I. Main duties of the research unit in 2012

In 2012 IEHAS continued its research activities based on the objectives arising from the previously formulated research strategies and accomplished the assignments as specified by its research contracts and agreements. The main tasks of IEHAS were as follows: publication of the 2012 volumes of the yearbooks *Competition and Regulation* and *The Hungarian Labour Market 2012*; the fulfilment of the targets set out for 2012 in the research projects supported by the European Commission’s 7th Framework Programme; further work on establishing a labour market demand and supply model; and the continuation of Game Theory research under the ‘Momentum’ programme of the Hungarian Academy of Sciences.

II. Outstanding research and other results in 2012

a) Outstanding research and other results

*MACROECONOMICS AND GROWTH*

Research on *the role of firm heterogeneity in efficiency and trade performance* presents the general characteristics of Hungarian international trade and export dynamics through the analysis of balance sheet information and product level trade data. The empirical analysis follows the logic of heterogeneous firm models. In conformity with these models, the findings suggest that Hungarian trade volume is heavily concentrated with 5% of the traders conducting more than 80% of all export and import activity. Trading companies (both exporting and importing firms) are considerably more efficient than non-trading firms with similar characteristics. Moreover, trade status plays a greater role in the differences between firms than foreign or domestic ownership. Based on the main results of empirical research concerning Hungarian trade activities (including the relationship of exports and imports, the role of innovation and the stability of foreign trade) it appears that entering international trade is a crucial factor from the point of view of competitiveness and growth. With this in mind, it follows that economic policies have to promote international trade by appropriate means.

Technological advancement is an indispensable factor in economic growth. This conclusion is supported by the results of the research programme *Science, innovation, firms and markets in a globalized world*. However, technologies that make advancement possible often originate in the developed world; as a result, a number of countries will have to import them. An analysis of detailed Hungarian data shows that (i) in the past two decades, imported technology has improved the productivity of individual firms as well as of firms taken as a whole; (ii) imported technology has increased demand for qualified labour which is a manifestation of skill-biased technological change. This is also one of the reasons why wage differentials have widened considerably in Hungary.
The research project entitled Repairs and spare parts supply of consumer durables and competition law arrived at the conclusion that in the market of durable goods, even when there is competition, strategies that try to take advantage of consumers’ irrational behaviour or aim at enhancing it are not unheard of. Their existence reduces the strength of competition and even robust competition cannot be relied on to fully eliminate them. Beyond informing consumers, certain direct measures can lead to some improvement, but it is mostly the redefinition of liability that could bring results. Since switching costs may contribute to the monopolization of the primary market and there could be a lot of „locked in” consumers in the market, it is the strengthening of competition between various brands that could be one of the most important tools of the competition authority. When defining the market, it may be convenient to accept the assumption of the existence of separated markets without the need for exact quantitative arguments. In such cases, the accomplishment of customary tests is practically impossible and a dominance analysis is required to establish if there has been an abuse of a dominant market position or not.

**EMPIRICAL INDUSTRIAL ORGANISATION**

In their project entitled Estimating the lock-in effects of switching costs from firm-level data, the research team focussed on analysing consumer behaviour and the switching to new service providers. They compared the behaviour of consumers with and without contracts in the personal loan market and estimated the switching costs from the reactions of old and new consumers to price changes. They found that the reactions of the old consumers were a lot weaker than those of the new consumers and concluded that this may point to considerable switching costs and may significantly increase the market power of banks.

A further research project examined how the theory of optimal auctions can be applied to modelling public procurement. While it seems that it is the straightforward, first-price auctions that make collusion most difficult, consideration should be given to different kinds of procedures including negotiations or even combined methods. Drawing on the law and economics of contracts the authors highlight the fact that the practice of allowing the parties to withdraw free of charge may not work in the long term. It needs to be examined which party is the risk bearer incurring the lower cost and decisions on the enforcement of promises and possible damages should be taken accordingly. Even that cannot guarantee that collusion is eliminated entirely, but the chances could be definitely reduced.

