in Procurement Auctions. *Available at SSRN 2467175*.
- Lewis-Faupel, S., Neggers, Y., Olken, B. A., & Pande, R. (2014). *Can electronic procurement improve infrastructure provision? evidence from public works in india and indonesia* (No. w20344). National Bureau of Economic Research.

- Menezes, F. M., & Monteiro, P. K. (2006). Corruption and auctions. *Journal of Mathematical Economics*, 42(1), 97-108.
- Mironov, M., & Zhuravskaya, E. (2011). Corruption in procurement and shadow campaign financing: evidence from Russia. In *ISNIE Annual Conference*.
- Porter, R. H. (2005). Detecting collusion. *Review of Industrial Organization*, 26(2), 147-167.

Kulikova, Yuliya¹: Health Policies and Intergenerational Mobility

Abstract: Each year the U.S. government spends about 2% of its GDP on Medicaid, its main means-tested health insurance program. In June 2013, over 28 million children were enrolled in Medicaid. What are the implications of such a large-scale policy intervention for intergenerational mobility and inequality? While the role of education and education policies received a lot of attention in the literature on intergenerational mobility, almost nothing is known on how medical policies affect intergenerational mobility and inequality. This is rather surprising, since health, like education, is highly persistent across generations and health of children have an important impact on how they perform in school. In this paper, I develop and estimate a human-capital based overlapping generations model of household decisions that take into account multidimensionality and dynamic nature of human capital investments. I distinguish two forms of human capital: health capital and human capital, and model explicitly government policies in education and health. The counterfactual simulations show that health policies is an important determinant of intergenerational mobility of income across generations for agents of the bottom of income distribution and there are important interactions between health and education policies.

Introduction

Parental characteristics, such as education, earnings, income, and health are strongly correlated with the same outcomes for children. Estimates of intergenerational elasticity of income, a common measure of intergenerational mobility, varies around 0.4-0.6 for the US – Solon (2002, 2004), Zimmerman(1992), and Mazumder(2005). These estimates imply that if a parent is 10% richer than the average person in the economy, his son is likely to be 4-6% richer as well. Thus, the "lottery" in which family a child is born is very important for his later life outcomes (Chetty et al., 2014).

Recent literature shows that initial (pre-labor market conditions) are very important in determining later labor market outcomes of children. For example, Keane and Wolpin (1997) find that unobserved heterogeneity at age 16, explains about 90% of variation in lifetime utility. Huggett, Ventura and Yaron (2011) find that differences in initial conditions (human capital and wealth) at age 23 are more important than shocks received over the working lifetime for the variation in lifetime earnings, lifetime wealth, and lifetime utility. The key question is of course what determines initial conditions of children.

First, genes, or as it is labeled in the literature, nature matters: parents with better health/ability are more likely to give birth to more healthy/able children. Second, nurture, the environment in which children grow, plays an important role. Family background, such as education, parental abilities, health, and earnings determines the environment in which a child is growing up. If parents are educated, healthy and rich, the child most probably will also be educated, healthy and rich. But what if parents are poor,

¹ yuliya.kulikova@gmail.com, Universitat Autonoma de Barcelona and Barcelona Graduate School of Economics, Barcelona, Spain

not educated or not healthy? Their children are disadvantaged comparing to the children of healthy, educated and rich parents. The government policies then can play a role and try to equalize opportunities for all children, independently of their family background. Providing access to education and to health facilities, government may counteract the role of parental earnings and disadvantaged environment at home.

Education is known to be an excellent social lift (Restuccia and Urrutia 2004, Caucutt and Lochner 2012, Lee and Seshadri 2014). On the other hand, we know almost nothing about how medical policies affect intergenerational mobility and inequality. To the best of my knowledge there are only few empirical papers devoted to this question. Mayer and Lopoo (2008) analyze association of total government spending and intergenerational mobility, using variation in the amount of government spending in different US states. They find that higher government spending reduce the importance of parental income for the economic success of children. Furthermore, Aizer (2013) analyzes empirically the relation between intergenerational mobility and different welfare policies, such as foster care, family planning, income transfer programs, residential mobility interventions, educational interventions and public health. Among all welfare policies she considers, increases in spending on health are most strongly associated with reductions in the importance of family background and declines in inequality in the production of child human capital (measured as PISA test scores among 15 year-olds). Case, Lubotsky, and Paxton (2002) study health-income gradient, i.e. children born to low-income parents tend to be in worse health status than children born to high-income parents and parental investments into health might be an important channel for intergenerational mobility. Finally, O'Brien and Robertson (2015), study how Medicaid expansion of 1980s and 1990s affected intergenerational mobility using geographical variation in policy changes and find a positive, but not very large, effect of Medicaid on mobility. They also find that children born to low-income parents who became eligible to Medicaid after Medicaid expansions are more likely to move upwards. Brown, Kowalski and Lurie (2015) also show that Medicaid expansion affected child's income significantly positively; however they were not studying implications of this for intergenerational mobility. Cohodes, Hendren, Lovenheim and Grossman (2014) explore the same Medicaid expansion of 1980s and 1990s and find that it had a substantial positive effect on child's schooling outcomes. Hence, while there is some evidence that suggests that health is important for intergenerational mobility, there have not been any attempts to understand the mechanisms through which health and health policies affect intergenerational mobility.

Meanwhile the U.S. government spends significant amount of resources on needs-based medical policies. In June 2013, over 28 million children were enrolled in Medicaid and another 5.7 million were enrolled in State Child Health Insurance Program (SCHIP). Yet, according to 2012 National Health Interview Survey, 36% of families with children in the United States experienced financial burden of medical care, such as problem paying medical bills. Poorer families are more likely to experience burden of medical care than the richer ones. In particular, families with income between 139% and 250% of Federal Poverty line (FPL) are affected the most, and this is exactly the group that is not always covered by Medicaid and SCHIP. On the other hand, government policies can also crowd

out family investments (Cutler and Gruber 1996). How do then parents allocate their limited resources between medical expenses and expenditures on other forms of human capital, such as education? Is poor health of children a barrier for upward mobility? How do a large-scale policy intervention, like Medicaid, affect intergenerational mobility and inequality? How do policies on health and education interact? These are the questions I try to answer in this paper.

Aim of the Project

Aim of the project is to understand the relation between health and childhood health policies and intergenerational mobility.

Hypotheses and Methodology

The main hypothesis of the paper is that health is an important channel in transmission of income persistence of generations, and, subsequently, health policies might affect the extent of intergenerational mobility. The additional hypothesis is that health policies interact with educational policies, and thus, should be analyzed together.

To approach the aim of the project, I develop a structural, human-capital based overlapping generations model of household decisions that take into account multidimensionality and dynamic nature of human capital investments. Following Grossman (1972), I model health as a human capital and hence distinguish two forms of human capital: health capital and human capital (ability). I assume that human capital eventually determines person's productivity while health capital determines physical capacity of acquiring and enjoying productivity. I follow Cunha, Heckman and Schennach (2010) and allow for dynamic complementarity and self-productivity of human capital². These two factors produce a multiplier effect since one type of human capital enhances production of the other type of human capital.

Parents decide on consumption and investments into human and health capital of their children. These investment decisions, together with intrinsic health and ability that is correlated across generations, determine future health and productivity of children when they become adults. Health and human capital of adults define their physical ability to work and labor market productivity. I model explicitly governmental policies in education and health. Government provides educational spending on primary and secondary education, as well as income-based subsidies for college education. Furthermore, it provides income-based medical policy that closely mimics Medicaid in the U.S.

To estimate the model I adopt a two-step procedure similar to the one used by Gourinchas and Parker (2002), De Nardi, French and Jones (2010), and Cosar, Guner and Tybout (2016). In the first step I select all parameters that could be assigned without simulating the model (either directly from the data or from previous literature). In the second step, I estimate the rest of the parameters with method of simulated moments,

² Self-productivity means that human capital produced at one stage make further human capital production more efficient. Dynamic complementarity means that levels of human capital investments at different ages are synergistic and fortify each other.

taking the first-step estimates as given. Once the model replicates well a lot of data moments, related to development of human capital and health, educational attainment, insurance market, I run counterfactual simulations of the economy with different policies. Thus, as a main experiment I shut down Medicaid policy and educational policies one by one, as well as all of them together, and analyze the implications of these policy changes for intergenerational mobility.

Results

Results show that Medicaid as well as both education policies (early and late) affects intergenerational mobility in the US. There are important interactions between health and education policies. Changes in both policies have a larger effect than each one in isolation. Especially this interaction effect is important for children of the lowest income quintile. When Medicaid is eliminated using counterfactual experiment, parents face a trade-off between spending their resources on education versus on health of their children. When both college subsidies and Medicaid are eliminated, this trade-off becomes much more significant, especially for poorer households. As a result, we observe that poor households do not invest into early education at all (and also they don't go to college in absence of college subsidies), while richer households substitute health investments (and as a result lower health level) by higher educational spending (and as a result higher ability).

References

- Aizer, Anna, "Rising Inequality and Intergenerational Mobility: The Role of Public Investments in Human Capital", CESifo Economic Studies, 2014.
- Brown, David W., Amanda E. Kowalski, and Ithai Z. Lurie, "Medicaid as an Investment in Children: What is the Long-Term Impact on Tax Receipts?", January 2015.
- Case, Anne, Darren Lubotsky, and Christina Paxton, "Economic Status and Health in Childhood: The Origins of the Gradient", American Economic Review, December 2002, 92 (5), 1308-1334.
- Caucutt, Elizabeth M. and Lance Lochner, "Early and late human capital investments, borrowing constraints, and the Family", Working paper, October 2012.
- Chetty, Raj, Nathaniel Hendren, Patrick Kline, and Emmanuel Saez, "Where is the Land of Opportunity? The Geography of Intergenerational Mobility in the United States", The Quarterly Journal of Economics, November 2014, 129 (4), 1553-1623.
- Cosar, A. Kerem, Nezih Guner, and James Tybout, "Firm Dynamics, Job Turnover, and Wage Distributions in an Open Economy", American Economic Review, March 2016, 106 (3), 625-663.
- Cohodes, Sarah, Samuel Kleiner, Michael F. Lovenheim, and Daniel Grossman, "The effect of child health insurance access on schooling: evidence from public insurance expansions", NBER Working paper 20178, May 2014.
- Cunha, Flavio, James Heckman, and Susanne Schennach, "Estimating the Technology of Cognitive and Noncognitive Skill Formation", Econometrica, May 2010, 78 (3), 883-931.

De Nardi, Mariacristina, Eric French, and John B. Jones, "Why Do the Elderly Save? The Role of Medical Expenses", *Journal of Political Economy*, February 2010, 118 (1), 39-75.

Gourinchas, Pierre-Olivier and Jonathan A. Parker, "Consumption over the Life Cycle", *Econometrica*, January 2002, 70 (1), 47-89.

Grossman, Michael, "On the Concept of Health Capital and the Demand for Health", *The Journal of Political Economy*, March-April 1972, 80 (2), 223-255.

Huggett, Mark, Gustavo Ventura, and Amir Yaron, "Sources of Lifetime Inequality", *American Economic Review*, December 2011, 101, 2923-2954.

Keane, Michael P. and Kenneth I. Wolpin, "The Career Decisions of Young Men", *Journal of Political Economy*, June 1997, 105 (3), 473-522.

Lee, Sang Yoon (Tim) and Ananth Seshadri, "On the Intergenerational Transmission of Economic Status", Working paper, 2014.

Mayer, Susan E. and Leonard M. Lopoo, "Government Spending and Intergenerational Mobility", *Journal of Public Economics*, 2008, 92, 139-158.

Mazumder, Bhashkar, "Fortunate Sons: New Estimates of Intergenerational Mobility in the United States Using Social Security Earnings Data", *The Review of Economics and Statistics*, 2005, 87 (2), 235-255.

O'Brien, Rourke L. and Cassandra L. Robertson, "Medicaid and Intergenerational Economic Mobility", Working paper, 2015.

Restuccia, Diego and Carlos Urrutia, "Intergenerational Persistence of Earnings: The Role of Early and College Education", *American Economic Review*, December 2004, 94 (5), 1354-1378.

Solon, Gary, "Cross-Country Differences in Intergenerational Earnings Mobility", *Journal of Economic Perspectives*, Summer 2002, 16 (3), 59-66.

Solon, Gary, "A Model of Intergenerational Mobility Variation over Time and Place, Generational Income Mobility in North America and Europe", edited by Miles Corak. Cambridge, UK: Cambridge University Press., 2004.

Zimmerman, David J., "Regression Toward Mediocrity in Economic Stature", *American Economic Review*, 1992, 82 (3), 409-429.

Kulkova, Anna¹ (with Ekaterina Borisova²): Cultural Heterogeneity and Trust: Evidence from Naming Patterns in Russia

Abstract: In this paper we aim to study the connection between names and generalized trust in the regions of Russia. Name is a visible sign of cultural identity that determines other people's beliefs about the person holding this name and can form biases in the evaluation of this person's characteristics. Using the data from RLMS 2013 we divide names and patronymics into 3 distinctive cultural categories: "Russian" (typical for traditionally Russian regions of the country), "Muslim" (typical for non-Russian regions like Caucasian republics, Tatarstan, Bashkortostan), and "Other" (culturally different, that cannot be related to one of the previous two categories). Our results suggest that individuals with names and patronymics that differ culturally from the dominant cultural groups in the region demonstrate lower levels of trust than the rest of population. In Tatarstan two cultural identities ("Russian-Orthodox" and "Muslim") are common, understandable and are not associated with decrease in trust, while holders of both other names and patronymics are less likely to be trusting. On the other hand, in Kabardino-Balkaria holders of Russian names and patronymics are not perceived as local and show lower levels of trust compared to purely Muslim majority.

Introduction

It has been widely accepted that cultural heterogeneity negatively affects different socio-economic outcomes. Among them one can name interpersonal trust and collective action (Bandiera et al., 2005), public goods provision (Alesina et al., 1999), common property management (Baland et al., 2007) as well as economic development of regions and countries (Collier, 2000). Negative consequences of heterogeneity are attributed mainly to problems in cooperation between different religious, ethnic and linguistic groups due to differences in norms and values. Moreover, subjective beliefs and stereotypes about other cultural groups could also hamper cooperation (Hoff and Pandey, 2004).

Heterogeneity by names shows similar effects. Name is a visible sign of cultural identity that determines other people's beliefs about the person holding this name and can form biases in the evaluation of this person's characteristics. A well-known theory of discrimination in a labor market suggests that any cultural group different from the majority could expect worse outcomes in terms of salary or opportunities to get a job (Bertrand and Mullainathan, 2004; Fryer Jr. and Levitt, 2004). Besides these well-studied labor market effects, there are only few papers that determine connections between names and other variables. Among them one can name those documenting discrimination in schools, where teachers may "punish" children for their cultural identity (Figlio, 2005), and those that study happiness and probability to have a child before age 25 (Aura and Hess, 2010).

¹ akulkova@hse.ru, National Research University Higher School of Economics, Moscow, Russia

² National Research University Higher School of Economics, Moscow, Russia

To the best of our knowledge, there are no papers that link together names and generalized trust, although the topic of trust determinants is quite popular now. There are amazingly interesting empirical papers on historical prerequisites of interpersonal trust (Nunn and Wantchekon, 2011; Tabellini, 2010), the role of geography (Durante, 2010) and individual characteristics such as income, education, experience of traumatic events, etc. (Alesina and La Ferrara, 2002). There are also papers on trust and biology (Cesarini et al., 2008). Overall we observe an important discussion on trust and norms persistence that assumes there is little we can do to accumulate trust, especially in a short-run perspective.

But apart from these deep roots of trust, there could be some other factors operating in a short-term period. We believe names could be among such factors. Papers on labor market effects of names show a significant and positive influence of the surname change on earnings and probability of being employed (Arai and Thoursie, 2009). Could we observe similar effects for trust?

Aim of the Project

In this paper we aim to study the connection between names and generalized trust in the regions of Russia and to find mechanisms for such connection. We would also like to understand the specifics of names as signs of cultural identity and their difference in comparison with ethnic origin and religion.

Hypotheses and Methodology

Generally we expect to see lower levels of trust among individuals holding names non-typical for the region where they live. To test this hypothesis we use data from Russian Longitudinal Monitoring Survey (RLMS)³ with approximately 23 thousand of respondents for 2013. It was possible to get names and patronymics for the surveyed respondents and code them⁴. We defined 3 categories of names and patronymics: typically Russian, typically Muslim, and others that cannot be related to one of these two categories. This third category includes names that are popular and wide-spread both in Russian and Muslim regions as well as names from other cultures (e.g. Jewish) or those that are rare or unusual. Category for each name and patronymic was chosen on the basis of their historical links to Russian and Muslim regions of Russia and popularity in these regions.

Additionally we made two types of codes for Russian names and patronymics. One is for pure Russian names that are frequent and commonly recognized as Russian. And the other including not only pure Russian names, but also Old Russian names (such as Agrafena or Gerasim), Soviet style names (as Vladlen or Olimpiada) and European that could not be considered as pure Russian (as Zhanna). Most popular names for each of three categories presented in Table 1, while frequencies for the categories in the sample showed in Table 2.

³ More about the survey could be found here: <http://www.cpc.unc.edu/projects/rlms-hse>.

⁴ For the purposes of anonymity protection we haven't seen database with the names. Our codes for different types of names were linked with the database by the RLMS staff.

Table 1. Most popular/frequent names within categories

Russian Name	Freq	Muslim Name	Freq	Other Name	Freq
Aleksandr	994	Rimma	33	Alina	105
Sergey	802	Fatima	33	Ruslan	59
Tatiana	801	Aslan	24	Diana	56
Elena	698	Madina	19	Artur	42
Natalia	625	Rustam	19	Karina	36
Olga	590	Elmira	19	Albina	33
Vladimir	546	Muhammad	18	Roza	31
Aleksey	507	Alim	15	Timur	30
Galina	487	Marat	15	Elvira	23
Svetlana	476	Arsen	12	Milana	22
Valentina	474	Gulnara	12	Nelly	19
Irina	427	Zalina	12	Angela	16
Andrey	413	Islam	10	Albert	14
Anna	413	Nailya	10	Darina	12
Dmitriy	392	Alfiya	9	Maya	12
Ekaterina	382	Radik	9	Elina	11
Nikolay	379	Farida	9	Mark	10
Ludmila	370	Anzor	8	Asya	9
Maria	369	Asiyat	8	Rita	8
Anastasiya	368	Azamat	7	David	7

Table 2.1. Frequencies of names in RLMS-2013

Type of the name	Total Freq (%)	Russian regions Freq (%)	Kazan Freq (%)	KBR Freq (%)
Russian	19,926 (88.47%)	19,487 (92.07%)	311 (47.48%)	128 (18.18%)
Muslim	1,030 (4.57%)	400 (1.89%)	215 (32.82%)	415 (58.95%)
Other	1,568 (6.96%)	1,278 (6.04%)	129 (19.69%)	161 (22.87%)
Total	22,524	21,165	655	704

This table shows frequencies for pure Russian names.

Table 2.2. Frequencies of patronymics in RLMS-2013

Type of the patronymic	Total Freq (%)	Russian regions Freq (%)	Kazan Freq (%)	KBR Freq (%)
Russian	19579 (88.37%)	19,188 (90.62%)	321 (48.86%)	70 (9.94%)
Muslim	1447 (6.53%)	616 (2.91%)	287 (43.68%)	544 (77.27%)
Other	1129 (5.1%)	995 (4.7%)	44 (6.7%)	90 (12.78%)
Total	22155	20,799	652	704

This table shows frequencies for pure Russian patronymics.

Our basic model has a form:

$$Trust_{ij} = Name_{ij}(Patronymic_{ij}) + Controls_{ij}$$

Here $Trust_{ir}$ is generalized trust of individual i leaving in a region j . It's measured according to a standard WVS question: "Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?" $Name_{ij}$ is a given name of this individual, $Patronymic_{ij}$ – his patronymic, and $Controls_{ij}$ include individual and regional level controls that according to the literature can affect individual's trust (age, age squared, gender, education, income, marital status, type and size of settlement, employment). Estimations are made using linear and logistic regression models with subsequent measures of trust. We run regressions for Russian and non-Russian regions as name effects could differ in them. The list of regions in the sample is given in Table A of the Appendix. The sample includes 36 Russian and two historically non-Russian regions – Tatarstan and Kabardino-Balkaria (KBR) which are very different in both ethnic structure and the experience of cohabiting with Russians. For this reason we run separate regressions for Tatarstan and KBR to account for potential differences in the link between trust and names. To get additional insights we use alternative measures for names by constructing 9 categories of name-patronymic combinations (Russian name and Muslim patronymic, Muslim name and other patronymic, etc.). In the models for Russian regions we also control for shares of Muslim and Other names/patronymics to account for potential differences in spreading and popularity of name categories in certain regions.

Results

Generally our results suggest that regions of Russia differ substantively in the way names are associated with trust (see tables 3 and 4 below). While there are almost no differences among holders of different names in traditionally Russian regions, non-Russian regions show more variance. In KBR holders of both Russian names show lower levels of trust than the Muslim majority. In KBR having Russian patronymics is associated with even bigger differences in trust when compared to those with Muslim patronymics. When it comes to name-patronymics combinations, these results still hold and are even more pronounced. In KBR holders of Russian, Muslim and Other names with Russian patronymics are less likely to trust others than those with Muslim names and patronymics. Similar results are for those with other names and both Russian and Muslim patronymics. Interestingly, holders of Russian names with Muslim patronymics do not differ from the Muslim-Muslim majority while individuals with Muslim names with Russian patronymics seem to be less trusting. Patronymics in Russia are usually highly correlated with last names as they are both given after father's first and last names. Thus these results may suggest that individuals with Russian names but local Muslim patronymics are regarded as assimilated in the local community while those with Muslim

names but Russian patronymics could be treated as cultural betrayers moving from the local to Russian culture.

In Tatarstan, where Russians and Muslims have a long history of cohabitation and do not differ substantively in terms of culture (especially in such a big city as Kazan), the differences between holders of Russian names/patronymics and those with Muslim names and patronymics are insignificant. Even individuals with culturally different “other” names do not show lower levels of trust provided that they have either Russian or Muslim patronymics. On the contrary, holders of both other names and patronymics are less likely to trust others in Kazan.

For traditionally Russian regions we observe mostly absence of relationship between names/patronymics and trust. Only holders of Muslim names with other patronymics are less trusting than the Russian-Russian majority. But this result is hard to explain substantially.

Table 3. Trust and Names, Trust and Patronymics (OLS)

	Names (1) Russian regions	(2) Kazan	(3) KBR	Patronymics (4) Russian regions	(5) Kazan	(6) KBR
Names/Patronymics category						
Russian		-0.00 (0.08)	-0.16* (0.09)		-0.00 (0.07)	-0.32*** (0.09)
Muslim	0.02 (0.04)			0.04 (0.03)		
Other	-0.01 (0.03)	-0.04 (0.10)	-0.16* (0.08)	-0.00 (0.03)	-0.09 (0.12)	-0.13 (0.10)
Share of Muslim names	-0.02 (0.01)			-0.02* (0.01)		
Share of Other names	0.00 (0.01)			0.00 (0.01)		
Gender (Female)	0.01 (0.01)	-0.11 (0.07)	0.03 (0.07)	0.01 (0.01)	-0.10 (0.07)	-0.02 (0.07)
Age	-0.01** (0.00)	-0.01 (0.01)	-0.00 (0.01)	-0.01** (0.00)	-0.01 (0.01)	-0.01 (0.01)
Age^2	0.00*** (0.00)	0.00 (0.00)	0.00 (0.00)	0.00*** (0.00)	0.00 (0.00)	0.00 (0.00)
Education	0.01 (0.01)	0.09*** (0.03)	-0.02 (0.04)	0.01 (0.01)	0.09*** (0.03)	-0.02 (0.04)
Income	0.01 (0.01)	-0.09*** (0.03)	0.26*** (0.05)	0.01 (0.01)	-0.08*** (0.03)	0.26*** (0.05)
Currnetly employed	-0.00 (0.02)	-0.01 (0.09)	-0.36*** (0.08)	-0.00 (0.02)	-0.01 (0.09)	-0.36*** (0.08)
Marital status controls	Yes	Yes	Yes	Yes	Yes	Yes
Size of the town controls	Yes			Yes		
Constant	1.76*** (0.09)	1.96*** (0.29)	0.60* (0.34)	1.76*** (0.09)	1.91*** (0.28)	0.65* (0.34)
Observations	16,334	523	572	16,340	525	572
R-squared	0.01	0.05	0.13	0.01	0.05	0.13

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Summing up, differences in trust arise when a person has name or patronymic which is not typical for both Russian and Muslim naming traditions. This may suggest that in Tatarstan two cultural identities (“Russian-Orthodox” and “Muslim”) are common, understandable and are not associated with decrease in trust. On the other hand, in KBR holders of Russian names are not perceived as local and show lower levels of trust. Generally, unusual (for the region) cultural attributes do not allow an individual (and other people) to identify herself as a member of one of these identifiable big social groups, and are associated with lower levels of trust.

