

Institute of Economics, Centre for Economic and Regional Studies Hungarian Academy of Sciences

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I. Main duties of the research unit between the 1st of January and the 31st of August, 2019

Between the 1st of January and the 31st of August, 2019 the institute continued to implement the objectives of its research strategy. It complied with its obligations undertaken under various research contracts and agreements. Its main tasks included the time-proportionate implementation / completion of the research projects supported by the European Commission and the continuation of research studying mechanism design, agglomeration and social networks, health and population, corporate strategies and competitiveness under the Lendület (Momentum) programme of the Hungarian Academy of Sciences (HAS), as well as compiling the Hungarian version of the 2018 Competition and Regulation Yearbook (*Verseny és Szabályozás*) and the English version of the 2018 Labour Market Yearbook (*Munkaerőpiaci Tükör*).

II. Outstanding research and other results between the 1st of January and the 31st of August, 2019

a) Outstanding research results

AGGLOMERATION AND SOCIAL NETWORKS – MOMENTUM RESEARCH GROUP

A better understanding of the technological diversification of regions is of paramount importance in the group's research agenda. In earlier literature on the subject, the emergence of new technology classes in regions was mainly explained by their similarity to technologies already present in these regions. Accordingly, new technologies with a related knowledge base are likely to emerge in regions. Researchers in the Agglomeration Group are looking at how interregional cooperation modifies the local effect of technological similarity. To answer this question, dynamic collaboration networks are being created from patent data and are used to analyze the conditional probability of the emergence of new technologies. According to the findings, cross-border cooperation enhances the effect of local similarity. The more intensive the inventors work with inventors in other regions, the easier it will be to develop a technology in the region that is similar to existing technologies. They also show that the diversity of links to other regions further facilitates diversification. Finally, they find that the intensity of co-operation within companies in many regions also contributes to diversification.

In the second major line of inquiry of the Agglomeration Group, researchers examined the relationship between the structure of intra-urban social networks and urban income inequality using the iWiW database. The study finds new evidence that the benefits of social relationships are not equally distributed across society. In cities where income inequality was initially high, fragmented networks continued to generate inequalities. All this suggests that the level of income segmentation of networks creates further inequality. In the second half of the study, the researchers looked at which factors are most likely to generate fragmentation of networks within a city. According to their findings, the structure of the settlement is more important for fragmentation than the ethnic, political or religious fragmentation and unequal access to education. Finally, they find that settlement structure is a good instrument of network fragmentation in estimating local inequality.

The group's third direction of research deals with mass automation, one of the greatest challenges in society. Researchers are exploring the dynamics of the spatial distribution of

occupations exposed to automation and explore the individual employee strategies behind it. A Swedish administrative database is used, which provides job-related data for all employees in the country. The US ONET database identifies the professions exposed to automation risk. According to their results, in the period 2005-2013, workers in jobs of low automation risk were much more concentrated in large cities than in the rest of the country. Examining the inter-regional relocation of individuals, they find that workers moving to a big city in a profession with high automation risk can get out of these jobs more easily than those moving to a small town. The result of the research suggests that the current wave of technological advances will generate strong spatial inequality between large cities and small towns.

AGRICULTURAL ECONOMICS AND RURAL DEVELOPMENT

The research investigates farm investment behaviour and the presence of soft budget constraints in the agricultural sectors of three Central and Eastern European countries – Estonia, Hungary and Slovenia – using individual farm accountancy panel data for the 2007–2015 period. Gross farm investment is positively associated with gross farm investment for the previous year, growth in real sales and public investment subsidies. Mixed results for debt square and cash flow variables imply that the different investment behaviour of farms pertains to different structures of investment sources among the countries under analysis. A particularly significant negative cash flow coefficient implies strong soft budget constraints for Estonian farms, while insignificant cash flow coefficients imply weak soft budget constraints for Hungarian and Slovenian farms.

