

CONFERENCE REPORTS

VON NEUMANN'S CENTENARY SCIENTIFIC MEMORIAL SESSION

The workshop convened in Budapest on 15 November 2003 commemorated John von Neumann's contributions to economics. The one-day conference – one of the series of events of the “von Neumann memorial year” – was organised under the auspices of the Hungarian Ministry of Information and Communication and the annual “Week of Science” arranged by the Hungarian Academy of Sciences (HAS). The chairman of the scientific organising committee, Academician Ernő Zalai opened the conference and gave the word to Minister Kálmán Kovács.

In his opening speech the minister emphasised that the centenary of von Neumann's birth is a perfect occasion for speaking about issues related to the emerging Hungarian information society. He reminded the participants that von Neumann was not only an outstanding Hungarian personality of the history of informatics, but he made significant contributions to the development of economics, too, despite the short time he spent in this latter field. He quoted Samuelson who has once written that economics “has never been the same” since he visited it. The speaker also pointed out that von Neumann had never let his own scientific achievements to be patented because of his strong conviction that science is universal and a common property of mankind, therefore, everybody should be provided free access to and benefit from its achievements.

The next opening speaker, Academician Tibor Vámos (former director of Computer and Automation Research Institute of the HAS) noted that great scientists could, in general, be classified into two groups. The first group consists of scientists who, with their genius discoveries, open up completely new areas for others to follow, while scientists who contribute to the development of science primarily by synthesising and generalising the achievements of others belong to second group. He argued that the case of von Neumann seems to challenge such a rigid classification because he should be placed into both groups at the same time. Furthermore, Vámos called attention to some noteworthy features of von Neumann's approach to mathematical models. Von Neumann had, he stressed, never presented mathematical models without providing adequate verbal interpre-

tations with them, and always maintained the view that the single most important criterion that defined the value and quality of a model was whether it was operational or not. Vámos viewed the latest Nobel Prizes given to economists as a sign of recognition and return to von Neumann's above perception of the usefulness of scientific models.

The presentations invited were divided into two sections. The *first section*, chaired by László Csaba (President of the Economics Committee of the HAS), was conducted in English and dealt with von Neumann's seminal contribution: the theory of general equilibrium and growth. Ernő Zalai (Budapest University of Economics and Public Administration, BUESPA) introduced the section by presenting his paper *The von Neumann model and the early models of general equilibrium* (see its full version in this volume). First, he briefly reconstructed von Neumann's original model and critically reviewed some of its extensions and generalisations. In his review he offered new insights into the genesis and interpretation potentials of the model as well. Next, recalling the salient models of general equilibrium that appeared before or roughly at the same time as von Neumann's paper, he argued that none of them had any noticeable influence on von Neumann's model. The latter, in his view, was genuinely distinct and indeed, in spite of its fresh and forward-looking methodology, a brilliant mathematical metaphor of some classical and even earlier visions concerning the "laws of commodity production".

The next speaker, Heinz D. Kurz (Graz) introduced their paper, co-authored by Neri Salvadori (Pisa), *Von Neumann, the classical economists and Arrow–Debreu: some notes* (also included in this volume). They demonstrated, illustrating by several important points, that the model of von Neumann had a lot in common with classical economic theories, whereas it lacked many crucial features of the neoclassical versions of general equilibrium models. They compared the von Neumann model to the neoclassical model of Arrow and Debreu and argued that the two models were based on two different traditions of economic thinking and, therefore, they should be viewed as alternatives to each other.

Instead of presenting his paper *The implicit dynamics of the Neumann growth model* (see also in this volume), András Bródy (Research Institute of Economics, HAS) chose to share his philosophical views with the audience, concerning the genius of von Neumann and the genesis of his model. He did it by means of lively and witty "self-dialogues". He had forcefully argued that the high level of logical abstraction, characteristic of von Neumann's way of thinking, offered a real source of intellectual gratification to everyone capable of conducting scientific research at a similar level of logical abstraction. In addition, he illustrated in colourful ways the bureaucratic and financial obstacles that hinder scientific progress in our modern times.