Table 4. Trust and Name-Patronymics Combination (OLS)

	(1) Russian regions	(2) Kazan	(3) KBR
Name-Patronymics combination			
Russian-Russian	0.01 (0.08)	-0.30* (0.17)	
Russian-Muslim	0.03 (0.07)	0.07 (0.27)	-0.14 (0.10)
Russian-Other	-0.00 (0.03)	-0.15 (0.20)	-0.42** (0.18)
Muslim-Russian	0.05 (0.12)	-0.13 (0.22)	-0.43*** (0.12)
Muslim-Muslim	0.05 (0.04)		
Muslim-Other	-0.22** (0.11)	0.23 (0.20)	-0.11 (0.14)
Other-Russian	-0.02 (0.03)	-0.03 (0.19)	-0.44** (0.22)
Other-Muslim	0.04 (0.07)	0.04 (0.13)	-0.18* (0.09)
Other-Other	0.06 (0.08)	-0.34** (0.16)	-0.25 (0.20)
Share of Muslim names	-0.02 (0.01)		
Share of Other names	0.00 (0.01)		
Gender (Female)	0.01 (0.01)	-0.12* (0.07)	0.02 (0.07)
Age	-0.01** (0.00)	-0.01 (0.01)	-0.00 (0.01)
Age squared	0.00*** (0.00)	0.00 (0.00)	0.00 (0.00)
Education	0.01 (0.01)	0.10*** (0.03)	-0.01 (0.04)
Income	0.01 (0.01)	-0.08*** (0.03)	0.25*** (0.05)
Currently employed	-0.00 (0.02)	-0.02 (0.09)	-0.35*** (0.08)
Marital status controls	Yes	Yes	Yes
Size of the town controls	Yes		
Constant	1.75*** (0.09)	1.93*** (0.29)	0.72** (0.35)
Observations	16,168	521	572
R-squared	0.01	0.06	0.14

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Our work also suggests that heterogeneity by names could be among factors that influence trust in a short-run. It can be the source of trust destruction. The evidence is suggestive as we clearly understand that we have endogeneity problem typical to all works in the field. We'll make additional steps to overcome it with information about parents' origins of respondents as well as with other datasets. In spite of this there were no results about trust and names in the literature before and, what is even more important, there is an absence of interest for the short-term determinants of generalized trust. Most of the literature is devoted to deep trust determinants. But we believe it's important to better understand sources of trust in a short-run as trust is an important ingredient of growth and well-being.

References

- Alesina, A., Baqir, R., Easterly, W., 1999. Public Goods and Ethnic Divisions. *Quarterly Journal of Economics* 114, 1243–1284.
- Alesina, A., La Ferrara, E., 2002. Who trusts others? *Journal of public economics* 85, 207–234.
- Arai, M., Thoursie, P.S., 2009. Renouncing Personal Names: An Empirical Examination of Surname Change and Earnings. *Journal of Labor Economics* 27, 127–147.
- Aura, S., Hess, G.D., 2010. What's in a Name? *Economic Inquiry* 48, 214–227.
- Baland, J.-M., Bardhan, P., Das, S., Mookherjee, D., Sarkar, R., 2007. Inequality, collective action and the environment: Evidence from firewood collection in Nepal. *Inequality, cooperation and environmental sustainability* 246–274.
- Bandiera, O., Barankay, I., Rasul, I., 2005. Cooperation in Collective Action. *Economics of Transition* 13, 473–498.
- Bertrand, M., Mullainathan, S., 2004. Are Emily and Greg More Employable Than Lakisha and Jamal? A Field Experiment on Labor Market Discrimination. *American Economic Review* 94, 991–1013.
- Cesarini D., Dawes C.T., Fowler J.H., Johannesson M., Lichtenstein P., Wallace B., 2008. Heritability of Cooperative Behavior in the Trust Game. *PNAS* 105, 3721–3726.
- Collier, P., 2000. Ethnicity, politics and economic performance. *Economics & Politics* 12, 225–245.
- Durante, R., 2010, Risk Cooperation and the Economic Origin of Social Trust: An Empirical Investigation, Working Paper, Economic Department, Sciences-Po.
- Figlio, D.N., 2005. Names, Expectations and the Black-White Test Score Gap. National Bureau of Economic Research, Inc, NBER Working Papers: 11195.
- Fryer Jr., R.G., Levitt, S.D., 2004. The Causes and Consequences of Distinctively Black Names. *Quarterly Journal of Economics* 119, 767–805.
- Hoff, K.R., Pandey, P., 2004. Belief systems and durable inequalities: An experimental investigation of Indian caste. World Bank Publications.
- Nunn N., Wantchekon L., 2011. The Slave Trade and the Origins of Mistrust in Africa. *American Economic Review* 101, 3221–3252.
- Tabellini, G., 2010, Culture and Institutions: Economic Development in the Regions of Europe, *Journal of the European Economic Association* 8, 677–716

Appendix

Table A. List of regions in RLMS-2013

Region	Freq.	%	Region	Freq.	%
Leningradskaya obl, Volosovskiy district	503	2.23	KBR, Zolskiy district	704	3.12
Krasnodar	545	2.42	Altai, Biysk	423	1.88
Udmurtiya, Glazovskiy district	563	2.5	Komi, Usinskiy district	530	2.35
Perm krai, Solikamskiy district	598	2.65	Vladivostok	439	1.95
Kalugskaya obl, Kuybyshevskiy district	464	2.06	Amur obl, Tambovskiy district	541	2.4
Tambovskaya obl, Uvarovskiy disitrcit	472	2.09	Saratov obl, Volskiy district	466	2.07
Volgogradskaya obl, Rudnyanskii district	578	2.57	Komi, Syktyvkar	521	2.31
Kazan	657	2.92	Chelyabinsk	510	2.26
Kurgan	409	1.82	Chelyabinsk obl, Krasnoarmeiskiy district	541	2.4
Orenburgskaya obl, Orsk	568	2.52	NNovgorod	602	2.67
Chuvashiya, Shumerlya	623	2.76	Penz obl, Zemetchinskiy district	459	2.04
Stavropolie, Georgievskiy disitrcit	551	2.45	Krasnodar krai, Kushevka	734	3.26
Altaiskiy krai, Kuryinskiy district	584	2.59	Smolensk	339	1.5
Krasnoyarsk	534	2.37	Tula	464	2.06
Tverskaya obl, Rgev	470	2.09	Rostovskaya obl, Bataisk	536	2.38
Saratov	506	2.25	Moscow	2,124	9.43
Tomsk	566	2.51	SPb	578	2.57
Lipetsk	734	3.26	Moscow obl	1,166	5.17
Krasnoyarsk krai, Nazarovskiy district	537	2.38	Novosibirsk obl, Berdskiy district	395	1.75
Total	22,534				

Lombardi, Claudio¹: Network Models for Digital Services: a Study on Market Power

Abstract: This paper proposes a novel approach to the analysis of market power in the digital sector, through the examination of the governance mechanism (contractual network models) selected by the undertakings in a relevant market. In particular, this paper will use as case studies the e-book and the Booking.com decisions, delving into the structure of the agreements concluded among the undertakings in each case.

Introduction

The Industrial Organization (IO) literature defines market power in terms of the ability of an undertaking to introduce a deviation from the price or quantity obtained from the competitive situation in the market in which the transaction takes place. Even when competition enforcers look at the commercial power of an undertaking to evaluate its market power, the classical and neo-classical economics vision of the economy as a process of voluntary exchange between individuals has traditionally taken a quite narrow vision focusing on the dyadic exchange between two actors, the buyer and the seller, one transaction, and a choice of internal or contractual mechanisms of coordination. The underlying assumption of this approach is that competitive markets - markets with multiple, self-interested players on both sides, armed with relatively full information- will choose the optimal governance structure, in the absence of any bargaining power arising out of private monopoly or imperfect information. However, these approaches have proved to be insufficient to fully explain the extent of the market power in certain situations, especially in the digital sector. The Microsoft case, for instance, has shown that market power assumes a particularly fluid form in the digital sector. By the same token, a two-sided intermediary, such as Google shopping, shows that the economic definition of the relevant market(s) is wrapped in uncertainty, as each side of a multisided intermediary requires an independent substitutability analysis. By contrast, this paper suggests that market power may also be defined as the ability to dictate the governance form of each side of the platform. Undertakings at each side of the market, may be forced to accept unfavourable conditions to enter or to maintain a business relationship. This situation may be the result of the presence or lack of a best outside alternative to an agreement for one of the parties, which allows the other to either substitute the business partner or impose a 'take-it-or-leave-it' term. The classical formulation of contract theory assumes that individuals negotiate agreements in their respective best interests and agree terms that impose discrete performance obligations on each party, through a process of offer and acceptance². In this account, a contract is a dyadic relationship between two discrete individuals and produces effects only between them. Moreover, contract law scholars show very diverse positions on the effects of bargaining power on

¹ clombardi27@gmail.com, clombardi@hse.ru, National Research University Higher School of Economics, Moscow, Russia

² One of the first to thoroughly describe and criticise the classical account of contract theory was Patrick S Atiyah, 'Contracts, Promises and the Law of Obligations' (1978) 94 Law Quarterly Review 193.

B2B agreements³. Similarly, the classical and neo-classical economics vision of the economy as a process of voluntary exchange between individuals focuses on the dyadic exchange between two actors, the buyer and the seller, one transaction, and a choice of internal or contractual mechanisms of coordination⁴. This relational view of transactions does not completely abstract the institutional arrangements to which these are often embedded, but such underlying institutional frameworks are not considered explicitly in the context of an analysis that is heavily influenced by marginalist thinking and a focus on how the level of uncertainty affects the governance choice for each marginal transaction. In this theoretical framework, uncertainty increases in the presence of asset specificity and transactions are carried out by other means than markets and placed instead in terms of contract mechanisms of coordination. At its limit, transactions can only be performed inside firms in hierarchic structures, leading to vertical integration. The framework is derived from the “discrete alignment principle” as specific organization forms are chosen in an effort to align governance structures with exchange attributes so as to minimize transaction costs⁵. The concept of “network” covers situations of relational contracting, quasi-integration or other forms of “quasi-market”⁶. The activities and tasks of the different members of the network are not coordinated solely by the price mechanism, as is the case for markets, nor by a designed administrative or management structure derived from property rights or more broadly residual rights of control, like in situations of hierarchy. The specific features of a “network order” are the trust, loyalty and reciprocity that exist between its different members, which may harden “the arteries of the marketplace” but do not immediately lead to situations of bureaucratic control⁷. The existence of a long-term relationship between the different nodes of the network is a pre-requisite for its formation. However, the distinction between networks and hierarchies should not be overstated. Networks may evolve towards a loose form of hierarchy as they are subject to cyclical developments, following which the most powerful participants may bring the network itself under control⁸. For instance, empirical studies on agro-related businesses indicate that contracts (and networks), instead of markets, constitute the most prevalent mechanism of governance observed in the food sector⁹.

³ Albert Choi and George Triantis, ‘The Effect of Bargaining Power on Contract Design’ [2012] Virginia Law Review 1665, 1669.

⁴ Oliver E. Williamson. *The Mechanisms of Governance* (Oxford University Press, 1996).

⁵ Oliver Williamson, Comparative Economic Organization: The Analysis of Discrete Structural Alternatives”, (1991) 36(2) *Administrative Science Quarterly*, 269-296.

⁶ W.W. Powell, Neither Market nor Hierarchy: Networks Forms of Organization, (1990) 12 *Research in Organizational Behavior* 295; C. Menard, “The Economics of Hybrid Organizations”, (2004) 160 *Journal of Institutional and Theoretical Economics* 345

⁷ H.B. Thorelli, Networks: Between Markets and Hierarchies, (1986) 7 *Strategic Management Journal* 37.

⁸ H.B. Thorelli, Networks: Between Markets and Hierarchies, (1986) 7 *Strategic Management Journal* 37.

⁹ See, James MacDonald et al, Contracts, Markets, and Prices: Organizing the Production and Use of Agricultural Commodities, USDA Agriculture and Economic Report, No. 837 (2004) (finding that traditional spot markets, though they still govern nearly 60 percent of the value of agricultural production, have difficulty providing accurate price signals for products geared to new consumer demands (such as produce raised and certified as organic or identity-preserved crops modified for special attributes) and predicting a continuing shift to more explicit forms of vertical coordination, through contracts and processor ownership, as a means to ensure more consistent product quantity and quality).

This relational view of transactions typically leads public authorities to focus on “superior bargaining power” or the “economic dependence” of one party on the other.

The cases that this paper analyses have two main factors in common, the presence of contract terms that limit the inter and intra platform competition (generally addressed as retail MFNs), and a governance structure of the industry determined by coordination or by captive relationships that defines the adoption of certain types of contracts (such as agency contracts or collaboration agreements). Little attention, for instance, has been given by national antitrust authorities to the structure of the relationship between the online travel platform Booking.com and the affiliated hotels. The main concern of the antitrust investigations were the so-called “parity clauses” used by Booking.com in contracts with hotels. According to these parity clauses (also called Most Favoured Nation clauses), hotels were not allowed to offer rooms at a lower price or better conditions than those offered on Booking.com’s platform. However, besides these terms, Booking, as well as other OTAs, has introduced a number of other innovations in its relationship with travel agents. The OTAs indeed do not replicate online what traditional travel agencies do, as for instance they advertise the hotel names and are often used to sell unoccupied rooms. The analysis of the relationship between OTAs and hotels reveals that they have established a business partnership (not an agent-principal relationship) where MFNs may even be beneficial to both parties, if for instance related only to unoccupied rooms. However, long term agreements are prone to modifications dictated by imbalances of bargaining power or by economic dependence, thus giving rise to abuses. Moreover, besides the MFN clauses, it is acknowledged that Booking was able to “strategically module the level of fees to hotels, in order to foreclose other competitors”. Assumingly, Booking was able to impose these terms, and impose modifications and variations of the same, almost without any negotiation, due to a combination of lack of valid outside alternatives for the hoteliers and to a network effect that increased the importance of the platform at the increase of the number of its members. On the other hand, the fact that Booking was able to impose standard contractual terms limiting the independent price policies of the hotels may pose doubts also on the capacity to compete inside the platform. In this connection, the traditional market power model, used by the national antitrust authorities involved in this investigation, does not explain under what conditions not only inter-platform competition but also intra-platform competition is impeded. In view of the consolidation of the industry (in Italy, for instance, there were two online operators covering the 80% of the online market), the intra-platform competition becomes a topical issue that competition regulators and enforcers should not neglect.

In a second case, the national antitrust authorities have analysed again MFN clauses reaching similar conclusions as in the Booking case, but for reasons that appear still blurry. The case in point is the Apple e-book, where the MFN clauses were not bargained by the dominant undertaking in the relevant market (Amazon) but rather by a new entrant. How this was possible has not been explained. The contractual network model instead helps giving an explanation of a collaborative form of network that gains market power through the imposition of a particular governance form, that in the specific case culminates in a series of agency agreements. On the basis of this model, market power is

not only the result of the ability of an undertaking to introduce a price or quantity deviation but in general to bend the terms of the commercial relations and of the network governance as a whole.

Aim of the Project

This paper aims to give an alternative definition of market power for multi-sided platforms in the digital sector. The project will disentangle the relationships between market actors, unveiling the governance structure they select and the nature of their relationships (captive, relational, modular or hierarchical). The definition of market power proposed, therefore, transcends the calculation of market shares and the ability to introduce a deviation from the price or quantity obtained from the competitive situation in the market in which the transaction takes place. By contrast it focuses on the analysis of the governance structure determined by the network and the power to impose the adoption of a particular structure or its modification. Thus, this research wants to benefit from the wide knowledge and expertise generated by the New Institutional Economics (in particular through the legacy of Williamson and Macneil) and extend its reach to markets and contractual relationships that are hardly explained by the current theoretical framework.

Hypotheses and Methodology

The classical and neo-classical economics vision of the economy as a process of voluntary exchange between individuals focuses on the dyadic exchange between two actors, the buyer and the seller, one transaction, and a choice of internal or contractual mechanisms of coordination. By contrast, this project assumes that, in particular in case of multi-sided platforms, the dyadic relationship loses significance if it is not analysed as part of the wider network of contracts that decides the overall governance structure.

In order to do so, I will adopt a mixed methods approach, combining quantitative and qualitative analysis with desk-based research. The research on case studies will serve to analyse and describe the general structure of these markets and to examine the actual dynamics taking place when two diametrically opposite governance structures are adopted.

The first dimension of the research will describe the current theoretical tools of New Institutional Economics to analyse the governance structure and the market power of firms in multi-sided markets.

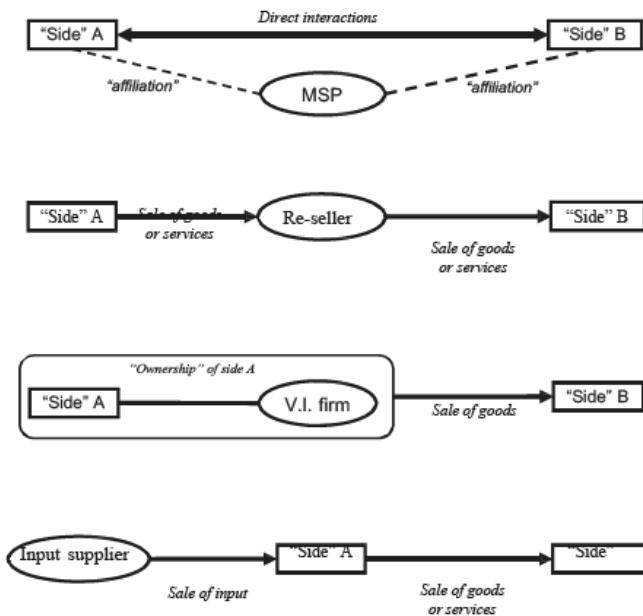
The second dimension aims to define the state of the art of the regulatory responses to situations of market power and its abuse in these markets. The aim is to have a complete picture of the positive law and the soft law regulatory tools that the two markets display.

The second dimension of the project will examine the actual structure of the governance model adopted by the selected organizations. The aim is to disentangle the relationships among the different market actors that qualify the network, and examine the origin of superior bargaining power in order to study its effects on the market. This research will require the analysis of the network structure, also by collecting information

about the cross-ownership of market actors and their contractual relations. Moreover, the analysis of the effects will also rely on price transmission, levels of innovation and choice. Information about current prices will be mainly obtained through existing databases and information published by competition and other authorities. In this respect, one of the aims of this study is also to collect first hand data possibly through semi-structured interviews and case enquiries.

With regard to the methodological approach to the analysis of multi-sided platforms, the research will be mainly desk based and will rely in particular on the definition of multi-sidedness recently refined by Hagiu and Wright¹⁰. Here, a two-sided platform is identified by the fact that the two sides have a “direct interaction” in the sense that they control the main variables of the transaction and the platform acts as an intermediary. Typically, in MSPs the seller retains ownership of the goods traded through the platform while pure resellers holds all the rights, included the ownership.

Fig. 1. MSPs vs. alternative business models.



¹⁰ Andrei Hagiu and Julian Wright, ‘Multi-Sided Platforms’ (2015) 43 International Journal of Industrial Organization 162. Other notable theories being: Jean-Charles Rochet and Jean Tirole, ‘Two-Sided Markets: A Progress Report’ (2006) 37 The RAND journal of economics 645; David S Evans and Richard Schmalensee, ‘Markets with Two-Sided Platforms’ (2008) 1 Issues in Competition Law and Policy (ABA Section of Antitrust Law) <available at <http://papers.ssrn.com/abstract=1094820>> accessed 27 April 2015; Mark Armstrong, ‘Competition in Two-Sided Markets’ (2006) 37 The RAND Journal of Economics 668; Marc Rysman, ‘The Economics of Two-Sided Markets’ (2009) 23 The Journal of Economic Perspectives 125.

Results

This research aims at giving a new interpretative key of market power in multi-sided platforms. The theoretical framework and the qualitative analysis will result therefore in an interpretative proposal that could be used by law enforcers (especially antitrust authorities) and law makers as an additional tool for the assessment of market power.

References

- Amstutz M and Teubner G (eds), *Networks: Legal Issues of Multilateral Co-Operation* (Hart Publishing 2009)
- Armstrong M, 'Competition in Two-Sided Markets' (2006) 37 The RAND Journal of Economics 668
- Atiyah PS, 'Contracts, Promises and the Law of Obligations' (1978) 94 Law Quarterly Review 193
- Baumol W. J., *The Free-Market Innovation Machine: Analyzing the Growth Miracle of Capitalism* (Princeton University Press 2002)
- Bishop S., Walker M., *The Economics of EC Competition Law: Concepts, Application and Measurement* (Thomson Reuters 2010)
- Bohannan C., Hovenkamp H., *Creation Without Restraint: Promoting Liberty and Rivalry in Innovation* (Oxford University Press 2012)
- Daintith T and Teubner G, *Contract and Organisation: Legal Analysis in the Light of Economic and Social Theory* (Walter de Gruyter 1986)
- Evans DS and Schmalensee R, 'Markets with Two-Sided Platforms' (2008) 1 Issues in Competition Law and Policy (ABA Section of Antitrust Law) <available at <http://papers.ssrn.com/abstract=1094820>>
- Hagiu A and Wright J, 'Multi-Sided Platforms' (2015) 43 International Journal of Industrial Organization 162
- Macneil IR, 'Relational Contract: What We Do and Do Not Know' (1985) 1985 Wisconsin Law Review 483
- Ogus AI, *Regulation: Legal Form and Economic Theory* (Hart 2004)
- Rochet JC and Tirole J, 'Two-Sided Markets: A Progress Report' (2006) 37 The RAND journal of economics 645
- Rysman M, 'The Economics of Two-Sided Markets' (2009) 23 The Journal of Economic Perspectives 125
- Teubner G and Collins H, *Networks as Connected Contracts* (Hart Pub 2011)
- Williamson OE, *Markets and Hierarchies, Analysis and Antitrust Implications: A Study in the Economics of Internal Organization* (Free Press 1975)

Mitrokhina, Evgeniya M.¹: How Political Business Cycles in Autocracies Depend on Institutions

Abstract: *Elections are the most popular mechanism for voters to influence policy by choosing the most efficient politicians. If citizens are not satisfied with current policy they have opportunity to change the incumbent during the next elections. Usually the right of initiative is attributed to legislatures (in most countries parliaments have right to propose laws and polices), though government and head of state also may have opportunity to make law proposals. Changes in policy may be connected and attributed to forthcoming elections, assuming that one of the main aims of an incumbent is reelection and further staying in power. Thus, to remain in office policymakers have to carry out a course that maximizes the utility of their electorate. That is why changes in government strategy may be connected with forthcoming elections; as a result policy is cyclic. It is highlighted in literature that in democracies institutions reduce political business cycles. Political and financial institutions give voters opportunity to control government. Although, political cycles are the attribute of democracy empirical works find out cycles in autocracies too. However, nondemocratic countries are not the same. There are dictatorships where all decisions are made by one person and autocracies where political institutions are present. In the paper I would like to check how political institutions in non-democratic countries influence political cycles in the countries. To do that, I plan to collect a database containing information about taxation/budget expenditures and political institutions in autocracies. As a main method to check the hypothesis about connection between institutions and political cycles in autocracies regression analysis of panel data will be used.*

Introduction

Elections allow voters to influence policy. If citizens are not satisfied with current policy they have opportunity to change the incumbent during the next elections. Usually the right of initiative is attributed to legislatures (in most countries parliaments have right to propose laws and polices), though government and head of state also may have opportunity to make law proposals. Changes in policy may be connected and attributed to forthcoming elections, assuming that one of the main aims of an incumbent is reelection and further staying in power.

Because of the fact that incumbents are interested in reelection that is why they try to manipulate voters' opinion. One of the ways is to carry out a political course that maximizes the utility of their electorate. Usually the changes occur before elections (raise of economy), however, after the elections there is economic recession. The process is called political cycle.

Political cycles may lead to long recession and inefficient public spending. But at the same time there is some electoral pressure on candidates or parties that make elections competitive. Unfortunately, the absence of political cycles can be a sign of non-competitive elections that may be the consequence of lack of democracy. At the same time

¹ emmitrokhina@gmail.com, National Research University Higher School of Economics, Moscow, Russia.

empirical research considering authoritarian countries confirm that political cycles present in the countries with the type of political regime too (Wright, 2011).

It is worth to mention that there are different authoritarian regimes. There are countries where political institutions do not exist (or there are few of them) and political power is concentrated (for example a dictatorship). On the other hand, there are countries determined as autocracy but political institutions (such political parties, parliament and others) exist there. The institutions serve for citizens as a mechanism for keeping promises (given by the dictator). Thus, the research question is whether existence of political institutions will increase political cycle in autocracies?

Aim of the Project

In the research I would like to understand what impact institutions have on political cycles in autocracies. The main aim is to understand whether it is true that political cycle will be increased in those countries where there are more political institutions, although the political regime in the countries is not democratic.

Hypotheses and Methodology

The connection between elections and policy has been analyzed on the basis of different theoretical frames. One of them is Political Cycle Theory (or Political Business Cycle Theory) that was developed in the 70s. There are two trends that describe the same phenomena in the frame of Political Cycle Theory but from different angles.

The first one is *Opportunistic Political Business Cycle* was introduced by William Nordhaus (1975). According to his model the main goal of an incumbent is to maximize probability of reelection. It is assumed that voters make a decision based on recent economic performance of an incumbent. The actor chooses the course which attracts as many voters as possible. Therefore the incumbent expand the economy before and tighten it after elections. Inflation and unemployment perform as an indicator of efficient policy for voters. That is why economic structure is presented by non-stochastic generalized Phillips curve (relationship of inflation and unemployment) adjusted for expectations. It is suggested to be a benefit for an incumbent if inflation and unemployment cycles decline before and increase right after elections.