The effectiveness of support directed to less developed regions is a timely question more than halfway through the 2014–2020 programming period. We present an analysis of the impact of rural development support on the well-being of Hungarian LAU1 regions between 2008 and 2013. The aim was to measure the overall impact of all of the Rural Development Funds, covering all measures within the program. Two indices of local well-being were used: the multi-dimensional, local-variables-based Regional Development Index that measures the overall level of regional development and a simple, migration-based index as a proxy for perceived quality of life. Generalized propensity score matching, and difference-in-differences estimation techniques were employed to evaluate the impact of subsidies. Irrespective of how the amount of support was calculated, the measure of local well-being, or the methodology employed, the impact was not significant, and was sometimes even negative. This casts doubt on the effectiveness of Rural Development Policy in Hungary.

HEALTH AND POPULATION – MOMENTUM RESEARCH GROUP

In 2010–2012, new outpatient service locations were established in poor Hungarian micro-regions. We exploit this quasi-experiment to estimate the extent of substitution between outpatient and inpatient care. Fixed-effects Poisson models on individual-level panel data for years 2008–2015 show that the number of outpatient visits increased by 19% and the number of inpatient stays decreased by 1.6% as a result, driven by a marked reduction of potentially avoidable hospitalization (PAH) (5%). In our dynamic specification, PAH effects occur in the year after the treatment, whereas non-PAH only decreases with a multi-year lag. The instrumental variable estimates suggest that a one euro increase in outpatient care expenditures produces a 0.6 euro decrease in inpatient care expenditures. Our results (1) strengthen the claim that bringing outpatient care closer to a previously underserved population yields considerable health benefits, and (2) suggest that there is a strong substitution element between outpatient and inpatient care.

In another study, using administrative data on a random 50% of the Hungarian population, including individual-level information on incomes, healthcare spending, and mortality for the 2003-2011 period, we develop new evidence on the distribution of healthcare spending and mortality in Hungary by income and geography. By linking detailed administrative data on employment, income, and geographic location with measures of healthcare spending and mortality we are able to provide a more complete picture than the existing literature which has relied on survey data. We compute mean spending and 5-year and 8-year mortality measures by geography and income quantiles, and also present gender and age adjusted results.

ECONOMICS OF NETWORKS

An important project of the research unit focused on the significant but under-studied issue of the role of network relations in the spreading of knowledge and how it affects economic (corporate, industry, regional) performance. Researchers examined the role of coworker networks in knowledge transfer between and within companies. The research site is the IT cluster in Umea (Sweden), where they conducted a network survey questionnaire in 16 companies. In addition to the questionnaire, the respondents' personalized data (social networks, skills) on their LinkedIn profile was also analyzed. The first study of the research examines the relationship between individuals' social networks and their skills. First results show that professionals with fewer local and more distant connections are bringing new skills to companies and to the region.

In the second project researchers explored the technological proximity network ("industry space") of Hungarian industrial sectors using linked data on corporate balance sheets and product statistics. As technological relatedness of industries influence the appearance and development of new industries in regions and countries, new approaches in regional development policies also emphasize this approach (e.g. in smart specialization). The applicability of these relationships in mapping the regional economic base was presented in a case study, which can help Hungarian regional economic development policy. They used the data of the Central Transdanubian Region as an example. The data of technological relatedness of industries were made publicly available on the institute's website to facilitate further research and public policy. Examining the role of technological relatedness in the firms' product portfolios, it has been shown that the technological similarity between industries (and production processes) and the resulting cost efficiency plays an important role in the design of a firms' product portfolio. It has also been proved that the role of these factors intensifies during economic crisis, thus firms' product portfolio will be better aligned with the technology-based relationships of industries.

In their third research, they examined the role of social networks in domestic migration in Hungary. Their results show that domestic migration in Hungary is related not only to the demographic characteristics, the economic and infrastructural characteristics of the settlements, but also to the structure of the social networks maintained via online social network. Based on iWiW data, they found that more people were migrating from settlements with more external and less internal connections. The network also influences the choice of destination.