The research project entitled International and domestic trends in the development of venture capital financing was accomplished over several years and resulted in the publishing of a book on the topic. It is the first scholarly monograph on venture capital that discusses side by side two segments of the venture capital sector, i.e. classical venture capital investments and buyouts on the basis of the similarities in how they operate. It is also the first in supporting by statistical data the significance of capital market financing in providing funds for domestic companies. It focuses on the driving forces behind the
functioning of the sector; it examines the areas determining the development of venture capital in Hungary, such as the sources of capital in venture capital funds, the credit facilities available when applying for investment funding loans as well as the returns achieved by (international/domestic) institutional investors and venture capital funds financing the sector after using disparate exit routes. By discussing how the Hungarian venture capital market fits into the trends observed in the Central Eastern European region, it highlights the main factors that were behind the direction of global capital flows and influenced the sector’s success in a region that started out with a considerable time lag and a less developed financial culture.

GLOBALISATION, EU-INTEGRATION AND CONVERGENCE

Hungary is one of the leading countries among the transition economies in Central and Eastern Europe in outward foreign direct investment. Some of the outward investors are owned by foreign investors and, as a result, are indirect rather than direct capital investors. A number of characteristics of outward foreign direct investment (its advantages and disadvantages or the mode of their operation) are, to a significant degree, determined by who, from among the parties involved, should be considered the real investor deciding on investments. Is it the investors of the parent company in the home country or the investors in the mediator country? Analyzing the examples of several large Hungarian outward foreign direct investors (TriGránit, MOL and OTP), the research calls into question the unqualified validity of the dichotomous distinction between indirect and direct investors (as well as the effects assigned to them) as used in the literature. It introduces the concept of virtual indirect investors to describe indirect investors that are majority foreign owned in the home country (countries), but there is no single (or identifiable group) of foreign investors holding a clear majority or a controlling share among the owners. The Hungarian companies referred to belong to this category and therefore, their strategic decisions, including initiatives regarding outward foreign direct investment, are taken by the management of the companies and not the majority owners. The characteristics of virtual indirect investors are closer to the direct than the indirect investors. Indirect and virtual indirect investors could have significantly different effects on the countries and companies in the investment chain. The motivation for outward foreign direct investment may be different: in the case of actual indirect investments, it is traditionally the relative competitive advantages that drive outward investment, while in the case of virtual indirect investments a dominant role is played by horizontal investments that characterize countries with similar levels of economic development and factor endowments. The effects concerning the home countries (e.g. profit repatriation) might also work differently in the case of virtual and actual indirect investors. In the same way, the sustainability of outward foreign direct investment is also treated differently depending on whether it is performed by virtual or actual indirect investors, because the former are not in such a peripheral position compared to those in the home country as the latter. Finally, virtual indirect investors may enjoy more sector-specific policy support from their own governments (given that they are
treated as ‘fellow country companies’) than it would be the case for actual indirect investors.

**ECONOMICS OF EDUCATION**

The results of the research project entitled *Forecasts of educational levels of the Hungarian population until 2020* suggest that even if everything had continued as in the early 2000 (the baseline scenario), the improvement in the educational attainment of the population would have slowed down after 2010. A drop in the proportion of those with very low level qualifications would have stopped, while it would have started growing among the youngest age groups. In the same period, a decrease in the ratio of those with vocational training qualification would have come to a halt as well. Even if educational policies had remained unchanged, the slowing down in the rising trend of educational attainment could apply not only to those with low levels of education, but others as well. The results draw attention to the fact that in order to prevent the slowing down of improvement in educational attainment, educational policy should have aimed at changes that would have, first and foremost, improved the educational opportunities of students with disadvantaged family background.

