

# Book of Abstracts

Annual Meeting & 100th Anniversary of the  
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TU Wien  
Institute of Statistics and Mathematical Methods in Economics  
Research Group Economics

in collaboration with the

Vienna Institute of Demography  
Austrian Academy of Sciences

# The Future of Health Care Systems

Progress in medical treatment and improvements in preventive health care have contributed to a significant increase in life expectancy in most industrialized countries during the last decades. At the same time, health care systems have come under increasing funding pressure due to the extended application of cost-intensive medical technologies on the one hand, and population ageing on the other. In the light of these facts, a debate on policy reforms has to address the structure of the health sector as well as its organizational efficiency. A second set of concerns relates to the fact that health outcomes, health behaviour and the access to health care differ across individuals. With income and wealth inequality being on the rise in many Western countries, this raises policy issues about the role of health care systems in generating, or mitigating, health-related inequality.

## **Keynote Speakers**

Jonathan S. Skinner (Dartmouth College, USA)

"The Elusive Link Between Health Care Spending and Health Outcomes"

Andrew Jones (University of York, UK)

"Equity, opportunity and health"

## **Panel Discussion**

"Sozialversicherungsstudie – Was ist schon geschehen und wohin gehen wir?"

Elias Mossialos (LSE, UK)

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## Table of Contents

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The Elusive Link Between Health Care Spending and Health Outcomes	1
Equity, Opportunity and Health	1
Economics in Austria from 1945 to Today	2
The Nationalökonomische Gesellschaft from its Foundation to the Postwar Period: Prosperity and Depression.	2
Hungry Children Age Faster	3
The Effect of Prenatal Maternity Leave Duration on Short and Long-term Child Outcomes	3
Inequality in Wages, Earnings, Income and Consumption: A European comparison	3
Longevity-induced vertical innovation and the tradeoff between life and growth	4
Curbing the Growth of Pharmaceutical Expenditure: A Panel-data Analysis of International Reforms	4
On the Political Feasibility of Increasing the Legal Retirement Age	5
The Death of the Red Herring: Ageing and Health Care Expenditures in a Large German Sickness Fund	5
Wage Differences Between Immigrants and Natives in Austria: The Role of Literacy Skills	6
We just estimated twenty million fiscal multipliers	6
Exploring differences in financial literacy across countries: the role of individual characteristics and institutions	7
Evaluating the aggregate efficiency of the European Union central budget	7
Measuring and decomposing economies of diversification: An application to biogas-fuelled cogeneration plants in Austria	8
The burden of disease, productivity and earnings	8
What drives reciprocal behavior? The optimal provision of incentives over the course of careers	9
The role of R&D and labour productivity for employment growth of small and medium sized firmsdrives reciprocal behavior? The optimal provision of incentives over the course of careers	9

Ways of the green tourist in Europe role of R&D and labour productivity for employment growth of small and medium sized firmsdrives reciprocal behavior? The optimal provision of incentives over the course of careers	10
US Monetary Policy in a Globalized World	10
Incentivizing Efficient Utilization Without Reducing Access: The Case Against Cost-Sharing in Insurance	11
The role of education for individual vulnerability to flood risks	11
Information Design in Insurance Markets: Selling Peaches in a Market for Lemons	12
Optimal Constrained Interest-Rate Rules under Heterogeneous Expectations	12
Oskar Morgenstern and Jacob Viner on the cost controversies	12
The Sovereign-Bank Interaction in the Eurozone Crisis	13
Patterns of material use and its interaction with socio-economic performances: a MFA-MRIO assessment of the Austrian economy Sovereign-Bank Interaction in the Eurozone Crisis	13
The gender dimension of intergenerational transfers in Europe	14
Implications of Macroeconomic Volatility in the Euro Area	14
The Strength of Absent Ties: Social Integration via Online Dating	15
When Communities Participate in Primary Health Care: A Randomized Controlled Trial of a Community Health Worker Program in the Philippines	15
Predicting crypto-currencies using sparse non-Gaussian state space models	16
Dealing with heterogeneity in panel VARs using sparse finite mixtures	16
Taking a fresh look at innovation efficiency	16
Managing moral hazard in last resort lending: credit limits as "contingent rules" at the Austro-Hungarian Bank	17
Prenatal exposure to the German food crisis 1944–1948 and health after 65 years	18
Historical Decoupling in EU: Evidence from Time-Frequency Analysis	18
Robust Bidding in First-Price Auctions	18
Contracting frictions and inefficient layoffs of older workers	19
CO <sub>2</sub> tax scheme scenarios in Austria – Effects on equity, CO <sub>2</sub> emissions and the economy	19
Globalization effects on the distribution of income	20
A Bayesian hierarchical approach for modeling interregional freight transportation flows	20

How did the 2008 financial crisis affect worker mental health? Evidence from 392 UK workplaces	21
You can't always get what you want? A Monte Carlo analysis of the bias and the efficiency of dynamic panel data estimators	21
Differential access to medical innovation and the emergence of inequality in longevity	22
Health Policies and Intergenerational Mobility	22
Quantile regression for risk adjustment	23
Back to the Future – Changing Job Profiles in the Digital Age	23
Economic drivers of greenhouse gas-emissions in small open economies: A hierarchical structural decomposition analysis	24
Recycling of steel, aluminium, paper and glass and their energy-economic scope	24
Methodological Positions, Economic Theories and the NOeG	24
Incidence and effectiveness of national greenhouse gas mitigation policies: A macroeconomic analysis for Austrian households	25
Perpetrators and Victims – Austrian Economists under the Nazis	26
Estimating the Trade and Welfare Effects of Brexit: A Panel Data Structural Gravity Model	27
Dismantled once, diverged forever? A quasi-natural experiment of Red Army misdeeds in post-WWII Europe	28
Fiscal Policy in the East and the West of Europe	28
How did the 2008-9 Financial Crisis affect Bank Credit Supply and the Real Economy? Bank-Firm-level evidence from Austria	28
Consumer Information and the Speed of Price Transmission	29
On the relevance of double tax treaties in the presence of treaty shopping	29
The dynamic impact of monetary policy on regional housing prices in the US: Evidence based on factor-augmented vector autoregressions	30
A multi-country approach to analyzing the euro area output gap	30
The Lost Race Against the Machine: Automation, Education, and Inequality in an R&D-Based Growth Model	30
Trust and Reciprocity Drive Social Common Goods Allocation Norms	31
The Future Is Now: How Joint Decision Making Curbs Hyperbolic Discounting but Blurs Social Responsibility in the Public Policy Domain	31



Economic Policy Uncertainty and the Volatility of Sovereign CDS Spreads	32
What are the Drivers of Regional Variations in Avoidable Hospitalisations in Austria? A Spatial Panel Data Analysis	32
Two worlds of fee setting in social health insurance?	32
Sequential Round-Robin Tournaments with Multiple Prizes	33
The impact of reducing the pension generosity on inequality and schooling	34
Measles outbreak and vaccination uptake	34
A cost-effectiveness analysis for an ambulant psychiatric rehabilitation programme in Vienna, Austria	34
Anticipation of Deteriorating Health and Information Avoidance	35
Increasing or relocating tourism activity after VAT cut? On competition and incidence of consumption taxes	35
Go your own way? The importance of environment in the formation of physician practice styles	36
Work incentives and the efficiency of tax-transfer reforms under constrained labor supply	36
Austria's Consumption-Based Greenhouse Gas Emissions: Identifying sectoral sources and destinations	37
An Economic Theory of Depression and its Impact on Health Behavior and Longevity	37
Boosting Taxes for Boasting about Houses: Status Concerns in the Housing Market	38
Testing for Labour Market Segmentation in Europe	38
A Field Experiment on Labor Market Speeddates for Unemployed Workers	39
Fair Prices for Medicines? Exploring Competent Authorities' and Public Payers' Preferences on Pharmaceutical Policies	39
Macroeconomic Effects of EU and Euro Area Accession of Serbia	40
Systematic Review: Validity and transferability of the results of health-economic evaluations of Transcatheter Aortic Valve Implantation	41
Tax and industry structure	41
Refugees and Migrants in the Austrian Health System	41
Equilibrium credit growth in the euro area: A non-linear model approach	42
End-of-life Healthcare Expenditure: Testing Economic Explanations Using a Discrete Choice Experiment	42

### **The Elusive Link Between Health Care Spending and Health Outcomes**

Skinner J. S.

*Dartmouth College – United States of America*

There is little consensus on whether the incremental Euro spent on health care yields positive benefits in terms of health outcomes. In this presentation, I argue that the statistical approaches used in prior studies are flawed, and that a more fruitful approach is to interpret hospital-level variations in health care spending and health outcomes as reflecting differences in productivity across hospitals and health facilities. Using preliminary data (from a paper by C. Colla, A. Chandra, and myself) on 1.5 million Medicare enrollees in the US age 65+ I will demonstrate there are broad differences in hospital level productivity, and that these differences can be predicted accurately by the input choices that hospitals make; some provide beta blockers, statins, and stents, which improve productivity (e.g., better health outcomes at lower costs), while others provide ineffective care (such as excessive home health care) that cost more but without beneficial effects. In sum, it's not so much how much money is spent that determines health outcomes; it's about how the money is spent.

### **Equity, Opportunity and Health**

Jones A.

*University of York – United Kingdom*

A The new national panel dataset, Understanding Society: the UK Household Longitudinal Study (UKHLS), provides an opportunity to embed new biosocial data within the ethical framework of equity of opportunity in health and focus on the ways in which early life shape lifetime inequality of opportunity in health. Inequality of opportunity is based on an ethic of 'responsibility-sensitive egalitarianism'. It distinguishes between circumstances, such as which kind of school someone attended, for which people are not held personally responsible, and their personal effort, which may in-part be shaped by those circumstances, for example through the attitudes and behaviours picked up at school. A normative model draws out the implications of this ethical stance in the data, by disentangling the direct and indirect (through effort) contributions of circumstances and the direct contribution of effort to the distribution of health outcomes. The aim of the research is to explore inequality of opportunity in health by: building a normative model to examine pathways from circumstances to health outcomes; taking into account that health is a multidimensional and complex outcome by considering a set of objective health measures (biomarkers); evaluating the mediating factors, such as cognitive abilities, lifestyles, employment and income, which can affect the pathways between circumstances and health;

extending analysis of the contribution of circumstances to health inequalities by (i) going “beyond the mean” to assess whether they matter more for people who are at the bottom or top of the pile in terms of their health and (ii) allowing for heterogeneity in the role of circumstances across people who have different characteristics.

## **Economics in Austria from 1945 to Today**

Nowotny E.

*National Bank of Austria*

Following the intellectual exodus of the 1930s and persecution by the Nazi regime, economics in Austria had, with only a handful of exceptions, lost connection to international trends. After 1945, political choices further consolidated this state of affairs. Only after a generation change and thanks to a climate of reforms in the late 1960s and 1970s, research both outside and inside universities managed to catch up. Today, academic economics in Austria is part of an integrated European and North American market for economists as well as for economic ideas.

## **The Nationalökonomische Gesellschaft from its Foundation to the Postwar Period: Prosperity and Depression.**

Klausinger H.

*Vienna University of Economics and Business – Austria*

After its foundation in June 1918 the Nationalökonomische Gesellschaft (NOeG) evolved in fits and starts. Designed as a forum for theoretical debate, despite the prominent economists (Schumpeter, Mises, Mayer, Amonn, Spann) involved its activities petered out by 1923. Its relaunch in 1927, which excluded Spann, aimed at finding a tolerable arrangement for the two inimical strands of Austrian economics, led by Mayer and Mises, elected president and vice-president of the society. Around 1930 the NOeG and more generally Vienna proved attractive for many well-known economists from abroad, and many of the papers presented were printed and cited in first-rate journals. Yet, in the course of the 1930s, the emigration of Mises and much of the younger generation of the Austrian School made the NOeG’s activities decline, both in number and quality. After the Anschluss 1938 the NOeG and its president Mayer were quick in dismissing its Jewish members and in the following adhered to a strategy of inconspicuous adaptation. Apart from saving its formal existence it did not display any substantial activities under the NS regime. In the postwar period after reconstructing the NOeG in 1949, Mayer broadened its membership to economists outside the University of Vienna. After his death in 1955 he was succeeded by Alexander Mahr. Yet, for the next decades, well into the 1960s, the evolution of the NOeG mirrored the decay and isolation that characterized Austrian academic economics in general.