GAME THEORY – PERMANENT MOMENTUM GROUP

They have modelled the European gas network to better understand the power distribution among the stakeholders and the effect of new pipelines thereon. They extended the standard

model by a partition function form game that makes it possible to account for third party access (TPA) – a policy which is now norm in the EU. TPA obliges the owner of a pipeline to transport gas for others, provided they pay a regulated transport fee. Former cooperative game theoretic models neglected this aspect. The proposed framework enables us to determine the bargaining power of the stakeholders more accurately.

They have used a classical fair division method in the station sharing problem, in which users subscribed to different service providers have to be allocated to base stations. In the proposed framework, service providers, according to the channel parameters of their users, evaluate each base station. Based on these evaluations, using fair division methods, the capacity of base stations is shared among the service providers.

The tools of game theory have also been extended to analyze and understand bankruptcy situations in financial networks. Research is motivated by the recent financial crisis or any situation where a bankrupt party may cause losses to others.

In fact, it often the case that creditors grant debt relief to companies (countries, states, individuals and other organizations). The main question is how to distribute the value of the company's assets between the creditors and the company. The main novelty of the liability game modeling this, as opposed to the usual bankruptcy games, is that the company is also a player, which, even in the event of insolvency, can receive a strictly positive payment, i.e. it can be saved. In this sense, the cooperative game theory model of debt relief can be considered as one of the variants of the soft budget constraint syndrome.

They have studied the effects of risk-sorting on price bubble formation. A recent stream of experimental economics literature studies if sorting along different dimensions contributes to the emergence of overpricing in asset markets. They have sorted participants into markets by risk-tolerance and tested its effect on overpricing. They showed that risk sorting is able to explain overpricing partially: Markets with the most risk tolerant traders exhibit larger overpricing than markets with the most risk averse traders.

PUBLIC ECONOMICS AND PUBLIC POLICIES

Macroeconomic model calculations performed at the institute predict a sharp slowdown in GDP growth from the current 5% to around 1%. The pessimistic scenario predicts 0% yearly GDP growth by 2023 and the optimistic predicts 2%. The main reason for the slowdown is that the growth of available labour stops and then reverses. This will not be offset by the supposed possible faster productivity growth.

Studies investigating the connection between the level of corruption risks, and economic development and social composition at the municipal level, based on public procurement data show, that economically more developed municipalities, and those where the education level of the inhabitants is higher are able to control corruption better than the others. This finding points out that it is worth tailoring local anti-corruption policies, taking into account the economic development and social composition of the settlements, as well as the labour market. The results of the analysis also highlight that raising the educational level of the population may also have a beneficial effect on increasing the control of corruption.

Research on the pension system has shown that women who retired without delay in the framework of the Female40 program, in the case of having average life expectancy benefited from this possibility in 2012, but from 2014, especially after 2015, due to the real wage

explosion and the indexation system of the pensions, they suffered a loss of well-being compared to those who continued to work.

Research investigating the Hungarian public employment system in an international context has found that this system is a unique mixture of different internationally known forms of public employment, including the characteristics of the workfare and the transit employment constructions alike. Its special features are the integration of public work schemes into the municipality management of small settlements and the creation of a planning and resource allocation mechanism in many ways similar to the planning procedure of the state socialism's last period. As a consequence, in the case of small settlements, municipal leaders became interested in keeping good public workers out of the primary labour market.

MECHANISM DESIGN – MOMENTUM RESEARCH GROUP

Kidney exchange programmes. The goal of kidney exchange programmes is that patients with end-stage renal disease can exchange their willing but immunologically incompatible donors among each other. In Europe there are more than ten countries with operating programmes, as it was described in the Handbook of the first Working Group of the ENCKEP COST Action (European Network for Collaboration on Kidney Exchange Programmes, 2016-2020). This Working Group was led by the head of the Mechanism design research group. The second Handbook on „Optimisation and Modelling” has been published in 2019 and the summary of each handbook appeared in scientific journals, Transplantation, and in a special issue of European Journal of Operations Research, respectively. Besides, they also gave a proposal for the establishment of the Hungarian kidney exchange programme in collaboration with Hungarian transplant experts, described in a Hungarian medical journal (Orvosi Hetilap).

