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**Final Report May 2014**

**NATIONAL RESEARCH NETWORK**

**“The Austrian Center for Labor Economics and  
the Analysis of the Welfare State”**



**JOHANNES KEPLER UNIVERSITY LINZ (AUSTRIA)**

Coordinator: Prof. Dr. Rudolf Winter-Ebmer

Secretary: Ines Meister

[www.labornrn.at](http://www.labornrn.at)

## Summary

The Research Network established itself quickly as a research hub in labor economics and the analysis of the welfare state in Austria and Central Europe. As the main purpose of the Network is scientific excellence, the publication output is the most important: 268 research papers have been produced, among them 115 already published (or accepted) in refereed journals, 14 more are in a Revise & Resubmit phase. Not only is the quantity of research impressive, also the quality: among the accepted journals, we do find contributions in many top general and field journals (e.g. Quarterly Journal of Economics, Economic Journal, Journal of the European Economic Association, Journal of Public Economics, Journal of Econometrics, Review of Economic Studies, Journal of Applied Econometrics, Industrial and Labor Relations Review, Journal of Health Economics, Scandinavian Journal of Economics, ...). Moreover, revise and resubmit options exist for papers in the American Economic Review and in Econometrica. Most of these publications were collaborative research efforts, often between members of different subprojects. The group associated also a large number of external co-authors (in the 126 (near-) published papers mentioned above, 78 external co-authors were involved).

Detailed research results cannot be explained here; some of the papers, e.g. on the impact of parental leave on the return to work, on fertility effects of plant closures or those on active labor market policy or model-based clustering are highly influential and (already) often cited. At present, we count 2,500 total citations for the research papers produced by the network.

Members of the Network have also been active in leading international conferences; they were regularly present at the American Economic Association's Meetings (with three AER P&P publications), the European Economic Association and the field Associations (SOLE, EALE, ESPE, the major Bayesian, Public and Experimental Economics Meetings), as well as at meetings of CEPR, IZA and CESifo Networks. Members of the Network presented their work also at many major Universities worldwide.

Moreover, NRN members presented their research papers in 10 international workshops. As most research questions are also very interesting from a public policy point of view, we took great effort to optimize public outreach and inform both the general public but also decision makers in the administration about our results: we established several highly visible policy workshops and collected a large number of press citations in the Austrian and German/Swiss daily press.

The most important accomplishment of the Network was certainly the creation of a research infrastructure – both in terms of data, programs but also in terms of personal

relations – which allowed the interdisciplinary collaboration of researchers from various sub disciplines in economics; while the initiation and establishment of the collaborative structure occupied much of the time of the first part of the NRN, many fruitful collaborations emerged both between the subprojects, but also with leading external researchers of the fields.

These large investments have already borne fruit; but more is to be expected. As will be shown below, several of the core researchers of the NRN got new positions as Full Professors in varying institutions. This and the prospect of national and international follow-up projects highlight the future research potential by the NRN.

## **A. General section**

### **1. Organizational points**

#### **1.1 Participants in the NRN**

**Table 1** Alphabetical list of the scientists participating in the NRN

Surname, first name, academic degree	Sex	Scientific field	Research institute	supported by the FWF / from other sources *	subproject	start of work in the NRN	conclusion of work in the NRN
Arias, Augustin	M	Labor Economics	University of Mannheim	FWF	S 10303	Aug.12	Jul.13
Böheim Rene, PhD	M	Labor Economics	University of Linz	University	S 10302	Sep.08	Aug.14
Brunner, Johann K., o.Univ.-Prof.DDr.	M	Public Economics	University of Linz	GA	S 10308	Sep.08	Aug.11
Dursun, Omer	M	Labor Economics	University of Mannheim	FWF	S 10303	Feb.12	Jul.12
Eckerstorfer, Paul, Mag.	M	Public Economics	University of Linz	EA	S 10308 S 10308	Sep.08 Feb.11	Feb.11 Aug.11
Fink, Martina	F	Labor Economics	IHS / University Wien	FWF	S 10303 S 10310	Sep .08 Sep.11	Aug.11
Frimmel, Wolfgang	M	Labor Economics	University of Linz	FWF	S 10302	Jun.10	Aug.14
Frühwirth-Schnatter, Sylvia, Univ.Prof. Dipl.-Ing. Dr.techn.	F	Statistics	Institute for Statistics and Mathematics, WU Wien	FWF	S 10309	Sep.08	Aug.14
Fussl, Agnes, M.Stat.	F	Statistics	Institute for Statistics and Mathematics, WU Wien	FWF	S 10309	Feb.14	Aug.14