### **Hungry Children Age Faster**

Abeliansky A.L. , Strulik H.

*University of Göttingen - Germany*

We analyze how childhood hunger affects human aging for a panel of European individuals. For this purpose, we use six waves of the Survey of Health, Aging, and Retirement in Europe (SHARE) dataset and construct a health deficit index. Results from log-linear regressions suggest that, on average, elderly European men and women developed about 20 percent more health deficits when they experienced a hunger episode in their childhood. The effect becomes larger when the hunger episode is experienced earlier in childhood. In non-linear regressions (akin to the Gompertz-Makeham law), we obtain greater effects suggesting that health deficits in old age are up to 40 percent higher for children suffering from hunger. The difference of health deficits between hungry and non-hungry individuals increases absolutely and relatively with age. This implies that individuals who suffered from hunger as children age faster.

### **The Effect of Prenatal Maternity Leave Duration on Short and Long-term Child Outcomes**

Ahammer A. , Halla M., Schneeweis N.

*Johannes Kepler University Linz – Austria*

Maternity leave policies are thought to be essential to ensure the health of pregnant workers and their unborn children. However, little is known about the optimal duration of prenatal maternity leave and existing policies are not evidence-based. We evaluate a substantial maternity leave extension in Austria, which increased mandatory leave prior to birth from six to eight weeks. Our estimation strategy exploits that the eligibility for the extend leave was determined by a cutoff due date. As an additional source of exogenous variation, we use information on non-working mothers, who are not eligible for maternity leave. Across estimations, we consistently find no evidence for significant effects of this extension on children's health at birth, subsequent maternal health and fertility, and long-term human capital outcomes of children. Our finding is confirmed by a supplementary cross-country panel analysis.

### **Inequality in Wages, Earnings, Income and Consumption: A European comparison**

Angel S.\* , Bittschi B.\***Error! Bookmark not defined.**

*\*Vienna University of Economics and Business – Austria, °IHS, Institut für höhere Studien – Austria*

We analyze the connection between inequality in wages, earnings, income and consumption for households in 21 European countries between 1995 and 2014. These two decades are characterized by periods of strong growth as well as times of pronounced economic and financial crisis and thus provide a unique opportunity to investigate different dimensions of inequality. For our analyses, we combine ECHP and EU-SILC data, which provide detailed wage, earnings, and income data. Moreover, we demonstrate that a hitherto unused question in both surveys is suitable to study a considerable part of household consumption. Our approach thus facilitates an integrated view on inequality in wages, earnings, income and consumption. This complements existing but yet fragmented evidence on the development of income inequality and consumption inequality in Europe for the past two decades.

## **Longevity-induced vertical innovation and the tradeoff between life and growth**

Baldanzi A.\*, Prettnner K.°, Tscheuschner P.°

*\*University of Milan – Italy, °University of Hohenheim – Germany*

We analyze the economic growth effects of rising longevity in a framework of endogenous growth driven by quality-improving innovations. We show that a rise in longevity raises savings and thereby reduces the market interest rate. Since the monopoly profits generated by a successful innovation are discounted by the endogenous market interest rate, this raises the net present value of innovations, which, in turn, fosters R&D. The associated increase in the employment of scientists leads to faster technological progress and a higher long-run economic growth rate. From a welfare perspective, we show that the direct effect of an increase in life expectancy on lifetime utility is much larger than the indirect effect of the induced higher consumption due to faster economic growth. Consequently, the debate on rising health care expenditures should not predominantly be based on the growth effects of health care.

## **Curbing the Growth of Pharmaceutical Expenditure: A Panel-data Analysis of International Reforms**

Berger M., Röhrling G., Pock M., Reiss M., Czypionka T.

*IHS, Institut für höhere Studien – Austria*

A steady increase in expenditure on pharmaceuticals over past decades poses a critical challenge to financial stability of healthcare systems around the globe. Policy makers have reacted by introducing a range of policy measures aimed at controlling growth of public pharmaceutical expenditure (PPE). Using a panel dataset of ten European and two non-European OECD member countries for the period 1990-2015, we estimate the effectiveness of various types of cost control measures along with a proxy for co-payments. Variables were chosen based on Bayesian

model selection. The resulting model specification was estimated using Prais-Winsten regression to accommodate for first-order autocorrelation and contemporaneous cross-sectional correlation. Our empirical analysis suggests that PPE growth can be successfully contained both by monetary and non-monetary means. Due to their relatively large impact, monetary measures stand out as a potent means to curb PPE growth, though come with a substantial risk of undesirable adverse effects. The effect of non-monetary measures is more limited, but all in all, such measures might be more equitable. Synergies between measures should be realized to maximize impact. As such, the introduction of a bundle of measures is preferable to singular measures.

## **On the Political Feasibility of Increasing the Legal Retirement Age**

Bittschi B.\*, Wigger B.U.°

*\*IHS, Institut für höhere Studien – Austria, °Karlsruhe Institute of Technology – Germany*

We first consider a politico-economic model in which the legal retirement age is determined by majority voting. We show that workers generally prefer a lower retirement age than retirees and that in equilibrium the level of the legal retirement age is increasing in longevity and decreasing in the public pension replacement rate. We then test these hypotheses empirically. Employing micro data for Germany we provide evidence that retirees compared to workers are 70% more likely to vote for an increase in the legal retirement age to make pension financing more sustainable. On the basis of a cross country analysis we demonstrate that, depending on the specification, a one percentage point increase in the share of the elderly increases the legal retirement age by 0.3 to 0.5 years. On the other hand, a 10 percentage point increase in the replacement rate reduces the legal retirement age by 0.5 to 3 years.

## **The Death of the Red Herring: Ageing and Health Care Expenditures in a Large German Sickness Fund**

Breyer F.\*, Lorenz N.°, Ihle P.+

*\*University of Konstanz - Germany, °Universitätsklinikum Köln – Germany, +University of Trier – Germany*

We analyze the impact of age and time on HCE by using data for a panel of German sickness fund members over the period 2001-2012. We employ non-parametric regression methods to estimate the age-profiles of health care expenditures separately for men and women and for persons in their last 4 years of life and for all others (“survivors”). We find that expenditures in the last 4 years of life constitute about 20 per cent of lifetime expenditures, which refutes the main justification of the “red-herring” hypothesis, namely the claim that the bulk of health care expenditures is incurred in the last years before death. Average expenditures of survivors rise strongly with age between ages 40 and 80, again contradicting the red-herring hypothesis. In

line with a number of previous studies, expenditures in the last year of life peak in the 50s and decrease strongly with age thereafter.

When simulating the effect of demographic ageing in Germany on per-capita health care expenditures over the next three decades, we find that this impact is positive and on the order of less than half a percentage point per year, and it makes almost no difference whether proximity to death is taken into account in the regression relating health care expenditures to age. Adding the much stronger impact of medical progress yield an annual growth rate of per-capita HCE of almost 2 per cent, which is more than twice as high as GDP growth. The results therefore imply that in the long run, the financial sustainability of the German health care financing system is seriously jeopardized.

## **Wage Differences Between Immigrants and Natives in Austria: The Role of Literacy Skills**

Christl M., Köppl-Turyňa M., Gnan P.

*Agenda Austria - Austria*

This paper analyzes wage differences between natives and immigrants in Austria. First, we show that for both groups, literacy skills are an important determinant of the hourly wage. In the second step, we show that differences in proficiency with respect to literacy can explain more than three log points of the total wage gap of 9.7 log points between natives and immigrants. When adding literacy skills to the wage decomposition, the discriminatory part vanishes completely, suggesting that the wage difference between immigrants and natives in Austria can be to a large extent explained. Furthermore, we account for a possible sample selection bias. After controlling for literacy skills, the unexplained part of the gap becomes statistically insignificant. The importance of literacy skills in explaining wage differences between natives and immigrants is robust across several sensitivity tests.

## **We just estimated twenty million fiscal multipliers**

Crespo Cuaresma J.

*Vienna University of Economics and Business – Austria*

We analyse the role played by data and specification choices as determinants of the size of the fiscal multipliers obtained using structural vector autoregressive models. The results, based on over twenty million fiscal multiplier estimated for European countries, indicate that many seemingly harmless modelling choices have a significant effect on the size and precision of fiscal multiplier estimates. In addition to the structural shock identification strategy, these modelling choices include the definition of spending and taxes, the national accounts system employed,

the use of particular interest rates or inflation measures, or whether data are smoothed prior to estimation.

## **Exploring differences in financial literacy across countries: the role of individual characteristics and institutions**

Cupak A.<sup>\*</sup>, Fessler P.<sup>°</sup>, Silgoner M.<sup>°</sup>, Ulbrich E.<sup>°</sup>

*<sup>\*</sup>National Bank of Slovakia – Slovakia, <sup>°</sup>Oesterreichische Nationalbank - Austria*

We examine recently compiled microdata from the OECD/INFE survey covering information on financial literacy of adult individuals from twelve countries around the globe. We find large differences in financial literacy across countries and decompose them into a part explainable by differences in individual characteristics and a part that cannot be explained by such differences. We show that individual characteristics matter with regard to differences in average financial literacy, but do not explain observed differences fully. We further relate the unexplained differences of our microeconomic analysis to institutional differences across countries. We find strong relationships between the differences in financial literacy not explained by individual characteristics and life expectancy, social contribution rates, PISA math scores, internet usage, and to a lesser degree with GDP per capita, the gross enrolment ratio and stock market capitalization. Our results suggest that there is a space for harmonization of economic environments across countries regarding decreasing inequality in the population's financial literacy.

## **Evaluating the aggregate efficiency of the European Union central budget**

Davoine T.

*IHS, Institut für höhere Studien – Austria*

The European Union budget mostly redistributes resources across its member countries. Using a multi-country general equilibrium model covering 14 European countries, I investigate the long run macroeconomic and labor market impacts of different budget options on both net recipient and net donor countries. Simulations show that one can shift prosperity from country to country, measured as gross domestic product variations, at no efficiency cost nor efficiency gains, as long as the central budget can be operated for free and net recipient countries use the transfers to stimulate economic activity, as opposed to supporting household income. If recipients only support household income, the net deadweight loss caused by the distortionary nature of taxation can reach 5% to 8% of the size of the central budget. The key policy implication is earmarking cross-country transfers for economic stimulation.



## **Measuring and decomposing economies of diversification: An application to biogas-fuelled cogeneration plants in Austria**

Eder A.

*Vienna University of Economics and Business – Austria*

This paper investigates the existence and the degree of economies of diversification for small-scaled, renewable-fuelled cogeneration systems using 2014 cross-sectional data from 67 Austrian biogas plants. It is the first study applying the methodology proposed by Chavas and Kim (2010). Economies of diversification are decomposed into three additive parts: a part measuring complementarity among outputs; a part reflecting economies of scale; a part reflecting convexity. In addition, this paper extends the decomposition introduced by Chavas and Kim (2010) in such a way that the contribution of each input to economies of diversification and its components can be investigated. The results indicate substantial cost savings from diversification. For very-small scaled plants (<100 kW<sub>el</sub>) most of the cost savings come from scale economies. For larger plants (>250 kW<sub>el</sub>) positive complementarity and convexity effects are the main source of economies of diversification and outweigh the negative effect from scale diseconomies. In addition to substantial fuel/feedstock cost reductions, significant costs saving effects from the jointness in labour and other inputs positively contribute to the complementarity effect. While on average capital and labour costs positively contribute to economies of scale, feedstock costs work in the direction of diseconomies of scale.