Allocation problems. In a joint work with foreign colleagues they studied the many-to-one object allocation problem under ordinal and cardinal preferences. They gave NP-hardness results and efficient algorithms for special cases for the problem of deciding whether an allocation is Pareto-optimal under different assumptions on the responsiveness of preferences. The preliminary version of the paper was presented at the AAMAS-2016 conference, and the extended version was published in Theoretical Computer Science. In another joint paper with international colleagues they considered the one-to-one allocation problems under uncertain linear and pairwise preferences. They studied the complexity of two main problems: 1.) computing the probability of a given allocation being Pareto-optimal, and 2.) finding an allocation with the highest probability of being Pareto-optimal. Their preliminary results were presented at the AAI-2019 conference and the extended journal paper was accepted for publication in Artificial Intelligence.

Stable flows and networks. The research group had three published papers on this topic with international co-authors. A network flow is stable if there is no group of vertices that all could benefit from rerouting the flow along a walk. They constructed an efficient augmenting path algorithm for computing a stable flow. They also gave several graph-based reductions for the stable multicommodity flow model that show equivalence to a significantly simpler model. We further show that it is NP-complete to decide whether an integral solution exists. The preliminary version of this paper was presented at WG-2017, the extended journal version was published in Algorithmica. In the second paper, published in International Journal of Game Theory, they proved a path-to-stability result for stable flows, that means that a random blocking procedure always converges to a stable solution for both better and best response dynamics. The third, Econometrica paper is concerned with stable networks with frictions. They showed how frictions and continuous transfers jointly affect equilibria in a model of matching

in trading networks. They proved that when contracts are fully substitutable for firms, competitive equilibria exist and coincide with outcomes that satisfy a cooperative solution concept called trail stability.

ECONOMIC GROWTH AND COMPETITIVENESS

Productivity growth and firms

The main goal of the project is to uncover the key factors behind the European productivity growth slowdown using micro-level data. Based on the results, the project also aims to arrive at macroeconomic conclusions. One paper studies the role of intangible capital in estimating productivity, highlighting the different measurement options for intangible capital, and the role of estimated productivity in the heterogeneity among different firm groups. Another approach is to examine supplier relationships, and the role of global value chains in particular.

Labor share and structural change

One of the main approaches was to study the sectoral composition of the aggregate labor share, both over time and across countries. The focus of the study was the new EU member countries in Central and Eastern Europe and in the Baltics, but as a comparison group the other EU member states were also included. Results show that if we correct the labor share with the relative price of consumption, labor share differences between advanced and emerging EU member states disappear. The second approach studies the relationship between convergence among EU countries and exchange rate misalignment in a two-sector framework. Misalignment is defined as the deviation from the “equilibrium” real exchange rate that corresponds to a particular level of development. Results indicate that there is a statistically well-defined and economically meaningful relationship between misalignment and economic growth.

The effect of domestic and foreign monetary policies on the currency composition of lending supply

The project studied the impact of monetary policy on the currency composition of bank lending. It examined bank lending to Hungarian companies between 2005-2011. Results show that bank lending in foreign currency was less sensitive to changes in domestic monetary conditions than lending in domestic currency. Also, changes in foreign monetary policy had a stronger effect on bank lending in foreign currency than lending in domestic currency. Therefore, when foreign currency lending is present in a country, the domestic bank lending channel is weaker, but international bank lending channels start operating.

Convergence, productivity and debt in Hungary

The project studies the role of productivity growth and financial conditions in Hungarian economic growth over the past few years. To do this a stochastic, small open economy model is built with capital accumulation, productivity convergence, and foreign debt. Model simulations show that empirically identified productivity and interest premium processes explain well the medium-term dynamics of Hungarian growth both before and after the global financial crisis. Counterfactual simulations show that the slowdown in GDP per capita growth is mostly explained by the productivity process, while tightening external financial conditions played an important role in the evolution of investment and the net foreign asset position.