Gächter, Martin, Dr.	M	Health Economics	University of Linz/Innsbruck	FWF	S 10306	Nov.08	Aug.11
Gaspari, Diana, Mag.	F	Economics	WU-Vienna	FWF	S10307	Jän.13	Mär.14
Graf, Gregor, Mag.	M	Health Economics	University of Linz	FWF	S 10306	Dez.08	Jun.09
Hackl, Franz, a. Univ.-Prof. Dr.	M	Health Economics	University of Linz	University	S 10306	Sep.08	Aug.14
Halla Martin, Dr. Univ.-Prof. Dr.	M	Health Economics	University of Linz	University	S 10306	Sep.08	Aug.14
Haller, Jasper	M	Labor Economics	University of Mannheim	University	S 10303	Sep.13	Aug.14
Hoffmann, Bernd, Mag.	M	Public Economics	University of Linz	EA	S 10308 S 10308	Sep.09 Nov.10	Nov.09 Nov.10
Horvath, Thomas	M	Labor Economics	University of Linz	FWF	S 10302	Sep.08	Aug.11
Hummer, Michael, Dr.	M	Health Economics	University of Linz	FWF	S 10306	Okt.09	Sep.13
Kalkbrenner Segalla, Esther	F	Labor Economics	IHS / University Wien	FWF	S 10303 S 10310	Sep.08 Sep.11	Aug.11 Aug.14
Kuhn, Andreas; Dr. oec. publ.	M	Labor Economics	University of Zurich	FWF	S 10304	2008	2011
Lalive, Rafael; Prof. Dr.	M	Labor Economics	University of Zurich	University	S 10304	2008	2010
Lehner, Thomas, DI.	M	Health Economics	University of Linz	FWF	S 10306	Jun.10	Dez.10
Mayr, Karin; Dr.	F	Assistant Professor	University of Vienna	University	S 10304	2008	2014
Meister, Ines, Secretary	F	Labor Economics	University of Linz	University	S 10302	Sep.08	Aug.14

Osikominu, Aderonke; Dr.	F	Labor Economics	University of Zurich	FWF	S 10304	2012	2013
Pamminger, Christoph, Mag. Dr.	M	Statistics	Institute for Applied Statistics, JKU Linz	FWF	S 10309	Sep.08	Dez.11
Parolini, Arno, Dr.	M	Economics	University Innsbruck	FWF	S10307	Sep.08	Aug.11
Parolini, Arno, Mag.	M	Economics	University of Innsbruck	University	S 10306	Jun.11	Dez.12
Pech Susanne, a. Univ. Prof. Dr	F	Public Economics	University of Linz	GA	S 10308	Sep.08	Aug.11
Perihan, Ozge Saygin	F	Labor Economics	University of Mannheim	FWF	S 10303	Apr.12	Aug.14
Pittner, Stefan, Dipl.-Ing. Dr.techn.	M	Statistics	Institute for Statistics and Mathematic s, WU Wien	FWF	S 10309	Sep.11	Aug.14
Posekany, Alexandra, Dipl.- Ing. Dr.techn.	F	Statistics	Institute for Statistics & Mathematic s, WU Wien	FWF	S 10309	Apr.12	Feb.14
Pruckner, Gerald J., Univ.-Prof. Dr.	M	Health Economics	University of Linz	University	S 10306	Sep.08	Aug.14
Rabas, Alexander, Mag.	M	Economics	Uni Vienna	FWF	S10307	Sep.11	Aug.14
Ruh, Philippe, MA	M	Labor Economics	University of Zurich	FWF	S 10304	2008	2014
Sausgruber, Rupert, Prof.	M	Economics	WU-Vienna	University	S10307	Sep.08	Aug.14
Schmieder, Julia	F	Labor Economics	University of Mannheim	FWF	S 10303	Sep.13	Aug.14