Closing the presentations of the first section, Katalin Martinás (Eötvös Lóránd University of Budapest) spoke about von Neumann's model from a chemist's point of view (*Von Neumann – a chemist's approach to economics*). She drew parallel between the classical approach to thermodynamics and von Neumann's model in order to offer potential explanation for the meaning of von Neumann's puzzling remark: "The similarity (of thermodynamic and economic equilibrium – eds) will persist in its full phenomenological generality (independently from our restrictive idealisations)". The basis for similarities between chemical and economic processes, in her view, is created by the fact that they are both concerned with transformation and transport of materials. This leads to equations of the same structures, but there are some important differences, too. She suggested that the formulation of the First and Second laws of thermodynamics could be directly translated into economics to yield von Neumann's model. But, she added, it was not a copy of a thermodynamic model, but an economic theory that utilised results (the philosophy and logic) of thermodynamics. At the end of her presentation she outlined a microeconomic theory based on thermodynamics.

The *second section*, chaired by Academician Ádám Török (University of Veszprém), was devoted to presentations illustrating the versatile nature of von Neumann's scholarly work. The first lecturer of the section, Dietmar Meyer (Budapest University of Technology and Economics) started his presentation by arguing that von Neumann's real strength and special gift was his ability to think in "structures" instead of "procedures", and the fact that the act of thinking constituted for him the primary source of gratification. Von Neumann had always organised systems around structures, and that made it possible for him to contribute to the progress of so many different fields of science. Looking at his works done in economics, one could find the same preoccupation with structures. For example, in his model of economical general equilibrium, he focused on the behaviour of the economic agents characterised by their choices from given possible structures. Von Neumann, who started his scientific pursuit by joining Hilbert's movement, would have deserved the same sentence that was placed on Hilbert's tomb "We have to know and we will know" – Meyer concluded.

Gusztáv Götz (Eötvös Lóránd University of Budapest) illustrated von Neumann's structure-oriented thinking by his contribution to meteorology. Von Neumann studied ballistic orbits in Aberdeen and participated also in the Manhattan project, wherein he analysed the spread of shock and explosion waves. These calculations made him aware of the acute need for computers. From 1946 he worked on the electronic computer project of the Institute of Advanced Studies and also, as a member of a meteorological research group, on numerical solutions of hydro-thermodynamic equations. The results of the latter calculations proved to be extremely sensitive to the choice of the starting values, and it was von

Neumann, who in March 1950 prepared the first successful weather forecast based on calculations carried out on the ENIAC computer. Von Neumann was also the first to call attention to the serious problems that may be created by unwanted changes in climate and environment, because of the highly unstable character of their systems. From the latter he concluded also that it was of no use to make very long-term weather forecasts. Von Neumann warned against activities, such as large-scale carbon-dioxide emission, which may result in abrupt changes in climate. Götz concluded his presentation by calling attention to two considerable findings that von Neumann could not be aware of. First, changes in weather can be periodic even in the absence of external effects, and second, inaccuracies in estimating the initial conditions grow at a rate higher than exponential in the calculations leading to the final results.

The next speaker, Ferenc Forgó (BUESPA) presented a paper (see also in this volume) in which he reviewed von Neumann's contribution to game theory. Von Neumann was the first to define game theory as the mathematical analysis of multi-person conflict situations. Apart from this definition and the first proof of existence of equilibrium in two-person, zero-sum games, he gave a precise definition of non-cooperative games, introduced their extensive and normal forms and, together with Oskar Morgenstern, laid down the foundations of modern game theory almost from scratch. Von Neumann, Forgó stressed, viewed game theory as a normative science that was concerned with problems of how player should act if they were rational, and not how they acted in reality.