EDUCATION AND LABOUR

One study found that childcare after the age of 3 significantly increases the labour market activity of mothers. According to the analysis using advanced statistical/econometric tools, free-of-charge (or low-cost) childcare around the age of 3 increases mothers' activity by about 12 percentage-points, which is a quarter more, compared to those who do not have access to free childcare.

Another study estimated the rate of undeclared work in Hungary. The results show that about 6–7% of workers went permanently unreported for six consecutive years, and a further 4% were transitorily unreported in any given year. The proportion is higher among males, high-school graduates, those in agriculture and transport, and in small firms. The results also highlighted that the long-term pension consequences of undeclared work may be substantial because of the high share of permanent non-reporting.

The third study investigated the effect of the selection effect of elite 6-year-academic secondary schools on primary school performance. After the 6th grade, some of the best students from the general schools go to these elite academic schools. The study shows that this selection has a negative impact on the 8th grade test scores of students left-behind in the general schools. One additional student leaving the general track lowers the 8th-grade mathematics test scores of the students remaining in the general track by about 4%. This effect is higher for girls and students with high social status.

EMPIRICAL INDUSTRIAL ORGANISATION

Regarding the **economic analysis of competition policy and regulation**, the group published a new volume of its flagship series, entitled “Versený és szabályozás 2018” [Competition and Regulation 2018], sponsored by the Hungarian Competition Authority. The book focuses on retail competition and retail regulation as the latter can impact competition and the two factors together affect consumer prices. Chapters in the book analysed both the competition of retail chains and the retail activities of network industries (telecom, electricity, gas, water). In the first case the results indicate that the Sunday trading ban did not have any significant effect on consumer prices during the year, when this regulation was in effect. In contrast, the spread of the modern store formats and international retail chains significantly reduced prices, therefore establishing entry barriers in retail by regulation had an unfavourable effect on consumers, materialising in higher prices. In the case of network industries, the final impact of market opening might be measured by the consumers' switching of providers or service packages. The analysis explored often irrational consumer behaviours. Supported by behavioural economics, regulators favoured interventions influencing consumers' switching, although experience of ineffective interventions and unexpected negative impacts also accumulated. These regulatory failures and the analysis of non-switching households caused more cautious interventions, highlighted the importance of preceding experiments and raised the question of liberty of influencing consumer behaviour.

The group has also analysed **innovation activities**, from various angles. **Innovation policy** studies established that competing economics paradigms justify science, technology, and innovation (STI) policies, that is, the need for state intervention with these tools, with different arguments. Mainstream economics derives its policy implications by relying on the market failure argument, while evolutionary economics stresses the importance of systemic failures. Hence, there are differences between these schools in terms of the proposed policy instruments too. By discussing monitoring tools used by the European Commission to assess its member states' innovation performance, it was shown that the science-push model of innovation is still

highly influential in EC STI policy circles, in spite of the significance of non-R&D types of knowledge in innovation processes. Another widely used tool, the Global Innovation Index also follows the science-push model of innovation. This way of measuring innovation activities strengthens the STI policy practice based on the science-push model, which, in turn, leads to various types of opportunity costs, as non-R&D-based innovation activities are neglected in this policy regime. A vicious circle is in operation: this policy practice gives further impetus to the current measurement practice, that is, the dominance of indicators reflecting R&D-based innovation activities, at the expense of non-R&D-based ones. This way of devising STI policy tools and measuring innovation activities is particularly detrimental in Central European countries, more generally, in all those countries where promoting non-R&D-based innovations would be at least as important as promoting R&D-based innovations. The latter ones – due to lack of resources, the lower level of economic development, and weaker innovation systems – have lower chances of success in these countries than the former ones, and thus have lesser economic impacts.

b) Science and society

The Institute sets great store on the premise that by publishing research results, raising awareness of them in the right forums and public events, and making them available for the interested public on its website, society is likely to put them to good use.