Schnalzenberger, Mario, MMag. Dr.	M	Labor Economics	University of Linz	FWF	S 10302	Sep.08	Aug.14
Schneeweis, Nicole, Mag. Dr.	F	Labor Economics	University of Linz	University	S 10302	Sep.08	Aug.14
Schober, Thomas, Mag.	M	Health Economics	University of Linz	FWF	S 10306 S 10302	Mai.10 Jän.11	Okt.13 Aug.14
Schwazer Peter, Dr.	M	Health Economics	University of Innsbruck	University	S 10306	Jun.11	Dez.12
Schwazer, Peter, Dr.	M	Economics	University Innsbruck	FWF	S10307	Apr.09	Aug.11
Spitzer, Florian, Mag.	M	Economics	Uni Vienna	FWF	S10307	Sep.12	Aug.14
Staubli, Stefan; Dr. oec. publ.	M	Labor Economics	University of Zurich	FWF; NBER Corporation	S 10304	2011	2013
Steinhauer, Andreas; MSc	M	Labor Economics	University of Zurich	FWF	S 10304	2008	2014
Strauss, Ulrike	F	Labor Economics	University Wien	FWF	S 10303	Feb.11	Aug.11
Theurl Engelbert, a. Univ.-Prof. Dr.	M	Health Economics	University of Innsbruck	University	S 10306	Sep.08	Aug.14
Tyran, Jean-Robert, Prof.	M	Economics	Uni Vienna	University	S10307	Sep.11	Aug.14
Weber, Andrea	F	Labor Economics	University of Mannheim	University	S 10303	Sep.08	Aug.14
Weichselbaumer, Doris Prof.	F	Economics	University Linz	University	S10307	Apr.09	Aug.11
Weichselbaumer, Michael, Mag. Dr.	M	Industrial Organization	University of Linz	FWF	S 10310	Sep.11	Aug.14
Weynandt, Michele	F	Labor Economics	University of Mannheim	FWF	S 10303	Aug.13	Aug.14
Winner Hannes,	M	Economics	University of	University	S 10306	Sep.08	Aug.14

Univ.-Prof. Dr.			Salzburg				
Winter-Ebmer, Rudolf, Univ.-Prof. Dr.	M	Labor Economics	University of Linz	University	S 10302	Sep.08	Aug.14
Wuellrich, Jean-Philippe; Dr.	M	Labor Economics	University of Zurich	FWF	S 10304	2008	2011
Zulehner, Christine, Prof. DI Dr.	F	Industrial Organization	University of Linz/Goethe University Frankfurt	University Frankfurt	S 10310	Sep.11	Aug.14
Zweimüller, Josef; Prof. Dr.	M	Labor Economics	University of Zurich	University	S 10304	2008	2014
Zweimüller, Martina, Dr.in	F	Economics	University of Linz	FWF	S 10306	Sep.08	Feb.14
Zylberstejn. Adam, Dr.	M	Economics	WU-Vienna	FWF	S10307	Sep.13	Aug.14



## **1.2 Organization of the NRN**

The organization of the NRN is lean. Rudolf Winter-Ebmer as coordinator is interacting first with the co-coordinators Gerald Pruckner and Josef Zweimüller and then with the subproject leaders. The project involves researchers from almost all major universities in Austria: Linz, Innsbruck and to a smaller extent the Universities of Vienna, Vienna University of Economics and Business, Salzburg and the Institute for Advanced Studies. Outside Austria, direct partners were in Zurich and Mannheim with smaller collaboration in Lausanne.