Concluding the section András Simonovits (Research Institute of Economics, HAS) talked also about von Neumann's contribution to game theory and, in particular, about the von Neumann–Morgenstern utility function. He started by saying that it was somewhat unjust that standard economics textbooks mention von Neumann only in the latter connection. Kakutani is cited for the fixed-point theorem of mappings used in the proofs of equilibrium, John Nash is credited for proving the existence of equilibrium of multi-person games, naming in fact a concept of equilibrium (Nash-equilibrium) after him. And paradoxically, co-operative games are less frequently used in economics, despite the fact that co-operative behaviour in economic decisions is much more common than non-cooperative ones. He went on to discuss the axioms and the concept of the von Neumann–Morgenstern utility function. He touched upon the major critiques raised against the discussed concept, too. For example, Allais's criticism of the independence postulate, and the critique formulated by Kahneman and Tversky based on framing. Finally, Simonovits pointed out that the critics, unlike von Neumann, were awarded the Nobel Prize although it was questionable if their contribution to economics could match that of von Neumann.

The conference ended with a *general discussion* with interventions from the audience. Ádám Török started the discussion with some comments on the assumption of rationality. He quoted real-life examples that are difficult to explain by the textbook concept of rationality, such as the tendency of over-insurance, which could, however, be seen rational on other grounds (e.g. in view of the impossibility to repurchase certain goods). Simonovits reflected that the von Neumann–Morgenstern model overestimates small probabilities, which may be justified from a mathematical point of view. The critical problems arose, in his view, from the assumptions made on the probability distributions. Coming back to von Neumann's growth model he suggested that it would be worth to consider how utility or welfare effects could be built into the model. Zalai taking the floor reiterated that von Neumann and Morgenstern viewed their construction as a normative model, therefore some of the critiques are misplaced. He also emphasised that rationality in real-life decisions was a rather dubious and often challenged assumption anyway. József Temesi (BUESPA) joined into the discussion by describing in more detail the main points of criticism raised, and referred to his own classroom experiences that seemed to reinforce them invariably.

Török opened up a new aspect by asking how the model would change if one introduced a probability distribution of rational and irrational decision-makers. Reflecting on Simonovits's presentation he remarked that Kahneman or others did not win the Nobel Prize for their critique of von Neumann. László Garai (University of Szeged) commented on von Neumann's "structuralist" approach. He admitted that structures did exist and were important, and added that, in his view, problems arose from the fact that different economic actors perceived and were thinking in different structures. To illustrate his point he referred to some known examples showing how differing circumstances (framing) could influence the outcome of certain situations. He called also attention to the possible danger that sticking to some perceived structures may deter one's thinking. Forgó, reflecting on the remarks of Simonovits, expressed his belief that Nash did not overshadow von Neumann's contribution to the theory of games at all. Von Neumann, he claimed, had proven more propositions in his 1928 paper than Nash did later. He also recalled the incident, in which von Neumann dismissed any claim of originality of Nash's result, saying that it was nothing but a well-known fixed-point theorem. Forgó added finally that it was regretful that economic textbooks did not mention von Neumann's name besides that of Nash, and he was glad to see that von Neumann was cited in nearly every scientific publication concerned with game theory.

Török closed the conference by expressing his delight to having participated in such an event, nowadays unfortunately rare, wherein economists discuss genuine

and deep theoretical issues instead of exchanging superficial observations about some burning economic policy issues that abound in turbulent times of transition.

Anita Pelle – Gábor Vicze

FROM HERE AND FROM THERE: NEW AND OLD MEMBERS' PERCEPTION ON EU ENLARGEMENT

The Hungarian and Dutch networks of institutional economists have organised a joint workshop on EU-enlargement at the University of Groningen, the Netherlands in September 2003. The organisers, Balázs Hátori and Gábor Péli, intended to make use of the fact that one of the participating countries is an EU member while the other is on its way to accession. The goal was to focus on the differences in the participants' standpoints with respect to enlargement. The chosen presentation structure was to facilitate the "newcomer – incumbent" dialogue: each programme session had two presenters, one from the accession side, and another from the incumbent side (from the Netherlands). The participants were asked to emphasise the specificities of their own side. The two lecturers of each session had contacted each other in advance. They served as discussants for each other, and their reactions on the other's contribution gave the starting impulse for an open discussion.