Research on the *causes of the Roma / non-Roma test score gap in Hungary* concluded that according to the national assessment of basic competencies, Roma 8th graders fall behind by a large extent – one standard deviation – both in reading comprehension and mathematics test scores. The gap in reading and mathematics test scores among Hungarian 8th graders is close to the achievement gap between African American and White students of the same age group in the United States in the 1980s (the latter has shrunk considerably in the last three decades). The large achievement gap is probably the most important cause of labour market disadvantages of the Roma minority, and the key mechanism of intergenerational transmission of poverty. Social disadvantages explain the gap, and ethnicity plays no additional role. The lower achievement of Roma students is due to poverty, low education and labour market disadvantages of the parents, and factors that are results of parental poverty and social disadvantages. The research identified three main transmission mechanisms. These are (1) inadequate access to cognitively stimulating home environment during the childhood, (2) adverse birth outcomes and poor health in childhood, and (3) inferior school environment. The analysis was made possible by a dataset that is unique in Europe. It is based on the Hungarian Life Course Survey of TARKI, financed by the Hungarian government using European structural funds. The survey data are linked to the comprehensive and standardized test scores from the Hungarian National Assessment of Basic Competences. The results have clear policy implications. Closing the achievement gap between Roma and non-Roma students requires reducing the disadvantages in early childhood environment, health and school environment. International evidence shows that such goals can be achieved by programs that focus on improving the health of pregnant mothers and children, early childhood education programs, and integrated education with high quality standards.
LABOUR RESEARCH

Research on the public sector labour market focused on the issue if, as a result of raising the retirement age, older workers crowd out the younger ones in the public sector. The estimates seem to suggest that both the composition of the young workforce and their numbers are responsive to the increased employment of the older generation. Besides age, experience is also a relevant factor creating a squeeze-out effect manifested in wages. Wages based on experience have dropped significantly for employees with minimal experience. The public-private income gap between 2002 and 2008 was also analysed. The results show that, at different points in the income distribution, there is a considerable difference, both in its level and its sign, in the income gap between the public and the private sector and the part that can be explained by workplace characteristics. Another research project examined public-private sector male-female income disparity and occupational segregation. Accounting for the impact of selective distortion between the two sectors as well as the effects of job segregation and its change over time, it was found that the unexplained income gap is smaller in the public sector and women have a greater chance of getting into managerial positions.

The experience of the past decades has proved that to achieve satisfactory working of their labour markets societies need, beyond the existing market mechanisms, the setting up of medium- and long-term forecasts on labour market demand and supply. These forecasts should preferably use quantitative methods and provide a fair degree of detail. An overview of how quantitative labour market forecasts have been generated in 12 countries and the EU shows that the basic approaches to forecasting methodology were established about 15-20 years ago and since then the efforts to elaborate it have taken various directions. Most countries aim at improving their data gathering methods in line with their forecasting activities and strive to co-ordinate the activities of the parties involved in making the forecasts. Moreover, there are endeavours to disseminate the results of the forecasts as widely as possible using the most up-to-date methods. Much effort is devoted to deepening the analyses carried out after the forecasts have been prepared, such as the application of shift-share analysis and the use of the Indicator of Future Labour Market Situation. Further new areas of modelling deal with the inclusion of options for substitution between occupation and qualification into the forecast model; the interpretation of skills as a new variable with regard to the traditional variables (industry, occupation and qualification); the appropriate interpretation of the divergence between demand and supply at various levels of detail, as well as the signalling of such imbalances to the users of the forecasts. The examination of forecasted imbalances and the accuracy of the forecasts raise one of the most crucial questions pertaining to labour forecasts, namely whether the results of the estimations be taken as forecasts of the future proper or they should be perceived simply as well-informed, systematic projections.
Research results analysing the implementation of extending microfinance in Hungary to those living in deep poverty are as follows: (i) in order for a micro-lending programme to succeed, it is not enough to provide capital in terms of money; it is crucial to render social and networking capital as well, mainly through the continuous presence of field workers; (ii) microcredit is a considerably more efficient employment generation tool than public works programmes; (iii) microfinance is not a universal solution to poverty reduction. Primarily, it can be a solution for those who have entrepreneurial skills. Some of the elements of state involvement for the success of a microcredit scheme are the following: a predictable regulatory environment; normative support for becoming an entrepreneur; an allowance in taxes and contributions payable when people with a low education level are employed – including self-employment; the lowering of entry barriers for micro- and small enterprises and the reduction of administrative costs; the formulation of financial regulations specific to micro-lending and the modification of the regulations of financial institutions.