## **The burden of disease, productivity and earnings**

Endel F.<sup>\*</sup>, Holl J.<sup>°</sup>, Wagner-Pinter M.<sup>°</sup>

*<sup>\*</sup>Technische Universität Wien – Austria, <sup>°</sup>Synthesis Forschung G.m.b.H – Austria*

Schooling raises productivity and thus earnings. Morbidity exerts a depressive effect on the level of performance of the individual burdened by morbidity. The objective of the paper is to analyse: How large this depressive effect is; how its distribution among the population looks like. Matched administrative health and employment records of more than 237 thousand individuals serve as micro database. Its population are persons having taken permanent residence in Lower Austria from 2006 to 2016. A burden of disease index is constructed. It is based on the following data for the period 2008 - 2011: Visits to general practitioners and specialists; admissions to hospitals; leaves of absence; prescriptions. This index is used to augment a standard earnings function in order to capture the depressing effect of the burden of disease. The results indicate: – The burden of disease is rather large for about a quarter of the population – It has a markedly depressive effect on earnings

## **What drives reciprocal behavior? The optimal provision of incentives over the course of careers**

Fahn M.<sup>\*</sup>, Schade A.<sup>°</sup>, Schüßler K.<sup>+</sup>

*<sup>\*</sup>Johannes Kepler University Linz – Austria, <sup>°</sup>TNS Infratest, <sup>+</sup>Ludwig-Maximilians-Universität München – Germany*

We explore how inherent preferences for reciprocity and repeated interaction interact in an optimal incentive system. Developing a theoretical model of a long-term employment relationship, we first show that reciprocal preferences are more important when an employee is close to retirement. At earlier stages, repeated interaction is more important because more future rents can be used to provide incentives. Preferences for reciprocity still affect the structure of an employment relationship early on, though, because of two reasons: first, preferences for reciprocity effectively reduce the employee's effort costs. Second, they allow to relax the enforceability constraint that determines the principal's commitment in the repeated interaction. Therefore, reciprocity-based and repeated-game incentives are dynamic substitutes, but complements at any given point in time. We test our main predictions using data from the German Socio-Economic Panel (SOEP) and find evidence for a stronger positive effect of positive reciprocity on effort for older workers.

## **The role of R&D and labour productivity for employment growth of small and medium sized firms drives reciprocal behavior? The optimal provision of incentives over the course of careers**

Falk M.

*Austrian Institute of Economic Research - Austria*

This paper investigates the link between firm growth and R&D activities of Austrian SMEs for the period 2002-2014 using 3,300 firm observations. A special focus of the analysis is put on these links for small and high-productive SMEs. Results obtained from robust regression and quantile regressions show that employment growth is significantly higher for firms with a high labour productivity level (to that of large firms in a given industry). Furthermore, the interaction term between the R&D sales ratio and the relative labour productivity level of SMEs is significant and positive indicating that the impact of R&D activities on firm growth increases with the relative labour productivity level. However, R&D activities are only a significant driver of firm growth when the labour productivity gap of SMEs to that of large firms is not too large. In particular, R&D activities are no longer a significant driver of employment growth of SMEs below a relative productivity level of 50 per cent.

## **Ways of the green tourist in Europe role of R&D and labour productivity for employment growth of small and medium sized firms drives reciprocal behavior? The optimal provision of incentives over the course of careers**

Falk M.\*, Hagsten E.°

*\*Austrian Institute of Economic Research – Austria, °University of Iceland – Iceland*

Almost a third of European citizens who went on holiday in 2015, preferred a destination or accommodation with environmentally-friendly practices or certificates (green destination). However, only about 16 per cent chose a green transportation mode (with low impact on the environment) for their vacation. By use of data from the Flash Eurobarometer, a bivariate Probit model is used to estimate the probability of choosing a green destination or transportation mode. Results reveal that the choice of a green destination depends significantly on a bundle of socio-demographic and contextual characteristics, where country of residence is the most important factor. Nature seeking and sports tourists as well as those who travel with a partner are more likely to choose green destinations. Women are more interested in this than men, while older and highly skilled persons are not particularly concerned about the environment when they decide on a destination. Still, choosing a green destination is not enough to make a “truly green tourist”, this also includes the choice of transportation mode. A look at those who appreciate the full green concept (seven per cent), reveals that they mainly spend their holidays domestically, or take a particular interest in nature based outdoor activities.

## **US Monetary Policy in a Globalized World**

Crespo Cuaresma J.\*, Doppelhofer G.°, Feldkircher M.+ , Huber F.\*

*\*Vienna University of Economics and Business – Austria, °Norwegian School of Economics - Norway, +Oesterreichische Nationalbank - Austria*

This paper develops a global vector autoregressive model with time-varying parameters and stochastic volatility (TVP-SV-GVAR) to analyze the international effects of US monetary policy. We find significant changes in the international transmission of US monetary policy over time. For most variables, the global response to US monetary policy has been increasing since the 1980s, while effects on output were dampened following the period of the global financial crisis. Countries that are more strongly affected tend to be highly open economies with excessive fiscal and current account deficits and pronounced foreign currency exposure (either through reserves or the external balance). Improving these fundamentals, reducing trade openness or restricting capital inflows can mitigate spillovers. Last, and as a consequence of an increase of financial globalization, we show that also US rates react significantly to certain foreign shocks.

## **Incentivizing Efficient Utilization Without Reducing Access: The Case Against Cost-Sharing in Insurance**

Fels M.

*University of Dortmund (TU) – Germany*

Cost-sharing is regarded as an important tool to reduce moral hazard in health insurance. Contrary to standard prediction, however, such requirements are found to decrease utilization both of efficient and of inefficient care. I employ a simple model that incorporates two possible explanations - consumer mistakes and limited access - to assess the welfare implications of different insurance designs. I find cost-sharing never to be an optimal solution as it produces two novel inefficiencies by limiting access. An alternative design, relying on bonuses, has no such side effects and achieves the same incentivization.

## **The role of education for individual vulnerability to flood risks**

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The rising number of hazardous catastrophes and natural disasters makes it increasingly important to correctly assess their effects on the population. Complementary, population characteristics like age, education, or income define the extent of damages after natural disasters.

We account for these two-way coupled feedbacks by introducing a theoretical framework that investigates household's consumption and investment decisions in the context of flood risk. Not all individuals and households are equally affected, so we suggest possible decision mechanisms at the individual level to explain the household's vulnerability with different educational background. Through this analysis of heterogeneous households we are able to make better predictions and estimations about the impacts and the effectiveness of various policy measures to decrease their flood risk vulnerability.

The presented economic model is based on a two-stage overlapping generation (OLG) model. Household's decisions take into account an uncertain flooding event affecting household's future consumption and we explicitly incorporate impacts of education on income, awareness and disaster mitigation potentials. We analytically obtain characteristics of the household behaviour under explicitly stated cost functions and an intertemporal elasticity of substitution of consumption equal to 1. Furthermore numerical optimization techniques allow to isolate different impacts of education on optimal decisions, and also to simulate the long-run behaviour of households exhibiting different educational levels. We find that higher educated households tend to settle in lower risk areas regardless of their initial situation and a potential poverty trap for the lowest educated households can exist.

## **Information Design in Insurance Markets: Selling Peaches in a Market for Lemons**

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This paper characterizes the optimal information structure in competitive insurance markets with adverse selection. A regulator assigns ratings to individuals according to their risk characteristics, insurers offer fixed insurance contracts to each rating group, and the market clears as in Akerlof (1970). The optimal rating system minimizes ex-ante risk subject to participation constraints. We prove that in any such market there exists a unique optimal system under which all individuals trade and the ratings match low risk types with high risk types negative assortatively. A simple algorithm yields the optimal system. We examine implications for government regulations of insurance markets.

## **Optimal Constrained Interest-Rate Rules under Heterogeneous Expectations**

Gasteiger E.

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This paper examines optimal monetary policy under heterogeneous expectations. To this end, we develop a stochastic New Keynesian model with a cost-push supply shock and coexistence of one-step ahead rational and adaptive expectations. We argue that the incorporation of heterogeneous expectations in both the design and implementation of optimal monetary policy is welfare improving. Nevertheless, heterogeneous expectations imply an amplification mechanism that has many adverse consequences missing under the paradigm of homogeneous rational expectations. In absence of commitment, a more hawkish policy is welfare improving under certain conditions. Credible commitment eliminates or mitigates many of the ramifications of heterogeneous expectations.

## **Oskar Morgenstern and Jacob Viner on the cost controversies**

Gehrke C.

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Oskar Morgenstern presented a paper at two consecutive NOeG meetings in January and February 1930 on “Open problems in the theory of returns” (in two parts), in which he summarized the critique of Marshall’s theory of particular equilibrium that had been put forward by Piero Sraffa in 1925 and 1926. Morgenstern’s contribution provided a lucid account of Sraffa’s argument and thus of the unresolved problems in Marshall’s approach to the construction of long-period industry supply curves with non-constant returns. Jacob Viner, at a further NOeG meeting in September 1930, then presented his classic paper on “Cost curves and

supply curves”, subsequently published in the Zeitschrift für Nationalökonomie, in which he set out a method for the construction of partial equilibrium long-period industry supply curves with non-constant returns under competitive conditions. Viner’s contribution, with its rigorous geometrical derivation of rising or falling industry supply curves in competitive conditions, became the model for many microeconomics textbook presentations of these issues, and a springboard for numerous further contributions. The present paper will discuss the role of Morgenstern and Viner’s contributions in the further development of partial equilibrium analysis and suggest some reasons for their continuing relevance for present-day microeconomic theory.

## **The Sovereign-Bank Interaction in the Eurozone Crisis**

Goedl M.

*University of Graz – Austria*

This paper investigates the relationship between government debt default, the banking sector and the wider economy. It builds a model of the public bond market, the banking sector and the real economy to study the mechanism by which a government default affects the other sectors and shows that this model can explain some “stylized facts” of the Eurozone crisis. The key aspect of the model is a friction in the financial market, which forces banks to hold part of their assets in the form of government bonds. In such a model, an exogenous increase in the probability of default can lead to the joint occurrence of a credit crunch (i.e. declining bank lending and rising spreads between loan interest rates and deposit rates) and a decline in output. The paper also shows that an adverse technology shock (an exogenous decline in total factor productivity) cannot fully explain these phenomena.

## **Patterns of material use and its interaction with socio-economic performances: a MFA-MRIO assessment of the Austrian economy Sovereign-Bank Interaction in the Eurozone Crisis**

Gözet B., Giljum S., Bruckner M., Wieland H.

*Vienna University of Economics and Business – Austria*

In a globalized world, production and consumption are increasingly spatially separated resulting in a highly complex web of supply chains. Understanding the linkages between resource extraction and processing and its environmental and economic effects therefore is an increasingly challenging task. This paper aims to shed light on the patterns of global material use related to a national economy and its interaction with socio-economic performance. Taking Austria as an example, we analyse worldwide material flows related to domestic production activities on the macro-economic and the sector level. Our assessment is conducted applying a

model that combines material flow analysis with multi-regional input-output modelling (MFA-MRIO model) and considering the production-oriented perspective – in contrast to the usual demand-oriented perspective in input-output economics. Thereby, we provide a combined assessment of material use, employment and value added of Austria's economy covering the time period 2000 to 2016. By relating Austria's material use to value added and employment, the position of Austria's economy in international supply chains is discussed both from a physical and socio-economic perspective. Further details of material dependency are gained by analysing these patterns with regard to the domestic versus foreign origin of raw materials. We find that the Austrian economy is highly dependent on foreign materials caused by not only domestic use but also the export sectors. Socio-economic performance shows different patterns varying among sectors and the origin of materials. The results form the basis for further discussions on re-industrialisation, import dependencies and circular economy pathways.

## **The gender dimension of intergenerational transfers in Europe**

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The paper analyzes transfers between age groups and genders in Europe, including public and private transfers. We investigate if the organization of the transfer system, which awards only public transfers to the elderly with pension entitlements, puts women at a disadvantage. Women provide most of the transfers in form of household work and childcare, but contribute less to public transfer system. Using National Transfer Accounts data on age- and gender-specific transfers in 2010, we derive gender-specific measures of lifetime transfer contributions and benefits. We find that in countries where women devote more time to production activities than men, the value of total net transfer contributions is considerably higher for women. In more gender-egalitarian countries, the value for men is higher, because of a lower valuation of unpaid work and a larger share of paid production being redistributed. We find a gender gap at the disadvantage of men in net transfer benefits at old age when the higher life expectancy of women is accounted for.