The session contents can be summarised as follows.

1. Cultural and behavioural aspects

Balázs Hátori (Budapest University of Economics and Public Administration (BUESPA), *Aggression and Unfairness in an Uncertain Transitory Environment*) posited that aggressive and dishonest business behaviour in transition countries may be explained by actors' rational choices under the turbulent conditions of emerging markets. For example, the large international retail chains in Hungary can exploit their monopolistic positions by placing financial demands akin to feudal rents on their suppliers. If a global company with well known brand-names wishes to see its products on the shelves of the hypermarkets, it must accept that the retailer will claim 1–2% of the retail value as a special discount. The presentation argued that the new mafia-type organisations in transition countries can be

seen as special state-surrogates that sell protection when state institutions fail to guarantee transaction security. The market economy has a Janus-face: while fairness is an inherent feature of voluntary exchange, so are the threats and aggression, and Eastern Europe experiences the uglier aspect nowadays. However, the balance can turn positive as the region integrates into the EU-framework.

Gert Jan Hofstede (Wageningen University, *Europe: An Experiment in Adoption or in Expansion?*) focused on the cultural differences between European countries. His thesis was that Europe has been a mixed bag since prehistoric times due to numerous migration waves. The various Europeans are not going to give up their identities, both the old similarities and differences between cultures will remain. He illustrated his point on the dataset collected between 1968 and 2000. This research typologised countries along five cultural dimensions: individualism/collectivism, power distance, masculinity/femininity, uncertainty tolerance, and preference for short- and long-term aspects. The data demonstrated that the distribution of the country differences along these dimensions do not follow the present East–West division line within Europe. However, collectivism and larger power distance characterised most accession states. Their citizens tend to think in terms of family structures when it comes to governance, seeing “Brussels” as a fatherly authority. While the accession states’ population might see the enlargement as an “adoption”, the existing EU citizens think in terms of expansion: not a family matter but an economic issue. This can give rise to disillusionment in accession states in a few years.

2. Enlargement and the Economic and Monetary Union¹

László Csaba’s lecture (Central-European University, Budapest, and University of Debrecen, *A De-Stabilisation and Antigrowth Pact? Enlargement and the Euro Zone*) concentrated on the fiscal policy aspects of the accession to the EMU. The Maastricht criteria and the Stability and Growth Pact (SGP) emerged from a gradual and basically self-imposed adoption of solid fiscal and monetary practices and the failure of Keynesian-type policies (like in France during the early years of the Mitterand administration). No country can experience sustained growth with high inflation. Government deficits will induce crowding-out effects for private investments with a negative impact on long-run growth. Lax (“populist”) fiscal policies in Poland, Hungary and the Czech Republic are attempts to avoid necessary insti-

¹ In this session, the two authors opted for a radical and surprising form of cross-referencing. They presented the other’s paper instead of their own, enriching it with their spicy critical remarks.

tutional and structural reforms with unattractive income distribution effects in the short run. With a quick adoption of the Euro, the restrictive criteria connected with EMU-accession and the SGP may counteract such populist policies in the accession countries, provided that the criteria are not undermined by lax policies or by attempts of renegotiations in the major EU countries. Even if these criteria do not appear to be theoretically well-founded, their simplicity is an important factor to control governments. (In this respect, Jakob de Haan referred to the possibility in some US states to go to court when the balanced budget requirement is violated.)