The model shows that voters make their decision based on the economic policy of the incumbent in the recent past that is why they have adaptive expectations. Thus, incumbent needs to stimulate the economy through expansionary monetary policy before the elections to maximize her utility or in other words to be reelected. That is why politicians that are in power try to satisfy the interests of the voters during the election (especially the period of a campaign). However, after the reelection of the incumbent its policy changes. Saving in the beginning and spending at the end of term being in power. In the next election cycle the same behavior is repeated so the cycle is formed.

It is suggested that voters think retrospectively and identically, that means that they elect government evaluating its past economic performance. The supposition reflects voters' adaptive expectations (that is why the Nordhaus' model is called irrational). Because of the suggestions about policymaker's desire to win elections and voters'

irrationality political actors choose the political course which attracts as many voters as possible. To respond preferences of most of citizens there is need to expand the economy before and tighten it after elections.

To a certain extent the irrationality of voters (retrospective expectations making a decision) is a problem of first models of Political Business Cycles. The reason is that in reality voters will not elect a candidate if they understand that improvements in economic situation are temporary. That is why an assumption about competence of incumbent has been introduced. The information about competence of a parliament (or a candidate) is incomplete. They make a decision based on the previous performance of an incumbent. The information is used as an indicator of competence. The assumption that voters also think about the future rationalize their decision.

Thus, Rogoff and Sibert (1988) pay attention to fiscal policy that may be used by incumbent as a tool for manipulations to change voters' opinion and influence their decision. They introduce independent monetary authorities that control economic policy. Thereby there is no one political actor that chooses and controls policy but several simultaneously acting elected political bodies. The political cycle reflects the interaction of these different actors. According to the Rogoff and Sibert's model of political cycles future government reveals its type to voters by changing the budget structure. The presence of the political cycle also depends on the size of budget spending on social and economic policy in relation to the economy as a whole (which also depends on the relative strength of monetary authorities and elected politicians).

It is assumed that voters respond to electoral manipulations because they have incomplete information about the characteristics of the potential politicians. Politicians' manipulations provide some information (perform as a signal for voters). On the basis of the available information voters make a decision so an opportunistic cycle appears. It is also taken into account that voters are heterogeneous. Firstly, the utility for each individual depends on various economic variables. Second, for different groups of voters (the division of the territory, nationality, etc.) the utility depends on public goods that are provided by the state. Therefore, only those voters, who have access to public goods and get them, have preferences for candidates or political parties. In this model, the basic conflict of interest arises between the voter, maximizing their utility function and political actor who wants to be reelected.

Based on the same assumptions that Rogoff and Sibert have introduced Persson and Tabellini (2000) assume that electoral manipulation are possible even in the case of asymmetric information and rational expectations of voters. Phillips curve is used as a base for the analysis as well as in other models. At the same time, it is suggested that various political actors have different competences .They define the competences as a government's ability effectively manage the economy.

Competences in this model are random because their existence depends on the nature of problems that a government faces. Also competences are fixed in time because it is suggested that if a government is able to solve a problem once it could manage the same problem in the future. Combined with asymmetric information about incumbents' intentions information and its competences the model explains how effectively various

governments can manage the economy. At the same time, there is uncertainty in elections outcome that is why a political cycle appears. It is also mentioned that incumbent is able to control inflation directly.

The theories discussed above were proposed for developed democracies where economic institutions (such as Central Bank) are independent from political actors. In non-democratic countries the independence cause doubts. Adi Brender and Allan Drazen (2005) study young democracies concentrating their attention on states' fiscal policy. The research has shown that incumbents may manipulate electorate using fiscal instruments. The authors explain the operations by lack of voters' experience.

Akhmed Akhmedov and Ekaterina Zhuravskaya (2004) have tested political cycle theory in regions of Russia, using data about governors' elections from 1991 to 2001. They found out that size of political cycle depends on the level of democracy, media freedom, and transparency of government actions.

Thus, the research hypothesis is

H1: existence of political institutions (in an authoritarian regime) will increase size of political cycle.

To test the hypothesis I plan to collect a dataset that will contain information about a country's political regime (democracies also have to be included in the dataset for comparison). For the purpose I plan to use polity index as well as indicator institutionalization of autocracy (from Polity IV project) as main independent variable. I have not decided yet on what kind of policy to concentrate in the research: fiscal or monetary. On the decision depends the choice of dependent variable whether it is taxation or budget expenditures (the source for the data – World Bank Database). Some other country characteristics will be included in the model as a control variables.

One of the best ways to test the existence of cycles is use panel regressions. An important advantage of panel data is that they allow us to analyse various objects in different periods of time and control unobserved regional characteristics. Now I assume to use the following specification (it is very simple, because I am not sure in set of variables yet).

$$y_{it} = (X_{it}, Z_{it})\beta_i + \alpha_i + e_{it}$$

Where:

y_{it} is taxation or budget expenditures share in country i in year t ,

X_{it} is a vector of institutionalization of an autocracy,

Z_{it} is a vector of control variables,

α_i is regional-specific effect,

e_{it} is IID.

Expected Results

The research is still on the initial stage there is need to work on the model specification, to understand what should perform as a dependent variable (what kind of policy is better to examine in non-democratic countries). However, according to the

literature I expect that institutions have impact on size of political cycle (I still have to decide what institutions to check). The project will have a contribution to the field because there have not been papers considering several autocracies (advantage of panel data). It is very important to understand how political institutions work in context of non-democratic countries. Because in democracies it is supposed that institutions reduce the size of the cycle, at the same time in autocracies they may be a guarantee for implementation of policy promises given by the dictator. That is why existence of institutions (and their composition) will decrease the political cycle.

References

- Akhmedov, A., & Zhuravskaya, E. (2004). Opportunistic political cycles: test in a young democracy setting. *The Quarterly Journal of Economics*, 1301-1338.
- Breider, A., & Drazen, A. (2005). Political budget cycles in new versus established democracies. *Journal of Monetary Economics*, 52(7), 1271-1295.
- Nordhaus, W. D. (1975). The political business cycle. *The review of economic studies*, 42(2), 169-190.
- Persson, T., & Tabellini, G. (1999). Political economics and macroeconomic policy. *Handbook of macroeconomics*, 1, 1397-1482.
- Rogoff, K., & Sibert, A. (1988). Elections and macroeconomic policy cycles. *The review of economic studies*, 55(1), 1-16.
- Wright, J. (2011). electoral spending cycles in Dictatorships. Manuscript, Pennsylvania state university.

Nurbayev, Daniyar¹: The Impact of Voice and Accountability on Economic Growth

Abstract: Today, it is widely believed that good governance leads to economic growth. This paper empirically determines the effects of voice and accountability, which is one of the dimensions of good governance, on economic growth. There are limited numbers of literature that have already done an empirical research on this subject, and drawback of existed literature is that they fail to account for non-stationarity and for the endogeneity between variables, and in this paper employ the dynamic System Generalized Method of Moments estimator to address these econometric limitations. I used balanced panel data covering 121 developed and developing countries for the period 2002-2014. The results suggest that the ability of the citizens to express their opinions and the government accountability and free media are one of the determinants of the economic growth.

Introduction

In the beginning of 1990's, along with the fall of the Berlin Wall and the dissolution of the Soviet Union, a new "good governance" concept was emerged. Since then a large amount of research has been made on this issue, which has become an important concept in the international development debates. This concept is used to explain why some countries with a large endowment of resources are struggling for economic and political development.

Although it has been more than a quarter of the century since the concept was emerged, there is no consensus among researches about the definitions of "governance" (Weiss, 2000). Grindle (2007) in his research provides a list of definitions of "governance" and "good governance". For example, World Bank's good governance definition "*is epitomized by predictable; open, and enlightened policymaking; a bureaucracy imbued with a professional ethos; an executive arm of government accountable for its actions, and a strong civil society participating in public affairs; and all behaving under the rule of law*". From this definition, we can understand that, to assure good governance, the government needs to carry some important characteristics.

Kaufmann et al. (1999) has distinguished six main characteristics (or dimensions) of governance: Voice and Accountability, Political Stability, Government Effectiveness, Regulatory Quality, Rule of Law, and Control of Corruption. In this research, I try to determine the effect of Voice and Accountability (V&A) on the economic growth. V&A is a very important dimension of good governance, and Kaufmann et al. (1999) defines it as an ability of the citizens to improve the government accountability, that influences the government decisions or even changes the government through citizens' freedom of expression and a free media. To have better understanding of V&A, it is preferable to consider "Voice" and "Accountability" as two different concepts.

"Voice" is the capacity of the country's citizens to express their preferences, and opinions and to demand proper actions from the government. Citizens can express their

¹ d.a.nurbayev@gmail.com, Eurasian Research Institute, Almaty, Kazakhstan

needs by demonstrations, by free media, by voting and by participating in government processes. On the other hand, "Accountability" is the relationship between two parties, and mostly it is the relationship between the government and citizens. Citizens' with a strong voice able to choose a government that guarantees satisfaction of their needs and in order to have a control on the governing processes they require higher accountability and transparency from the government. The government to safeguard their position forced to become more accountable and transparent.

Economic development mostly depends on the policies and actions of those who govern the country. In the society with higher V&A, people can influence and change the government if its policies do not satisfy people's needs and do not lead to economic development. Thus, in the countries with high V&A, those who can guarantee economic development can displace the incumbent government that cannot ensure economic development.

Aim of the Project

The aim of the project is to empirically analyze effect of V&A on economic growth. There is extensive literature that explore this issue (Kaufmann et al., 1999; Bird and Martinez-Vazquez, 2008; Khan, 2007). This paper contributes to the literature by using system-GMM (Generalized Method of Moments) estimator rather than previously used OLS estimator, which has some empirical limitation.

Hypotheses and Methodology

Sample uses balanced panel data covering 121 developed and developing countries for the period 2002-2014. The source of V&A is the World Bank's World Governance Indicators (WGI) developed by Kaufmann et al. (2010). As an indicator of the economic growth, we use log of GDP per capita (constant 2005US\$) from World Bank's World Development Indicators (WDI). We also use other control variables: log inflation, population growth, log openness and foreign direct investment (FDI). Other control variables are also from WDI. For the inflation, we use consumer price index, also in order to avoid heteroskedasticity problems, resulting from the high variability of inflation rates, inflation was defined as $\log(1+CPI/100)$. Population growth is an annual population growth for each country. While for openness measure, we use the share of total trade (exports plus import) in GDP. Descriptive statistics of the variables are in Table 1.

Table 1: Summary Statistics for the Variables

VARIABLES	N	mean	sd	min	max
lngdpc	1,552	8.392	1.519	4.904	11.14
vaa	1,513	0.0301	0.981	-2.224	1.826
pgrwth	1,573	1.375	1.677	-2.258	17.62
fdi	1,545	0.0449	0.0575	-0.175	0.628
open	1,546	4.310	0.494	2.746	6.121
lncpi	1,525	0.0564	0.0581	-0.103	0.737

Note 1: lngdpc - log of GDP per capita; vaa – V&A; pgrwth - Population growth; fdi- foreign direct investment; open – openness; lncpi – log of Consumer price index; sd - standard deviation

I employ the following equation:

$$\ln \text{gdpc}_{it} = \alpha + B_0 \ln \text{gdpc}_{i,t-1} + \beta_1 \text{vaa}_{it} + B^* X_{i,t} + \nu_i + \mu_t + \varepsilon_{it}$$

where $\ln \text{gdpc}_{it}$ is the natural logarithm of GDP per capita at constant prices, $X_{i,t}$ is a vector of determinants of economic growth, $\ln \text{gdpc}_{i,t-1}$ is lagged dependent variable, vaa_{it} is V&A indicator, ν_i is country-specific effects, μ_t is period specific effects, and, ε_{it} is the error term.

Dynamic panel GMM estimator, developed by Arellano and Bond (1991), overcomes the problems of the OLS estimator and helps to control endogeneity issue of all explanatory variables. This estimator uses first differencing to remove the specific effects of countries. In their research Blundell and Bond (1998) noted that if the time series are persistent, then lagged levels are weak instruments for first-differences. This issue is typical for the empirical growth models as in our model, and we use system GMM estimator proposed by Arellano and Bover (1995), Blundell and Bond (1998) to overcome the problem. System GMM uses lagged values of the first-differences of the variables as instruments for equations in levels composed with the usual approach. The stationarity test (not reported) shows that some of the variables exhibit unit root process, which proves that system GMM is preferable estimator. In this research, we hypothesize that higher V&A leads to higher economic growth.

Results

Regression results achieved by system-GMM estimators show that higher V&A leads to higher economic growth. Table 2 shows that effects of V&A on the economic growth are statistically significant. V&A coefficient is 0.0027 which means that every percent increases (decreases) in V&A will increase (decrease) log of GDP per capita to 0.27%. Almost all control variables show an expected result. Population growth negatively affects the economic growth, while openness and FDI have a positive effect. According to the table, inflation has a positive effect on the economic growth and the result is significant. That is unexpected result, because it is widely believed that inflation and the economic growth have a negative relation. Regression that was made by OLS, Fixed Effect does not show the relation between V&A and the economic growth. In the Fixed Effect regression, among all explanatory variables, only FDI was statistically significant. In Table 2 you can also see diagnostic tests of the appropriateness of the instruments used. According to the Roodman (2009), a validity of the instruments requires the absence of second-order serial correlation in the residuals, and the reported AR(2) fails to reject a null hypothesis of no serial correlation. The Sargan test rejects the null hypothesis that the set of instruments is appropriate. However, according to the Roodman (2009), the Sargan test require homoscedastic errors for consistency, while our panel data heteroscedastic, due to the fact Sargan test is not consistent. The Hansen test cannot reject the null hypothesis that the set of instruments is appropriate, which indicates that the model is adequately

specified. There is no robustness test, but I plan to perform the robustness check in the final version of the paper.

Table 2: Regressions between V&A and growth

VARIABLES	OLS	Fixed Effect	System GMM
L.lngdpc			0.993*** (0.00368)
vaa	0.0483 (0.0366)	-0.0158 (0.0239)	0.00268** (0.00106)
pgrwth	-0.132*** (0.0225)	0.00562 (0.00574)	-0.00654*** (0.00112)
fdi	1.423** (0.620)	0.232** (0.0967)	0.228*** (0.0383)
Open	0.0830 (0.0717)	-0.0174 (0.0141)	0.0143*** (0.00506)
Lncpi	-12.18*** (0.705)	-0.0847 (0.110)	0.259*** (0.0395)
Constant	8.784*** (0.312)	8.423*** (0.0620)	
Observations	1,418	1,418	1,312
Arellano-Bond test for AR(1) in first differences:			z = -1.14 Pr > z = 0.254
Arellano-Bond test for AR(2) in first differences:			z = 0.58 Pr > z = 0.561
Sargan test of overid. restrictions:			chi2(105) = 345.94 Prob > chi2 = 0.000
Hansen test of overid. restrictions:			chi2(105) = 111.32 Prob > chi2 = 0.318

Note: Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

The results suggest that the ability of the citizens to express their opinions and the government accountability and free media are one of the determinants of the economic growth. The results of the research may be an important incentive to the governments and world development organization to improve this good governance dimensions. For the countries with low V&A, it may be crucial to provide external assistance by the international development organizations to improve this good governance dimension. Because in this countries the government may not be willing to improve citizens' V&A, because with increased V&A citizens may choose to displace incumbent government.

References.

- Weiss, T.G. (2000) 'Governance, Good Governance and Global Governance: Conceptual and Actual Challenges'. Third World Quarterly, Vol. 21, No. 5
- Grindle, M. (2007) Good enough governance revisited. Development Policy Review, Vol. 25, No. 5
- Kaufmann, Daniel & Kraay, Aart & Zoido-Lobaton, Pablo, 1999. "Governance matters," Policy Research Working Paper Series 2196, The World Bank.
- Kaufmann, Daniel & Kraay, Aart & Mastruzzi, Massimo, 2010. "The worldwide governance indicators: methodology and analytical issues," Policy Research Working Paper Series 5430, The World Bank.

Richard M. Bird & Jorge Martinez-Vazquez & Benno Torgler, 2007. "Tax Effort: The Impact of Corruption, Voice and Accountability," CREMA Working Paper Series 2007-13, Center for Research in Economics, Management and the Arts (CREMA).

Khan, M. 2006. Governance, Economic Growth and Development since the 1960s: Background paper for World Economic and Social Survey 2006. New York: United Nations.

Manuel Arellano & Stephen Bond, 1991. "Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equations," Review of Economic Studies, Oxford University Press, vol. 58(2)

Blundell, Richard & Bond, Stephen, 1998. "Initial conditions and moment restrictions in dynamic panel data models," Journal of Econometrics, Elsevier, vol. 87(1), pages 115-143, August.

Arellano, Manuel & Bover, Olympia, 1995. "Another look at the instrumental variable estimation of error-components models," Journal of Econometrics, Elsevier, vol. 68(1), pages 29-51, July.

David Roodman, 2009. "How to do xtabond2: An introduction to difference and system GMM in Stata," Stata Journal, StataCorp LP, vol. 9(1), pages 86-136, March.

Ostapenko, Natalia¹: The Distinction between the Impacts of Informal Institutions and Social Conditions on the Perceptions of Government Actions by Different Segments of the Population

Abstract: *Social conditions in which people are growing up and live influence their representations of the government actions: poverty and well-being of the society, social inequality could influence the behaviour of the citizens. At the same time the existing informal institutions also indirectly impact the economic outcomes by formatting the peoples' perceptions and therefore impacting their behaviour. The purpose of this study therefore is to define in which extent social conditions and in which extent informal institutions together could impact the representations of government actions as acceptable or not. And because the perceptions of different categories of population differ, in this study these categories of the population will be analysed separately. The data will be drawn from European Social Survey, European Value Survey and Business Environment and Enterprise Performance Survey. The preliminary findings show that social conditions as well as informal institutions may influence the populations' perception of government actions. This will be the first study of the indirect effects of informal institutions and social conditions on the economic outcomes at the individual level.*

Introduction

The traditional and the new institutional theory determines that informal institutions have a significant impact on economic development (North, 1990; Von Hirschhausen, 2001; Polterovich, 2001, etc.). Informal institutions are unique to a particular model of the national economy, and the impact of these institutions may negate the effect of any law, which could lead to an institutional trap and reduce the efficiency of development of the national economy. Informal institutions could affect through the interpretation of the citizens of formal rules of the game and thereby determining their effectiveness. The informal institutions influence economic activities through two mechanisms: firstly, based on the model of Williamson (2000), informal institutions condition formal institutions and hence indirectly affects economic outcomes as suggested by Licht et al. (2005) and secondly, informal institutions exert a direct impact on economic activities through its role as an informal constraint on opportunistic behaviours and through its influence on human actors' actions and decision-making by shaping their incentives and subjective perceptions of the external world (Akerlof and Kranton, 2000; Rabin, 1993). The direct impact of culture on expectations and preferences was reflected in the works Henrich et al. (2001) and Bornhorst et al. (2005).

But the indirect impact of the informal institutions hasn't been studied at the full extent yet, therefore, that is *the research gap* in the literature. At the same time informal institutions are not the only one influencing factor on the perceptions about formal institutions, and therefore they shouldn't be analysed separately. Poverty and well-being

¹ natalia.ostapenko@ut.ee, University of Tartu, Estonia

of the society, social inequality, government social policy influence the behaviour of the citizens and impact their perceptions.

Social conditions as well as informal institutions could influence the representation of behaviour of citizens. When citizens may not see anything bad in the opportunistic behaviour because they live in the conditions of unequal society, poverty and government's weak protection and therefore they consider "bad" government actions as a norm. But, when citizens live in the conditions of an equal society, fair government distribution and protection policy they would demand more transparency and fairness from the government. The same effect may have the informal institutions, which have been formed throughout the historical development of the particular country.

At the same time the perceptions of government policies per se are important factors for the economic outcomes – if citizens perceive the government actions as an unfair they as well will tend more to behave unfairly relative to government.

Aim of the Project

The purpose of this research is to define in which extent social conditions and in which extent informal institutions could impact the perceptions of government actions and therefore predetermine the economic behaviour of the citizens. This study will be based on the theories of Baumol (1990) according the impact of the institutional environment on productive and unproductive behaviour and on the psychological theories according differences in perceptions of different categories of population (Decety and Sommerville, 2003; Kasperton, 1992; Rohrmann, 1994; Tversky and Kahneman, 1981).

Hypotheses and Methodology

The main research hypothesis is that social conditions and informal institutions together influence the peoples' perceptions of government actions.

By conducting the regression analysis on the individual level it would be possible to define the effects of informal institutions and social conditions on the peoples' personal perceptions. What will allow us to distinguish and define the major causes of different types of citizens' behaviour between different types of countries.

The individual level data from one dataset has advantages to be used, because the combining the different data sets could lead to biases in estimations. The analysis within one dataset and on the individual level will give an ability to overcome these biases.

The used data (European Social Survey, European Value Survey and Business Environment and Enterprise Performance Survey) will allow us to define the proxies for the peoples' informal institutions as well as for the social conditions and to determine their influence on the perceptions of the government actions at the individual level. We will assume as well that the perceptions of the different segments of the population within one country could be different (Decety and Sommerville, 2003; Kasperton, 1992; Rohrmann, 1994; Tversky and Kahneman, 1981). In this case the combination of different datasets in the analysis could lead to biases in estimations.

The proxies for informal institutions will be defined as unexplained parts (errors) of the regression of the acceptability of different types of behaviour, as well as several variables of national culture within selected data sets. For example, as one of these proxies could be informal institutions' proxy 1:

Gays and lesbians free to live life as they wish=B₁ + B₂ Important that people are treated equally and have equal opportunities + ε*

Informal institutions = ε

The correlation of this proxy of informal institutions on the country level (14 countries) with Inglehart's Survival/Self-expression values is -0.82, with Hofstede's Indulgence versus restraint is -0.75 and with Individualism is -0.73.

As the additional national culture proxies could be used the proxies of informal institutions by Tabellini (2010) (Trust, Respect, Control, Obedience): generalized trust (most people can be trusted or can't be too careful), the importance of getting the respect from others, the importance of making own decisions and be free, the importance of doing what is told and follow the rules. As the other set of national culture proxies of informal institutions could serve the variables used by Kaasa et al. (2014) to define regional cultural proxies for Hofstede's national cultural dimensions:

Latent factors of power distance: satisfaction with democracy, possibility to decide daily work organization, confidence in parliament, believe that government should reduce income inequality. Additional factor is the importance to do what is told and follow rules, which acts as a substitute for the obedience.

Latent factors of uncertainty avoidance from the European social survey data set: importance of the strong government and safety, importance of secure and safe surroundings, importance of following the traditions and customs, beliefs that immigrants make the country a better place; from EVS data set: importance of job security.

Latent factors of masculinity from the ESS data set: importance of being successful, importance of being rich, importance to show abilities and be admired, importance of the religion; from EVS data set: preferences of giving priority to men in the scarce jobs, importance of responsible job.

Latent factors of individualism from the ESS data set: importance to think new ideas and being creative, importance of seeking fun, importance of having a good time, importance to make own decisions and be free; from EVS data set: importance of leisure time in life, preferences of learn children to be independent.

As the proxies for *social conditions* could serve: satisfaction with the life, freedom or equality, income equality, beliefs that government should reduce differences in income levels, income level of respondents.

As the dependent variable for *the perception of government actions* could serve the level of satisfaction with the national government. By conducting a preliminary OLS regression analysis it has been found out that this variable through two data sets (EVS and ESS) has an impact on the variables "important to think new ideas and being creative"

and "important child qualities: feeling of responsibility" and therefore could influence people's behaviour.

$$Perceptions\ of\ government\ actions = B_1 + B_2 Employment_status + B_3 Happiness + B_4 Social\\ Conditions + B_5 Informal + B_6 Controls + \varepsilon$$

Where, *Perceptions of government actions* - level of satisfaction with the national government.

Informal - proxies for the informal rules rooted in the peoples' minds.

Happiness - perceptions of happiness.

Social conditions - as the proxies have been selected satisfaction with the life, freedom or equality, income equality, beliefs that government should reduce differences in income levels, income level of respondents.

Employment status - the category of the respondent (employee, employer, self-employed).

Controls - country, highest level of education, year of birth.

Preliminary Results

Preliminary results were calculated by using two separate regression analysis of ESS and EVS data sets. From these data sets was used the same/similar independent and dependent variables. The comparing the results will give the possibility to check the robustness because of the obvious limitations of the proxies.

The main finding of this study is that social conditions and informal institutions simultaneously could affect the peoples' perceptions of the government actions, which in their turn could formate the appropriate behaviour of the citizens according to the government. Additionaly, peoples' social conditions were found to have an robust influence on peoples' behaviour through the perception of the government actions throughout two data sets (all selected proxies were found to be significant in the regressions). Satisfaction with life and concerns about government should reduce differences in income levels have statistically significant and positive effect through formal rules, whereas household's total net income and feeling about household's income negatively influence through individualism and formal institutions respectively

At the same time the informal norms rooted in peoples' minds also were found to have a robust effect on the peoples' view of the government as good or bad. Informal institutions impact mainly through the interactions with the formal institutions.