The main issues of coordination concern data warehouse, additions to data, corrections and cleaning as well as coordination of research topics. Moreover, seminars and workshops are organised centrally at least twice a year. The web-site serves as a main communication device ([www.laborrn.at](http://www.laborrn.at)).

## **2. Progress of the NRN**

### **2.1 Report on the research program**

#### 2.1.1 General scientific concept and long-term aims of the NRN

- Establish a network of Austrian economists working in labor economics and related areas to join forces with international top researchers to cross-fertilize research.
- Involve the main Austrian institutions and the main Austrian researchers within the country and abroad.
- Collaborate in preparatory and data work to establish a matched data base on individual life histories coming from various administrative sources.
- Initiate interdisciplinary research between labor and population economists as well as researchers in public finance, health economics and experimental economics.
- Investigate causal questions in the before mentioned areas which are technically state-of-the-art and are, thus, internationally relevant.
- Cooperate with advanced econometricians and theoretical economists to expand the scope and depth of the analysis.
- Complement classical evaluation methods with more theory-based econometrics and experimental methods.
- Contribute to major scientific and policy questions in the areas of retirement, healthcare, income distribution, migration, family economics, labor market policies and taxation.
- Connect to the international scientific community and publish the results in international top journals.
- Reach out to the public and politics to communicate policy-relevant results in an easy-accessible fashion.
- Provide a focus point for researchers working in areas related to labor economics and the welfare state in and around Austria and provide communication and educational opportunities for young researchers.

#### 2.1.2 Scientific development of the NRN

The Research Network established itself quickly as a research hub in labor economics and the analysis of the welfare state in Austria and Central Europe. As the main purpose of the Network is scientific excellence, the publication output is the most important: 268 research papers have been produced, among them 115 already published (or accepted) in refereed journals, 14 more are in a Revise & Resubmit phase. Not only is the quantity of research impressive, also the quality: among the accepted journals, we do find contributions in many top general and field journals (e.g. Quarterly Journal of Economics, Economic Journal,

Journal of the European Economic Association, Journal of Public Economics, Journal of Econometrics, Review of Economic Studies, Journal of Applied Econometrics, Industrial and Labor Relations Review, Journal of Health Economics, Scandinavian Journal of Economics, ...). Moreover, revise and resubmit options exist for papers in the American Economic Review and in Econometrica. Most of these publications were collaborative research efforts, often between members of different subprojects. The group associated also a large number of external co-authors (in the 126 (near-) published papers mentioned above, 78 external co-authors were involved).

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The most important accomplishment of the Network was certainly the creation of a research infrastructure – both in terms of data, programs but also in terms of personal relations – which allowed the interdisciplinary collaboration of researchers from various sub disciplines in economics; while the initiation and establishment of the collaborative structure occupied much of the time of the first part of the NRN, many fruitful collaborations emerged both between the subprojects, but also with leading external researchers of the fields.

These large investments have already borne fruit; but more is to be expected. As will be shown below, several of the core researchers of the NRN got new positions as Full Professors in varying institutions. This and the prospect of national and international follow-up projects highlight the future research potential by the NRN.