Jakob de Haan (University of Groningen, *Implications of the Upcoming Enlargement of the European Union for EMU*) dealt with the question whether the enlargement of EMU would threaten the viability of the monetary union. In most accession countries, the requirement of an independent central bank is fulfilled – at least on paper. However, the translation of legal arrangements into actual practice should also be taken into account. Both the laws and the institutional framework matter to keep inflation low. Although the accession countries succeeded to reduce inflation in the 1990s, inflation will still be higher than within the current EU due to catching-up processes (cf. Balassa–Samuelson effect) and structural misalignments. As accession countries will represent only a small part of the total GDP of the EU, their impact on the total inflation in the Euro area will be rather small. However, an increased dispersion of inflation rates in the Euro area may affect the monetary policy of the European Central Bank due to its decentralised setup. National considerations of central bank governors in the Governing Council of the ECB may undermine its task to focus on Euro-area-wide developments. This could be counteracted by a closer correspondence between the economic weight of a country in the Euro area and its decision-making power in the Governing Council.

3. Capital markets

Judit Karsai's contribution (Institute of Economics, HAS, *The Venture Capital and Private Equity Market in Hungary with Special Focus on EU Accession*) primarily dealt with the dilemma, whether – and if so in which way – the government should intervene in case of a capital gap in the supply of venture capital in a transition economy. In fact, this is an example of the broader dilemma of market failure versus government failure. State intervention should be temporary, it should not interfere with the development of a private venture capital market in the long run and it should reconcile the requirements of private business yields with the economic development objectives of the state. The Hungarian government tried to contribute to the development of a venture capital market from the very beginning

of the transition. Legislative provisions, however, were rather ineffective, being overly bureaucratic and showing little regard for business considerations. Efforts to raise capital supply relied first of all on direct state intervention (via the Hungarian Development Bank), and were conducive to political bargaining, but failed to provide incentives for private-sector capital investors.

The paper by Ralph de Haas (Dutch National Bank) and Ilko Naaborg (University of Groningen, *Foreign Bank Behaviour in Transition Countries, a Multiple Case-study*) investigated the entry strategies, the relationship between parent bank and subsidiary, and the credit strategies of Swedish and Finnish banks in the Baltic countries. Rather than following customers (services could have been provided in cooperation with local banks), these banks made use of the opportunity opened by the Russian crisis of 1998. They took over existing banks in the Baltic states in order to acquire a significant market share in a nearby region that they regarded as an important growth market. The investigated banks gave different degrees of local autonomy to their Baltic subsidiaries, and they also differed in the integration of their risk management systems. However, each subsidiary benefited from the foreign parent's expertise with respect to screening and monitoring and they also made use of the internal market for capital and liquidity. In all cases, the transfer of funds from the parent to the subsidiary was justified as an allocation to the fastest-growing business units. The preliminary results in this paper are now being amplified with the results of recent interviews with foreign banks operating in Poland, the Czech Republic and Hungary.

4. Technology and innovation

Marcin Piatkowski (TIGER² and Leon Koźmiński Academy of Entrepreneurship and Management, Warsaw, *Information and Communication Technologies as Drivers of Economic Development in Post-communist Countries*) discussed three ways how ICT can contribute to the economic growth of transition countries: by the increase of production of the ICT sector itself, by the application of ICT in other sectors (capital deepening), and by knowledge spillover. He assessed the quantitative impact of ICT capital on economic growth and labour productivity in transition countries based on an extended growth-accounting framework. He also discussed the institutional and economic determinants of absorption and diffusion of ICT in post-communist countries through application of a New Economy Indicator based on individual country characteristics. He concluded that due to the small size of the sector, the impact of ICT production on total factor productivity

² TIGER – Transformation, Integration, and Globalization Economic Research.

growth is rather small in transition countries (although ICT production had a substantial contribution to economic growth in Hungary in the late 1990s). However, the role of ICT capital in economic growth and labour productivity can be relatively large in some countries and is likely to be rising.