Wage under-reporting (paying grey wages) is rather widespread even in the Scandinavian countries in certain sectors although these countries are often quoted as examples of high tax morale. The practice often involves that the employer only pays the compulsory minimum wage. Paying “fake minimum wages” has been common in the countries of the European periphery and until recently, it was prevalent in Hungary, too. Using data from 2003 and 2006, the researchers used a double hurdle econometric model to estimate the probability of cheating. The ratio of cheating minimum wage earners among all company employees was estimated at 7-11% in 2003 and 5.5-6% in 2006. According to the findings, about 40-50% of those who were paid the minimum wage received “envelope wages” (unreported cash supplements) in the above two years. The estimated real earnings of the cheaters were considerably (about 2-2.4 times) higher than the minimum wage, which follows from the fact that the probability of cheating is higher among highly qualified minimum wage earners. Sixty per cent of the whole amount that evaded taxation can be assigned to the highest (potential) earner quintile and 83 per cent to the two highest quintiles. For this reason, the universal raising of the minimum wage cannot considerably affect the volume of untaxed wages and likewise its aggregated whitening effect may not be significant. However, differentiating minimum wages according to carefully selected criteria and well-targeted tax audits might prove to be more useful whitening instruments.

PUBLIC ECONOMICS AND PUBLIC POLICIES

Micro- and macro-level research was carried out on the health of the population and subjective well-being. Calculations using the macro-level health production function (redefined for Hungary) seem to confirm that education has a direct effect on the trends of mortality rates for men and women. An increase in the proportion of men and women with university education decreases the mortality rate, although lifestyle variables (alcohol consumption and smoking) are still determining factors. The study also aimed at measuring empirically how far self-employment affects the rate of mortality. According to the results,
the state of health of working-age men has a significant effect on the proportion of the self-employed: the lower the mortality rate, the higher the number of the self-employed. Further, an increase in the ratio of the self-employed has a beneficial effect on the state of health: the higher the proportion of the self-employed, the lower the mortality rate. Once controlling for the rate of unemployment and the effects of the hidden economy, the results veritably reflect the effects of voluntary self-employment on health.

The research project studying the effects of multinational companies on labour relations in Hungary focussed on labour conflicts. The case study of a steel producing company that used product development to escape ahead came to the conclusion that even though the owner arrived from a culture characterised by a pattern of unregulated labour relations, both the employers and the employees perceived the industry level collective agreement as an instrument worth preserving. The negotiations concerning the conflicts (arising mainly from work force reduction) between HR and the trade union leadership and accompanied by strike actions were finally resolved, often through outplacement, by a peculiar mix of global markets, post-socialist features and Europeanization. The local unions were mindful of the latest ‘Western’ (IGMetall) trade union trends of the traditionally leading industrial sector and were able to successfully manage their actions within the framework of ‘streamlined’ strike regulations at a firm with ‘Eastern’ ownership. Plant and company conflicts were channelled in a positive manner to the level of the national and European confederation of employees as well as created solidarity beyond the world of work in the local community. Another research in the electronics sector is examining what kind of latent or open conflicts may ‘disturb’ harmonious labour relations and is focussing on which ones are resolved ‘locally’ and which ones are passed further up to ‘headquarters’ level.

AGRICULTURAL ECONOMICS AND RURAL DEVELOPMENT

Results for the study Technical efficiency of Hungarian crop farms suggest that technological heterogeneity plays an important role in the economic modelling of the crop sector in which traditionally the employment of relatively homogeneous technology has been presumed. The comparison of standard Stochastic Frontier Analysis models, which assume that the technology employed is common to all farms, and estimates by Latent Class Models highlights that the efficiency of crop farms may be underestimated using traditional Stochastic Frontier Analysis models. The estimations distinguished two types of farms. The first group can be characterized by extensive farms with decreasing economies of scale, while the second group consists of intensive farms with increasing economies of scale.