### 2.1.3 Promotion of early stage researchers and of teaching

The opportunities for young NRN researchers to advance their scientific careers are wide-ranging. All participating institutions offer excellent PhD programs with courses not exclusively held by faculty members, but also by renowned visiting professors. Joshua Angrist from MIT taught two PhD courses on program evaluation. Other courses were taught by Christian Dustmann, Steve Jenkins, Francis Kramarz, Bernd Fitzenberger, Martin Huber, Steve Jenkins, Josh Angrist, Sascha Becker, Michael Lechner or Kostas Tatsiramos.,

Young researchers were also encouraged to apply for international conferences and to participate in workshops and summer schools. Among others, NRN researchers participated at IZA Summer School, Summer School in Advanced Econometrics at the London School of Economics, Summer School in Microeconometrics at the Barcelona Graduate School of Economics or Summer School in Psychological Economics and Economic Psychology in Trento. Young researchers also participated in several NRN workshops, at workshops of the Research Priority Program in Empirical and Experimental Economics at the University of Innsbruck or a Workshop on Behavioral Public Economics at the University of Copenhagen.

Visits at international universities, e.g. UC Berkeley, MIT Boston or Queensland University of Technology, as well as attendance of courses taught by highly respected professors, such as David Card, Patrick Kline (both UC Berkeley), Guido Imbens (Harvard), Jeffrey Wooldridge (Michigan State University) or John Hassler (IIES, Stockholm University), illustrate the manifoldness of the support of young researchers provided by the NRN.

Ten young members of the NRN received offers for a Full Professorship in Germany (Berlin, Hohenheim, Mannheim [2x]) and Austria (Salzburg, Linz [2x], Vienna [3x]).

### 2.1.4 Future perspectives

The general development of the research group is very promising: on the one hand, collaboration structure between the members of the subprojects has been established which will lead to a large number of future joint research projects; on the other hand, some specific new efforts are in the planning phase. Linz established itself as a hub in labor market research in Austria and Central Europe; in particular in aging and health economics. Among new initiatives are a newly founded Christian-Doppler Laboratory (over seven years) which will bundle research in health economics, aging and the labor market. Moreover, several collaborative initiatives are ongoing: a joint application for NORFACE-Welfare State program (Linz, Zurich, Oslo and UCL), several applications in a newly established German Special

Research Program (Linz and Mannheim, as well as Nuremberg and Berkeley). In the last proposal, a worldwide novelty to fully combine administrative datasets for cross-country migrants (between Germany and Austria) is undertaken. This new project may become a milestone in migration research – collaboration with experts in CREAM (UCL), Berkeley, and Nuremberg is therefore warranted.

These new initiatives will strengthen the integration of the NRN into the international research community. Next to the data warehouse on administrative micro-data for Austria, Linz is also hosting the Austrian headquarter of SHARE (The Survey of Health, Ageing, and Retirement in Europe): as the panel grew much larger in many countries and the panel dimension become more important over time, efforts to combine administrative and survey data have already started in Germany; Austria will follow in a year.

#### *Subproject 02: AGING*

The research group was able to establish itself as a player at the European level in aging research. Due to the establishment of a newly funded Christian-Doppler Laboratory and the national coordination of the SHARE survey, aging will be one of the central research clusters in social sciences at the University of Linz.

#### *Subproject 03: LABOR MARKET POLICY*

The research has opened up novel research strategies and topics, which we will continue to pursue in the future. Among them are the effects of social networks on information transmission in the labor market, the impacts of gender diversity in management on firm outcomes, the migration of workers between Germany and Austria, and the role of firms in the labor market.

The subproject 4 POPULATION ECONOMICS will continue ongoing projects on (i) policy evaluation in general, (ii) aspects of certain welfare programs, and more specifically (iii) the interaction of different welfare programs. Regarding specific welfare programs, we aim at providing evidence for work incentives for people currently being in a program such as disability insurance and continue to conduct research on search behavior of unemployed individuals. More general aspects include the interactions of different welfare programs such as unemployment insurance, disability insurance and old age pensions. Because the

interactions of the different insurances are quite strong in Austria, it makes it an interesting case to study. Having worked already on these different types of welfare programs in Austria, we want to continue this research in greater detail. In particular, we want to study the interactions of these welfare programs with each other but also with labor supply in more general terms.