The presentation of Bart van Ark, Robert Inklaar and Edwin Stuivenwold (University of Groningen, *ICT Production and Use in Old and New Europe: A Comparison of Manufacturing and Services*) first paid attention to the labour productivity gap between transition countries on the one hand, and the US and the EU on the other. The rise of labour productivity in the CEE countries was mainly due to declining labour participation, and their failure to increase labour participation limited the reduction of the income gap. Hungary could only slightly narrow the productivity gap, while the Czech Republic showed no improvement. Poland featured the largest progress in this respect, but it started from a lower income- and productivity level. ICT-producing industries show high growth in labour productivity, but this benefits only a small part of the economy. In the large manufacturing sector (part of the old economy), the labour productivity growth is also rapid, but the potential lack of technical congruence may hamper the catch-up. The authors' conclusion was that it is not the EU integration as such, but the institutional stability and the integration coupled with net transfers to CEE countries that are important in ICT absorption.

5. Firm adaptation to enlargement

Katalin Szabó (BUESPA, *"Dual Learning" at International Companies during the Transition*) pointed out three dualities in organisation learning processes based on 55 in-depth interviews with managers of Hungary-based joint ventures. The first duality is that companies in transition countries were confronted with the difficulties of the transition to a market economy and in the same period with the dramatic changes related to the New Economy. The business development that took place in 4–5 years in the transition countries might have taken 30–40 years in the West. The second duality is that organisational learning went together with the unlearning of the old behavioural patterns of the Homo Sovieticus. The third duality she analysed was in the knowledge flow between parent companies and their CEE branches. In contrast to the mainstream views, this knowledge flow is bi-directional: the transition country subsidiaries can serve as test fields for companies for the implementation of the newest practices and techniques.

The presentation of Harry Barkema and Rian Drogendijk (Tilburg University, *Small or Large Steps? Studying Entry Processes of Dutch Companies into CEE Markets*) challenged the so-called Uppsala model on the internationalisation pro-

cess of firms developed in the 70s. This model claims that firms should expand incrementally in order to reduce uncertainty. The authors tested the validity of the Uppsala model by analysing 83 Dutch investments in CEE countries between 1989 and 1998. To filter out effects of country heterogeneity, they included a control variable that measures the cultural distance between the host country and the Netherlands (a measure also used in the Hofstede-study in session 1). Their regression model results suggest that firms opting for an immediate FDI were as successful after their first two FDIs as those that followed an incremental entry strategy like franchising and licensing. The authors concluded that expanding firms may not need too many stepping stones, but can enter new markets in larger steps.

6. Institutional and economic diversity in an enlarged Europe

Tamás Réti (Institute of Economics, HAS, *New Members. Old Animosities. Future Integration?*) placed the past and potential future interactions between accession countries into the centre of his presentation. First, he analysed the role and history of current political and economic cooperation between CEE countries such as the Visegrád Agreement, the Central European Initiative and the CEFTA. The presentation compared the macroeconomic developments in these countries, discussing possibilities of a potential convergence in their economic policies. He addressed the issues of cross-border cooperation between Hungary and its neighbours, concluding that such economic bridges might have a positive effect on the status of the Hungarian minorities in these countries by facilitating the removal of old ethnic resentments, and by turning rivalry into solidarity. This may also lead to the articulation and successful representation of certain special Central European interests within the EU.

This idea of Réti linked his paper to the presentation of Gábor Péli and Beppo van Leeuwen (University of Groningen) on country groupings within the enlarged Union (*Potential Clusterings between Member States after Enlargement*). First, the presentation assessed some clustering effects of the new rules of qualified majority voting that would apply in the Council of Ministers from 2005 on the basis of the Nice Treaty. The second part looked for clustering patterns on the basis of the current trade intensity between EU-members and accession countries. The third part took into account historical, political and geographical motivations of cluster formation. The authors considered a number of ways of coalition formation like “newcomer vs. incumbent grouping”, “crystallisation around big players”, and “small guys against big guys”. On the one hand, most of these clusterings can raise centrifugal forces within the Union, on the other, cluster formations con-

tribute to the aggregation of opinions, making the complex decision making process shorter in the enlarged European Union.

The participants considered this workshop as a first step towards further cooperation between Hungarian and Dutch institutional economists. A follow-up workshop is planned in Hungary next year.

Gábor Péli – Beppo van Leeuwen