## **Implications of Macroeconomic Volatility in the Euro Area**

Hauzenberger N.

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In this paper, we estimate a Bayesian vector autoregressive (VAR) model with factor stochastic volatility in the error term to assess the effects of an uncertainty shock in the Euro area (EA). This allows us to incorporate uncertainty directly into the econometric framework and treat it as a latent quantity. Only a limited number of papers estimates impacts of uncertainty and

macroeconomic consequences jointly, and most literature in this sphere is based on single countries. We analyze the special case of a shock restricted to the Euro area, whose countries are highly related by definition. Among other variables, we find significant results of a decrease in real activity measured by GDP in most Euro area countries over a period of roughly a year following an uncertainty shock.

## **The Strength of Absent Ties: Social Integration via Online Dating**

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We used to marry people to which we were somehow connected to: friends of friends, schoolmates, neighbours. Since we were more connected to people similar to us, we were likely to marry someone from our own race. However, online dating has changed this pattern: people who meet online tend to be complete strangers. Given that one-third of modern marriages start online, we investigate theoretically, using random graphs and matching theory, the effects of those previously absent ties in the diversity of modern societies. We find that when a society benefits from previously absent ties, social integration occurs rapidly, even if the number of partners met online is small. Our findings are consistent with the sharp increase in interracial marriages in the U.S. in the last two decades.

## **When Communities Participate in Primary Health Care: A Randomized Controlled Trial of a Community Health Worker Program in the Philippines**

Hoffmann R.

*Vienna Institute of Demography – Austria*

In many developing countries public health systems are confronted with a significant shortage in professional health workers, which is recognized as a major constraint to economic development and poverty reduction. Community Health Workers (CHWs) have been suggested as a cost-effective, inclusive solution to address the enduring shortage. In recent years, microfinance institutions (MFIs) have increasingly implemented small-scale health programs with CHW components. So far, little is known about the impacts and implementation barriers of these initiatives. In this paper we evaluate an MFI-led CHW program in the Philippines using a cluster-randomized controlled trial design. The intervention had a positive impact on the dissemination of specific information about the health program and health monitoring. However, there is no evidence for a positive effect on general knowledge and social support in the communities. Acceptance of the program in the communities is a key driver of program success. Apart from the CHW's motivation, her social networks in the neighborhoods and the existing alternative health infrastructure are the strongest determinants of program awareness



and take-up by the community. Based on our results we discuss potential extensions and derive policy recommendations for community-based health programs in similar contexts.

## **Predicting crypto-currencies using sparse non-Gaussian state space models**

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*Vienna University of Economics and Business – Austria*

In this paper we forecast daily returns of crypto-currencies using a wide variety of different econometric models. To capture salient features commonly observed in financial time series like rapid changes in the conditional variance, non-normality of the measurement errors and sharply increasing trends, we develop a time-varying parameter VAR with t-distributed measurement errors and stochastic volatility. To control for overparameterization, we rely on the Bayesian literature on shrinkage priors that enables us to shrink coefficients associated with irrelevant predictors and/or perform model specification in a flexible manner. Using around one year of daily data we perform a real-time forecasting exercise and investigate whether any of the proposed models is able to outperform the naive random walk benchmark. To assess the economic relevance of the forecasting gains produced by the proposed models we moreover run a simple trading exercise.

## **Dealing with heterogeneity in panel VARs using sparse finite mixtures**

Huber F.

*Vienna University of Economics and Business – Austria*

In this paper we provide a parsimonious means of estimating panel VARs with stochastic volatility. We assume that coefficients associated with domestic lagged variables arise from a sparse finite mixture of Gaussian distributions. Shrinkage on the cluster size is introduced through suitable priors on the component weights and cluster-relevant quantities are identified through novel normal-gamma shrinkage priors. To assess whether dynamic interdependencies are needed, we moreover impose shrinkage priors on the coefficients related to other countries' endogenous variables. Finally, our model controls for static interdependencies by assuming that the reduced form shocks of the model feature a factor stochastic volatility structure. We assess the merits of the proposed approach by using synthetic data as well as a real data application. In the empirical application, we forecast Eurozone unemployment rates and show that our proposed approach works well in terms of predictions.

## **Taking a fresh look at innovation efficiency**

Janger J.

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Research and innovation activities are regarded as central for economic, societal and environmental goals. As a result, public policies in emerging and developed countries alike aim at fostering research, technology and innovation activities (RTI). Yet all countries face important constraints in the form of restricted public financial resources. Policy-makers are as a result routinely questioned about RTI efficiency, or the relationship of resources devoted to RTI policies with their impact. The existing approaches to analysing RTI efficiency at the country level face however several issues, which affect the amount of learning policy-makers, can draw from them. In this paper, we propose a new and more theory-based way to look at innovation efficiency based on recent advances in the understanding of the measurement of innovation outputs and outcomes, and generally research, technology and innovation performance measurement. Using these advances, we employ a restricted set of indicators capturing the most important dimensions, looking at the efficiency of three different performance areas of the innovation system. Our DEAs yield a limited number of efficient countries, which stay robust under a variety of specifications, potentially informing policy efforts aimed at increasing efficiency in RTI.

## **Managing moral hazard in last resort lending: credit limits as "contingent rules" at the Austro-Hungarian Bank**

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Moral hazard is a central issue in the literature on last resort lending. In this paper, we provide a new explanation for how central banks dealt with moral hazard historically. We focus on one specific component of central banks' counterparty risk frameworks: counterparty credit limits for discount window customers. We argue that credit limits as operationalized by the Austro-Hungarian Bank (OeUB) after 1878 constituted the backbone of an early form of microprudential regulation that was designed to check moral hazard in normal times. Credit limits empowered the Austro-Hungarian Bank to enforce minimum liquidity and capital standards for its counterparties at the discount window. Rather than contradicting the tenet of free lending in times of distress, credit limits functioned as "contingent rules": enforced in normal times, limits were increased or lifted during liquidity crises perceived as exogenous. Moreover, even during crises, the Bank did not simply relax limits for all credit institutions: it differentiated between banks depending on their fundamentals prior to the crisis.

## **Prenatal exposure to the German food crisis 1944–1948 and health after 65 years**

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Using data on 90% of the German population, we investigate the long-term relationship between intra-uterine exposure to the German food crisis 1944–1948 and 16 doctor-diagnosed health conditions at age 60 to 70. We find elevated risks of being diagnosed with a wide range of conditions, including diabetes, depression, lung disease, and back pain. In terms of critical periods, malnutrition in the first trimester of pregnancy appears to have the strongest negative correlation with health at older ages.

## **Historical Decoupling in EU: Evidence from Time-Frequency Analysis**

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We investigate the evolution of economic cycle co-movements across the current European Union and open a discussion concerning the validity of the OCA endogeneity hypothesis after a relatively long period (twenty years after the euro adoption). We identify historical decoupling of heavily indebted countries in Southern Europe (Portugal, Italy, Greece, and Spain), especially Greece, and find that the Baltic countries represent a single economic area and share common shocks. Moreover, we confirm decoupling of Germany after the Hartz reforms have been applied, and decreasing synchronization of the United Kingdom with the European Union, which is still significant with Germany. In addition, we identify directions of causal relationships using wavelet coherence analysis with phase shift and discuss possible adjustments and spread of asymmetric shocks across the European Union. Moreover, we apply Monte Carlo method to estimate the significance of results and edge effects.

## **Robust Bidding in First-Price Auctions**

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Bidding optimally in first-price auctions is complicated. In the classical equilibrium framework, optimal bidding relies on detailed beliefs about other bidders' value distributions and bidding functions. This article shows how to find a robust bidding rule that does well with minimal information and thus achieves good performance in many situations. Robust bidding means to minimize the maximal difference between the payoff and the payoff that could be achieved if one knew the other bidders' value distributions and bidding functions. We derive robust bidding

rules under different scenarios, including complete uncertainty. Our bid recommendations are evaluated with experimental data.

## **Contracting frictions and inefficient layoffs of older workers**

Kerndler M.

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In light of the low re-employment opportunities that workers above age 55 face in continental Europe, bilaterally inefficient job separations of older workers may generate a significant loss in aggregate employment, output, and welfare. Bilaterally inefficient separations may arise from frictions in wage contracting, such as asymmetric information. This paper assumes that wages can be contingent on age, but not on match productivity. I assess the micro- and macroeconomic effects of this friction on different age groups in a directed search model of the labor market. First, I find that the contracting friction particularly reduces the employment rate of the elderly, while employment of prime-age workers is hardly affected. Second, I find that reducing generosity of early retirement arrangements promotes bilaterally inefficient layoffs among the elderly. Such reforms should therefore be complemented by labor market policies that improve firms' willingness to keep elderly workers employed. I identify training older workers and severance pay as the most appropriate measures.

## **CO<sub>2</sub> tax scheme scenarios in Austria – Effects on equity, CO<sub>2</sub> emissions and the economy**

Kirchner M., Sommer M., Kettner-Marx C., Kletzan-Slamanig D., Köberl K., Kratena K.

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We analyze the impacts of CO<sub>2</sub> tax schemes in Austria on equity, CO<sub>2</sub> emissions and macroeconomic indicators with the macroeconomic IO model DYNK[AUT]. The tax scenarios focus on CO<sub>2</sub> emissions not covered by the European Emission Trading System (ETS), different tax rates as well as compensation schemes. Comparative scenario analysis is provided for the model's current base year (2012). The impact on equity with respect to five household income groups depends on the indicator used and the tax compensation scheme applied. Without tax compensation tax burden relative to income is regressive, but rather proportional relative to expenditure. Changes in real income and consumption are also proportional and slightly U-shaped. Lower income households benefit more from compensation via lump sum payments while higher income households benefit more from labor tax reductions. Adverse impacts on value added in non-ETS sectors are small without tax compensation, and labor tax reductions can increase value added for most sectors. Consequently, we only see marginal effects on real

GDP without tax recycling and negligible impacts with tax recycling (strong double dividend). However, labor tax reductions are more efficient than lump sum payments (weak double dividend) and can increase employment modestly. Finally, impacts on non-ETS CO<sub>2</sub> emissions are quite considerable already in the short term, although households react very inelastic. Our model simulations thus suggest that CO<sub>2</sub> taxes could be a crucial and socially acceptable element within a comprehensive set of policy instruments to contribute to achieving greenhouse-gas emission targets for non-ETS sectors in Austria.

## **Globalization effects on the distribution of income**

Kleinert J.

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Changes in the distribution of income are one of the main challenges to social cohesion in OECD countries. Empirical evidence points to a large share of growth accruing to the top 1% in the income distribution during the last three decades. The role of globalization in this process is hotly debated. As my contribution to this debate, I present a theoretical mechanism of how globalization affects the income distribution, which has not been studied extensively yet. I build my argument on the Melitz model, which I augment by a banking sector to replace the implicit complete financial market in the original paper. The generated rents thus become income relevant and accrue by assumption to firms' top managers. That allows assessing globalization's effect on the top end of the income distribution. I find globalization having a strong effect on income distribution but do not conclude that reversing globalization is the solution for the challenge to social cohesion.

## **A Bayesian hierarchical approach for modeling interregional freight transportation flows**

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The presence of spatial dependencies, spatial interaction models have been extensively used to model interregional freight flows. Such models explain freight flows through origin-, destination- and distance-based variables, as well as their spatially lagged counterparts. We propose the use of a Bayesian Poisson regression model, using Bayesian data augmentation techniques developed by Frühwirth-Schnatter et al. (2009), which allows for modelling of large count data in feasible computational time, and is capable of modelling over-dispersed data through a negative binomial model. We include spatial dependence of the explanatory variables in conjunction with spatially lagged origin- and destination-based random effects terms. We demonstrate the feasibility of our approach in an applied example over a panel of commodity

flows between 49 US states, in the time period 1993 to 2012. Almost 24% of the commodity flow data consists of zero flows. Our results suggest that spatial dependence plays a key role, both on the origin, as well as on the destination level. Furthermore, log- linearization of the data is not appropriate, since it leads to severe biases in the parameter estimates, especially in the structure of spatial dependencies.