#### *Subproject 05: INDUSTRY DYNAMICS AND MARKET STRUCTURE*

The research has opened up novel research strategies and topics using new data sets. This subproject consists of studies in industry dynamics and market structure. For the empirical analysis we use the ASSD firm panel and answer questions related to industrial organization. The ASSD firm panel includes, as is unusual in IO, information on the characteristics of the workforce. We also added industry specific data such as bids (prices) from procurement auctions and merged balance sheet data from the Amadeus data base. In this way, we obtained unique data sets for particular industries. We continue to pursue this research in the future, in particular by focusing on industry studies.

The research subproject formed by Christine Zulehner, Michael Weichselbaumer and the national cooperation partner Klaus Gugler (see below) work on a follow-up research project on mergers in bidding markets. Some of the research within this subproject is based on empirical auction models. It turned out that the data and models are suitable to simulate mergers and evaluate ex-ante projections and ex-post outcomes. The new research project will contain new contributions to the literature of empirical auction models, determinants and effects of mergers on market power, efficiency and entry.

#### *Subproject 06: HEALTH ECONOMICS*

In continuation of ongoing projects that have been conducted, future health economics research will focus on (i) the efficient provision of healthcare services for treatment of non-communicable diseases at the interface between the inpatient and outpatient sector, (ii) primary health prevention and the role of economic incentives, and (iii) the role of family structure for the utilization of inpatient and outpatient healthcare services. The institutional framework for this research agenda is a Christian Doppler Laboratory on “Aging, Health, and the Labor Market” to be established at the University of Linz in autumn 2014.

#### *Subproject 07: EXPERIMENTAL INVESTIGATION OF LABOR MARKETS*

We will continue and deepen our research on behavior in markets with asymmetric information, the measurement and determinants of motivation at work, gender sorting, and the effect of solidarity on social mobility.

#### Subproject 8: TAXATION AND INCOME DISTRIBUTION

The subproject will continue basic research on the design of an optimal tax system. In particular, we will investigate the potential role of additional taxes, especially those on bequests, capital income and consumption, to supplement the labor income tax. Moreover, the group will study the appropriateness of rules for early retirement in the so-called notional defined benefit plans which have recently been established in Austria and several other countries.

#### Subproject 09: BAYESIAN ECONOMETRICS

Many useful tools to analyze complex data have been developed within the NRN. It is planned to promote and develop these tools further through collaborations within Subproject 2 AGING, Subproject 3 LABOR MARKET POLICY, Subproject 5 INDUSTRY DYNAMIC AND MARKET STRUCTURE and Subproject 6 HEALTH beyond the NRN. Furthermore, new international collaborations will be started to apply and extend these methods. Examples are continuing the collaboration with James J. Heckman on Bayesian factor model and continuing the collaboration with Liana Jacobi and Helga Wagner on Bayesian treatment effect models.

## 2.2 Overview of the subprojects

**Table 2**

Subproject No.	Title	Leader	Sex	page no. in the Report	Start	End
S10301	Coordination	Winter-Ebmer Rudolf	M	65 – 72	09/2008	08/2014
S10302	Aging	Winter-Ebmer Rudolf	M	73 – 90	09/2008	08/2014
S10303	Labor Market Policy	Weber Andrea	F	91 – 107	09/2008	08/2014
S10304	Population Economics	Zweimüller Josef	M	108 – 132	09/2008	08/2014

S10306	Health Economics	Pruckner Gerald	M	148 – 167	09/2008	08/2014
S10307	Experimental Investigation of Labor Markets	Sausgruber Rupert	M	168 – 179	09/2008	08/2014
S10308	Taxation and Income Distribution	Brunner Johann	M	180 – 190	09/2008	08/2011
S10309	Bayesian Econometrics	Frühwirth-Schnatter Sylvia	F	191 – 208	09/2008	08/2014
S10310	Industry dynamics and Market Structure	Christine Zulehner	F	133 – 147	09/2011	08/2014

### 2.2.1 Short description of the subprojects

#### *Subproject 01: COORDINATION PROJECT*

In the coordination project we provided basic support to all groups. Specific tasks were web-site design, data management, support in super-computing, conference organization and support for the setup of teaching. The main task was to provide the subprojects with access to the Austrian Social Security Database (ASSD), to maintain it, to replenish it and “translate” the administrative structure of the data base into a structure useful to statisticians and economists – as well as to provide and merge auxiliary data sources.