References

Akerlof, G. and R. Kranton (2000), "Economics and Identity," Quarterly Journal of Economics, Volume 115, Issue 3, pp. 715-753.

Baumol, W. J. (1990), "Entrepreneurship: Productive, Unproductive, and Destructive", Journal of Political Economy, No. 5, pp. 893-921.

Bornhorst, Fabian, A. Ichino, Karl Schlag and Eyal Winter, (2005), "Trust and Trustworthiness Among Europeans: South - North Comparison", European Institute Working paper.

Decety, J., Sommerville, J.A. (2003), "Shared representations between self and other: A social cognitive neuroscience view", Trends in Cognitive Sciences, No. 1 (12), pp. 527-533.

Henrich, J., Boyd, R., Bowles, S., Camerer, C., Gintis, H., McElreath, R. and Fehr, E. (2001), "In search of Homo economicus: Experiments in 15 Small-Scale Societies", American Economic Review, No. 91(2), pp. 73-79.

Hofstede, G. (2016), National cultural dimensions, available at: <http://geert-hofstede.com/national-culture.html>.

Inglehart, R., Welzel C. (2005), Modernization, Cultural Change and Democracy, New York, Cambridge University Press.

Kaasa, A., Vadi, M., Varblane, U. (2014), "Regional Cultural Differences Within European Countries: Evidence from Multi-Country Surveys", Management International Review, pp. 825-852.

Kasperson, R. E. (1992), "The Social Amplification of Risk: Progress in Developing an Integrative Framework in Social Theories of Risk", Social Theories of Risk, p. 53—178.

Licht, A.N., Goldschmidt, C., Schwartz, S.H., (2005), "Culture, law, and corporate governance", International Review of Law and Economics, No. 25, pp. 229–255.

North, D.C., (1990), Institutions, Institutional Change and Economic Performance, Cambridge University Press, Cambridge, UK.

Rabin, M. (1993), "Incorporating Fairness into Game Theory and Economics", American Economic Review, No. 83 pp. 1281-1302.

Rohrmann, B. (1994) "Risk perception of different societal groups: Australian findings and crossnational comparisons", Australian Journal of Psychology, 46, 150-163.

Tabellini, G. (2010), "Culture and Institutions: Economic Development in the Regions of Europe", Journal of the European Economic Association, No. 8 (4), pp. 677-714.

Tversky D, Kahneman A (1981), "The framing of decisions and the psychology of choice", Science, No. 21, pp. 453-458.

Von Hirschhausen C. (2001), "Power Utility Re-Regulation in East European and CIS Transformation Countries (1990-1999): An Institutional Interpretation", mode of access: http://www.hks.harvard.edu/hepg/Papers/discussion_paper_tu.pdf.

Williamson, O.E., (2000), "The new institutional economics: taking stock, looking ahead", Journal of Economic Literature, No 38, pp. 595-613.

Полтерович, В. М., (2001), Трансплантация экономических институтов, Экономическая наука современной России, № 3., С. 24-50.

Raschupkin, Mikhail¹ (with Maria Semenova²): Informal Lending and Bank Competition: Lessons for Policy Makers

Abstract: *Informal lending market is usually considered to be a substitute for the bank credit market, being focused on more risky and less prosperous borrowers. Having a more limited access to financing as well as greater opportunity to monitor and/or stricter enforcement mechanisms, informal lenders still can provide people – sometimes rationed by banks or even discouraged to apply – with necessary funds what leads to an increase in consumption. The degree to which informal lending substitutes the formal one might depend much on how hard the competitive pressure is pushing the banks to riskier borrowers. Banking regulation policies are the most important drivers of the competition influencing the strategic behavior of banks related to interest rates, collateral requirements and credit limits. In this paper we study the degree to which exposure of both firms and households to the informal loans is influenced by the competition in the bank credit market, and how the regulation affects this relationship. Our preliminary results show that competition in the banking market is associated with lower demand for informal loans, meaning that competition decreases formal lending standards and discourage borrowers from choosing the formal market.*

Introduction

In most cases, informal loans are thought to be effective only in case of developing economies where financial system is underdeveloped and are frequently considered as a part of shadow economy. However, they can be extremely useful for economic growth of a country (Ayyagari et al., 2008), establishing lower interest rates than banks. Relying more on soft information and informal sanctions, informal lenders may operate more efficiently than banks in terms of risks. Nevertheless, informal and formal lenders usually co-exist and even cooperate in order to provide more people with necessary funds.

It is barely possible to regulate informal credit market directly. At the same time, the size of informal market is highly depended on banks' strategies towards risks and competition in formal credit market. Hence, studying such a link will provide us with a fruitful insight into how this sector should be regulated to reach a better equilibrium for the whole society.

Aim of the Project

In this paper we try to find out how the regulation of competition in bank credit market can influence the demand for informal loans via the channel of banking market competition.

Informal financing is considered to be «the entire gamut of non-market institutions such as credit cooperatives, moneylenders, etc. that do not rely on formal contractual

¹ mraschupkin@hse.ru, Research Assistant at the Center for Institutional Studies, National Research University Higher School of Economics

² msemenova@hse.ru, Senior Research Fellow at the Center for Institutional Studies, and Associate Professor at the Department of Finance, National Research University Higher School of Economics

obligations enforced through a codified legal system» (Ayyagari et al., 2008, p. 2). Main tools of informal financial institutions are possibly business or personal relationships with borrowers and reputation. These should be more effective in terms of monitoring and default forecasting than scoring systems of the banks.

It should be also mentioned that informal sector involves agents of different types and classified in Allen et al. (2013). To be more specific, informal financing can be «constructive» and «underground». The first type of informal financing is defined as «transactions that derive their information and enforcement technology from business or social relationships, mainly trade credits and family borrowing» (Allen et al., 2013, p. 4). The second type is not connected with any information advantage and use violence to prevent borrowers from delinquency. There are four criteria to determine the type of lender: (1) information technology, (2) monitoring and control risk, (3) pricing risk, (4) resource mechanism in case of delinquency.

In the model of underdeveloped financial markets created by Madestam (2014), the difference between two sectors of credit market can be comprehensively described by two criteria – an access to financial resources and monitoring costs connected with information asymmetry between a lender and a borrower. As proposed in the model, formal agents (such as banks) have an unlimited access to money, however, a probability of strategic default or opportunism by borrowers are not observed by them. Meanwhile, informal lenders have relatively small monitoring costs, but are financially constrained and have to borrow from banks by themselves.

Providing a household or company with necessary financing, a bank faces a great number of risks, and several of them are caused by inability of a bank to monitor every action or decision of a borrower. Thus, besides some exogenous shocks, there is a positive probability that a borrower will take excessive risk or become strategically insolvent. The central bank establishes requirements for commercial banks related to capital adequacy and reserves on loans and deposits. They are used to raise the cost of excessive risks for both a bank as an organization and its management (if a bank goes bankrupt, managers will possibly be fired) (Bolt, Tieman, 2004). Nearly the same effect will be achieved if regulation changes towards lower entry barriers, as an increase in market competition may cause less market power for its participants, hence, less risk will be taken by banks (Angelini, Cetorelli, 2003), (Casey, O'Toole, 2013). However, such a relation between concentration and risks is not ambiguous, as if concentration adds to market power of banks, the total effect will be reverse (Boyd, De Nicolo, 2005). At the same time, an opposite effect is also possible if entry barriers are decreasing and it becomes possible for large international banks to join the market.

The most essential reaction of banks on increase in firms' risks is credit rationing. That is why it is expected that banks will make fewer loans in case of an increase in strictness of the regulator requirements or a significant deterioration of loan portfolio. A contraction of formal loans supply will lead to an increase in demand on informal loan market.

Hypotheses and Methodology

In this paper we test the following hypotheses:

H.1: Higher competition on banking market is associated with lower probability of borrowing informally;

H.2: Competition on the banking market is influenced by banking policies;

H.3: Dynamics of competition due to changes in banking regulation is correlated with probability of borrowing from informal credit market.

Our model is based on the basic Probit regressions (estimated separately for firms and households) for the use of informal lending market explained by bank competition measures (Lerner index, Boone indicator and concentration) and the list of factors that possibly influence banks' decision on lending money and prerequisites for participating in the informal sector that are not related to formal financing.

To be more specific, our regression equations are as following:

$$Prob(Inform = 1)_{ic} = f(Comp_c; Control_{ic}), \quad (1)$$

$$\begin{cases} Comp_c = \alpha + \beta Reg_{ic} + e \\ Prob(Inform = 1)_{ic} = f(\widehat{Comp}_c; Control_{ic}) \end{cases} \quad (2)$$

where «inform» is vector of dependent variables, «Comp» is vector of competition measures, «Control» is vector of control variables.

The key **dependent variable** is the demand on informal loans (**Inform_{it}**) measured as a binary variable that equals to «1» if the share of firm capital or consumption financed by informal loans is positive and false equals to «0» if it is negative. In case of individuals, the answer to the question whether an interviewee attracted some funds from informal lenders was used in the same way («1» if he or she did attract and his or her application was approved, «0» if did not). To be more specific, we evaluate the probability of becoming a borrower on informal credit market.

Such data can be extracted from BEEPS³ (IV-V) firm survey and LITS⁴ (II) household survey conducted in 2007, 2011 and 2010 respectively. We also divide the informal credit market into two parts: constructive and underground, as it was done in (Allen et al., 2013). Unfortunately, it was possible only for the case of individuals, as BEEPS lacks such an information. For firms, the informal demand includes two parts – borrowing for purchasing fixed capital or working capital.

Competition measures in banking markets (Lerner Index, Boone Indicator, share in total assets of banking system) were taken from GFDD⁵ country-level database. We apply all the measures since they will demonstrate different aspects of competition.

³ Business Environment and Enterprise Performance Survey, [link](#)

⁴ Life in Transition Survey II, [link](#)

⁵ Global Financial Development Database, [link](#)

Control variables are factors that can also be used to explain the variation of the dependent variable (in other words, which person or firm will prefer to attract investment from informal lenders), such as level of income of an interviewee, last completed level of education, living in rented living space and risk inclination.

In case of firms, the most significant factors are expected to be the amount of employees, dummy-variables for exporters and dummy variable for external audit.

Preliminary Results

Up to this moment, we show that market structure actually influence the demand on informal financing, being a direct result of government regulation of banking market (see Table 1 in Appendix). Informal loan market, in turn, consists of different agents, hence, has controversial impact on economic activity of firms and strategies of households. That is why this market should be precisely regulated by the means of capital and risk management requirements for banks.

More competitive market structure can possibly result in less informal loans since lesser values of Boone Indicator mean more competitive markets. This can be explained with «market power hypothesis» of access to finance: if a bank has market power, it is able to deteriorate credit conditions for borrowers or to rationate them. It means that in case of an increase in the level of competition, banks will have to compete with each other for borrowers, and this will lead to expansion of loans.

It should be mentioned that underground financing does not depend on the level of banking competition, so it is constructive financing that actually will change.

The overall effect for firms is controversial, as the usage of informal loans in order to invest in working capital is positively associated with an increase in competition, while this link is averse in case of fixed capital.

In further research we will enhance our modeling of informal demand by adding variables for «demand» (requesting loans from particular source of financing) and «credit rationing» (being rationed by banks). This step is necessary to interpret the changes in strategies of borrowers and creditors. Also we will evaluate the same model for banking market in order to confirm or reject our findings.

References

- Agostino, M., & Trivieri, F. (2010). Is banking competition beneficial to SMEs? An empirical study based on Italian data. *Small Business Economics*, 35(3), 335-355
- Allen, F., Qian, M., & Xie, J. (2013). Understanding informal financing. *Asian Bureau of Economic Research*.
- Angelini, P., & Cetorelli, N. (2003). The effects of regulatory reform on competition in the banking industry. *Journal of Money, Credit and Banking*, 663-684.
- Ayyagari, M., Demirguc-Kunt, A., & Maksimovic, V. (2008). Formal versus informal finance: Evidence from China. World Bank Policy Research Working Paper Series, Vol.
- Barth, J. R., Caprio, G., & Levine, R. (2004). Bank regulation and supervision: what works best?. *Journal of Financial intermediation*, 13(2), 205-248.

- Bolt, W., & Tieman, A. F. (2004). Banking Competition, Risk and Regulation*. *The Scandinavian Journal of Economics*, 106(4), 783-804.
- Boyd, J. H., & De Nicolo, G. (2005). The theory of bank risk taking and competition revisited. *The Journal of Finance*, 60(3), 1329-1343.
- Casey, E., & O'Toole, C. M. (2014). Bank lending constraints, trade credit and alternative financing during the financial crisis: Evidence from European SMEs. *Journal of Corporate Finance*, 27, 173-193.
- Madestam, A. (2014). Informal finance: A theory of moneylenders. *Journal of Development Economics*, 107, 157-174.
- Mallik, R. (2006). Deregulation in the formal credit market and its impact on informal credit. *Hitotsubashi Journal of Economics*, 51-68.
- Tanaka, K., & Molnar, M. (2008). What is Different about Informal Finance?. *Revue économique*, 59(6), 1131-1143.

Appendix

Table 1. Results for informal loans for individuals

Average marginal effects

Variables	Inform_borrow				Constructive_inform_borrow				Underground_inform_borrow			
Lerner_predicted	2.319*** (0.629)				2.339*** (0.615)				-0.189 (0.410)			
Con3_predicted		-0.022*** (0.006)				-0.022*** (0.006)				-0.000 (0.000)		
Con5_predicted			0.069*** (0.019)				0.070*** (0.019)				-0.000 (0.000)	
Boone_predicted				-115.710*** (31.395)				-116.717*** (30.678)				0.056 (0.121)
Work	0.042*** (0.009)	0.042*** (0.009)	0.043*** (0.009)	0.042*** (0.009)	0.044*** (0.009)	0.044*** (0.009)	0.045*** (0.009)	0.044*** (0.009)	-0.001 (0.003)	-0.001 (0.003)	-0.001 (0.003)	-0.001 (0.003)
Hi_edu	-0.020** (0.009)	-0.020** (0.009)	-0.018* (0.009)	-0.020** (0.009)	-0.023** (0.009)	-0.023** (0.009)	-0.020** (0.009)	-0.023** (0.009)	0.001 (0.003)	0.001 (0.003)	-0.000 (0.003)	0.001 (0.003)
Risk	0.008*** (0.002)	0.008*** (0.002)	0.008*** (0.002)	0.008*** (0.002)	0.007*** (0.002)	0.007*** (0.002)	0.008*** (0.002)	0.007*** (0.002)	0.001** (0.001)	0.001** (0.001)	0.002** (0.001)	0.001** (0.001)
Ln_Income	-0.038*** (0.007)	-0.038*** (0.007)	-0.040*** (0.007)	-0.038*** (0.007)	-0.035*** (0.007)	-0.035*** (0.007)	-0.037*** (0.007)	-0.035*** (0.007)	-0.005* (0.003)	-0.005* (0.003)	-0.006** (0.003)	-0.005* (0.003)
Rented	0.078*** (0.010)	0.078*** (0.010)	0.077*** (0.010)	0.078*** (0.010)	0.077*** (0.010)	0.077*** (0.010)	0.076*** (0.010)	0.077*** (0.010)	0.009*** (0.004)	0.009*** (0.004)	0.008** (0.003)	0.009*** (0.004)
N	5679	5679	5513	5679	5679	5679	5513	5679	4192	4192	4026	4192
Prob>chi-squared	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Standard errors in parentheses , *** p<0.01, ** p<0.05, * p<0.1

Table 2. Results for informal loans for firms

Average marginal effects

Variables	Inform_demand_WC				Inform_demand_FC			
Lerner_predicted	-18.478*** (5.992)				31.086*** (6.189)			
Con3_predicted		0.014*** (0.005)				-0.023*** (0.005)		
Con5_predicted			-0.010*** (0.003)				0.017*** (0.003)	
Boone_predicted				-0.261*** (0.084)				0.434*** (0.088)
Size	0.006 (0.005)	0.009** (0.004)	0.009** (0.004)	0.009** (0.004)	-0.066*** (0.005)	-0.061*** (0.004)	-0.063*** (0.004)	-0.061*** (0.004)
Ext_audit	0.009 (0.013)	0.000 (0.010)	-0.000 (0.011)	0.000 (0.010)	-0.059*** (0.013)	-0.047*** (0.011)	-0.047*** (0.011)	-0.047*** (0.011)
Exporter	0.021 (0.014)	0.016 (0.012)	0.014 (0.012)	0.016 (0.012)	-0.047*** (0.015)	-0.048*** (0.012)	-0.051*** (0.012)	-0.048*** (0.012)
N	7053	9976	9643	9976	7053	9976	9643	9976
Prob>chi-squared	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Standard errors in parentheses , *** p<0.01, ** p<0.05, * p<0.1

Rudakov, Victor¹ (with Igor Chirikov² and Sergey Roshchin³): Non scholae, sed vitae discimus? The Impact of Academic Achievement on Wages of Russian University Graduates

Abstract: This paper analyses the impact of student academic achievement on future wages of Russian university graduates through looking into GPA-earnings relationship for graduates of Russian selective university, based on cross-sectional graduate survey data. The issue of how student academic achievement, measured by GPA impact future labor market rewards is analyzed through the set of academic, demographic and labor market factors. Our results indicate that there is no significant impact of GPA on future earnings for male graduates and negative impact for female graduates (8% wage penalty for additional GPA point). The significance of negative effect of GPA on earnings for female graduates decreases if we control for sectoral segregation. Factors that are associated with higher student abilities, such as high GPA, studying on the state-funded basis does not impact male earnings and negatively impact female earnings, while the existence of work experience before graduation is the most significant factor that positively affects future wages for both groups. However, we found no evidence that combining study and work affects student academic achievements.

Introduction

Massive expansion of higher education in Russia during two last decades has led to structural transformation from elite to mass higher education. According to the OECD, in 2012 Russia ranked first in the world in the percentage of tertiary educated adults (OECD 2016). In such institutional structure, higher education has become a social norm for the majority of Russian households. The significance of university diploma as a strong signal of graduate abilities and productivity in the labor market decreases. Societies with elite higher education that provide education of high quality recognize university diploma holders as professionals with very high qualification. Societies with mass higher education recognize university diploma just as a pass to labor market, but it does not guarantee qualified job and high salary.

Mass higher education leads to a strong differentiation between universities' educational standards, in terms of their quality of education and reputation. Considering this, the importance of additional labor market signals that reflect quality of education or applicants abilities, such as work experience and quality of education increases. Quality of education and applicant abilities can be measured by selectivity of university, educational attainment or student academic achievement.

It is likely that student with higher academic achievements (GPA) gained higher level of human capital during their study, have higher cognitive abilities. By this, we can

¹ victor.n.rudakov@gmail.com, Laboratory for Labour Market Studies, National Research University Higher School of Economics, Moscow, Russia

² ichirikov@hse.ru, Institute of Education, National Research University Higher School of Economics, Moscow, Russia

³ sroshchin@hse.ru, Faculty of Economic Sciences, Laboratory for Labour Market Studies, National Research University Higher School of Economics, Moscow, Russia

assume that such students are better prepared for professional practice and can be rewarded on labor market with a higher starting wages or rapid career growth. A number of studies of the impact of academic achievements on graduate wages confirm this thesis and found a wage premium for high academic achievements (Wise, 1975; Jones, Jackson, 1990; Rumberger, Thomas, 1993; Roth, Clarke, 1998; Pascarella, Terenzini, 2005; Hershbein, 2013). The main sources of heterogeneity in starting graduate wages are gender differences (Filer, 1981; Jones, Jackson, 1990), selectivity of the university and specialization (Thomas, Zhang, 2005; Zhang, 2008; Hershbein, 2013).

Explanations of the positive effect of student academic achievements on future labor market outcomes can be formulated on the basis of human capital theory (Becker, 1968; Mincer, 1989; Shultz, 1962) and job market signaling theory (Spence, 1973; Arrow, 1973; Stiglitz, 1975).

Human capital theory proposes that academic achievement reflects the amount of human capital that was acquired through university education. Depending on the individual abilities and efforts made by students during their study, students accumulate a different amount of knowledge and competences that can be measured by academic achievement (for instance, GPA). Hence, students with higher GPA that accumulate higher amount of human capital will get higher returns to this human capital in terms of wages, that results in positive impact of GPA on earnings. According to job market signaling, high academic achievement may be used for employee's selection as an additional signal about applicant abilities and by this provide a returns in terms of wages.

The alternative view and explanation of the negative or insignificant correlation between GPA and graduate wages can be provided by concept of mass higher education. In case of the decrease of significance of the higher education diploma as a labor market signal students need to obtain additional labor market signal confirming their productivity, such as work experience. Obtaining work experience and intensive student employment may negatively affect academic achievement, but if work experience is a valuable signal for employers it can provide high wage premium.

Aim of the Project

The project aims to answer the following question: «Does the same positive effect of academic achievements on future wages exist in Russia or this effect may be different in case of mass and differentiated by quality higher education? » To answer this question we carried out empirical analysis of GPA-earnings relationship for recent graduate of Russian selective university. In addition to empirical evaluation we are interested in explanation of relationship between academic achievements and labor market rewards.

Data

Our study is based on the data of graduate survey carried out by Centre for Institutional Research of National Research University Higher School of Economics. The data was collected for students graduated from Higher School of Economics in 2014 6 month after graduation. The sample size is 815 observations. The sample contains graduates of bachelor (35%), specialist (16%) and master (49%) programs, studied on

state-funded (71%) and fee-basis (29%) that is representative for all Higher School of Economics graduates.

Hypotheses and Methodology

On the basis of reviewed literature on GPA-earnings relationship we can propose 3 competing hypothesis and one additional on the size of an effect.

H1- Academic achievement positively affects wages of recent graduates due to higher human capital accumulation by students with high GPA or stronger signal on labor market

H2- Academic achievement negatively affects wages of recent graduate through reversed causality connected with student employment that has positive impact on wages after graduation but negatively affect academic achievements

H3-Academic achievement does not impact graduate wages as education and job market spheres are autonomous and reward different skills and knowledges or effects described in H1 and H2 acting in the opposite direction

H4-Academic achievement is not the main predictor of graduate wages as its impact is moderate while the main heterogeneity in returns to higher education is connected to such factors as gender, sectoral segregation and combining study and work.

To test the listed hypotheses we use means of descriptive and regression analysis. To estimate the effect of academic achievement on graduate starting wages we used standard Mincer wage equation (1) and applied OLS regression for employed graduates. Equations are estimated for the whole sample and for male and female graduates separately. We also applied Heckman correction as OLS results may be biased due to self-selection in the employment. Additionally, we estimate determinants of student academic achievement in order to reveal factors that influence high academic results using OLS regression for our equation (2).

$$\ln(W_i) = \beta_0 + \beta_1 \cdot GPA_i + \beta_2 \cdot Acad_i + \beta_3 \cdot SocDem_i + \beta_4 \cdot St_Work_i + \beta_5 \cdot Job_i + \varepsilon \quad (1)$$

$$GPA_i = \beta_0 + \beta_1 \cdot Acad_i + B_2 \cdot SocDem_i + \beta_3 \cdot St_Work_i + \beta_4 \cdot Job_i + \varepsilon \quad (2)$$

where

$\ln(W_i)$ - logarithm of average monthly salary of graduate 6 month after graduation

GPA_i - student Grade Point Average while studying in Higher School of Economics (on a scale from 0 to 10)

$Acad_i$ - a set of academic factors (educational attainment, field of study, study on a state funded/fee basis)

$SocDem_i$ - a set of demographic factors (gender, age group)

St_Work_i - dummy for combining study and work

Job_i - a set of labor market factors (sector of employment, tenure, job relatedness to specialty)

Results

The main result of regression analysis is that high academic performance does not significantly affect starting wages of male graduates and negatively affect starting wages of female graduates. One additional point in GPA decreases female graduate wages on 8%. Sectoral segregation can be one of the possible explanations of gender heterogeneity in returns to academic achievement. We included in our equation (1) proxy for sectoral segregation and after control for sector of employment the significance of female penalty for academic achievement considerably decreases.

The existence of work experience before graduation is the most significant factor that positively affects future wages for both gender groups. Students combined study and work has a 33% wage premium after graduation comparing with those who did not obtain work experience. For male students return to combining study and work is higher than for female students (respectively, 40% and 28% wage premium). On average, wages of male graduates are 10% higher than that of female graduates. There exists labor market rewards for higher educational attainment. Master programs graduates have 12% wage premium comparing with bachelor graduates. We applied Heckman procedure using marital status as exogenous variable to cope with self-selection bias in the sample of employed. The results of estimation showed that there is no selection bias in a base specification (1) and we can trust the results of OLS estimation.

We also estimated equation (2) to reveal determinants of student academic achievements and test the hypothesis 2 on reversed causality effects connected with negative impact of combination of study and work on student academic achievement. Regression results indicate that combining study and work does not influence student academic achievement. The analysis of predictors of GPA shows that there are significant gender differences in student academic achievements: predicted GPA for female students is 40% higher than that of male students, predicted GPA for students studying on a state-funded basis is 55% higher than for students studying on a fee basis.

The analysis shows that in spite of the fact that female students and students studying on a state-funded basis have significantly higher academic achievements, these achievements are not rewarded by labor market. Generally, factors associated with student abilities are not rewarded in the labor market by higher wages. Our estimations let us reject the hypothesis of combining study and work explanation.