## **How did the 2008 financial crisis affect worker mental health? Evidence from 392 UK workplaces**

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This paper analyses how the 2008 financial crisis affected the mental health of continuously employed workers. The literature connecting recessions, particularly the 2008 financial crisis, to mental health problems (anti-depressant drug use, suicide, etc.). This literature has established that the 2008 financial crisis had a negative effect on mental health. Using detailed questions, provided in the 2011 Work and Employment Relations Study, on how the recession affected the workplace, we show which work-aspects are important for the mental health of the workforce. Redundancies and monetary changes appear less relevant in the UK context compared to previous literature. Increased workload and changes in non-monetary benefits of work are relevant. The results are potentially biased by over-reporting of the consequences of the financial crisis by workers.

## **You can't always get what you want? A Monte Carlo analysis of the bias and the efficiency of dynamic panel data estimators**

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We assess the bias and the efficiency of state-of-the-art dynamic panel data estimators by means of model-based Monte Carlo simulations. The underlying data-generating process consists of a theoretical growth model of income convergence based on capital accumulation. While we impose a true speed of convergence of around 5%, the results obtained with the different panel data estimators range from 0.03% to 17%. In terms of the squared percent error, the pooled OLS, fixed effects, random effects, and difference GMM estimators perform worst, while the system GMM estimator with the full matrix of instruments and the corrected least squares dummy variable (LSDVC) estimator perform best. The LSDVC estimator, initialized by the system GMM estimator with the full matrix of instruments, is the only one capturing the true speed of convergence within the 95% confidence interval for all scenarios. Other estimators yield values that are substantially different from the true ones.

## **Differential access to medical innovation and the emergence of inequality in longevity**

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Recently, several studies have examined the role of medical progress as a possible contributor to longevity inequality if individuals from higher socioeconomic groups tend to be able to utilize medical advances more effectively in lowering mortality. Building on this empirical evidence, we study the role of medical progress for longevity inequality from a theoretical life-cycle as well as from a macroeconomic perspective. To do so, we develop an overlapping generation model populated by heterogeneous agents subject to endogenous mortality. We model two groups of individuals for whom differences in skills translate into differences in income and in the ability to use medical technology effectively in curbing mortality. We derive the age-specific individual demand for health care based on the value of life, the level of medical technology and the market prices. Calibrating the model to the development of the US economy and the longevity gap between the skilled and unskilled, we then study the impact of rising effectiveness of medical care in improving individual health and examine how disparities in health care demand and mortality emerge as a consequence. Furthermore, we explore the role of differential income growth. We pay particular attention to the macroeconomic feedback from price changes, especially to medical price inflation. According to Baumol (1967), productivity gains in capital-intensive sectors cause not only income to grow but also the cost of the labor-intensive production of health care. The unskilled may then be exposed to health care price inflation without benefitting from a concomitant increase in income.

## **Health Policies and Intergenerational Mobility**

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*Bank of Spain - Spain*

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

education and health. The counterfactual simulations show that health policies is an important determinant of intergenerational mobility of income across generations for agents of the bottom of income distribution and there are important interactions between health and education policies.

## **Quantile regression for risk adjustment**

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In social health insurance systems with community rating a good risk adjustment scheme is necessary to reduce insurers' incentives for risk selection - an activity which results in inefficient benefit packages offered (indirect risk selection) or a waste of resources (direct risk selection). In basically all risk adjustment schemes risk adjusted payments from the regulator to the sickness funds are calculated as the predicted expenditures from a weighted least squares (WLS) regression of actual expenditures on age, sex, morbidity measures and sometimes additional risk adjusters. The WLS regression maximizes the R<sup>2</sup>, which has been used as a measure for how successful the RAS is, i.e., by how much it reduces the insurers' incentives for risk selection. Recently, the German regulator has put more emphasis on a different measure, Cumming's Prediction Measure (CPM) which is less sensitive with respect to outliers. In this paper we show that the regulator can increase the CPM considerably by using a restricted quantile regression instead of a WLS regression.

## **Back to the Future – Changing Job Profiles in the Digital Age**

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In light of increasingly "smarter" technologies, the future of (human) labour is questioned on a daily basis. A study by Frey and Osborne (2013), one of the most recognised contributions in this domain, estimated that half of the US labour force is highly susceptible to computerisation in the near future. Their findings have been applied for several follow-up investigations in other countries. However, the transferability of the results is limited by the set-up of the study. In contrast to previous investigations, our approach tries to overcome past shortcomings by collecting assessments on the susceptibility to digital technologies for the Austrian labour market by Austrian experts. We show that the diversity of previous findings regarding the degree of job automatisisation is to a large extent driven by model selection and not by controlling for personal characteristics or tasks. Our results indicate that while clerical computer-based routine jobs are likely to change in the next decade, professional activities, e.g., the processing of complex information, are prone to digital change.



## **Economic drivers of greenhouse gas-emissions in small open economies: A hierarchical structural decomposition analysis**

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The Paris agreement has prescribed strict Greenhouse Gas (GHG) reduction targets for participating countries. Implementation of climate protection policies are challenging, especially if the economy is export driven. We introduce a hierarchical structural decomposition model in order to investigate the effects of exports, imports, economic structure, consumption patterns, consumption level, outsourcing and insourcing on national GHG emissions. This model is applied to the data of national environmental accounts and to a harmonized and price-deflated series of national input-output tables of Austria for the years 1995, 2000, 2005 and 2010. Over the whole time period, the results indicate that the final demand effect was the main driver of GHG emissions, with exports as most important factor. Surprisingly, emission intensity contributed to an increase of GHG emissions during the period 2000-2005 as well, mostly due to increasing emission intensity in the transport sector.

## **Recycling of steel, aluminium, paper and glas and their energy-economic scope**

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The recycling economy contributes to resource productivity as well to lower energy usage and emissions. The amount of these contributions in Austria has not been quantified before this study. In our analysis we select the recycling activities of four material groups in the year 2014 and show that they have a significant effect on GDP (0.52% or 1.7 Bn. €) and employment (14,759 Jobs or 0.38%). The usage of recycled materials reduces emissions at a global scale. We found that recycling of steel (-4.5 Mio. t CO<sub>2</sub>e) and aluminium (-2.7 Mio. t CO<sub>2</sub>e) avoids the most emissions, followed by paper (-0.7 Mio. t CO<sub>2</sub>e). In total 7.9 Mio. t. CO<sub>2</sub>e are not emitted due to the recycling of the investigated materials.

## **Methodological Positions, Economic Theories and the NOeG**

Milford K.

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This paper reviews the major methodological contributions which appeared in *Zeitschrift für Nationalökonomie*, the 'house journal of NOeG, between 1930 and 1950. It is argued that these contributions primarily concern two problem areas: the problem regarding the satisfactory

structure of theoretical explanation in the theoretical social sciences and in history and the problem regarding the epistemological status of the social sciences. Positions are classified into two broad classes, i.e. methodological essentialist and methodological nominalist positions. It is maintained that positions of methodological essentialism dominated in the aforementioned period and that this partly explains the decline regarding theoretical research between 1930 and 1950 in Vienna.

## **Incidence and effectiveness of national greenhouse gas mitigation policies: A macroeconomic analysis for Austrian households**

Nabernegg S.

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A deep decarbonization of the EU and its member states by 2050 involves both, low carbon technology policies and demand side policies, directly addressing consumer behaviour and household emissions. Against the background of rising income inequality in developed countries [1], the distributional implications of greenhouse gas mitigation policies are of utmost importance.

In the context of climate change, three social dimensions can be identified, addressing inequalities between different income groups. First, the distribution of climate change impacts, which have been shown to hit low income groups harder than households with higher incomes, within developing and developed countries [2]. Second, the distribution of emission contribution across income groups, which is naturally increasing with a higher consumption level [3]. Third, the economic incidence of greenhouse gas mitigation policies across income groups, which strongly depends on the specific policy design [4,5].

In this paper we therefore investigate for the context of Austria the drivers for direct greenhouse gas emissions and emissions embodied in the consumption of products and services (carbon footprints). We break down these emissions for different household groups within Austria to reveal the distribution of emission contribution. Further, we evaluate the income and consumption implications across these household groups from the simulation of different mitigation policies. As two thirds of the carbon footprint of Austrian consumption arises outside Austria, along international supply chains [6], we contrast two broad environmental tax policies with two sector specific instruments in consumption areas of high emissions. In particular, we investigate the incidence effects for a carbon tax and a fossil fuel tax in Austria, as well as an adaptation of building code for wood-based construction and company mobility plans.

Our analysis is conducted by employing a macroeconomic framework with the environmental extension of greenhouse gas emissions and a household specification in income quartiles. We use a global Computable General Equilibrium (CGE) model with focus country of Austria in

combination with a Multi Regional Input Output (MRIO) model for emission accounting. The coverage of multidirectional trade linkages in the MRIO model allows us to assess the full supply chain emissions (carbon footprints) from the consumption of the different household groups. The CGE model incorporates behavioural responses in the consumption of private households and responses of production activities as a reaction to changes in prices of products and services, as well as in factor prices. The disaggregation into household groups by income is implemented via hybrid method [7], based on data from Austrian consumption expenditure survey [8]. In particular, we characterize the household groups by their different consumption of products and services as well as the level and composition of income (labour, capital and transfers). Thereby we are able to disaggregate the policy incidence also into the channels of price changes of products and services as well as income changes across the household groups. Combining both, the CGE and the MRIO model, allows us further to evaluate the changes in emissions induced by the policies for each household group.

For the current emission distribution in Austria we find the emission level of the highest income group to be more than four times higher than in the lowest income group. This inequality turns out to be much larger, compared to other countries like the UK [3]. The main drivers for this high emission ratio are the emissions for leisure spending and mobility, while emissions from food consumption alleviate this strong inequality.

The distributional effects on consumption of the household groups strongly varies between the investigated policies. In contrast to the general literature, we find a progressive household effect from the carbon tax, as well as from the fuel tax. As fuel consumption in Austria increases disproportionately strong with income, higher income groups contribute stronger to an increase in government revenue from the taxes. In combination with the current transfer system in Austria, low income groups therefore benefit relatively more from these environmental taxes than high income groups. The consumption effects from the policies of building code adaptation and mobility plans turns out to be regressive across the household groups. However, the policy of mobility plans also induces a positive GDP effect (+55 Mio Euro), which in turn generates scope for additional distributional compensation from the government.

## **Perpetrators and Victims – Austrian Economists under the Nazis**

Neck R.

*Alpen-Adria University Klagenfurt - Austria*

In this presentation to the 2018 Annual Meeting of the Austrian Economic Association, we report about preliminary results of a research project (supported by the Oesterreichische Nationalbank) about Austrian economists under the Nazi regime from 1938 to 1945. We collected biographies of over 100 economists with substantial relations to Austria, who were affected in some way or the other by the politics of the Third Reich: some as perpetrators,

followers or opportunists, others as victims being prosecuted, forced to emigrate or even losing their lives. Although these two groups are not evenly distributed among the adherents to the different “schools” of economics that existed in the interwar period, the initial hypothesis of clear Nazi-prone positions of historicist economists and anti-Nazi positions of theoretical and quantitative economists so far could not be corroborated. It seems as if Austrian economists follow similar patterns as German ones in this respect, as has been shown by Hauke Janssen in his path breaking study of German economists.

To illustrate the diverse fate of Austrian economists after the Anschluss, we give a brief account of three economists, who belonged to different economic “schools” and were affected by the Nazi regime in very different ways. Friedrich Gottl-Ottlilienfeld, a romanticist maverick and NS party member, after a long and successful academic career returned to his homeland and got an institute in Graz by grace of the Nazis, which however turned out to be ineffective. Friedrich Otto Hertz, an economist with strong sociological and historical interests and a Social Democrat-turned-liberal, was forced into emigration twice, first as professor at Halle University in 1933 and then as Austrian civil servant in 1938. Karl Schlesinger, a Hungarian-born banker and, as a mathematical economist belonging to the Austrian School, a long-term active member of the Austrian Economic Association, committed suicide on the day when the German Wehrmacht invaded Austria.