Volume 18 of the Labour Market Yearbook presenting the topical characteristics of the Hungarian labour market and employment policy in Hungary and analysing various areas of this topic in detail was published in Hungarian. The yearbook presents the characteristics of the processes in, and the internal interconnections of the Hungarian labour market on the basis of available statistics, theoretical research and empirical analyses, in an easy-to-follow style and structure and by an international comparison. In keeping with the earlier practice adopted by the editors of the series, an area that is key to understanding labour market processes in Hungary and the success of fact-based employment policies was selected for special discussion.

The research results achieved in the Institute and discussed in seminars were published in 14 working papers and 1 issue of the Budapest Working Papers on Labour Market (Budapesti Munkagazdaságtani Füzetek). A professional blog serving as a discussion forum for the Institute's research results, policy opinions and topical economic, public and socio-political issues is in place and is regularly used by the staff to impart their opinions and papers thereby facilitating social interaction. News about the media presence of the staff is available in the Press Survey section. The website offers up-to-date information in both English and Hungarian on the main activities, publications and projects as well as the conferences and seminars organised by the individual research groups.

The Institute organizes several annual domestic and international conferences. Researchers have been active organizers and participants of the annual conference of the Hungarian Society for Economics (Magyar Közgazdaságtudományi Egyesület, MKE). This is the largest, and most comprehensive scientific event for economic science in Hungary, attended by leading Hungarian scientists working locally and abroad. More importantly, many PhD students participate, and get valuable feedback on their work. The Annual Summer Workshop provides an excellent opportunity for young Hungarian scholars studying abroad to present their research and to establish and to keep contact with colleagues working in Hungary.

III. A presentation of national and international R&D relations between the 1st of January and the 31st of August, 2019

Researchers of the Institute teach at nearly all Hungarian higher education institutions offering undergraduate and graduate courses in economics (CEU, BCE, ELTE, DE, PTE, KE, SZTE

etc.). Furthermore, they are engaged in PhD programmes at Pannon University in Veszprém, Kaposvár University, University of Szeged, Corvinus University and Szent István University under a co-operation agreement. They also teach at other universities (Cardiff University, UK Open University) and work as external researchers in prestigious research institutes (CEPR, IZA) abroad.

Researchers provide expert services for the Competition Office, the Central Statistical Office, TÁRKI, FIW, Czech Science Foundation, Polish Science Foundation and the Fiscal Council. Its researchers include consulting experts of the Monitoring Committee of the Economic Development and Innovation Operational Programme, members of the Advisory Panel of Parliaments and Civil Society in Technology Assessment (PACITA) and the Expert Group 'Strategic Foresight for R&I Policy in Horizon 2020' (SFRI) at the European Commission's DG Research and Innovation. One of its researchers is a member of the Scientific Council of the Technical University of Ostrava. The Institute is an advisory member of the Evaluation Committee of the National Strategy entitled "Let's Make Things Better for Our Children" and the Indicator Sub-committee.

The Hungarian kidney exchange programme, which is under development with the help of our research group, will potentially save the lives of Hungarian patients with end-stage renal disease. The matching algorithms developed and implemented by the research group for two-sided applications have been used in the Hungarian university admissions, project allocation of students at Corvinus University to companies, and for kindergarten allocation.

One of its senior research fellows was invited to the MTMT Scientific Metrology Committee. Many researchers are founders or members of the presidium of the Hungarian Society of Economics and participate as members of the presidium in the work of the Hungarian Economic Association.

Our researchers are active members of the Hungarian Academy of Sciences and Economics, the Scientific Committee for Human Resources, the Agricultural Economics Committee, the Scientific Committee for Development Economics and the Doctoral Committee on Economics.