The only remaining explanation for insignificance of the impact of academic achievements on wages of recent graduates is a relative autonomy of education and labor market in terms of results or ability assessment. It means that education system and labor market reward different knowledges and skills. For instance, education system assess students abilities to study and their efforts, but unable to estimate student soft-skills such as general communication skills, leadership, emotional stability, ability to cooperate and team working. Formal knowledge acquired during study in the university are not as valuable for employers (especially in service sector where most of recent graduates are employed) as for university faculty. On the contrary, they value soft-skills that are not measured by GPA. These differences in value of skills in education and job can make GPA-earnings relationship insignificant.

References:

- Altonji, J. G. (2005). Employer learning, statistical discrimination and occupational attainment. *The American economic review*, 95(2), 112-117.
- Arcidiacono, P., Bayer, P., & Hizmo, A. (2008). *Beyond signaling and human capital: Education and the revelation of ability* (No. w13951). National Bureau of Economic Research.
- Arrow, K. J. (1973). Higher education as a filter. *Journal of public economics*, 2(3), 193-216.
- Bills, D. B. (2003). Credentials, signals, and screens: Explaining the relationship between schooling and job assignment. *Review of educational research*, 73(4), 441-449.
- Gleason, P. M. (1993). College Student Employment, Academic Progress, and Postcollege Labor Market Success. *Journal of Student Financial Aid*, 23(2), 5-14.
- Hershbein, B. J. (2013). *Worker Signals among New College Graduates: The Role of Selectivity and GPA*. Upjohn Working Paper 13-190. Kalamazoo, MI: WE Upjohn Institute for Employment Research. http://research.upjohn.org/up_workingpapers/190.
- Jones, E. B., & Jackson, J. D. (1990). College grades and labor market rewards. *The Journal of Human Resources*, 25(2), 253-266.
- Lazear, E. (1977). Academic achievement and job performance: Note. *The American Economic Review*, 67(2), 252-254.
- Pascarella, E. T., & Terenzini, P. T. (2005). *How college affects students* (Vol. 2). K. A. Feldman (Ed.). San Francisco, CA: Jossey-Bass.
- Roth, P. L., & Clarke, R. L. (1998). Meta-analyzing the relation between grades and salary. *Journal of Vocational Behavior*, 53(3), 386-400.
- Rumberger, R. W., & Thomas, S. L. (1993). The economic returns to college major, quality and performance: A multilevel analysis of recent graduates. *Economics of Education Review*, 12(1), 1-19.
- Spence, M. (1973). Job market signaling. *The quarterly journal of Economics*, 355-374.
- Thomas, S. L., & Zhang, L. (2005). Post-baccalaureate wage growth within four years of graduation: The effects of college quality and college major. *Research in Higher Education*, 46(4), 437-459.
- Stiglitz, J. E. (1975). The theory of "screening," education, and the distribution of income. *The American Economic Review*, 65(3), 283-300.
- Wise, D. A. (1975). Academic achievement and job performance. *The American Economic Review*, 350-366.

Rusanov, Vasily¹: Minorities and Business: the Case of Russian Old Believers

Abstract: In 19 century Russia, a close-knit and persecuted religious minority, the Old Believers, controlled a large share of textile manufacturing. I estimate the production functions of the textile factories of Moscow and Vladimir provinces (the main center of Old Believers' business) in 1882 and in 1897, using their share in the population within a 7 km range from the factory as a proxy for the status of Old Believers' factory. The Old Believers' factories had a higher Total Factor Productivity, but this effect is only observed in the districts that generally had a high share of Old Believers. I interpret this as evidence of the social capital theory of this minority's economic prominence, indicating the importance of business networks that developed in the Old Believers' communes. Following the existing literature on the role of Protestants in the economic development of Europe, I also control for human capital and geography factors and do not find that they explain the business success of Old Believers.

Introduction

Like Quakers in the United States, Jews in Europe, and Armenians in Turkey, the Russian Old Believers were economically more successful than the general population (Raskov, 2012). The Old Believers split from the official Orthodoxy in 1667 after a religious reform that aimed to standardize the liturgy and ceremonies of the Russian Orthodoxy. They faced harsh oppression from the government and the official Orthodox Church. Until 1722 all the Old Believers were to be executed, which was later changed for the death penalty for spreading the Old Belief (and, effectively, for any liturgy). Later, in 1761, the Old Believers were allowed to have service but they faced many constraints in building churches, holding any official positions and marrying. Despite the oppression, many of them managed to become wealthy merchants controlling a significant part of the rising textile industry in 19th century.

What explains the economic success of religious and ethnic minorities? Bernstein (1992) offers an example of how Jewish diamond traders formed their own institutions and the way of handling disputes, which increased efficiency and reduced transaction costs. Several recent studies discuss the role of Protestants (originally a minority in mainly Catholic countries) for the European economic development. Becker & Woessmann (2009) offer a human-capital theory of the Protestants' economic prominence, providing evidence of higher literacy rates and investment in education. Hornung (2014) also shows the importance Protestants' human capital. He studies Huguenot immigrants to Prussia and their contribution to the textile industry through the technological spillovers. Although some research (Cantoni, 2014) suggests that Protestantism had no effect on the overall economic development, there is still a lot of evidence that many minorities tend to be wealthier than the overall population (Bonacich, 1973).

¹ basil.rusanov@gmail.com, CInSt, National Research University Higher School of Economics, Moscow, Russia

A distinctive feature of Old Believers history is important for understanding their role in Russian society: they co-existed with adherents of official Orthodoxy without major conflicts. In the words of Leroy-Beaulieu, a 19 century French traveler to Russia, “Rather than hating or rejecting [the Old Believers] as the rebels or heretics, a peasant or a factory worker faithful to the official Church often considers Old Believers as the most pious and fervent Christians, as the early Christians, persecuted for their religion.” Thus, the story of ethnic conflict that is often discussed in economic literature (the studies of ethnic conflict in Africa or of the coexistence between the Armenians and the Turks in the Ottoman Empire) is different from the case of the Old Believers. In the environment with a constant burning conflict between the Orthodox population and business on the one side and the Jewish, German and Polish minorities on the other, Old Believers were never a target of any pogroms.

Aim of the Project

The aim of this research is to explain the economic success of the Old Believers.

Hypotheses and Methodology

Several hypotheses can be found in the existing historical literature. Historians analyzed the life of the communes, the changing state’s attitude to the schism, and “case studies” of individual dynasties of Old Believers’ businessmen. However, almost no econometric analysis of the Old Believers has been performed so far (with the exception of Raskov & Kufenko, 2014, who only compare the total and average outputs of the factories). In this section, I discuss hypotheses for the Old Believers success (the following three sections summarize ideas from Kufenko & Raskov, 2014, and Blackwell, 1965).

Social Capital: Persecution and Higher Intragroup Trust

Old Believers started to create trade networks very soon after their split from the official church. The Vyg commune in the North of the Empire, for example, created an extensive trade network to sell bread to the newly-built Saint-Petersburg in the early 18th century. At that time, there were already several denominations of Old Believers (priestless or with priests, praying for the Tsar or not...), although all of them had extensive business relations with each other. The weak contract law and the Old Believers’ incapacitation contributed to the creation of these networks. Leroy-Beaulieu, a witness of the relations within the Old Believers’ communes in the late 19th century, wrote: “Thanks to the support that the dissidents give each other, thanks to the ties that the religious belief creates between them, the schism sometimes had a chance to be considered as a path leading to fortune”.

Of course, the vast trade networks allowed for opportunistic behavior. With very weak contract law, on which the Old Believers could not rely anyway, the communes developed special rules for trade conduct. The Vyg commune established strict rules for its trade agents, mandating collective discussion of every important business deal and stipulating the role of the collective in making every decision. From the early years of the schism, Old Believers relied on the communes in doing business, which created

information networks and also allowed to build reputation mechanisms like those of the Maghribi traders discussed by Greif (1993) the unfair businessmen were condemned by the Commune.

Access to Finance and Lending

Blackwell (1965) discusses the key role that the Moscow communes played in the Russia-wide trade of the pre-reform books and icons, and how later the monetary capital that they accumulated was used for loans to the (often newly-converted) members of the commune to start business or to buy freedom. The accumulation of funds by the communes was boosted further by mandatory celibacy, with all possessions becoming collective property after his or her death.

Unlike the Jews, who are allowed to collect interest on the loans given to the outsiders, Old Believers often considered unethical giving loans with interest to anyone, which precluded the use of capital that communes accumulated for specializing in finance. Sometimes the communes even decided not to keep the money in a bank because of ethical concerns. However, the accumulated capital was used in a system of intragroup interest-free loans. Blackwell describes how, according to the police reports, the peasants in the Moscow region decided to convert to the Old Belief and join the factories in exchange for having their debts paid and getting some money for purchasing their freedom. He also describes how the loans were used to start a new business or to expand the existing factories.

In the framework of undeveloped financial markets in 19th century Russia, access to interest-free loans could give the Old Believer entrepreneurs a big advantage over the rest of the population for starting a business and then purchasing equipment and machinery.

Human Capital: Literacy and Sobriety

The adherents to the “priestless” denomination of the Old Believers (*bezpopovtsy*) had to read the Bible themselves, which increased literacy rates. The Russian Empire never had a system of universal primary education, and, until the 1917 revolution the overall literacy rates remained low. Historians also describe meticulous accounting and reporting practices of trade agents in the mentioned Vyg commune, which caused higher numeracy rates and bookkeeping skills. This potentially indicates a mechanism similar to that discussed by Becker and Woessmann (2009) for the case of Protestants: literacy, together with the need to read and to interpret the Bible, could have increased the human capital of the Old Believers, raising workers’ productivity and managerial abilities.

Also, there is some anecdotal evidence of higher sobriety of Old Believers (although they never were teetotalers, and special moonshine and sometimes drank *braga*, a special moonshine for ceremonial purposes), but this feature was never studied systematically and there is no quantitative evidence of lower alcohol consumption among Old Believers. The Old Believers in the Guslitsi region specialized in growing hops, and alcohol itself was not considered immoral, unlike many of the “modern” goods: tobacco, tea and coffee that religious leaders explicitly prohibited.

Methodology

To check whether the Old Believers played a special role in the Russian textiles, and also to test the hypotheses discussed above, I turn to the data on the textile factories in the Central Industrial Region, a region around Moscow where the Russian textile industry developed. I collected the data on the textile factories and the spatial distribution of the Old Believers. To check my hypothesis, I estimate Cobb-Douglas production functions in the following form:

$$\log Y_i = \log A + \gamma \log S_i + \alpha \log L_i + \beta \log K_i + \varepsilon_i$$

Here, Y_i is the total revenue of the factory (in rubles, to allow for factories with different produce), S_i is the share of Old Believers within a certain radius from the factory L_i and K_i are the number of workers and a proxy for the capital. The main coefficient of interest is γ : if the Old Believers had an advantage in the textiles (for any reasons discussed above) we should observe higher productivity² in the factories.

Using the share of the Old Believers near the factory leads to potential endogeneity problems: if the Old Believers settled near the places that were more suitable for textile manufacturing (closer to unobserved trade road, for example, or near the places with high supply of wool or flax), then the coefficient γ can't be interpreted as a measure of causal influence of the Old Believers on the textile productivity. To tackle this issue, I instrument their share in the population near a factory with the distance to the center of Guslitsi, a remote region where many Old Believers fled after the 1682 Streltsy Uprising and from which they later spread over the territory in the sample.

Data

I use a newly-constructed dataset factory surveys of Moscow and Vladimir provinces in 1897, merged with the locality-level data on the share of Old Believers. As a part of constructing this dataset, I geocoded each factory and each locality, taking the share of Old Believers within a certain radius from the factory as a proxy for the Old Believers' status of the owner and the workers. I'm also currently expanding my dataset to include a rich set of control variables from the township-level data on the literacy rates, agricultural productivity, number of drinking houses etc.

Currently, the dataset consists of 800 factories in Moscow and Vladimir provinces in 1897. For each factory, several various production-related indicators are available (the number of workers, the total cost of fuel used, the total horsepower of machinery the factory uses etc.) as well as the share of Old Believers within 7 kilometers from the factory³. Appendix A contains the summary statistics for the data.

² By *productivity* I mean the variation in the total output that cannot be explained by higher labour or capital.

³ Since all the data are geocoded, I can pick any radius. Geographical labour mobility in 19 century Russia was low, and so we may expect that most of the factory's workers came from nearby villages. Changing the radius to 5 or 10 kilometers does not alter the results, and I picked 7 km because this is a 1-day walking distance.

Results

Table 1 in Appendix B shows the OLS and 2SLS estimation of Cobb-Douglas production functions. Greater share of Old Believers did increase the total factor productivity (TFP). This result is robust to the inclusion of some geography controls and dummies for different categories of factories. However, the share of Old Believers becomes insignificant when I control for the district of the factory. There were 24 districts in the 2 provinces (Moscow and Vladimir), but the distribution of the Old Believers between the districts is very uneven, with 12 districts having less than 10 factories in them.

I use Model (6) from Table 1 as my reference regression for the IV estimation. Note that the numerical interpretation γ , the coefficient of interest, is a little tricky. The coefficient estimate of 0.188 means that, ceteris paribus, an increase in the share of Old Believers by 10 percent (not percentage points!) increases the TFP of a factory by 1.88%. A 10 percent increase in the share of Old Believers could be, for example, an increase from 2% of the population to 2.2% of the population. The effect is actually quite sizable: when the share increases from 2% to 4% (that is, increases by 100%), the total factor productivity increases by 18.8%. Thus, the effect is not only statistically, but also economically significant. This is an important result, and it supports the motivation to study Old Believers' because of their economic success.

References

- Alesina, Alberto, & Giuliano, Paola, 2013. "Culture and institutions", Working paper, National Bureau of Economic Research, (No. w19750)
- Abramitzky, Ran, 2007. "The Limits of Equality: An Economic Analysis of the Israeli Kibbutz" The Journal of Economic History, Cambridge University Press, vol. 67(02), pages 495-499, June
- Barro, Robert J. & Rachel McCleary, 2003. "Religion and Economic Growth," NBER Working Papers 9682, National Bureau of Economic Research, Inc.
- Bernstein, L., 1992. "Opting out of the legal system: Extralegal contractual relations in the diamond industry". Journal of Legal Studies 21, 115–157.
- Becker, Sascha O. & Ludger Woessmann, 2009. "Was Weber Wrong? A Human Capital Theory of Protestant Economic History," The Quarterly Journal of Economics, MIT Press, vol. 124(2), pages 531-596, May.
- Blackwell, William L., 1965. "The Old Believers and the rise of private industrial enterprise in early nineteenth- century Moscow." Slavic review 24.3: 407–424.
- Bonacich, Edna, 1973. "A theory of middleman minorities" American sociological review: 583 594
- Cantoni, Davide, 2010. "The economic effects of the Protestant Reformation: Testing the Weber hypothesis in the German Lands," Economics Working Papers 1260, Department of Economics and Business, Universitat Pompeu Fabra.
- Gregg, Amanda "Factory Productivity and the Concession System of Incorporation in Late Imperial Russia." Working paper

Gregg, Amanda "Shareholder Rights and Share Capital: The Effect of the 1901 Russian Corporation Reform, 1890-1905" Working paper,

Greif, Avner, 1993. "Contract Enforceability and Economic Institutions in Early Trade: the Maghribi Traders' Coalition," American Economic Review, vol. 83(3), pages 525-48, June.

Hillmann, Henning, and Brandy L. Aven, 2011. "Fragmented Networks and Entrepreneurship in Late Imperial Russia." American Journal of Sociology, vol. 117 (September): pp. 484-538

Hornung, Erik, 2014. "Immigration and the diffusion of technology: The Huguenot diaspora in Prussia." The American Economic Review, 104(1), 84-122.

Knack, Stephen & Philip Keefer, 1997. "Does Social Capital Have an Economic Payoff? A Cross-Country Investigation," The Quarterly Journal of Economics, MIT Press, vol. 112(4), pages 1251-88, November.

Leroy-Beaulieu, Anatole, 1897. L'empire des tsars et les Russes (Vol. 1) . Paris, Hachette.

Owen, Thomas C., 1992. RUSCORP: a database of corporations in the Russian Empire, 1700-1914. 3rd ICPSR release. Baton Rouge, LA: Thomas C. Owen [producer]. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor], 1993.

Owen, Thomas C., 1995. "Russian Corporate Capitalism from Peter the Great to Perestroika". New York: Oxford University Press.

Owen, Thomas C., 1991. "The Corporation under Russian Law, 1800-1917: A Study in Tsarist Economic Policy". New York: Cambridge University Press.

Raskov, Danila & Vadim Kufenko, 2014. "The role of Old Believers' enterprises: Evidence from the nineteenth century Moscow textile industry" Working paper

Raskov, Danila, 2012. "The Economic Institutions of Old Believers," Saint-Petersburg State Universti, book (in Russian),

Syverson, Chad, 2011. "What Determines Productivity?" Journal of Economic Literature, vol. 49(2), pages 326-65, June.

Бобков В.Я., 1885 "Сведения о фабриках и заводах Московской губернии", М., Земская управа, статистическое отделение.

Боголепов, И.П., "Статистические сведения о грамотности крестьянского населения Московской губ. по подворной переписи 1869 и 1883 гг., по уездам, и по призывным спискам по отбыванию воинской повинности за 1885 и 1895 гг. по уездам и волостям" М., Статистический ежегодник Московской губернии за 1895 г., 1896.

Матисен Н., 1872 "Атлас мануфактурной промышленности Московской губернии", М., Типография т. Рис на Садовой.

"Распределение Населения Империи по главным вероисповеданиям по данным первой всеобщей переписи 1897 г.", М, 1901.

"Населенные места Российской Империи в 500 и более жителей с указанием всего наличного в них населения и числа жителей преобладающих

вероисповеданий. По данным переписи 1897 года." Под редакцией Н.А. Тройницкого, СПб., 1905.

Орлов, В.И., Н.А. Каблуков, 1878-, "Сборник статистических сведений по Московской губернии. Отдел хозяйственной статистики." Тома 2-3, М., Издательство Московского губернского земства.

Appendix A: Summary statistics

Variable	Mean	Std. Dev.	Min.	Max.	N
Total revenue, rub	375733.165	1074695.307	160	13753694	811
# of workers	263.556	714.816	1	10219	811
Square feet of boilers	4143.959	35689.764	0	694000	811
Total HPs of equipment	121.45	522.482	0	8242	811
Total cost of fuel	8406.798	33804.198	0	435158	811
Days/year working	237.911	43.001	40	340	809
Age of factory (years)	27.799	22.733	2	146	527
Latitude	55.926	0.41	54.854	57.065	800
Longitude	38.576	1.443	35.654	42.678	800
Distance to center of Guslitsi, km	95.731	55.218	0.214	265.088	800
Distance to Novg. fair	341.203	89.84	89.563	523.936	800

Appendix B: Estimation results

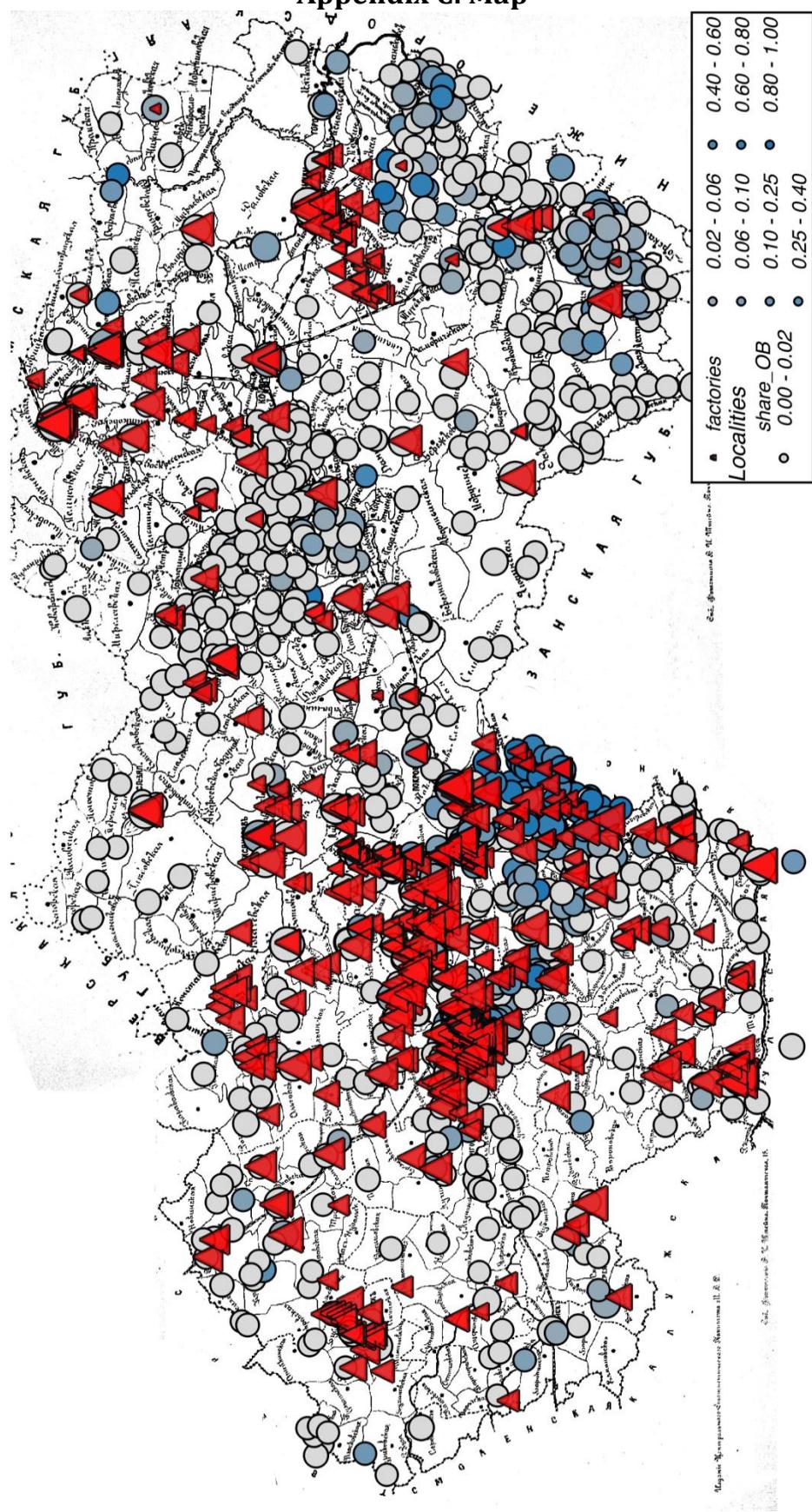
Table 1: Results

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Log(Share of Old Believers)		0.073*** (0.012)	0.058*** (0.011)	0.012 (0.013)	0.060*** (0.013)	0.188*** (0.041)	0.169* (0.102)	0.240*** (0.053)
Log(N of workers)		0.973*** (0.039)	0.968*** (0.038)	0.900*** (0.039)	0.931*** (0.037)	0.771*** (0.052)	0.884*** (0.038)	0.908*** (0.040)
log(Cost of fuel)		0.035*** (0.011)	0.013 (0.011)	0.025** (0.011)	0.031** (0.013)	0.017 (0.013)	-0.010 (0.017)	0.012 (0.018)
Log(HP of machinery)		-0.013 (0.030)	0.027 (0.032)	0.032 (0.032)	0.051 (0.031)	0.102** (0.041)	0.113** (0.046)	0.096** (0.046)
Log(Surface of boilers)		0.061*** (0.018)	0.053*** (0.019)	0.027 (0.019)	0.016 (0.019)	0.038 (0.026)	0.012 (0.023)	0.006 (0.023)
Log(Days/year working)				1.519*** (0.186)	1.252*** (0.167)	1.646*** (0.216)	1.347*** (0.202)	1.200*** (0.191)
Latitude				-0.187* (0.096)	-1.276*** (0.346)	-0.134 (0.167)	0.111 (0.144)	-0.094 (0.850)
Longitude				0.195*** (0.041)	0.583*** (0.221)	0.140 (0.402)	0.135*** (0.051)	0.281 (0.285)
Distance to Novg. fair						-0.001 (0.007)		0.012 (0.010)
Age of factory (years)						0.008*** (0.002)		0.006*** (0.002)
Constant		6.725*** (0.181)	7.129*** (0.191)	11.008** (4.639)	56.646** (23.290)	10.470 (25.645)	-2.726 (6.743)	2.906 (42.947)
Dummies for types of factories	Yes	Yes*	Yes**	No	Yes*	Yes***	No	Yes**
Dummies for 24 districts	No	No	No	Yes***	No	No	Yes***	No
Estimator	OLS	OLS	OLS	OLS	OLS	2sls	2sls	2sls
Observations	811	800	798	798	520	798	798	520
R ²	0.781	0.793	0.816	0.841	0.833	0.783	0.810	0.770

* p < 0.1, ** p < 0.05, *** p < 0.01, joint significance indicated for control variables. Standard errors in parentheses.

Note: A unit of observation is 1 textile factory in Moscow and Vladimir provinces in 1898. Dependent variable is log(Total revenue), robust standard errors are used. Share of Old Believers is instrumented with the distance to the center of Guslitsi in 2SLS settings. Share of Old Believers within 7 kilometers from the factory is taken, although the results are not sensitive to the specific radius.