## **Estimating the Trade and Welfare Effects of Brexit: A Panel Data Structural Gravity Model**

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This paper proposes a new panel data structural gravity approach for estimating the trade and welfare effects of Brexit. The suggested Constrained Poisson Pseudo Maximum Likelihood Estimator exhibits some useful properties for trade policy analysis and allows to obtain estimates and confidence intervals which are consistent with structural trade theory. Assuming different counterfactual post-Brexit scenarios, our main findings suggest that UKs (EUs) exports of goods to the EU (UK) are likely to decline within a range between 7.2% and 45.7% (5.9% and 38.2%) six years after the Brexit has taken place. For the UK, the negative trade effects are only partially offset by an increase in domestic goods trade and trade with third countries, inducing a decline in UKs real income between 1.4% and 5.7% under the hard Brexit scenario. The estimated welfare effects for the EU are negligible in magnitude and statistically not different from zero.

## **Dismantled once, diverged forever? A quasi-natural experiment of Red Army misdeeds in post-WWII Europe**

Ochsner C.

*ifo Institute for Economic Research - Dresden Branch – Germany*

I study the long-term economic consequences of the Red Army's misdeeds after WWII. I exploit differences in spatial economic activity across the arbitrarily drawn and only for 74 days lasting liberation demarcation line between the Red Army and the Western Allies in South Austria. Dismantling and pillaging, but also (sexual) violence made regions liberated by the Red Army a less desirable place to live and to start economic activities compared to adjacent regions. Spatial regression discontinuity (RD) estimates show that the liberation causes a relative population decline by around 26 to 31 percent until the present day. Measures of local labor productivity in 2011 also lag in Red Army liberated regions. I show that ongoing economic backwardness is the likely result of the selective sorting of people across the demarcation line in the direct aftermath of WWII.

## **Fiscal Policy in the East and the West of Europe**

Pekanov A.

*Austrian Institute of Economic Research (WIFO) - Austria*

Does fiscal policy differ between the old EU Member States from Western Europe and the new Member States from Eastern Europe? In this paper, we try to answer this question using an innovative approach to solving the short data sample problem for Eastern European countries. Using a hierarchical Bayesian VAR as in Gelman (2002) and Jarocinski (2008), we explore the different approaches common in the fiscal policy literature to estimate fiscal multipliers.

## **How did the 2008-9 Financial Crisis affect Bank Credit Supply and the Real Economy? Bank-Firm-level evidence from Austria**

Pelzl P.\*, Valderrama M.T.°

*\*Tinbergen Institute (TI), Vrije Universiteit Amsterdam (VU) & De Nederlandsche Bank (DNB) - Netherlands, °Österreichische Nationalbank – Austria*

We use data from the Austrian Credit Register as well as bank and firm balance sheet data to analyze the effects of the 2008-09 financial crisis on access to credit and the performance of Austrian firms in 2007-2009. We distinguish two important and distinct channels through which the crisis affected bank lending and the real economy: exposure to the interbank market as well as exposure of a bank to the United States via the assets it holds. Controlling for credit demand, we find that firms borrowing from banks that relied more on interbank financing or had more U.S. assets on their balance sheet before the crisis received less bank credit and invested less

during the crisis, but did not cut employment by more. Additional results suggest that firms with only one bank relationship before the crisis were more adversely affected by lender health during the crisis in terms of access to credit than firms with multiple banks.

## **Consumer Information and the Speed of Price Transmission**

Pennerstorfer D.\*, Loy J.-P.<sup>o</sup>, Rroshi D.<sup>+</sup>, Yontcheva B.<sup>+</sup>, Weiss C. <sup>+</sup>

*\*Johannes Kepler Universität Linz - Austria, <sup>o</sup>Christian - Albrechts - Universität zu Kiel – Germany,*

*<sup>+</sup>Wirtschaftsuniversität Wien – Austria*

In this paper, we study how consumer information endowment, proxied by commuter behaviour affects price adjustment in the Austrian gasoline market using station-specific daily price data. A threshold error-correction specification shows that the price adjustment process is characterized by three regimes, meaning that prices adjust only if their deviation from equilibrium exceeds a certain threshold. For the majority of the gasoline stations, the pricing dynamics do not exhibit asymmetry. The cross-section results show that a larger share of informed consumers per station is associated with a higher pass-through rate and long-run pass-through elasticity and lower asymmetry.

## **On the relevance of double tax treaties in the presence of treaty shopping**

Petkova K., Stasio A. , Zagler M.

*Vienna University of Economics and Business - Austria*

This paper investigates the effects of double tax treaties (DTTs) on foreign direct investment (FDI) after controlling for their relevance in the presence of treaty shopping. DTTs cannot be considered a bilateral issue, but must be viewed as a network, since FDI can flow from home to host country through one or more conduit countries. By accounting for treaty shopping, we calculate the shortest (i.e. the cheapest) tax distance between any two countries allowing the corporate income to be channelled through intermediate jurisdictions. We use these data to derive four important results. First, only relevant DTTs increase bilateral FDI, whereas others do not. Second, a reduction in the overall tax burden along the direct route due to a DTT increases FDI. Third, a reduction in taxation along the indirect route will lead to a reduction in bilateral FDI on the direct route due to treaty shopping, as investment is channelled through conduit countries. Finally, the need to use conduits along the cheapest route increases direct FDI, which indicates non-negligible non-tax costs of treaty shopping.

## **The dynamic impact of monetary policy on regional housing prices in the US: Evidence based on factor-augmented vector autoregressions**

Fischer M. , Huber F. , Pfarrhofer M. , Staufer-Steinnocher P.

*Vienna University of Economics and Business – Austria*

In this study interest centers on regional differences in the response of housing prices to monetary policy shocks in the US. We address this issue by analyzing monthly home price data for metropolitan regions using a factor-augmented vector autoregression (FAVAR) model. Bayesian model estimation is based on Gibbs sampling with Normal-Gamma shrinkage priors for the autoregressive coefficients and factor loadings, while monetary policy shocks are identified using high-frequency surprises around policy announcements as external instruments. The empirical results indicate that monetary policy actions typically have sizeable and significant positive effects on regional housing prices, revealing differences in magnitude and duration. The largest effects are observed in regions located in states on both the East and West Coasts, notably California, Arizona and Florida.

## **A multi-country approach to analyzing the euro area output gap**

Huber F.\*, Piribauer P.°

*\*Vienna University of Economics and Business – Austria, °Austrian Institute of Economic Research (WIFO) – Austria*

We develop a multivariate dynamic factor model that exploits euro area country-specific information on output and inflation for estimating an area-wide measure of the output gap. In the proposed multi-country framework we moreover allow for flexible stochastic volatility (SV) specifications for both the error variances and the innovations to the latent quantities in order to deal with potential changes in the commonalities of business cycle movements. By tracing the relative importance of the common euro area output gap component as a means to explaining movements in both output and inflation over time, the paper provides valuable insights in the evolution of the degree of synchronicity of the country-specific business cycles. In an out-of-sample forecasting exercise, the paper shows that the proposed approach performs well as compared to other well-known benchmark specifications.

## **The Lost Race Against the Machine: Automation, Education, and Inequality in an R&D-Based Growth Model**

Prettner K.\*, Strulik H°

*\*University of Hohenheim - Germany, °University of Göttingen - Germany*

We analyze the effects of automation and education on economic growth and inequality in an R&D-based growth model with two types of labor: high-skilled labor that is complementary to

machines and low-skilled labor that is a substitute for machines. The model predicts that innovation-driven growth leads to increasing automation, an increasing skill premium, an increasing population share of college graduates, increasing income and wealth inequality, and a declining labor share. In contrast to conventional wisdom, our theory predicts that faster economic growth promotes inequality. Because education and technology are endogenous, redistribution to low-skilled individuals may actually not improve disposable low-skilled income, irrespective of whether it is financed by taxes on labor income or machine input in production. We extend the model by fair wage concerns and show how automation implies involuntary low-skilled unemployment.

## **Trust and Reciprocity Drive Social Common Goods Allocation Norms**

Puaschunder J.

*Columbia University - United States of America*

In the emergent field of tax psychology, the focus on regulating tax evasion recently shifted towards searching for situational cues that elicit common goals compliance. Trust and reciprocity are argued to steer a socially-favorable environment that supports social tax ethics norms. Experiments, in which 256 participants played an economic trust game followed by a common goods game, found evidence for trust and reciprocity leading to individuals contributing to common goals. The more trust and reciprocity was practiced and experienced, the more common goals were supported – leveraging trust and reciprocity as interesting tax compliance antecedents. The results have widespread implications for governmental-citizen relations. Policy makers and public servants are advised to establish a service-oriented customer atmosphere with citizens breeding trust and reciprocity in order to reach common societal goals.

## **The Future Is Now: How Joint Decision Making Curbs Hyperbolic Discounting but Blurs Social Responsibility in the Public Policy Domain**

Puaschunder J.\*, Schwarz G.°

*\*Vienna University of Economics and Business – Austria, °University of Nottingham, Ningbo - China*

This paper analyzes the applicability of joint decision making for global public policy decisions in the intergenerational equity domain. When individuals judge alternative choices, presenting alternatives concurrently improves decision making outcomes. Evaluating two policies with different outcome times – one that would benefit current and one that would favor future generations – together elicited more intergenerationally equitable choices when surveying 223 Chinese individuals (Study 1) and 374 international respondents (Study 2). We also find that policy bundling decreases social responsibility. The joint alternative presentation thus leads to a trade-off between future-orientation and social responsibility in intergenerational decisions.



Policy makers are advised to consider multi-faceted decision schemata and age-differentiated consortia to overcome this predicament.

## **Economic Policy Uncertainty and the Volatility of Sovereign CDS Spreads**

Raunig B.

*Oesterreichische Nationalbank - Austria*

Multipliers estimated for sixteen major economies predict that 1% more economic policy uncertainty (EPU) produces about 0.3% - 0.8% more sovereign CDS volatility. The impact of EPU is strong but short-lived. US EPU is an important additional source of CDS volatility for European countries, Japan, China, and South Korea. European EPU does, in contrast, not affect the CDS volatility of other countries.

## **What are the Drivers of Regional Variations in Avoidable Hospitalisations in Austria? A Spatial Panel Data Analysis**

Renner A.-T.

*Vienna University of Economics and Business - Austria*

The aim of this study is to investigate the drivers of the regional variations in avoidable hospitalisations in Austria. Austria poses an interesting example of an insurance-based healthcare system with almost no formal restrictions of utilisation for the patient, but with a strict divide of regulative power between hospital and outpatient sector.

As patients in Austria are not restricted to certain regional outpatient service providers, the level of supply of geographically close districts is conceivably of high importance. Different spatial panel data models (Spatial Error, Spatial Durbin and Spatial Durbin Error Model) were estimated and tested to explore whether regional variations in avoidable hospitalisation rates are better explained by regional supply- or demand-side characteristics. For the initial selection of relevant covariates Bayesian model averaging was used with a time and regional fixed effects estimator.

Our analysis showed that supply-side characteristics (such as physician density) seem to play a subordinate, albeit still significant, role compared to demographic and socioeconomic characteristics of the population when time and regional fixed effects are accounted for.

## **Two worlds of fee setting in social health insurance?**

Riedel M.

*Institut für Höhere Studien (IHS) - Austria*

Background: Most Eastern-European post-socialist countries introduced some form of social insurance into their health systems, thus becoming “new social health insurance countries” - new SHIC - as opposed to the already existing “old SHIC”. An important part of the public-private mix commonly found in health systems with social health insurance is the negotiation of contracts and related fee schedules.

Objective: We hypothesize that new SHIC differ from old SHIC in their fee-setting procedure due to two reasons: (1) historically, stakeholders in these countries were used to a strong government and only a limited role of stakeholder involvement, (2) these countries can build on experiences of old SHIC.