Research on generating and transmitting knowledge for sustainable agriculture and rural development concluded that the current policy practice is characterized by strong centralization, weak multi-level governance. The government does not sufficiently recognize or support social learning processes amongst local action groups (LAGs), let
alone their cooperation or the informal networks established by them. There is little and yet unbalanced cooperation between government authorities and the LAGs that are putting the policies into practice. The development system is over centralised and bureaucratized, there is insufficient time and opportunity for innovation, knowledge creation and social learning. As for agro-environmental protection, the central, horizontal control system appears to be working in a satisfactory manner; however there are serious imbalances as well as distortions, first and foremost because of certain agricultural and political groups with powerful lobbying skills. The vertical control system does not function in practice, because the horizontal structures (local networks, social learning, bottom-up initiatives, etc.) are almost completely missing from it. As a result, local or micro-regional level institutions are weak or non-existent in this field.

**GAME THEORY**

The recursive core is a very complex solution concept; its implementation for totally-balanced partition function form games has been proven. The approach based upon the stationary perfect equilibrium cannot be used for the case of not totally-balanced games, where the residual cores can be empty. Therefore a new method was used for the implementation of the recursive core.

Cooperative game theory methods were used for modeling energy trade on electrical power transmission networks. Existing theoretical and practical results were extended for endogenous networks generalizing the recursive core for network games.

In a simpler case for traffic routing drivers follow navigation softwares and the game takes place between the navigation firms. The results are different if the firms play a cooperative or a non-cooperative game. The results obtained study the effect of information asymmetry on efficiency, too.

The partition function form game with uncertainty was defined and the weak sequential core was extended to these games. An important application is the electric energy transmission market with the uncertainty caused by the possible malfunction of the technical elements.

Further research topic was the extension of standard tree games to games given by acyclic digraphs. The main question was how a quick algorithm for the calculation of the nucleolus can be extended to acyclic digraphs. The motivation comes from a real-life problem: Such cost allocation problems emerge, for example, during the construction of an infrastructure network if the arising costs have to be distributed among the nodes of the network.

Special matching problems such as the roommates problem were considered in the special case when the players have bounded preference lists. The main question was the complexity of the algorithm containing the fewest number of blocking pairs. Considering
the problem of matching with sizes the cases, which are NP-hard and which can be solved efficiently have been identified. Furthermore, approximation algorithms have been given for the NP-hard variations.

The stable roommates problem with payments has also been studied. It was shown that if a stable solution exists it can be found in polynomial time. It has also been proven that finding a solution with a minimum number of blocking pairs is NP-complete. Special cases of College Admission were considered, where either the college enrolls all of the candidates with equal scores or none of them. The question of truthfulness was also considered besides the question of existence and optimality of the stable solution.

b) Dialogue between science and society

Beyond its basic research projects, the research portfolio of IHEAS has always included current economic policy, well-being and national issues. A couple of examples for topics of this kind: forecasts on the changes in the educational level of the population, detecting the causes why Roma students fall behind in school, the Hungarian experiences of providing microfinance to those living in deep poverty, the evolving vulnerability of the Hungarian economy between 2001-2008, as well as the project investigating the determining factors behind the relocation of foreign firms previously based in Hungary or the establishing of a labour market forecasting system.

IEHAS places particular emphasis on releasing the results of its research activities deemed to be of service for society at large by using appropriate forums; its publications are presented in public shows as well as made available on its website for the benefit of all those interested.

For the past 12 years, the Labour Market Yearbooks published with the support of the National Employment Foundation have provided information for labour market decision makers and helped the pursuit of knowledge of those interested in the labour market as well as the training of students in higher education.

The results of on-going research are presented at the annual Conference of Labour Studies in Szirák. This year the topic was ‘Wages, Taxes and Transfers’; the lectures were delivered in three sections reflecting issues of considerable public interest. At a time of profound changes in the tax and benefit system, the topicality of how wages, taxes and transfers affect the labour supply does not need justification. The public sector labour market was put in the limelight because more than a quarter of the workforce is employed in it. The lectures in Section 3 presented the research activities related to the establishment of a labour market forecasting system.
Fifth in the series, the yearbook entitled *Competition and regulation 2011* focuses on the re-regulation of the financial sector during the crisis. The volume contains important findings regarding the relationship between the crisis and competition as such, analyzes bank regulation and the changes in the role of central banks, the competitiveness of the Hungarian banking sector as well as the behavioural economics explanations for the behaviour of consumers who employ the financial services.