Appendix C: Map



Shestakov, Daniel¹: Is God Dead? Persistent Effects of the Soviet 1930s Antireligious Campaign

Abstract: What are the limits of conscious institutional change, implemented by the modern bureaucratic state? Taking one particular case, this study seeks to explore the effects of 1930s antireligious campaign in the USSR, second largest in history, with the new dataset tracing histories of more than 20,000 Russian temples. Two main hypotheses are tested: locations with 1930s temples destruction relatively more intense should be populated today with relatively less number of Orthodox Christians (however defined) and relatively high number of Christian sects. Data from WVS are employed to account for present day beliefs. Set in quasi-experimental framework this research contributes to economics of religion, persistent effects in development literature, as well as to literature on culture and socioeconomic outcomes.

Introduction

Modern approach to defining institutions aims at bridging economic and sociological perspectives; institutions can be described as systems ‘of rules, beliefs, norms, and organizations that together generate a regularity of (social) behavior’ (Greif 2006: 30). All of the components listed above do change in intertwined fashion, so that resulting behavior regularity is interpreted as an equilibrium given structure of rules with supporting beliefs or internalized norms, with organizations influencing both rules and beliefs. Endogenous institutional change is assumed to be guided by slowly changing quasi-parameters (Ibid: 159). Immediate question one might ask is what are the limits of conscious institutional change, implemented by the modern bureaucratic state?

This study seeks to isolate an impact of a single large case of centralized attempt in changing whole country’s beliefs system: Soviet antireligious campaign of 1930s. As Smith (2008: 1569) recently noted: “in communist and post-communist societies... we have various forms of something like natural experiments with religion involving different regions, cultures and time periods”. It is therefore surprising to see a lack of rigorous statistical examination of what might be considered as the most far-reaching attempt to forcefully change people’s belief system.

Aim of the Project

In exploring possible effects of antireligious campaign this study aims to contribute to the several stands of literature across broadly defined institutional economics field.

First, there is a growing body of persistent effects and historical development literature which tries to show how historical events shape current economic performance (Nunn 2014). Studies of that sort avoid identification problems by looking at quasi-experimental setting (Diamond and Robinson 2010). Examples of this strand of literature are both numerable and common place, though it is worth noting that geographical width

¹ dschestakov@gmail.com, Bank of Russia

of them increasing, with several new articles based on data from the late Russian empire (Acemoglu et al 2011, Grosfeld et al 2013, Dower and Markevich 2014).

Second, once marginalized, economics of religion is gaining wide recognition: number of papers published in the last decade increased six-fold (Hungerman and Chen 2014). Economic approach to religion is understood less as economic imperialism and more like a legitimate interdisciplinary line of inquiry. For example, one might claim that in sociological literature difference between religious and non-religious organizations is more of a degree than of a kind. Bauman and May (2001: 45-46) define religious sects as a type of organization whole lives of whose members come into their domain of concern. By that definition difference between religious sects and some types of economic entities, say, direct selling organizations (Biggart 1989) becomes blurred. Seminal article by Iannaccone et al (1997) made economists realize that it is not enough looking at decreasing demand for religiosity, and one should account also for increased supply. Disentangling supply and demand while observing only equilibrium outcomes is not an easy task: that is why it might be instructive to look of the situation of almost pure supply-side shock, which USSR atheist campaign supposedly was.

More broadly, this paper contributes to the literature on the interrelation between culture and economic and political outcomes. Most of that literature takes culture as slowly changing variable, affecting both politics and economics (Greif 2006, Tabellini 2010). Reverse causation left underexplored: however cases when policy might influence culture might occur more often, than assumed in this type of literature, with antireligious campaign being an extreme example.

Two works that are closest to my efforts are Dower and Markevich (2014) and Johnson and Koyama (2013). Dower and Markevich explore connections between privatization in post-communist Russia and a mass privatization reform in the Imperial Russia, the 1906 Stolypin land reform and find that historical measures of resistance to privatization are associated with greater negative sentiment towards private property today. Their interpretation of the effect is that it cannot be explained fully with pre-determined preferences. Difference with my work is while Stolypin reform seems to alter population beliefs as the by-product of the reform, antireligious campaign was a conscious attempt to alter people's beliefs. Johnson and Koyama links religious toleration with state capacity: state tolerates religious dissidents when it becomes too costly to prosecute them. My case could be seen as a proper extension of their framework for a case when minority holding power (Bolsheviks) has authority to impose its views on largely religious population.

Hypotheses and Methodology

My hypothesis is that Soviet antireligious campaign of 1930s had a lasting and differential impact on religious attitudes of Soviet population, which could be imperfectly seen even in the end of 1930s and persisted till today. While organized religion (Russian Orthodox Church) took a major hit and saw number of its followers plummeted, small sectarian churches had better chances to survive. Role of intergenerational transmission for religious attitudes is high, so effects on people's beliefs was largely permanent.

Locations with 1930s antireligious campaigns relatively more intense should be populated today with relatively less number of Orthodox Christians (however defined) and relatively high number of Christian sects. Referring to a plethora of Russian Christian denominations as sects conveys no negative meaning and is simply due to the fact of predominance of Russian Orthodox Church in the Russian empire.

While performing analysis clear distinction should be made between starting conditions, treatment, immediate effect and persistent effect.

Starting conditions are number of temples and share of Orthodox Christians according to 1897 Census. I try different measures of pre-treatment Christianity and economic development and assume that Bolshevik treatment was random conditioning on observables.

My main source of data is previously unused in research, but highly informative 'Temples of Russia' (Rus.: *Hramy Rossii*) database, which includes more than 20,000 geolocated existing and historical sites of Orthodox and Old Believer temples. Geographic span covers the whole Russian Federation territory, with historical sites listed both under 1913 and 2002 administrative division. Project is supported by the team of local historians and aims to extend research efforts of Palamarchuk (1996) over the whole former Russian empire. 'Temples of Russia' research team codifies temples, chapels, oratories and monasteries. Typical description includes name, type of building, foundation date, finishing date for the last wing, closing date (if ever closed), reopening date (if reopened), destruction date (if destroyed).

Share of temples destroyed within certain range from particular place is assumed to be my treatment of choice. Destruction of temples by no means covers whole antireligious treatment – if anything, it underestimates it. Material well-being of churches shattered after the Decree on the Separation of Church and State of January 1918 when most of their property was effectively nationalized. However, temples itself were mostly left untouched, bearing in mind increased pressure on clergy and local communities to pay for them. State offensive was reiterated during the Cultural Revolution, especially after 1929. While before that period antireligious measures were mostly confined to propaganda, 1930s saw increased number of destroyed temples and repressed clergy. Orthodox clergy in that period were repressed as much as small sects, although that would change after the start of the Great Patriotic War (Perepechenykh 2013). Destroyed temples and repressed clergy should be understood as an attack on religious supply-side after efforts to diminish demand through propaganda in 1920s were deemed ineffective.

World Value Survey, European Social Survey and European Values Survey data are used to measure current religious attitudes of Russian population. These data are first mapped then to treatment variable localities. However main strategy is similar to statistical approach of Dower and Markevich (2014), which estimate influence of local index (destroyed temples in my case) to the answer of particular respondent (for the on privatization, for me on religiosity) controlling for respondent's socioeconomic status.

Results

Preliminary results are strongly suggestive of the actual presence of the above-described effect in data. Cross-regional analysis catches both negative correlation of antireligious intensity with present day Christian attitudes and positive correlation with Christian sects' activity. Next step is looking beyond cross-regional analysis benefiting from geolocated temple destruction data and the fact that religious attitudes can be pinned down to the city-level to make a link with particular WVS, ESS and EVS respondents. Work-in-progress part is also to include share of prosecuted by 58-10 article of USSR Penal Code ('counterrevolutionary crime referring to the mass religious superstitions').

References

- Acemoglu, D., Hassan, T. A., Robinson, J. A. (2011). Social Structure and Development: A Legacy of the Holocaust in Russia. *The Quarterly Journal of Economics*, 126(2), 895-946.
- Bauman, Z., May, T. (2001). *Thinking sociologically*. John Wiley & Sons.
- Biggart N. W. (1989). *Charismatic capitalism: Direct selling organizations in America*. University of Chicago Press.
- Diamond, J., Robinson, J. A. (2010). *Natural experiments of history*. Harvard University Press.
- Dower, P. C., Markevich, A. (2014). A history of resistance to privatization in Russia. *Journal of Comparative Economics*, 42(4), 855-873.
- Etkind, A. (1998). *Khlyst. Sekty, literatura i revoliutsiia*. Novoe literaturnoe obozrenie. [In Russian]
- Greif, A. (2006). *Institutions and the path to the modern economy: Lessons from medieval trade*. Cambridge University Press.
- Grosfeld, I., Rodnyansky, A., Zhuravskaya, E. (2013). Persistent Antimarket Culture: A Legacy of the Pale of Settlement after the Holocaust. *American Economic Journal: Economic Policy*, 5(3), 189-226.
- Hungerman, D., Chen, D. (2014). Economics, Religion, and Culture: A Brief Introduction. Forthcoming in the *Journal of Economic Behavior and Organization*.
- Iannaccone, L. R., Finke, R., Stark, R. (1997). Deregulating religion: The Economics of Church and State. *Economic Inquiry*, 35(2), 350-364.
- Iyer, S. (2015). The New Economics of Religion. *IZA Discussion Papers*, No. 9320
- Johnson, N. D., Koyama, M. (2013). Legal centralization and the birth of the secular state. *Journal of Comparative Economics*, 41(4), 959-978.
- Nunn, N. (2014). Historical development. *Handbook of Economic Growth*, Vol. 2, 347-402.
- Palamarchuk, P. (1996). *Sorok sorokov. Kratkaja illjustrirovannaja istorija vseh moskovskikh hramov*. Vol. 1-4. AST Press [In Russian]
- Perepechenykh, A. (2013). *Tragicheski uzhasnaja istorija XX veka. Vtoroe prishestvie Hrista. "U Boga kamni vozopijut!"*. Novoe literaturnoe obozrenie. [In Russian]
- Smith, C. (2008). Future Directions in the Sociology of Religion. *Social Forces*, 86(4), 1561-1589.

Tabellini, G. (2010). Culture and Institutions: Economic Development in the Regions of Europe. *Journal of the European Economic Association*, 8(4), 677-716.

Sidorova, Elena E.¹: Empirical Assessment of the Importance of the Factors Affecting the Litigation Antitrust Cases' Results²

Abstract: Many antitrust cases in Russia continue to be a challenge for the assessment of competition policy. The question is that the impact of several antitrust decisions is rather questionable because of poor legal and economic proceeding. In fact, one of the key factors of the antitrust enforcement quality is the way of decision making by the judges in antitrust cases. This project proposal investigates the factors, affecting final antitrust cases results as the key element of the competition policy's tools in Russia – antitrust regulation. Using a unique dataset of the appeals of infringement decisions from 2008-2012 this paper empirically examines the impact of competition policy instruments on national economy; development of the criteria for evaluating the effectiveness of antitrust policy; analysis of data on facts influencing the final court decision of antitrust investigations against Russian companies.

Introduction

Competition policy is one of the major issues of the world economy, which has become the most significant ones in terms of modern trends of liberalization and globalization. Efficient antitrust regulation is one of the most significant factors of the national economic system, ensuring development through the creation of a strong competitive environment. Current Russian antitrust legislation has been under some changes, including the adoption of four "antitrust packages", specifying methodology of antitrust investigation. That has strongly affected the national economy and competition.

Interpretation and application of antitrust legislation by the judicial system determines the way of further legal acts application, creating a stable framework of national economy regulation. The judicial system has a significant impact on competition policy as a result of interaction between the judicial system and competition policy enforcement.

Among different explanations of the antitrust enforcement development, there is a standard reference to several problems, such as lack of experience of competition law enforcement by competition agencies, the judges' lack of specific knowledge in economic analysis that may cause a misuse of antitrust legislation. Moreover, it is still not clear how different factors can explain the large number of decisions with the modest quality of argumentation and standards of evidence. The analysis conducted in those papers is an important extension of the prior literature, but they cannot provide answers to issues connected with combination of measures able to improve the effectiveness of antitrust enforcement or factors influence the final court decision.

The Russian experience shows the results of continuing modernization of antitrust system characterized by the implementation of the best world practices and their

¹ e_sidorova_94@mail.ru, Institute for Industrial and Market / Laboratory of competitive and antitrust policy, HSE, Moscow, Russia

² This is part of the project under the direction of Svetlana B. Avdasheva and with participation of Svetlana V. Golovanova

adoption to specific conditions of national economy. However, as long as the Russian antitrust law has been reformed, its changes have different types of impact on Russian antitrust policy. The main research question is about the specific types factors influencing the final court decision as an indicator of competition policy efficiency.

This research contributes to the existing methodology pertaining to the measurement of the national competition policy implementation. Since Russia is likely to adopt a wide range of antitrust standards now and in the nearest future, the methodology in question requires modification and improvement in aspects of antitrust regulation.

Aim of the Project

The goal of this study is to assess changes in the effectiveness of Russian antitrust regulation in the framework of researching the key factors influencing the final court decisions in antitrust cases.

Therefore, we concentrate on the following tasks: development of a system of criteria in order to evaluate the influence of several factors on the arbitration court cases' results; collection of the data and creation a coded database containing the quantitative and qualitative description of antitrust cases; making a statistical analysis of the unified database; formulation of the hypotheses about the correlation between the factors chosen from the database and the final court decisions and making an econometrical model assessing factors affecting the results of antitrust cases.

Hypothesis and Methodology

The empirical part of the research is concerned with structural analysis of antitrust cases from 2008 to 2012. In order to explain the key tendencies in the number of final court decisions we combine both qualitative and quantitative analysis.

We are going to estimate our assumptions with Logit-model approach and use this econometric model to discuss several issues. The hypothetical assumptions consist of several key terms. First, we would like to realize how the period and the lengths of case consideration change the probability of the final decision "refusal to satisfy company's claim". Second, we are going to find out the impact of the size of fine and the judges' experience, including the existence of economics education among them on the judgment. Third, we are aimed at estimation the influence of such factors, as judge working load, the sphere of economics, the size of the company, taking into account experts' and third parties' opinions by the judge during the court consideration as factors, influencing the final decision.

As a result, the Database consisted of 4005 cases is coded and described according to 128 different characteristics. Those cases of antitrust violations refer to different types of markets. The characteristics take into account the features that probably reflect the dynamics of antitrust regulation efficiency and the development of antitrust law implementation with respect to Russian companies over the period.

Using the decisions of the commercial court as an observation, we attribute to the observation quantitative characteristics, including types of alleged violations (abuse of dominance - 10 article, concerted practice - 11 article of the Competition Protection

Federal Law); features of alleged party (being a natural monopoly, having any experience of arbitration processes); type of the final decision and the following actions of arbitration process' parties (if it was satisfied, appealed and reversed by a higher court); market effects caused by violation (economic harm, the level of the market of violation) and additional information in the dataset (for example, characteristics of the lengths of the process, code of industry, existence of indicators of evidence like economic analysis and referring to theoretical framework, etc.).

Results

In this section, we will apply the econometric and statistical procedures from theoretical part, combining a dataset on Russian antitrust regulation collected by the Institute for Industrial and Market Studies of the National Research University the Higher School of Economics.

Table 1. presents the statistical overview of the judge's antitrust cases consideration. Those figures are basics of the further research, because they illustrate the main findings connected with the Russian antitrust mechanism in general.

Table 1. Overall statistics on the judges' qualification, average

	2008	2009	2010	2011	2012	Total
Overall judge experience, amount of cases	15	25	45	70	87	49
Economic education of the judge, the number of judges	3	6	5	14	19	47
The judge is a PhD in Law, the number of judges	24	34	65	59	48	230

The evidence provided in this table demonstrates that there is a lack of economic experience among judges, what leads to the poor quality of final antitrust decisions. That happens due to the questionable standards of evidence and stated indictment. Another notable finding seen in table 1 is that there is a growing trend in the amount of overall judge experience and their economic education, what illustrates the tendency of antitrust enforcement development.

Theoretically, the probability of the final court decision, estimated as "refusal to satisfy company's claim", is investigated by Logit model. The court antitrust decision is considered as "refusal to satisfy" in cases where the arbitration court of first instance found the indictment, which is expressed in the refusal to meet the company's complaint, so the company is considered as the violator of the antitrust legislation. Given this, the dependent variable can be written as:

$$L = \prod_{RTSi=0} (1 - F(Xi'\beta)) \cdot \prod_{BECi=1} F(Xi'\beta) \rightarrow \max_{\beta} \quad (1)$$

$$\ln L(\beta) = \sum_{i=1}^{4005} RTSi \cdot \ln F(Xi'\beta) + \sum_{i=1}^{4005} (1 - BECi) \cdot \ln (1 - F(Xi'\beta)) \rightarrow \max_{\beta} \quad (2)$$

$$RTSi = \begin{cases} 1, & \text{if final court decision is "refusal to satisfy"} \\ 0, & \text{otherwise} \end{cases} \quad (3)$$

In our present study we will also employ the marginal effect and argue that there is a significant impact of the factors described to the final court decision. Basing our judgment on the sum of qualitative and quantitative indicators, we will determine that the figures related to the antitrust enforcement become higher because of modernization of the antitrust law in Russia.

Simultaneously the value of company's figures, describing its antitrust and business activity, will be higher because according to theoretical overview, in most cases company is more interested in satisfying its claim.

It is also expected that the impact of all those factors on probability of refusal to satisfy the company's claim will be statistically significant. Further precise statistical analysis will reflect more key tendencies in antitrust enforcement. The financial indicators and their calculations will be presented in tables. Final econometric model will show several issues of antitrust regulation in Russia. All the results will be reported in the narrative text. Our results will definitely open several prospects for further research.

References

- Avdasheva, S., Tsytsulina, D., Golovanova, S., Sidorova, Ye. (2015). Discovering the Miracle of Large Numbers of Antitrust Investigations in Russia: The Role of Competition Authority Incentives. *Higher School of Economics Research Paper No. WP BRP, 26/PA/2015.*
- Baye, M., Wright, J. (2011). Is Antitrust Too Complicated for Generalist Judges? The Impact of Economic Complexity and Judicial Training on Appeals // *Journal of Law and Economics*, 54(1), 1-24.
- Carree, M., Günster, A., Schinkel, M. (2010). European Antitrust Policy 1957-2004: An Analysis of Commission Decisions // *Review of Industrial Organization*, 36(2), 97-131.
- Geradin, D., Petit, N. (2010). Judicial Review in European Union Competition Law: A Quantitative and Qualitative Assessment // *Tilburg Law and Economics Center (TILEC) Law and Economics Discussion Paper No. 2011-008.*
- Harding, C., Gibbs, A. (2005). Why go to court in Europe? An analysis of cartel appeals 1995-2004 // *European Law Review*, 3, 349-369.
- Huschelrath, K., Smuda, F. (2014). The appeals process: an empirical assessment, *ZEW Discussion Papers*, No. 14-063.
- Kaplow, L. (1987). Antitrust, Law and Economics, and the Courts // *Law and Contemporary Problems*, 50(4), 181-216.
- Posner, R.A. (1970). A Statistical Study of Antitrust Enforcement // *Journal of Law and Economics*, 13(2), 365-419.

Susin, Ivan¹: Subcontracting Fees in Public Procurement

Abstract: *Public procurement research is often concerned with issues of efficiency, rents, collusion and competition. Subcontracting is an important feature of procurement process that has to be understood well to regulate procurement properly. For example, ability to subcontract from the winner changes the incentives of potential procurers and makes usual auction theory results inapplicable. Though in organization economics subcontracting can well described through real option approach, regulation has to deal with highly asymmetrical information and that requires different set of instruments. This project tries to derive the conditions when this real option to subcontract can be sold, either separately or simultaneously with the procurement contract itself. Secondary question is to study what subcontracting regulation should be in place for social goals promotion (such as contracts, designated to small and medium enterprises (SMEs)).*

Introduction

Research Problem

Procurement projects account for a significant share of public spending and their efficient implementation is vital for promoting social welfare. Since the procured products and services are often complex, and the projects may be large, they call for collaboration between firms from the same or different industries. Hence, subcontracting may potentially improve the social welfare. On the other hand, subcontracting may have costs, in particular, due to the opportunities it opens for collusion between competing suppliers.

Therefore, efficient regulation of subcontracting can improve incentives, allocation and revenues in procurement auctions. The current regulatory practice is typically binary: either subcontracting is outright prohibited, or no restrictions are imposed. More sophisticated policy where the option to subcontract would be determined endogenously, in particular – sold at a fee, might improve the efficiency of procurement.

Since procurement auctions are a mirror image of the standard auctions used for sale, a natural framework for studying the scope for subcontracting in procurement is the theory of multi-unit auctions with potential resale. Auction theory is clear that existence of the aftermarket changes in an important ways incentives of the bidders. This topic is inherently difficult and there are very few closely related papers (see the next section).

This project makes a first important step in my postgraduate research on optimal subcontracting regulation. It introduces and analyzes a simple yet potentially very effective instrument to regulate subcontracting, a fee for the right to subcontract (resell in the standard auction theory terminology). Zero fee corresponds to unrestricted subcontracting and a prohibitively high fee corresponds to no subcontracting.

¹isusin@hse.ru, International Laboratory for Institutional Analysis of Economic Reforms, Center for Institutional Studies, National Research University Higher School of Economics, Moscow, Russia

Literature

Main insights come from research on auctions with resale. We can interpret a project as a collection of multiple units sold in an auction, some of which are later resold to subcontractor. A good modern overview of multi-unit auctions with resale is given in [Filiz-Ozbay, Lopez-Vargas, Ozbay, 2015]. Ability to subcontract is universally modeled as exogenous and this project adds to the literature by considering it as endogenous.

In an influential work [Haile, 2003] shows that auctions with resale possess specific features, essentially transforming even auctions with independent values into those with common values. More competition not necessarily increases sellers' revenue in an ordinary auction. But competition with resale increases the value of the object for every bidder due to higher opportunity to sell and lower opportunity to buy on the aftermarket. Therefore, resale is an essential factor in the auction design that cannot be simply omitted.

Unlike auction theory that is mainly concerned with seller's revenue alone, applied subcontracting regulation is often motivated by promoting social goals (mostly efficiency, sometimes providing support to small businesses). However proper theoretical foundations are often lacking. For example, [Marechal Morand 2012] show that splitting big project to small lots is a more efficient measure than mandating partial subcontracting out to small firms (both measures are widely used in practice), yet they do not account for resale effects. [Alcalde Dahm 2013] propose a simple yet promising auction for shares that allows arbitrary social objectives, but they do not consider subcontracting.

Another body of literature explains incentives for subcontracting and the effects of subcontracting on industrial structure. Subcontracting is not limited to simple production specialization (outsourcing non-core responsibilities) or malicious collusion (joint bids reduction followed by subcontracting a large share of the project). [Spiegel, 1993] shows that even if industry output falls with horizontal subcontracting, welfare can still be higher if industry-wise costs are sufficiently lowered. As [Jeziorski, Krasnokutskaya 2013] show, when random fluctuations of the production costs or from opportunity costs make a firm to prefer lower production volumes, subcontracting significantly affects right tail of industry costs distribution. From the industry point of view subcontracting fee is seen as efficiency-reducing, but only for cases with low subcontracting gains.

[Pagnozzi, 2007 2009] shows the problem of demand reduction in multi-unit auction: a bidder can reduce demand on the marginal units to decrease the price of submarginal units. By selling project as a bundle and then allowing resale, the auctioneer can often get higher revenue than selling units separately. Optimal project partition problem also arises in studies of repeated auctions and combinatorial auctions in similar circumstances. Bundling can be seen as a prohibition for the strong bidder to buy only second unit on the aftermarket. Compared to subcontracting fee this measure is less flexible (the fee accommodates ex-post subcontracts with high gains) and it can limit competition if there are financial constraints.

Hypotheses and Methodology

Hypotheses

The framework is based on [Pagnozzi, 2009] and has two (asymmetric) bidders who compete for two units of the good in a uniform-price auction. To simplify the analysis, this model assumes that both bidders are perfectly informed about each other's valuations for the objects on sale. This allows to model the aftermarket as a simple bargaining procedure (Nash bargaining solution).

The main questions are (1) how introducing a fee for the right of resale will affect strategies of the bidders the auction outcomes; (2) whether a bounded positive fee can be preferred by the auctioneer to the zero or infinite fee and (3) whether it would be conducive to higher social welfare; (4) how economic factors (such as the degree of asymmetry between the bidders) affect the answers to the previous questions; (5) what information available to the auctioneer can be used to properly establish the fee; (6) should the fee be fixed or can it be differentiated.

Methodology

The project involves standard tools of game-theoretic analysis of auctions. The set-up with full information between the bidders, borrowed from [Pagnozzi, 2009], allows to concentrate on bidding behavior while maintaining tractable description of the aftermarket bargaining.

While these assumptions are extreme and not very realistic, they capture some essential features (knowledge asymmetry between bidders as whole and auctioneer, bids are influenced by aftermarket gains) in a tractable way. My further goal is to extend these preliminary results and insights to attempt analyzing a more realistic framework with asymmetric information.

Whereas there are multiple ways to model procurement auctions, uniform price auction allows to study multiple units (that may be extended to shares in future works) being sold in real-world procedure that also shows strong bidders' incentives for manipulating their bids.