Data: A specifically designed questionnaire was completed by representatives of five old and five new SHIC.

Method: A qualitative analysis of information on the participants of the fee-setting procedure, their roles and the procedure in case of non-agreement, as well as major determinants for fee levels was performed.

Results: In new SHIC, health ministries play a much stronger role in fee setting, as opposed to a bargaining culture in old SHIC. Therefore, old SHIC in contrast to new SHIC require some mechanism to decide on fees in the case of non-agreement. Thus, in new SHIC there is still a stronger hierarchical element compared to old SHIC.

## **Sequential Round-Robin Tournaments with Multiple Prizes**

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We examine the fairness and intensity of sequential round-robin tournaments with multiple prizes. With three symmetric players and two prizes, the tournament is completely fair if and only if the second prize is valued half of the first prize, regardless of whether matches are organized as Tullock contests or as all-pay auctions. For second prizes different from half of the first prize, three-player tournaments with matches organized as Tullock contests are usually fairer than tournaments with matches organized as all-pay auctions. However, unless the second prize is very small, they are less intense in the sense that players exert less ex-ante expected aggregate effort per unit of prize money. Moreover, we specify how the relative size of the second prize influences the extent and the direction of discrimination as well as the intensity of three-player tournaments. Finally, we show that there is no prize structure for which sequential round-robin tournaments with four symmetric players are completely fair in general.

## **The impact of reducing the pension generosity on inequality and schooling**

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In this paper we investigate the impact of a reduction in the pension replacement rate on inequality and on the schooling choice. We develop an overlapping generations model in which individuals differ by their life expectancy and in the cost of attending schooling. Individuals optimally choose their consumption path and their educational attainment. Within our framework we show the conditions under which a reduction in the replacement rate may increase the number of skilled workers and reduce inequality.

## **Measles outbreak and vaccination uptake**

Schober T.

*Johannes Kepler University Linz – Austria*

This paper explores the effects of an measles outbreak on vaccination uptake in Austria, using administrative data with individual-level information on childhood vaccinations. I define a treatment group of children that is affected by the outbreak and compare the behavior to an earlier born control group that is unaffected. Twelve months after the outbreak, the vaccination rate of the treated children is 4.1 (first dose of the measles, mumps and rubella vaccine) and 3.4 (second dose) percentage points higher than that of the control group. The findings also reveal heterogeneity in the response with respect to parents' level of education, indicating that high educated parents absorb new information more rapidly.

## **A cost-effectiveness analysis for an ambulant psychiatric rehabilitation programme in Vienna, Austria**

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*\*Zentrum für seelische Gesundheit BBRZ-Med Wien, °University of Vienna - Austria*

The cost-effectiveness study presented includes all patients treated in the context of a standardized 6-weeks multimodal ambulant rehabilitation programme (WHO phase 2) in Vienna (Zentrum für seelische Gesundheit Wien-Leopoldau) from January 2014 to December 2016, that is in total 2,486 patients (63.4% females). Patients with missing data and rehabilitation dropouts were excluded from further analyses, resulting in a final sample size of 1,952 patients. Treatment was performed as a standardized 6-weeks rehabilitation programme (142 treatment units), composed of the following components: 1) group and individual psychotherapy (cognitive behavioural therapy), 2) occupational therapy, 3) physiotherapy, 4) social work, and 5) weekly psychiatrists consultations. Questionnaire-based surveys (e.g., BSI, BDI, WHODAS) were

performed at the time of pre-contact, at the time of admission, at the time of discharge, as well as 6 and 12 months after discharge. In the cost-effectiveness analysis, data were compared for the period of 12 months before admission to the rehabilitation programme and the period of 12 months after the end of the rehabilitation programme.

The results significantly demonstrated that the psychological effectiveness measures highly improved during the 6-weeks rehabilitation programme and have not dramatically dropped 12 months after discharge of the patients. Furthermore, the employment status of the patients included significantly improved from the start of the six week rehabilitation programme compared to 12 months after the rehabilitation programme. However, this effect was not stable when including only the 481 patients that completely returned catamnesis questionnaires. A similar trend was found for productivity loss. We could also illustrate interesting differences among rehabilitation patients depending on their particular characteristics.

## **Anticipation of Deteriorating Health and Information Avoidance**

Schünemann J.\*, Strulik H\*, Trimborn T.°

*\*University of Goettingen - Germany, °Technische Universität Wien - Austria*

People anticipate the evolution of future health deficits which negatively affects their utility already today. In this paper we analyze how anticipation of a deteriorating state of health affects health spending, life expectancy, and the value of life. We set up a life-cycle model in which individuals are subject to physiological aging, calibrate it with data from gerontology, and compare behavior and outcomes of anticipating and non-anticipating individuals. While anticipation generally decreases life-time utility, its impact on health behavior and longevity depends crucially on whether individuals are aware of their anticipatory behavior, i.e. whether they anticipate in a naive or sophisticated way. We then use our model of health deficit anticipation to contribute to the literature on information avoidance. We find that introducing anticipation provides a quantitatively strong explanation for why people tend to avoid medical testing even when the likelihood of developing a certain disease is high and the cost for the test is low.

## **Increasing or relocating tourism activity after VAT cut? On competition and incidence of consumption taxes**

Neisser C., Schwab T.

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The incidence of tax cuts hinges on the relative elasticities of demand and supply. However, theory predicts that imperfect competition leads to a decrease in the pass-through of tax savings to consumers. We empirically test this prediction by exploiting a substantial VAT cut for a single

sector in Germany. The VAT was reduced from 19% to 7% for hotel stays with no further amendments. We focus on the German-Austrian border region which is homogeneous in terms of tourism. Firms located more close to the border face intensified competition. We employ a spatial regression discontinuity design to identify the effect of varying degrees of competition on the tax incidence of the reform.

## **Go your own way? The importance of environment in the formation of physician practice styles**

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Variations in regional health care expenditures are sometimes attributed to discretion in physician's treatment decisions. It is less clear how such discretion translates into changes in quality of care. This paper contributes to the recent literature on provider practice styles by studying the extent to which treatment heterogeneity arise from physician and environment-specific factors, respectively, and relate this to changes in patient outcomes. We adapt an empirical approach similar to that of Molitor (2016), exploiting cardiologist migration across hospital regions in the US, and use administrative data on all coronary catheterization procedures performed in Swedish hospitals 2004-2015, together with detailed information on patient's clinical health. Results indicate that cardiologists rapidly and strongly adapt their treatment style to the new environment after relocating. This effect appear to be mainly driven by peers. Furthermore, we find no indication that the changes in practice style have important effects on the quality of care.

## **Work incentives and teh efficiency of tax-transfer reforms under constrained labor supply**

Steiner V., Fischer B., Jessen R.

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Potential efficiency gains of policy reforms are limited if individuals cannot adjust their labor supply due to hours constraints. Using information on desired and actual hours of work, we formulate a discrete choice model of constrained labor supply. Involuntary unemployment as well as over- and underemployment are modelled in a consistent way. Using data from the German Socio-Economic Panel (SOEP) and the microsimulation model STSM, we find that estimated own wage elasticities in the constrained model are substantially smaller than those obtained from the conventional one using actual hours. However, we show that constraints actually increase labor supply elasticities as elasticities derived from desired hours without constraints are even smaller. The reason is overemployment. Many individuals would prefer to

work less, which is prevented by constraints. We apply the model to evaluate two hypothetical budget neutral reforms of the German tax-transfer system aimed at improving incentives for the working poor. The first increases the transfer withdrawal rates, making working few hours unattractive, and redistributes to the lower middle class. The second reform increases taxes and redistributes to the lower middle class. We propose a simple measures to capture the key equity-efficiency trade-off of redistributive reforms. We find that the first reform increases efficiency, but, with labor market constraints, the effects are limited. The second reform worsens efficiency under the conventional labor supply model, while efficiency is virtually unchanged under the constrained model.

## **Austria's Consumption-Based Greenhouse Gas Emissions: Identifying sectoral sources and destinations**

Steininger K.\*, Strohmaier R.\*, Munoz P.°, Karstensen J.+, Peters G.P.+, Velázquez E.~

*\*University of Graz - Austria; °United Nations University - Germany, +CICERO Center for International Climate Research - Norway, ~Institute of Environmental Studies - Netherlands*

Greenhouse gas emissions can be addressed at the points of both production and consumption of goods and services. In a world of inhomogeneous climate policy, missing out policies on either production or consumption leaves an important policy area idle, rendering climate policy inefficient and potentially ineffective. While consumption-based emissions accounts have become readily available at the national level, we here show how their more detailed analysis by sectoral destination (which final demand sectors account for them), sectoral source (in which sectors across the globe those emissions are actually occurring) and the geographical location of the latter can inform a complementary consumption-based climate policy approach. For the example of the EU member country Austria, we find that more than 60% of its consumption-based emissions occur outside its borders, and 34% even outside the EU. The top sectors are a very different list under a consumption-based accounting perspective (construction, public administration (including defense, health and education), and wholesale and retail trade) than under a production-based one (electricity, iron and steel, and non-metallic minerals, such as cement). While for some sectors (e.g. electricity) production-based approaches can work well, emission reduction in other sectors (e.g. electronic equipment) is crucially dependent on consumption-based approaches, as a structural path analysis reveals.

## **An Economic Theory of Depression and its Impact on Health Behavior and Longevity**

Strulik H..

*University of Goettingen - Germany*

In this paper, I introduce depression to the economics of human health and aging. Based on studies from happiness research, depression is conceptualized as a drastic loss of utility and value of life (life satisfaction) for unchanged fundamentals. The model is used to explain how untreated depression leads to unhealthy behavior and adverse health outcomes: depressed individuals are predicted to save less, invest less in their health, consume more unhealthy goods, and exercise less. As a result, they age faster and die earlier than non-depressed individuals. I calibrate the model for an average American and discuss the socioeconomic gradient of health and depression as well as the hump-shaped association of antidepressant use with age. Delays in treatment for depression in young adulthood are predicted to have significant repercussions on late-life health outcomes and longevity.

## **Boosting Taxes for Boasting about Houses: Status Concerns in the Housing Market**

Trimborn T.\*, Schünemann J.°

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There is empirical evidence that households use residential houses as status goods. Their visibility qualifies them as an excellent signaling device of the relative income and wealth position, in contrast to less visible financial assets. To this end we introduce a residential housing sector and status concerns for housing into a neoclassical framework. In the model, households derive utility from the absolute amount of housing and from comparing their stock of housing to a reference stock, which is composed of the current or past level of housing of their peers. We analyze how status concerns affect household behavior and find that they increase housing demand and labor supply. Furthermore, we find that status concerns exert a negative externality and elevate housing to inefficiently high levels. We derive a (state contingent) optimal tax that establishes the first-best allocation along the transition path and at the steady state. Calibrating the model to the US we quantify the optimal tax on residential housing to 1.8%. Introducing the optimal tax entails a considerable welfare gain of 0.29% measured in consumption equivalents.

## **Testing for Labour Market Segmentation in Europe**

Valkova K.

*Institute for Advanced Studies - Austria*

Over the past few decades the existence of separate labour market segments characterised by unexplained wage differentials, unequal working conditions and stability patterns has been claimed lacking to provide recent evidence. To fill this gap, this paper tests for the existence of labour market segmentation based on the assumption that wage-setting mechanisms differ between labour market segments using the longitudinal data from European Union Statistics on

Income and Living Conditions (EU-SILC). I propose a novel strategy using a individual data where, first, labour market segments are constructed using cluster analysis. And second, the returns to human capital investment are estimated within each segment using random effects model. Additionally, switching regressions as an alternative estimation strategy is implemented. Preliminary results suggest, that the earnings differentials between segments are not based on individual differences in productivity. Returns of schooling and work experience are significantly lower or non-significant in determining the wages in marginalised segments even after controlling for preselection according to individual characteristics.

## **A Field Experiment on Labor Market Speeddates for Unemployed Workers**

van der Klaauw B., Ziegler L.