The chapter on network services deals with the competitive position of the Hungarian rail freight transport system and that of the energy sector after the opening up of the markets as well as the problems involved in switching service providers. According to the conclusions of the research, the speed of recovery from the crisis is significantly influenced by the fact whether during the interventions aimed at alleviating the crisis new competition barriers have been set up and whether the competition restrictions that played a part in the crisis have been eliminated or not.

IEHAS maintains a *professional blog* which functions as a forum to discuss initial or final research results, opinions regarding professional policies as well as topical issues of the economy and public life including society and politics; the researchers regularly publish their writings and express their opinions enabling social interaction in the process.

Press appearances of IHEAS associates are gathered and presented to the public in the *press review section* of its website. Regularly updated information on the main activities of the research groups, the publications of its researchers, the conferences and seminars organized by IHEAS as well as the major research projects is made available on the website both in English and Hungarian. Regular evaluation of site attendance data is a key element of its communication strategy.

### III. Presentation of national and international relations

The researchers of IEHAS hold lectures at a number of national higher education institutions that provide graduate and postgraduate economic courses (CEU, BCE, ELTE, DE, PTE, etc.). They also support the PhD training at the University of Pannonia, Veszprém and the University of Szeged through cooperation agreements. IEHAS researchers teach at several foreign universities (Cardiff University, Open University UK) and participate as external collaborators in the activities of several renowned international research institutes (CEPR, IZA). A young member of IEHAS is a research fellow at the University of California while another young researcher is spending the academic year in Florence at the European University Institute under the Max Weber Postdoctoral Programme.

The IHEAS Summer Workshop aimed at providing a forum for economists studying or working abroad was held for the 12th time in 2012. The third joint Chinese-Hungarian conference under the cooperation agreement signed between IEHAS and the School of
Economics and Business Administration (SEBA) of Beijing Normal University took place in Beijing and was deemed a resounding success.

IEHAS members acted as experts for the National Media and Info communications Authority, the European Employment Observatory, the EU’s 7th Framework Programme and the European Central Bank. They contributed to the draft of the European Commission’s „Horizon 2020” programme and the „National Research and Development and Innovation Strategy 2020” document. IEHAS researchers took part in the development of the EU’s Skills Panorama; one of its researchers is a member of the network of experts working for the European Centre for the Development of Vocational Training, another contributed to the methodological groundwork for the „NEKIFUT” project (National Research and Development Infrastructure Survey and Itinerary) and the drawing up of the final report.

IEHAS is represented and has consultation rights in the National Strategy Evaluation Committee of the programme ’Let it be better for the children’ and the Indicators Review Subcommittee. Its experts took part in preparing the study that developed the indicator system of the National Strategy for Social Convergence.

A number of IHEAS researchers are founders or presidency members of the Hungarian Society of Economics as well as that of the Hungarian Economic Association.

IV. Brief summary of national and international research proposals, winning in 212

IHEAS was working on 26 OTKA (National Scientific Research Programme) research topics out of which 10 were newly started. Among its research tender activities special importance is attached to the accomplishment of Priority project TÁMOP - 2.3.2-09/1 for the establishing of labour market forecasts and foreseeing structural changes. Funding has been won for the publication of the next annual volume of Competition and Regulation and for two other projects arising from tender invitations by the Competition Culture Centre of the Hungarian Competition Authority. As in previous years, the National Employment Foundation supported the publication of the yearbook entitled The Hungarian Labour Market 2012.

Work has started on two research projects: ‘Growth, innovation and competitiveness: Fostering cohesion in Eastern and Central Europe’ and the project entitled ‘International comparisons of product supply chains in the agro-food sectors: determinants of their competitiveness and performance on EU and international markets’ are both financed by the EU’s 7th Framework Programme. The research contract pertaining to the EU funded project ’Mapping European Competitiveness’, with IHEAS as its coordinator, is in the process of being concluded.

V. List of important publications in 2012