The challenge is to model in a tractable way the auctioneer's beliefs about the bidders' valuations, an element that is absent in [Pagnozzi, 2009].

Preliminary Results

A fee for horizontal subcontracting among bidders is shown to improve revenue without compromising welfare. This fee should be imposed only in the case when the strong bidder wants to subcontract from the weaker one. Then the fee for subcontracting will partly extract the rent that arises in procurement auction. At the same time, this fee will not affect allocative efficiency and is paid from the bidders' rents.

However, as this rule depends on weak bidder being present in the auction (moreover, winning a unit in it), endogenous entry into the auction still can alter the strategies. This is subject to further research.

References

- Alcalde, J. and Dahm, M., 2013. Competition for procurement shares. *Games and Economic Behavior*, 80, pp.193-208.
- Jeziorski, Przemyslaw, and Elena Krasnokutskaya. "Dynamic Auction Environment with Subcontracting." (2013)
- Haile, P.A., 2003. Auctions with private uncertainty and resale opportunities. *Journal of Economic Theory*, 108(1), pp.72-110.
- Filiz-Ozbay, E., Lopez-Vargas, K. and Ozbay, E.Y., 2015. Multi-object auctions with resale: Theory and experiment. *Games and Economic Behavior*, 89, pp.1-16.
- Francois Marechal and Pierre-Henri Morand (2012). Small business participation procurement policy: Subcontracting vs Allotment. *Recherches economiques de Louvain*, 78, pp 5-23 doi:10.3917/rel.782.0005
- Pagnozzi, M., 2007. Bidding to lose? Auctions with resale. *The RAND Journal of Economics*, 38(4), pp.1090-1112.
- Pagnozzi, M., 2009. Resale and bundling in auctions. *International Journal of Industrial Organization*, 27(6), pp.667-678.
- Spiegel, Y., 1993. Horizontal subcontracting. *The RAND Journal of Economics*, pp.570-590.

Udrea, Cristina-Eliza²: Econometric Analysis of Non-performing loans in the European Region

Abstract: During the past years many European countries have struggled with an economic downturn, visible in the main macroeconomic indicators. Together with the economical struggles of the indicators there has been observed a deterioration of credit portfolio quality leading to insolvency of banks. Furthermore in case of non-performing loans their high level can jeopardize the financial stability of the whole economic sector. As a result, using a novel panel data set estimated over 2000-2013 across 44 European countries, this research attempts to examine the factors that influence NPL levels. Firstly, we created a linear model but as its histogram was strongly skewed to right and the coefficient of determination dropped abruptly from 70.03% to 21.46% we decided to create a logarithmic model which gave a more realistic approach. According to our dynamic panel estimates the following variables are found to significantly affect NPL ratios: domestic credit provided by financial sector, interest rate spread, real interest rate, lending interest, rate risk premium on lending, depth of credit information index, deposit interest rate, GDP per capita, consumer price index and personal remittances. The results of this research can be useful for banks as well as for regulatory institutions, as it can help with predicting and controlling possible issues that may appear.

Introduction

Today's financial system is marked by fast changes generated by financial innovation mainly, and on the other hand by institutional changes which are reshaping the whole system of relations between financial markets participants.

Just recently, the European Central Bank has announced the cuts on interest rates close to zero, in an unprecedently attempt to jump-start the European economy. With this measure the institution is trying to determine banks to lend out money as cheaply as possible to businesses and household instead of holding on to deposits. Even though the purpose is to increase inflation rate and to trigger higher rates of expenditures, there are analyst who say that by this measure it will be more difficult for banks to sustain profitability³.

Although credit risk has always had the highest importance, the last financial crisis and recession have made NPL one of the major concerns for both bank managers and regulatory authorities. Only in the Central, Eastern and South Eastern Europe (CESEE) region since the onset of the crisis, NPLs increased to an average of 11 percent from just above 3 percent in 2007⁴.

Banks are very important constituents in the financial system of countries and play a fundamental role in the global economy. Therefore, if the financial system does not work

² udreaeliza@gmail.com, University of Bucharest

³ <http://www.theguardian.com/business/2016/mar/10/european-central-bank-cuts-interest-rates-zero-mario-draghi>

⁴ <https://www.imf.org/external/pubs/ft/wp/2013/wp1372.pdf>

properly, its problems have a strong impact on the whole economy⁵. The recent crisis and as well as others that occurred in the past, confirm that bad-loan portfolio is one of the most important factors of fragility and it could produce negative effects on the overall economic activity.

Aim of the Project

The purpose of this research is to empirically investigate and determine the factors that affect non-performing loans in the European region. Identifying the factors that cause non-performing loans is key to the implementation of mechanisms that facilitate the avoidance of their occurrence. The identification of the underlying causes of non-performing loans is necessary for the minimization of the chances of increasing the level of such bad loans in European banks.

Hypotheses and Methodology

To accomplish this task, we apply panel data of 44 countries, in period from 2000-2013 extracted from World Bank. The analysis of non-performing loan through econometric modeling has been used before by many researchers that have tried to explain the variation on NPL using different econometric methods.

Harvir Kalirai and Martin Scheicher used the simple linear regression model to explain the variation of the NPL in Austria for the period 1990 to 2001. The independent variables used were the interest rate for the loans, the inflation and the GDP. Another research was made by Olena Havrylchyk who explained the variation of NPL in South Africa using a linear regression model with factors such as GDP, inflation and interest rate as independent variables.⁶

In this research we will use a simple linear regression model to explain the variation of non-performing loans. The study is conducted for the period of 2000 till 2013 and employs 16 variables. The dependent variable used for the econometrical study is the bank nonperforming loans to total gross loans. In addition to lending interest rate and GDP which are standard empirical determinants of bank asset quality, we highlighted the importance of other additional factors: deposit interest rate, domestic credit provided by financial sector (% of GDP), interest rate spread, real interest rate, risk premium on lending, depth of credit information index, consumer prices and remittances as independent variables.

For the description of data we used indicators of descriptive statistics so as to show the central tendency of the data and for the description of representative values that shape the distribution we used the average and median.

⁵ Richard Mileris (2014), Macroeconomic factors of non-performing loans in commercial banks, Lithuania, *Ekonomika*, Vol. 93 (1), ISSN 1392-1258, pp.22

⁶ Fiqiri Baholli, Ines Dika, Gjergj Xhabija, (2015), Analysis of Factors that Influence Non-Performing Loans with Econometric Model, *Mediterranean Journal of Social Sciences*, MCSER Publishing, Rome-Italy, Vol 6 No 1, pp.392

Results

The data set contains 602 observations of 16 variables. Five of them are type factor, a quality variable, and the other 8 are numeric variables or quantitative variables. Applying dynamic panel data method we achieve the results presented in Table one. The test confirms the validity of the model.

Table 1

Variable	Minimum	Maxim	Mean	Median	1st Qu	3rd Qu
Nonperforming	0.10	897.00	13.81	3.70	1.80	8.10
Deposit Rate	0.010	789.000	7.931	3.590	2.252	6.787
Domestic credit	1.676	299.040	99.520	89.722	45.722	142.736
Spread	-2.808	125.000	5.704	4.725	3.120	6.596
Lending.rate	0.500	67.667	10.211	8.458	5.744	12.000
Real.rate	-41.230	29.358	3.665	3.927	1.476	6.488
Risk.premium	-0.1452	17.5392	4.0147	3.5079	2.1190	5.3042
Information	0.000	8.000	4.072	5.000	4.000	5.000
GDP.cap	354	113732	26614	21502	7521	41302
CPI	16.05	288.65	89.85	92.09	82.40	100.00
Remittances current	4.053*10 ⁻⁹	2.334*10	2.663*10 ⁻⁹	1.478*10 ⁻⁹	5.308*10 ⁻⁸	2.807*10 ⁻⁹
Remittances percent	0.06142	34.49900	2.40714	0.75477	0.34169	2.06777

From the table of descriptive statistics we can classify the European countries according to the NPL as follows:

- 25% of them have levels of NPL below the 1.8%
- 25% of countries are located above the 8.1%
- The median of 3.70 is nearly three times higher than the mean (13.81) which suggest that between the analyzed observations there are extreme values the data containing high variations.

In order to shed more light on the impact of the different variables on NPL we study the correlation between variables used. We form six different models of estimation by extracting from the data set one variable at a time.

We form the following general model:

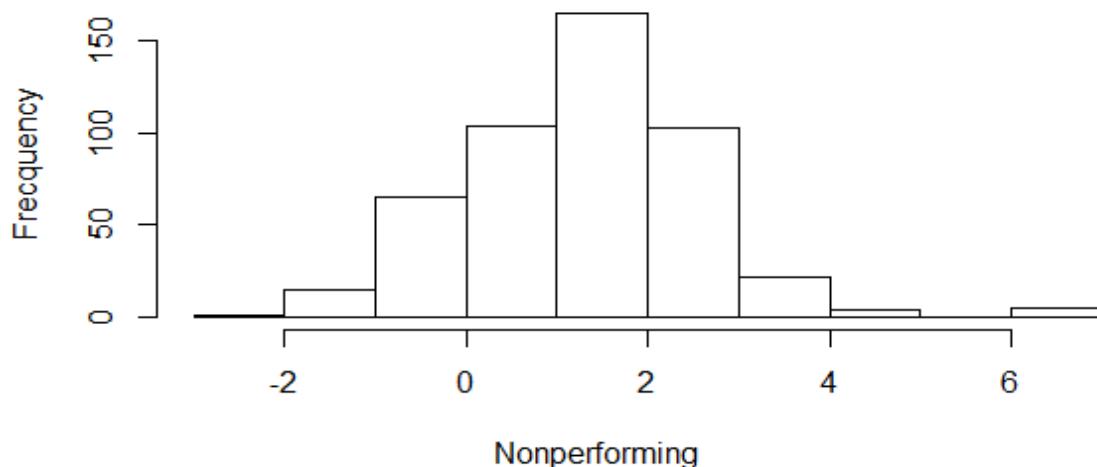
$$\text{NPL} = -19,94 + \text{deposit rate} (-0.0016820) + \text{domestic credit} * (0.04786) + \text{spread} * (0.6027) + \text{lending rate} * (-0.2604) + \text{real rate} * (0.4281) + \text{risk premium} * (-0.12) + \text{information} * (0.2905) + \text{GDP/cap} * (-0.0002213) + \text{CPI} * (0.249) + \text{Remittances current} * (0.000000002943) + \text{Remittances percent} * (0.112)$$

From the analysis it is evident that there is good multiple correlation of 70.03% percent between the NPL and risk premium variable. After the reducing of risk premium the R adjusted square drops to 21.46% suggesting that the other independent variables

do not have such a high influence on NPL but still, the Pvalue is rather low meaning that the model is still statistically significant, only the explanatory power being reduced.

As the R adjusted was maintained near a low value of 21% we created a logarithmic model which presented a far greater accuracy than the linear-linear model. The coefficient of determination maintained a value over a minimum of 46.4%. The most significant result was observed in the logarithmic model formed by excluding spreading interest rate where four variables are presented with a confidence level of 99.9%, one variable with a grade of 99% and a variable degree of 95%. As a result, a significant correlation was found between lending rate, real rate, GDP, consumer price index, remittances and domestic credit.

Histogram of bank nonperforming loans



Furthermore the histogram of logarithmic credit data shows a normal distribution, almost symmetrical. Most of the data is concentrated between 1 and 2 with a frequency of 150.

In the end, the results showed a strong correlation between the independent variables and the NPL. Lower GDP, higher consumer price index, and higher consumer price index are the main drivers of non-performing loans affecting the profitability of banks.

Also, a very strong correlation has been found between risk premium and NPL. A high lending rate reflects high risk premium that banks charge for low credit quality debtors, indicating poor credit portfolios⁷.

⁷ http://businessperspectives.org/journals_free/bbs/2013/BBS_en_2013_01_Curak.pdf

The same is true for the interest rate spread variable as it used not only to cover the cost of operating expenses and required reserves but also reflects the high degree of market power among banks and the poor quality of loans⁸.

Understanding the interrelation between macroeconomic indicators and non-performing loans can help banks and regulatory institutions to manage credit risk more effectively. The parties interested in the credit system can apply policies that are going to facilitate minimizing the macro-economic factors that have a strong impact on the nonperforming loans.

⁸ <http://www.eccb-centralbank.org/PDF/working/wp-07-01.pdf>

Valero, Mathilde¹ (with Christophe Muller²): Female Economic Rights and Human Capital Accumulation: An Application to Developing Countries

Abstract: This paper examines whether women's legal rights affect the human capital of the next generation. While previous papers investigate this issue at a micro level and for specific reforms, few evidence rely on a more global context. Using the World Bank database on "50 Years of Women's Legal Rights", we look at married women's rights as a determinant of children's education in 75 developing countries from 1970 to 2010. We find evidence that reforms improving the legal capacity of married women - measured by the rights to access to a bank account or to a job without the husband's permission, go to court or sign legal contracts - increase the educational attainment among youth aged between 15-19 years old. However, legal reforms endowing women with property and inheritance rights equal with men do not seem to have a significant impact on the average years of schooling of the young cohort.

Introduction

In 2010, the promotion of gender equality and empowerment of women became one of the Millennium Development Goals. Gender equality matters because it is a core development objective in its own right but also because women play a fundamental role in development by improving prospects for the next generation. In the Word Development Report 2012, it is explicitly mentioned "gender equality and women's empowerment reduce under-five mortality, the likelihood of contracting HIV or AIDS and help to promote primary education".

Regarding this last development dimension, despite enormous progress in education during the last 15 years, the pace of improvement has been insufficient to achieve universal primary enrolment by 2015. There are still 58 million children out of school and around 100 million children who do not complete primary education (Unesco, 2015). That's why finding other channels that lead to greater schooling is a relevant issue. This raises the question of empirical investigations to estimate the mechanisms of human capital accumulation and how they are related to female property rights or female resources.

While significant improvements towards gender equality and women's empowerment have already been achieved, the situation of women remains largely unsatisfactory. Women access to economic resources, and in particular property rights are still limited in developing countries. Gender discrimination on labour market and for diverse economic operations or activities is still pervasive. Female individuals economic and social rights are often below than their male counterparts. For example, 21 of the 63 countries studied by Htun and Weldon (2011) have inheritance and bequest rights unequal between genders. According to the Women, Business and the Law 2016 report,

¹ mathilde.valero@univ-amu.fr, AMSE/GREQAM

² christophe.muller@univ-amu.fr

155 of the 173 economies covered have at least one law impeding women's economic opportunities, almost located in the Middle East and North Africa and in Sub-Saharan Africa. In 18 economies, husbands can legally prevent their wives from working.

In some countries like Cameroon, Ivory Coast or Congo-Brazzaville, the husband has the exclusive control on matrimonial assets and financial institutions require the husband's consent to give women's access to financial services.

Strengthening property rights for women seems to be a natural policy avenue to improve this situation. In particular, inheritance rights, access to a bank account or to a job without the husband's permission are crucial rights, beyond more common property rights of land, housing or household capital.

A growing literature demonstrates the particular benefits of women's asset ownership, not only for themselves, but also for their families and the economy as a whole. The access to marital property and the removing restrictions from working outside the home increases women's share of occupations (Hallward-Driemeier et al, 2015), household income (Deere et al, 2014) and reduces fertility (Fernandez, 2009), child mortality (Eswaran, 2002) or child labor (Fied, 2003; 2007). Moreover, women's share of business assets, savings and farmland do have an impact on the allocation of household budget (Doss, 2005) by reducing the consumption of some male-favored goods (Anderson and Baland, 2002; Bobonis, 2009; Wang, 2014) and increasing the consumption of more durable goods, such as children health or education (Thomas, 1990). Then, married women are more able to exercise their preferences on spending when they participate in household decision-making, which rises with their rights and endowments (Roy, 2009; Allendorf, 2007). These hypotheses are reflected by diverse studies in Bangladesh, Indonesia and South Africa (Quisumbing and Maluccio, 2003), in Ethiopia (Kumar and Quisumbing, 2012), in US (Geddes et al, 2012) or in India, finding a positive association between women's economic rights and children enrollment.

However, as an outlier in this literature, Edmonds (2006) demonstrated in South Africa that children schooling might also increase when resources are given to male adult members instead. The difference in results with these microeconomic studies highlights the importance to conduct a macroeconomic study, to see whether results are country specific or more general.

Thus, this paper focuses on an analysis of married women's economic rights - measured by property rights, inheritance rights, access to a bank account or to a job without the husband's permission, go to court or sign legal contracts- as a determinant of children education attainment in 75 developing countries, from 1970 to 2010. In this study, human capital accumulation is reflected by the average years of schooling of the 15-19 age group, from Barro and Lee (2013).

While numerous studies have considered the effects of female economic rights on various outcomes in specific countries and for particular reforms, there has been limited research on this issue across countries and over time. Thus, this paper contributes to the literature by expanding both the country coverage and time dimensions, in assessing the variation in married women's legal rights thanks to the "50 Years of Women's Legal Rights Database" of the World Bank (2012). However, our indicators of legal rights are

based on the law enrolled in the Constitution and can only imperfectly reflect reality. Indeed, the lack of knowledge of the law or social norms can prevent women from acquiring a property or opening a bank account, although the legal rights are enforced in the country

An important dimension of the analysis is the incorporation of dynamic mechanisms in typical collective household settings. Most reforms affecting female rights are little likely to produce immediate and powerful effects. This is not only because it may take time for individual to incorporate information and change their behavior, but also because human capital accumulation is fundamentally a medium term dynamic process.

Finally, this paper devotes special attention to questions of simultaneity, causality and identification, which were not clearly specified in the literature. Indeed, more educated countries can be more prone to have legal rights in favor of married women so the direction of causality between economic development and female economic rights is not very clear.

Aim of the Project

Identify and estimate empirically the mechanisms of human capital accumulation and how they are related to female property rights or female resources with an aggregate model. More generally, these questions have social policies implications in terms of targeting the social programs for female members, as a device to foster human capital accumulation, and thereby growth and economic development.

Hypothesis and Methodology

Our methodology consists in estimating two aggregate women's rights indicators - (1) one reflecting women's property and inheritance rights (2) the other reflecting women's legal capacity with variables on the access to a bank account, to a job, to sign contract or go to court- on the average years of schooling of a younger cohort aged between 15 and 19.

Due to the construction of our data from Barro and Lee (2013) and to reduce measurement error, we use five-year average for all variables. Moreover, the lagged five-year averages of women's rights indicators are put separately into our regressions to take into account the dynamic structure.

First, we estimate our equations including country fixed effects and time fixed effects to identify the effect of changes in women's legal rights within countries over time.

Secondly, we try to correct a suspected endogeneity problem, not only due to reverse causality as our legal indicators are lagged with one period, but mainly due to the omission of one variable correlated both with our dependent and independent variable, like a tendency to modernity in the medium term. For that, we use the 2SLS estimator with some exogenous variables and lagged ten-year of the endogenous variables as instruments.

Regarding our external variables, we use the countries' ratification to the Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW). To assess whether these instruments are valid- in the sense that they only affect the

dependant variable through their correlation with the endogenous variables for which they instrument- we conduct joint F tests for the first stage regression and overidentification tests.

Then, we analyze the inertia phenomenon of our dependent variable by using dynamic GMM.

Results

Our results suggest that empower women can be an important tool for economic development through the slow channel of human capital investment. The measure of women's legal capacity is strongly associated with the educational attainment of children. In other words, greater legal rights in the area of legal capacity seems to increase the average years of schooling of the 15-19 years old around 0.3 years, which means around 3 months. However, women's property and inheritance rights seem to not impact children education, as the coefficient is never significant in all specifications. Potential explanations could be mentioned here. In some countries, customary and religious laws can be superior to the Constitution especially in the area of property and inheritance practices (Htun and Weldon, 2011). Moreover, in societies where key assets that provide smoothing consumption throughout life are controlled by men (land or property), women can try to answer to the same long term needs through other instruments, as children human capital. By allowing women to control these assets, women can be less dependent on children for old-age assistance and the effect on schooling disappears.

References

- Aghion, P., Pearson, T., Rouzet, D. 2012. Education and Military Rivalry. *NBER Working Paper # 18046*.
- Allendorf, K. 2007. Do Women's Land Rights Promote Empowerment and Child Health in Nepal? *World Development Vol. 35, No. 11, pp. 1975–1988*.
- Anderson, S., Baland, J.M. 2002. The Economics of Roscas and Intrahousehold Resource Allocation. *The Quarterly Journal of Economics Vol. 117, No.3*.
- Baldacci, E., Clements, B., Gupta, S., Cui, Q. 2008. Social Spending, Human Capital, and Growth in Developing Countries. *World Development Vol. 36, No. 8, pp. 1317–1341*.
- Barro, R.J., Lee, J.W. 2013. A new data set of educational attainment in the world, 1950-2010. *Journal of Development Economics Vol. 104, pp. 184–198*.
- Barro, R.J., Caselli, F., Lee, J.W. 2013. Symposium on human capital and economic development: An Introduction. *Journal of Development Economics Vol. 104, pp. 181–183*
- Behrman, J.R., Rosenzweig, M.R. 2002. Does increasing women's schooling raise the schooling of the next generation? *American Economic Review Vol. 92, No.1, pp. 323–334*
- Behrman, J.R. 2010. Chapter 73- Investment in Education- Inputs and Incentives. *Handbook of Development Economics Vol. 5, pp 4883–4975*.
- Bennell, P. 2002. Hitting the Target : Doubling Primary School Enrollments in Sub-Saharan Africa by 2015. *World Development Vol. 30, No. 7, pp. 1179–1194*.
- Besley, T. 1995. Property Rights and Investment Incentives: Theory and Evidence from Ghana. *Journal of Political Economy Vol. 103, No.5*.

- Besley, T., Ghatak, M. 2010. Property Rights and Economic Development. *Handbook of Development Economics Vol. 5 Elsevier B.V.*
- Bobonis, G.T. 2009. Is the Allocation of Resources within the Household Efficient? New Evidence from a Randomized Experiment. *Journal of Political Economy Vol. 117, No. 3, pp. 453-503.*
- Deere, C.D., Leon, M. 2003. The Gender Asset Gap: Land in Latin America. *World Development Vol. 31, No. 6, pp. 925-947.*
- Deere, C.D., Duran, R.L., Mardon, M., Masterson, T. 2004. Female Land Rights and Rural Household Incomes in Brazil, Paraguay and Peru. *Working Paper 2004-08. Department of Economics, University of Massachusetts at Amherst*
- Deininger, S., Squire, L. 1998. New ways of looking at old issues: inequality and growth. *Journal of Development Economics Vol. 57, pp. 259-287*
- Deininger, K., Goyal, A., Nagarajan, H. 2013. Women's inheritance rights and intergenerational transmission of resources in India. *Journal of Human Resources Vol.48, No. 01, pp. 114-141.*
- Doepeke, M., Tertilt, M. 2009. Women's Liberation: What's in It for Men ? *The Quarterly Journal of Economics Vol. 124, No.4.*
- Doss, C. 2005. The Effects of Intrahousehold Property Ownership on Expenditure Patterns in Ghana. *Journal of African Economies Vol. 15, No. 01, pp. 149-180*
- Dreher, A., Nunnenkamp, P., Thiele, R. 2008. Does Aid for Education Educate Children? Evidence from Panel Data. *The World Bank economic review Vol. 22, No. 2, pp. 291-314.*
- Duflo, E. 2012. Women Empowerment and Economic Development. *Journal of Economic Literature Vol. 50, No.4*
- Edmonds, E.V. 2006. Child labor and schooling responses to anticipated income in South Africa. *Journal of Development Economics Vol. 81, pp. 386-414.*
- Eswaran, M. 2002. The empowerment of women, fertility, and child mortality: towards a theoretical analysis. *Journal of Population Economics Vol.15, pp. 433-454.*
- Fafchamps, M., Quisumbing, A. 2002. Control and ownership of assets within rural Ethiopian households. *The Journal of Development Studies Vol. 38, No.6, pp. 47-82.*
- Fafchamps, M., Quisumbing, A. 2005. Assets at marriage in rural Ethiopia. *Journal of Development Economics Vol.77, pp. 1-25.*
- Fafchamps, M., Kebede, B., Quisumbing, A.R. 2009. Intrahousehold Welfare in Rural Ethiopia. *Oxford Bulletin of Economics and Statistics Vol.71, No.4, pp. 0305-9049.*
- Field, E. 2003. Fertility responses to land titling: the roles of ownership security and the distribution of household assets. *Working paper.*
- Galiani, S., Schargrodsy, E. 2010. Property rights for the poor: effects of land titling. *Journal of Public Economics Vol.94, pp. 700-729.*
- Galor, O., Moav, O., Vollrath, D. 2009. Inequality in Land Ownership, the Emergence of Human Capital Promoting Institutions and the Great Divergence. *Review of Economic Studies.*

- Garikipati, S. 2008. The Impact of Lending to Women on Household Vulnerability and Women's Empowerment: Evidence from India. *World Development Vol. 36, No. 12*, pp. 2620–2642.
- Geddes, R., Lueck, D. 2002. The Gains from Self-Ownership and the Expansion of Women's Rights. *The American Economic Review Vol. 92, No. 4*
- Geddes, R., Lueck, D., Tennyson, S. 2012. Human Capital Accumulation and the Expansion of Women's Economic Rights. *Journal of Law and Economics Vol. 55, No. 4*
- Hallward-Driemeier, M., Hasan, T., Rusu, A. B. 2013. Women's legal rights over 50 years: Progress, stagnation or regression? *Policy Research working paper no. WPS 6616. Washington, DC: World Bank Group.*
- Hanushek, E.A., Woessmann, L. 2012. Schooling, educational achievement, and the Latin American growth puzzle. *Journal of Development Economics Vol.99*, pp. 497–512.
- Htun, M., Weldon, L. 2011. Sex Equality in Family Law: Historical Legacies, Feminist Activism, and Religious Power in 70 Countries. *Background Paper for the World Development Report 2012.*
- Kumar, N., Quisumbing, A.R. 2012. Beyond "death do us part": the long-term implications of divorce perceptions on women's well being and child schooling in rural Ethiopia. *World Development Vol. 40, No. 12*, pp. 2478–2489.
- Mabsout, R., Staveren, I.V. 2010. Disentangling bargaining power from individual and household level to institutions: evidence on women's position in Ethiopia. *World Development Vol. 38, No. 5*, pp. 783–796.
- Maluccio, J.A., Quisumbing, A.R. 2003. Resources at Marriage and Intrahousehold Allocation: Evidence from Bangladesh, Ethiopia, Indonesia, and South Africa. *Oxford Bulletin of Economics and Statistics, Vol.65, No. 3*, pp. 0305-9049.
- Menon, N., van der Meulen Rodgers, Y., Nguyen, H. 2014. Women's land rights and children's human capital in Vietnam. *World Development Vol.54*, pp. 18–31.
- Quisumbing, A.R., Estudillo, J., Otsuka, K., 2004. Land and Schooling: Transferring Wealth Across Generations. *Johns Hopkins University Press for the International Food Policy Research Institute, Baltimore, MD.*
- Rajkumar, A.S., Swaroop, V. 2008. Public Spending and outcomes: Does governance matter ? *Journal of Development Economics Vol.86*, pp. 96–111.
- Roy, S. 2015. Empowering women? Inheritance rights, female education and dowry payments in India. *Journal of Development Economics Vol.114*, pp. 233–251.
- Samarakoon, S., Parinduri, R.A. 2015. Does Education Empower Women? Evidence from Indonesia. *World Development Vol. 66*, pp. 428-442.
- Thomas, D. 1990. Intra-household Resource Allocation: An Inferential Approach. *Journal of Human Resources Vol.25, No. 4*.
- Unesco. 2015. Education For All 2000-2015: Achievements and Challenges.
- United Nations. 2015. The Millennium Development Goals Report 2015.
- Wang, S-Y. 2014. Property Rights and Intra-household bargaining. *Journal of Development Economics Vol.107*, pp. 192–201.
- Wiig, H. 2013. Joint Titling in Rural Peru: Impact on Women's Participation in Household Decision-Making. *World Development Vol. 52*, pp. 104–119.