IV. Brief summary of national and international research proposals, gained between the 1st of January and the 31st of August, 2019

There were 34 OTKA / NKFIH projects in progress between the 1st of January and 31st of August, 2019. Our Institute won 3 grants for research groups with internationally outstanding high impact results (KH_18). The HAS Momentum Programme funds three research groups – mechanism design, health and society, agglomeration and social networks – in the Institute. The Firms, strategy and performance Momentum Research group's 5-year-long research activity and its final report was deemed 'excellent' by the Hungarian Academy of Science and the Council of Research Institutes' joint committee, and the team was granted a permanent position in the Institute.

The Institute continued to implement the objectives of the research project entitled SKIN - Short supply chain Knowledge and Innovation Network H2020 project was launched, which aims to build an international network covering various actors in the short supply chains and to find good practices and innovations.

Low-Input Farming and Territories – LIFT is a research project funded under the European Union's Horizon 2020 research programme, its goal is to identify and understand how socio-economic and policy drivers impact on the development of ecological approaches to farming and assess the performance and sustainability of such approaches, taking into account different farming systems at farm, farm-group and territorial scales. The Institute's new H2020 project

MICROPROD will examine the empirical observation that productivity growth in the developed world has slowed down in the past decade despite both continuing technological innovation as well as greater openness to trade.

V. List of important publications between the 1st of January and the 31st of August, 2019

Aziz H, Biró P, de Haan R, Rastegari B: Pareto optimal allocation under uncertain preferences : uncertainty models, algorithms, and complexity. **ARTIFICIAL INTELLIGENCE** 276 pp. 57-78. (2019)

Biró P, Haase-Kromwijk B, Andersson T, Ásgeirsson E I, Baltesová T, Boletis I, Bolotinha C, Bond G, Böhmig G, Burnapp L, Cechlárová K, Di Ciaccio P, Froněk J, Hadaya K, Hemke A, Jacquelinet C, Johnson R, Kieszek R, Kuypers D, Leishman R, Macher M-A, Manlove D, Menoudakou G, Salonen M, Smeulders B, Sparacino V, Spieksma F, de la Oliva Valentín Muñoz M, Wilson N, vd Klundert J: Building kidney exchange programmes in Europe – an overview of exchange practice and activities. **TRANSPLANTATION** 103:(7) pp. 1514-1522. (2019)

Biró A: Reduced user fees for antibiotics under age 5 in Hungary : effect on antibiotic use and imbalances in the implementation. **PLOS ONE** 14:(6) Paper: e0219085 (2019)

Csercsik D, Hubert F, Sziklai B, Kóczy Á L: Modeling transfer profits as externalities in a cooperative game-theoretic model of natural gas networks. **ENERGY ECONOMICS** 80 pp. 355-365. (2019)

Csóka P, Herings P J-J: Liability games. **GAMES AND ECONOMIC BEHAVIOR** 116 pp. 260-268. (2019)

Eriksson R H, Lengyel B: Co-worker networks and agglomeration externalities. **ECONOMIC GEOGRAPHY** 95:(1) pp. 65-89. (2019)

Fazekas K, Szabó-Morvai Á (eds.): The Hungarian labour market, 2018. Budapest : Institute of Economics, Centre for Economic and Regional Studies, Hungarian Academy of Sciences, 2019. 300 p.

Harasztosi P, Lindner A: Who pays for the minimum wage? **AMERICAN ECONOMIC REVIEW** 109:(8) pp. 2693-2727. (2019)

Hornok C, Muraközy B: Markups of exporters and importers : evidence from Hungary. **SCANDINAVIAN JOURNAL OF ECONOMICS** 121:(3) pp. 1303-1333. (2019)

Lőrincz L, Koltai J, Győr A F, Takács K: Collapse of an online social network : Burning social capital to create it? **SOCIAL NETWORKS** 57 pp. 43-53. (2019)

Schiltz F, Mazrekaj D, Horn D, De Witte K: Does it matter when your smartest peers leave your class? Evidence from Hungary. **LABOUR ECONOMICS** 59 pp. 79-91. (2019)

Segal-Halevi E, Sziklai B: Monotonicity and competitive equilibrium in cake-cutting. **ECONOMIC THEORY** 68:(2) pp. 363-401. (2019)