*VU University Amsterdam - Netherlands*

We conduct a randomized field experiment to evaluate the effectiveness of speeddate events at which unemployed workers get in contact with private employment agencies. Using administrative data, we find that participation in such an event has an immediate positive impact on job finding. One month after the speeddates, treated participants are 20 percent more likely to be employed. Effects last about one year, indicating that temporary jobs at private employment agencies do not serve as stepping stones toward subsequent employment. We find that the UI administration saves about 400 euros per invited job seeker on benefits payments, while the organization of the speeddate events costs only about 4 euros per invited job seeker. Additional survey evidence collected shortly after the events shows that treated job seekers report lower reservation wages and higher job search motivation. Our results point towards the presence of substantial search frictions in the labor market for unemployed benefit recipients.

## **Fair Prices for Medicines? Exploring Competent Authorities' and Public Payers' Preferences on Pharmaceutical Policies**

Vogler S.

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Objective: The study aimed to explore the priorities of authorities and payers related to policy options for pharmaceutical pricing and reimbursement and to understand the rationale of their preferences.

Methods: Representatives of competent authorities for pharmaceutical pricing and reimbursement and public payers of the 28 EU Member States were invited to express their preferences about 16 pharmaceutical policy measures in a web-based questionnaire. Replies from 27 respondents from 22 countries were analysed through a Multi-Criteria Decision Analysis



(MCDA), using an outranking method based on the ELECTRE III algorithm. Follow-up focus groups were held with 47 representatives from authorities and payers of 29 countries.

Results: Respondents to the online questionnaire highly prioritized the policy objectives of equitable access to medicines and long-term sustainability of the health care system. In order to achieve intended policy aims, they considered a transparent reimbursement process based on clear rules as the most appropriate pharmaceutical policy option, followed by pharmacoeconomic evaluations, generic substitution, value-based pricing and tendering. Least preferred policy options were discounts and similar arrangements, differential pricing and external price referencing. In the focus groups the risk of over-paying due to referencing to official prices instead to actually paid, confidential discounted prices was stressed as major limitation of external price referencing. Still, this policy continues to be applied due to the lack of perceived alternatives.

Conclusions: While existing tools remain to stay, at least short-term, policy-makers are searching for new policy options that should be based on the principles of fairness, solidarity and transparency.

## **Macroeconomic Effects of EU and Euro Area Accession of Serbia**

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In 2009, Serbia applied officially for EU membership, and on 21 January 2014, membership negotiations started. If Serbia joins the EU, it will have to adopt the euro as legal tender as soon as it fulfils the relevant Maastricht criteria. By means of simulations with a macroeconomic model of the Serbian economy, this paper examines what macroeconomic effects can be expected from Serbia's EU membership and from its membership of the Euro Area. The macroeconomic model for Serbia comprises the key macroeconomic markets, i.e. the labor, goods, monetary and foreign exchange markets. It contains equations for GDP and its expenditure components (consumption of private households, government consumption, fixed capital formation, exports, and imports), the price level, wages, employment, unemployment, interest rates, and exchange rates. In addition, the government sector is modeled in some detail. It is shown that EU accession and the introduction of the euro bring about higher real GDP, more employment, and slightly higher inflation due to additional aggregate demand. Public finances are affected positively. The benefits of joining the Euro Area are mainly due to supply side effects, viz. increases in productivity.

## **Systematic Review: Validity and transferability of the results of health-economic evaluations of Transcatheter Aortic Valve Implantation**

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*Aim:* To investigate health-economic evaluations of Transcatheter Aortic Valve Implantation (TAVI).

*Methods:* Systematic literature search about health-economic evaluations of TAVI compared to Medical Management and Standard Management in inoperable patients and to Surgical Aortic Valve Replacement in operable patients with intermediate/high surgical risk. Costs have been adjusted to Austrian price level (2016). The studies were evaluated according to their relevance and quality.

*Results:* 15 health-economic evaluations were identified. Thereof eight analyses were rated as sufficiently relevant and of high quality. Results showed that TAVI is cost-effective compared to Medical Management, while compared to Standard Management it is cost-effective in only in one out of five analyses and resulted in controversial results compared to Surgical Aortic Valve Replacement. Sensitivity analyses showed that particularly the inclusion of follow-up treatments of serious complications, i.e. stroke, or of product costs as well as interventional costs had significant impacts on the cost-effectiveness results.

## **Tax and industry structure**

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This paper analyzes the distortionary effects of different tax structures on industry structures. Using a new data set, based on the EU KLEMS Growth and Productivity Accounts and Eurostat's Main National Accounts Tax Aggregates, seemingly unrelated regressions were used to estimate the effects. The results show a significantly negative effect of income related taxation on industrial specialization. We demonstrate that corporate income taxes have a negative impact in capital intensive industries. More surprisingly, consumption taxes embedded a positive and social security contribution a negative effect as the capital intensity increases.

## **Refugees and Migrants in the Austrian Health System**

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European countries experienced significant inflows of migrants in the past decade, including many refugees coming from regions engaged in armed conflicts. While previous research on

migrant health largely focused on economic migration, empirical evidence on health of refugees is sparse. We use administrative data from Austria to differentiate between economic migrants and refugees, and analyze their health care expenditures compared to natives. Preliminary results indicate distinctly different expenditure patterns among migrants. In contrast to economic migrants, we find substantially higher expenditures for refugees, most pronounced in the first year upon arrival. We further analyze the difference in expenditures by examining different spending categories and explore heterogeneity according to refugees' characteristics. Additionally we study the influence of regional conditions such as physician density on the level and the development of health care expenditures over time. In this context, the quasirandom placement of refugees in communities can be interpreted as a natural experiment to analyze supply-side factors of health care systems.

## **Equilibrium credit growth in the euro area: A non-linear model approach**

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In the present paper, I propose a threshold vector error correction model (TVECM) that postulates Euro area credit growth to fluctuate around some long-run equilibrium value determined by a set of macroeconomic fundamentals. The deviation of credit growth from its fundamental value serves as a threshold variable that governs the transition between three regimes. It allows estimating the equilibrium credit growth rate and, in addition, provides insights on whether credit markets appear to be far from their equilibrium values. A flexible Bayesian approach permits fully probabilistic inference and provides regime probabilities that the credit market is over or undervalued at a given point in time. Moreover, I investigate the impact of monetary policy on credit growth and its equilibrium value by means of structural impulse response analysis. The results suggest that monetary policy has heterogeneous effects on credit growth depending on the respective regime.

## **End-of-life Healthcare Expenditure: Testing Economic Explanations Using a Discrete Choice Experiment**

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For years, it has been known that healthcare expenditure (HCE) spent during an individual's last year of life accounts for a high share of lifetime HCE (Lubitz and Riley, 1993; Riley and Lubitz, 2010). From the point of view of standard economics, this finding is puzzling because an investment in health is unlikely to have a sufficiently long payback period. However, Becker et al. (2007) and Philipson et al. (2010) have advanced a theory designed to explain high willingness

to pay (WTP) for an extension of life close to its end. Their work has several empirically testable implications, which will be extended by using invoking the concept of 'pain of risk bearing' introduced by Eeckhoudt and Schlesinger † (2006). This contribution seeks to test these implications using evidence from a Discrete Choice Experiment (DCE) performed in 2014, involving 1,529 Swiss adults. An individual setting where the price attribute is substantial out-of-pocket payment for a novel drug for treatment of terminal cancer is distinguished from a societal one, where it is an increase in contributions to social health insurance. Most of the economic predictions receive empirical support; however, estimated societal WTP may not exceed its individual counterpart, although there is evidence of both altruism and the effect of the public good characteristic of a therapy covered by social health insurance.

## Author Index

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Abeliansky A.L., 5  
Affenzeller A., 37  
Ahammer, A., 5  
Angel S., 6  
Avdic D., 38  
Baldanzi A., 6  
Berger M., 6  
Bittschi B., 6, 7  
Böhnke J., 23  
Breyer F., 7  
Bruckner M., 16  
Christl M., 8  
Crespo Cuaresma J., 9, 12  
Croner D., 26  
Cupak A., 9  
Czypionka T., 6  
Danninger P., 44  
Davoine T., 9  
Doppelhofer G., 12  
Eder A., 10  
Endel F., 10  
Fahn M., 11  
Falk M., 11, 12  
Feldkircher M., 12  
Fels M., 13  
Fessler P., 9  
Fischer S., 43  
Fischer B., 39, 45  
Fischer M., 32  
Freiberger M., 13  
Garcia D., 14  
Gasteiger E., 14  
Gehrke C., 15  
Giljum S., 16  
Gnan P., 8  
Goedl M., 15  
Gözet B., 16  
Hagsten E., 12  
Halla M., 5  
Hammer B., 16  
Hauzenberger N., 17  
Hergovich P., 17  
Hoffmann R., 13, 17  
Holl J., 10  
Hotz-Behofsits C., 18  
Huber F., 12, 18, 32, 33  
Ihle P., 7  
Istenic T., 16  
Ivets M., 38  
Janger J., 19  
Jessen R., 39  
Jones A., 1  
Kapounek S., 20  
Karstensen J., 40  
Kasberger B., 21  
Kerndler M., 21  
Kettner-Marx C., 21  
Kirchner M., 21  
Klausinger H., 2  
Kleinert J., 22  
Kletzan-Slamanig D., 21  
Köberl K., 21  
Koller W., 26  
Köpl–Turyňa M., 8  
Kratena K., 21, 27  
Krisztin T., 23  
Kronenberg C., 23  
Kučerová Z., 20

Kufenko V., 24  
 Kuhn M., 24  
 Kulikova Y., 25  
 Laica C., 36  
 Lauber A., 36  
 Lorenz H., 26  
 Lorenz N., 7, 25  
 Loy J.-P., 31  
 Mahlberg B., 26  
 Meyer I., 27  
 Milford K., 27  
 Munoz P., 40  
 Nabernegg S., 27  
 Neck R., 29, 43  
 Neisser C., 38  
 Nowotny E., 2  
 Oberhofer H., 30  
 Ochsner C., 30  
 Ortega J., 17  
 Pekanov A., 31  
 Pelzl P., 31  
 Pennerstorfer D., 31  
 Peters G.P., 40  
 Petkova K., 32  
 Pfaffermayr M., 30  
 Pfarrhofer M., 32  
 Piribauer P., 23, 33  
 Pock M., 6  
 Prettner K., 6, 24, 33  
 Prskawetz A., 13, 36  
 Puaschunder J., 33, 34  
 Rauner M.S., 37  
 Raunig B., 34  
 Reiss M., 6  
 Renner A.-T., 35  
 Riedel M., 35  
 Röhrling G., 6  
 Rroshi D., 31  
 Sahm M., 36  
 Sanchez-Romero M., 36  
 Schade A., 11  
 Schillo S., 25  
 Schlag K., 21  
 Schneeweis N., 5  
 Schober T., 37, 44  
 Schosser A., 37  
 Schünemann J., 38, 41  
 Schüßler K., 11  
 Schwab T., 38  
 Schwarz G., 34  
 Senft B., 37  
 Silgoner M., 9  
 Skinner J. S., 1  
 Sommer M., 21  
 Sommer M.W., 27  
 Spitzer S., 16  
 Sriubaite I., 38  
 Stasio A., 32  
 Stauer-Steinnocher P., 32  
 Steiner V., 39  
 Steininger K., 40  
 Stephany F., 26  
 Strohmaier R., 40  
 Strulik H., 5, 33, 38, 40  
 Telser H., 45  
 Teper R., 14  
 Trimborn T., 38, 41  
 Tscheuschner P., 6  
 Tsur M., 14  
 Ulbrich E., 9  
 Valderrama M.T., 31  
 Valkova K., 41  
 van der Klaauw B., 42  
 Vargha L., 16  
 Velázquez E., 40  
 Vogler S., 42  
 Wagner-Pinter M., 10  
 Wasem J., 25  
 Weiss C., 31  
 Weyerstrass K., 43

Wieland H., 16  
Wigger B.U., 7  
Wolf S., 43  
Yontcheva B., 31  
Zagler M., 32, 44

Ziegler L., 42  
Zocher K., 44  
Zoerner T.O., 45  
Zörner T., 18  
Zweifel P., 45