World Bank. 2011. World Development Report 2012: Gender Equality and Development.

World Bank. 2015. Women, Business and the Law 2016. Getting to Equal.

Zakharov, Nikita¹: Does Corruption Hinder Capital Investment? Evidence from Russian Regions

Abstract: This paper studies the relationship between corruption and fixed capital investment. We improve on existing literature by using a better corruption data and estimation strategy as we focus on highly corrupt environment within one country, controlling for the unobserved heterogeneity and endogeneity of corruption using freedom of press as an instrument. We also differentiate between different types of investment with regard to the ownership type. Our main finding is a strong negative effect of corruption on capital investment in Russian regions. Corruption decreases private but not public investment, and the effect is larger for companies with foreign ownership. We also observe a simultaneous decline in imports of capital goods due to higher corruption.

Introduction

Corruption has been long recognized to be detrimental for economic growth². It can affect growth in multiple ways but, as recent studies show, its primary and by far the biggest channel is via investment in the physical capital (Pellegrini 2011, Hodge et al. 2011). Because corruption creates uncertainty of investment outcomes (Mauro 1995; Wei 2000) and decreases the expected returns, level of investment is expected to decline which translates into a forgone economic growth.

Previous studies (Mauro 1995, Habib and Zurawicki 2001, Asiedu and Freeman 2009, Everhart et al. 2009, Shaw et al. 2011) find negative correlation between corruption and investment, especially for the case of foreign investment. However they cannot establish causal effect as they are mostly cross-country studies that utilize perception based measurements of corruption. Cross-country analysis normally suffer from unobserved heterogeneity and are unable to identify causal effect. Additionally perception based measures of corruption has been recently criticized for being subjective and biased (inter alia, Knack and Keefer 1995, Mocan 2008, Olken 2009, Donchev and Ujhelyi 2011). We improve on that by focusing on one country and its regions. We take Russia as a suitable example of relatively corrupt environment but with ample variation both in corruption and economic development across regions. We adopt a better and robust corruption measure as compared to perception based proxies.

We find that corruption decreases total investment in Russian regions. We study this effect regarding the form of ownership of companies who invest: the negative effect is significant only for companies with private ownership and companies with foreign ownership, but not for companies fully owned by the government. Our results are robust for inclusion of various social-economic controls and instrumenting for the endogeneity of corruption.

¹ nikita.zakharov@vwl.uni-freiburg.de, University of Freiburg

² This is supported by a broad range of literature: see, for example, Myrdal, 1989; Andvig and Moene, 1990; Shleifer and Vishny, 1993; Blackburn et al., 2006, Aidt 2009.

Aim of the Project

The project aims to establish the causal link between corruption and capital investment. We employ a new panel data-set on corruption across Russian regions for the last 10 years which allows us to perform panel-data analysis. In our research we introduce a new proxy for corruption which is derived from hard data from police on registered incidents of bribe-taking by public officials and which can be more reliable compared to perception indices and expert opinions. We improve on previous literature by introducing instrument for our corruption measure to deal with endogeneity of corruption and potential measurement errors.

Hypotheses, Methodology and Data

We expect to find corruption to hinder the scope of investment made by companies and entities in private sector, especially with foreign ownership. At the same time investment by government and state owned companies has no reason to decrease with corruption.

We test our hypothesis across Russian regions. Russia fits our purpose of research as it offers a heterogeneous corrupt environment which could explain the differences in the regional investment rates.

To test our hypothesis we employ an econometric approach. We assemble a panel dataset to run regression analysis controlling for region- and year-specific fixed effects. Further, we instrument for corruption using variation in freedom of press in Russian regions: freedom of press has been well known to deter corruption (Brunetti and Weder 2001).

Table 1 provides a short description of data assembled for estimations. We use a unique data-set of registered incidents of bribe-taking by public officials as provided by the Ministry of Internal Affairs. Investment data and other social-economic variables (used as controls) come from Russian Federal Statistics Service. The data-set covers 9 years and 79 Russian regions (excluding Chechnya Republic).

Table 1: Summary statistics of main variables

Variable name	Variable description	Mean	St. Dev.	Observations
Corruption	Registered incidents of bribe-taking by public officials per 100 000 population, lagged natural logarithm	1.58	0.51	711
Investment All	Logarithm of capital investment in total in the region, constant roubles per capita	10.1	0.66	711
Investment Private	Capital investment by companies and entities with private ownership in constant roubles per capita, natural logarithm	9.79	0.76	711
Investment Public	Capital investment by government-owned companies and public sector in constant roubles per capita, natural logarithm	8.63	0.64	711
Investment Foreign	Capital investment by companies with foreign ownership (10% or more of capital belongs to foreign residents) in constant roubles per capita, natural logarithm	7.54	1.55	711
Import of capital goods	Logarithm of imports of machinery, equipment and electronics in constant roubles per capita	7.78	1.42	711
Income	Logarithm of regional average monthly income per capita in constant roubles in the previous year	8.76	0.41	711
Poverty	Share (%) of population with income lower than official minimum income in the previous year	18.21	7.38	711
Oil production	Oil and gas production in the region in constant thousand roubles per capita, lagged	12.64	59.9	711
CPI	Consumer price index of the previous year	110.03	2.93	711
Government	Number of governmental officials in executive branch of power per 10 000 of population by the end of the past year	112.55	50.56	711
Telephones	Density of landline telephones, telephones per 100 people in the previous year	21.81	5.48	711
Urban	Share (%) of urban population on the January 1 st of the current year	69.4	12.62	711
Education	Share of population with professional education in the previous year	68.89	7.19	711
Population	Logarithm of average annual population in the previous year	7.13	0.9	711

Results

Fixed effects estimation

Table 2 presents results from OLS estimation with region and time fixed effects. We find that corruption in the previous year is associated with lower per capita investment in the region. The coefficient in column (1) suggests that one standard deviation increase in corruption would result in 3.5% lower investment.

One way the result can be biased is when the investment decision-making differs depending on who makes the investment as suggested by Everhart et al. (2009). Private investors are scared away by high corruption because their main motivation to invest is future profit and corruption decreases the expected returns on investment; public investors such as government or state-owned companies are not guided by expected

profits and are not targeted by corrupt officials, instead they gain from more investment as it can be mis-allocated or pocketed directly and several studies find a positive relationship between corruption and public investment (Keefer and Knack 2007; Baliamoune-Lutz and Ndikumana (2008). For this reason we analyze private and public investment separately. Column (2) show that relationship between private investment and corruption is statistically significant and the effect is bigger than for total investment: increase in one standard deviation is associated with 4.5% lower investment. At the same time corruption has negative but statistically not significant effect on investment by state or by state-owned companies as reported in column (3) of Table 2. Estimation in column (4) shows that foreign investors are more sensitive to corruption: the coefficient is 4 times larger than for private investment and statistically significant at 1% level.

Table 2: Effect of corruption on investment, OLS with fixed effects

	(1) Investment All	(2) Investment Private	(3) Investment Public	(4) Investment Foreign	(5) Import of capital goods
Corruption	-0.0686* (-1.77)	-0.0884** (-2.15)	-0.07 (-1.39)	-0.360*** (-2.95)	-0.161*** (-2.66)
Income	0.397* (1.95)	-0.24 (-0.70)	0.702** (2.19)	-2.558** (-2.02)	0.17 (0.17)
Poor	-0.0037 (-0.70)	-0.0284** (-2.51)	0.0044 (0.60)	-0.103*** (-2.81)	-0.0060 (-0.28)
Oil	0.0001 (0.35)	0.0001 (0.30)	0.0001 (0.51)	0.0001 (0.08)	-0.0002 (-0.96)
CPI	0.0002 (0.04)	-0.01 (-0.76)	0.0141* (1.88)	-0.0997*** (-2.84)	-0.0194* (-1.73)
Government	0.0013 (0.58)	0.00593*** (2.82)	-0.0002 (-0.06)	0.0238* (1.76)	-0.0128** (-2.21)
Telephones	-0.005 (-0.40)	-0.01 (-0.52)	0.0273* (1.66)	-0.07 (-1.50)	-0.04 (-1.37)
Urbane	0.006 (0.45)	0.014 (0.77)	-0.026 (-1.07)	0.027 (0.31)	-0.019 (-0.48)
Education	-0.00605** (-2.51)	-0.0133** (-2.08)	0.0016 (0.40)	-0.02 (-1.50)	-0.0104* (-1.78)
Population	-0.38 (-0.43)	-0.22 (-0.20)	0.44 (0.37)	-0.81 (-0.18)	-0.21 (-0.09)
Year FE	Yes	Yes	Yes	Yes	Yes
Observations	711	711	711	711	711
R2	0.66	0.62	0.37	0.29	0.45

Notes: t statistics in parentheses, * p < 0.1, ** p < 0.05, *** p < 0.01. Robust standard errors clustered at the region level.

Column (5) reports the significant negative effect of corruption on imports of capital goods: a decrease of corruption for one standard deviation translates into 8% less capital goods imports. This finding is in line with our hypothesis that corruption disrupts the motivation of businesses to invest, but it also tells us that more innovative and technological investment is the first to be scared off by rising corruption, making the problem of corruption even more dire for developing countries who struggle to upgrade their technology. For a long time capital goods imports have been recognized as a

determinant of a long-run economic growth (e.g. Lee 1995) but have not been previously associated with corruption.

Instrumental variable estimation

We employ freedom of press as an instrument variable (IV) for corruption as suggested by literature on determinants of corruption (e.g. Brunetti and Weder 2003). Schulze et al. (2016) has shown that registered bribe-taking in Russia is negatively associated with better freedom of press in Russian regions (data on press freedom is generated by the Glasnost Defense Foundation (GDF) as a result of expert-opinion survey). In table 3 we show how press freedom affects corruption: fixed effects regression with year dummies produces significant negative coefficient. However it is worth noticing that effect is not sufficient for IV. Then, we include a different dimension of press freedom in our analysis by separating all observations according to data on presence of abuse of journalists in the forms of censorship, physical attacks, arrests, violent threats or murders (also provided by GDF). When no abuse is present we find much stronger as reported in Table 3, column (2) and more significant deterrence effect of freedom of press on corruption, as compared to results in column (3). The logic is following: when region in current year is identified by experts as relatively free, its journalists can still risk to be abused and therefore are unable to report on corruption, but if journalists are not abused and experts of GDF rank the region as relatively free, then it might be the case of efficient and robust press that helps to reduce corruption. This way variable "Really free" takes value of 1 only when region has no abuse of journalists and ranks as relatively free by experts. Further we use "Really free" as an instrumental variable for corruption. The column (4) and (5) show the relationship between our new press variable and regional corruption.

Table 3: The effect of press freedom on corruption

	(1)	(2)	(3)	(4)	(5)
Dep. Variable:	Corruption Incidents per 100 000 population, logarithm				
Relatively free	-0.141*	-0.089	-0.650**	-0.098	
	(-1.91)	(-1.43)	(-2.12)	(-1.43)	
Really free				-0.228***	-0.248***
				(-3.95)	(-4.29)
Region FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Observations	390	263	107	390	390
R2	0.07	0.05	0.14	0.10	0.09
AIC	70.96	-32.32	39.44	62.17	62.39
BIC	90.79	-14.46	52.8	85.97	82.23

Note: t statistics in parentheses * p < 0.1, ** p < 0.05, *** p < 0.01

Table 4 presents results of estimation with instrument variable (IV). The F-statistics of the first stage is 18.5 which confirms the strength of our instrument.

We find that corruption decreases the total investment and investment by private companies (column (1) and column (2) in Table 5 respectively). This effect is three times bigger for foreign-owned companies as reported in column (4).

Table 4: Effect of corruption on investment, regression with instrumental variable

Dep. Variable:	(1) Investment All	(2) Investment Not Governmental	(3) Investment Governmental	(4) Investment Foreign	(5) Technological import
Corruption	-0.521** (-2.32)	-0.528* (-1.72)	-0.59 (-1.55)	-1.583** (-2.21)	-1.242** (-2.18)
CONTROLS	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Observations	390	390	390	390	390
Kleibergen-Paap rk Wald F-Stat	18.51	18.51	18.51	18.51	18.51
Underidentificat ion test (p- value)	0.00	0.00	0.00	0.00	0.00

Notes: t statistics in parentheses, * p < 0.1, ** p < 0.05, *** p < 0.01. Robust standard errors clustered at the region level. Controls are the same as in our basic estimation

Assuming Russia in the end of our data-timeline in 2012 to have the same level of corruption as in 2004, its total investment in 2013 would have been expected to be 11% or 1458 billion rubles in absolute terms higher.

References

- Aidt, T. S. (2009). Corruption, institutions, and economic development. *Oxford Review of Economic Policy*, 25(2), 271-291.
- Andvig, J. C., & Moene, K. O. (1990). How corruption may corrupt. *Journal of Economic Behavior & Organization*, 13(1), 63-76.
- Asiedu, E., & Freeman, J. (2009). The Effect of Corruption on Investment Growth: Evidence from Firms in Latin America, Sub-Saharan Africa, and Transition Countries*. *Review of Development Economics*, 13(2), 200-214
- Blackburn, K., Bose, N., & Haque, M. E. (2006). The incidence and persistence of corruption in economic development. *Journal of Economic Dynamics and Control*, 30(12), 2447-2467.
- Brunetti, A., and Weder, B. (2003). A free press is bad news for corruption. *Journal of Public Economics*, 87(7), 1801-1824.
- Everhart, S. S., Vazquez, J. M., and McNab, R. M. (2009). Corruption, governance, investment and growth in emerging markets. *Applied Economics*, 41(13), 1579-1594.
- Günther G. S., Bambang S. S., and Zakharov, N. (2016): Corruption in Russia, *Journal of Law and Economics*, forthcoming in Vol.59, March 2016.
- Habib, M., & Zurawicki, L. (2001). Country-level investments and the effect of corruption—some empirical evidence. *International Business Review*, 10(6), 687-700.
- Hodge, A., Shankar, S., Rao, D. S., & Duhs, A. (2011). Exploring the links between corruption and growth. *Review of Development Economics*, 15(3), 474-490.
- Keefer, P., & Knack, S. (2007). Boondoggles, rent-seeking, and political checks and balances: public investment under unaccountable governments. *The Review of Economics and Statistics*, 89(3), 566-572.

- Knack, S., and P. Keefer. 1995. Institutions And Economic Performance: Cross-Country Tests Using Alternative Institutional Measures. *Economics and Politics* 7(3): 207-227.
- Lee, J. W. (1995). Capital goods imports and long-run growth. *Journal of development economics*, 48(1), 91-110.
- Mauro, P. (1995). Corruption and growth. *The Quarterly Journal of Economics*, 110(3), 681-712.
- Mocan, Naci. 2008. "What Determines Corruption? International Evidence From Microdata." *Economic Inquiry* 46(4): 493-510.
- Myrdal, G. (1989). Corruption: its causes and effects. *Political Corruption: A Handbook, 2nd Edition*. Transaction Publishers, New Brunswick, USA.
- Olken, B. A. 2009. Corruption Perceptions vs. Corruption Reality. *Journal of Public economics* 93(7): 950-964.
- Pellegrini, L. (2011). The Effect of Corruption on Growth and its Transmission Channels. In *Corruption, Development and the Environment* (pp. 53-74). Springer Netherlands.
- Shaw, P., Katsaiti, M. S., and Jurgilas, M. (2011). Corruption and growth under weak identification. *Economic Inquiry*, 49(1), 264-275.
- Shleifer, A., & Vishny, R. W. (1993). Corruption. *The Quarterly Journal of Economics*, 108(3), 599-617.

Zubanov, Andrey¹: Multiple Equilibria in Clubs with Club Good and Uncontrolled but Costly Entrance

Abstract: We model an economy with one club and a congestible club good, which is produced from voluntary donations of club members and enjoyed by club members only. The agents in the economy are heterogeneous and those who join the club incur some entry costs if they decide to join the club. We show that, under general assumptions, multiple equilibria of two types can emerge in such an economy. The first type is when the size of the club is large, but there are many free riders, the second is when the club size is small, and there are no free riders in the club. We found that higher entry costs can have a positive impact on the number of contributors and can improve the volume of donations. The effect takes place because entrance costs make agents who value the club good less stay out of the club, preventing overcrowding and improving incentives of club members to donate. We also carry out welfare analysis to find out when one or another type of equilibria is socially optimal.

Introduction

Many types of human and firm behavior can be expressed in terms of clubs. Such clubs can consist of individuals or firms, and a club can produce a good from donations of club members. Each agent in the economy first chooses whether he wants to join the club, then each club member decides on the contribution to the club. According to (Cornes and Sandler, 1996) a club is defined as “a voluntary group of individuals who derive mutual benefit from sharing one or more of the following: production costs, the members’ characteristics, or a good characterized by excludable benefits”. Production of such club goods is financed from the club fund, which is usually formed from contributions of club members. These club goods are jointly produced in the sense that agents donate to the club good, and then its benefits are distributed among club members. For example, when a club good is not congestible it behaves like a public good but only club members have an access to it.

We analyze effect of entry costs for such clubs on the club size and the number of free riders in these clubs. Intuitively, higher entry costs should enhance positive sorting when only the agents who value club good the most enter the club. Such agents, then, are more motivated to contribute to the club good. High entry fees for congestible club goods also discourage some agents from entering the club thus preventing congestion and overcrowding to occur.

We found that entry costs, predictably, provide additional incentives for positive sorting of the club members. However, the most important finding of the paper is that in many cases multiple equilibria are possible. The first type of equilibria is when the club size is large and there are many free riders in it. The second type is characterized by small club size and by the absence of free riders. Since both equilibria are possible, each of them can realize as the focal point.

¹ zubanov@wisc.edu, andr1904@gmail.com, University of Wisconsin-Madison

We investigate conditions, under which equilibria exist at all and when equilibria of each type exist, their comparative statics with respect to parameters. We also provide welfare analysis of the equilibria in economy with one club, one congestible club good and a continuum of heterogeneous with respect to club good valuation agents.

Aim of the Project

The aim of the project is to analyze how entry costs influence participation and donation in clubs with congestible club goods. The study attempts to explain why some clubs with club goods can be relatively big, have high free-rider rates, whereas other clubs are small, and have high donation rates. The result of the paper contributes to the literature of club goods, but can also be used as a basis for empirical research.

Because entry costs influence entry decision, and thus, indirectly, donation decision, then clubs can potentially change these costs in their favor, either by choosing some distant location for their club or by directly increasing or decreasing them. Thus, our model can help researchers in explaining why some clubs may be willing to choose, when possible, high entry costs for its participants and when, on the contrary, it is better for clubs to try to minimize such costs. The paper also shows a way to alleviate free rider problem in such clubs in some cases.

The results of the paper can be applied to some clubs we encounter in real life. For example, it can be used for analyzing shared resources pools, urban formation, and optimal team design or for analyzing life of communities.

Hypotheses and Methodology

We develop a theoretical model to demonstrate how entry costs in clubs can influence the club size, donations and mitigate free-rider problem in the case when club produces a potentially congestible club good. We consider clubs, which everyone can join without any restriction, and club authorities are not able to restrict access. Although control over entering the club is not possible, those who join the club incur some entry costs, i.e. commuting costs.

Another important feature of clubs we model is that they are potentially prone to congestion (or crowding) or not. Congestion takes place when either the quality or amount of good produced in the club decreases with the number of users. One can come across this when waiting in longer queues, using dirtier swimming pools or walking in the park, which is too crowded.

One important example of a congestible club good is a common-pool resource (CPR) which is accessible to club members only. Due to this feature such CPRs are called limited-access common-pool resources (Walker et al., 1990). CPR is characterized by the fact that the total amount of CPR is divided equally between community members. The club good behaves like a public good but it is accessible to only a limited number of agents—club members. The club good and CPR as a combination together may form a congestible club good since its aggregate utility for users decreases with club size.

In general, the fact that we model congestible club goods helps us to analyze the whole variety of common goods produced in the club – from limited-access version of pure public goods to limited-access common pool resource.

The model we build is a theoretical model of economy with agents and one club with a congestible club good. Agents derive utility from consuming a private and a club good. They agents have the same endowment of a private good, but are heterogeneous in how they value the club good.

The timing of the game is the following. First, agents independently decide, whether to enter the club or not. In the second stage, each club members decide on the amount of private good they are willing to donate to the club good. Then, the club produces a club good from available donations and utilities of agents are realized.

Results

We show that entry costs can discourage people from joining the club and those agents with the low club good value decide not to enter. This reduces congestion in the club and promotes donations from club members, providing better sorting of individuals in the club.

The model predicts that two types of non-zero equilibria are possible in some situations — there can be no more than one equilibrium with large club size and with free riders in the club, and there can be one or many equilibria of the other type — when all club members contribute to the club good but where the club size is low. Higher entry costs always decrease the equilibrium club size in the case of equilibria of the first type, but can either decrease or increase the equilibrium club size in equilibria of second type.

The results of the paper can be applied to some clubs we encounter in real life. For example, it can be used for analyzing shared resources pools, urban formation, and optimal team design or for analyzing life of various communities.

References

- Berglas, E. (1976). On the theory of clubs. *The American Economic Review*, pages 116–121.
- Buchanan, J. M. (1965). An economic theory of clubs. *Economica*, pages 1–14.
- Cornes, R. and Sandler, T. (1996). *The theory of externalities, public goods, and club goods*. Cambridge University Press.
- Glazer, A., Niskanen, E., and Scotchmer, S. (1997). On the uses of club theory: Preface to the club theory symposium. *Journal of Public Economics*, 65(1):3 – 7. Special Issue: Club Theory Symposium.
- McGuire, M. (1974). Group segregation and optimal jurisdictions. *The Journal of Political Economy*, pages 112–132.
- Olson, M. (2009). *The logic of collective action: public goods and the theory of groups*. Volume 124. Harvard University Press.
- Sandler, T. and Tschirhart, J. (1997). Club theory: Thirty years later. *Public Choice*, 93(3-4):335–355.

Walker, J. M., Gardner, R., and Ostrom, E. (1990). Rent dissipation in a limited-access common-pool resource: Experimental evidence. *Journal of Environmental Economics and Management*, 19(3):203–211.

Weitzman, M. L. (1974). Free access vs private ownership as alternative systems for managing common property. *Journal of Economic Theory*, 8(2):225–234.

Contacts:

**Center for Institutional Studies,
National Research University Higher School of Economics**

Address: 24-3, Myasnitskaya str., Moscow, 101000, Russia

Tel. +7(495) 772-95-90 ext. 2276

Fax. +7(495) 772-95-90 ext. 2335

Email: lia@hse.ru

WWW: <http://cinst.hse.ru/en/>

<http://rssia.hse.ru>