#### *Subproject 02: AGING*

We studied aging from the workers’, the firms’ and the society’s perspective. Major accomplishments concern the study of early retirement after job loss, evaluations of a subsidized old-age part-time scheme and the impact of a layoff tax on the employment of elderly workers, where we explore substitution strategies of firms in some detail. Moreover, we decompose earnings into firm and worker components to test, whether elderly workers set (due to overconfidence or misperceptions) reservation wages too high. Moreover, from the perspectives of firms, we consider the impact of wage structures on worker’s turnover and early retirement. Using data from SHARE (Survey of Health, Ageing and Retirement in Europe) we study retirement behaviour of European workers in relation to the “quality” of their previous job. In collaboration with other subprojects, we analyze issues in the realm of



population economics (in particular, family formation and fertility), gender issues, as well as questions related to health, the entry into the labor force and education.

The group succeeded in a large number of academic publications in journals like Journal of the European Economic Association, Journal of Applied Econometrics, Demography, Scandinavian Journal of Economics, Journal of the Royal Statistical Society, Labour Economics, Economica, Industrial and Labor Relations Review, ...

#### *Subproject 03: LABOR MARKET POLICY*

In this subproject, for the implementation of efficient and well-functioning labor market policies it is crucial to understand how agents react to the institutional environment. This subproject has analyzed the interdependence of economic outcomes and labor market policy conditions from the supply side perspective of individual workers and in the demand side perspective of firms. We have investigated how institutional regulations regarding unemployment insurance, pension benefits, labor market training, or flexible employment impact on individual labor supply and earnings. Further we studied how job displacement affects employment, earnings, fertility, and health outcomes. Motivated by the availability of extensive linked employer-employee data, the recent literature increasingly focuses on understanding the implications of firm heterogeneity and dynamics for the labor market. In this subproject we have exploited firm-worker information in the Austrian administrative data to study how the choice of workforce composition affects the survival of startup firms and how gender-diversity in leading positions affects business success. For the investigation of labor demand related topics we set up a firm database based on the linked worker-firm component of the ASSD, the ASSD firm panel, which we link to balance sheet data at the firm level. This subproject has closely collaborated with other subproject on topics of joint interest. Several papers from these efforts have been published in the Journal of the European Economic Association, Economic Journal, Journal of Applied Econometrics, or the American Economic Review P&P.

#### *Subproject 04: POPULATION ECONOMICS*

The Members of this subproject investigated (i) the impact of family policies on fertility and employment and (ii) topics related to both population and health economics and/or other topics that are closely related to other NRN subprojects. For instance, the study „How does parental leave affect fertility and return-to-work? Evidence from two natural experiments“ by Rafael Lalive and Josef Zweimüller analyzes the effects of changes in the duration of paid, Abschlussbericht NFN, FWF 2014

job-protected parental leave on mothers' higher-order fertility and post-birth labor market careers and has been published in the Quarterly Journal of Economics. Related to this project is the study "Parental Leave and Mothers Career" by Rafael Lalive, Analia Schlosser, Andreas Steinhauer and Josef Zweimüller that analyses how mother's labor market outcomes depend on alternative mixes of key policy parameters which has been accepted for publication in the Review of Economics Studies.

Other papers are invited for a revise and resubmit (or have already been published) in the American Economic Review, Journal of the European Economic Association, Economic Journal, and Journal of Health Economics. Projects by subproject 04-members investigated the impact of early retirement on mortality; the impact of financial incentives and quota rule for employment of disabled workers; the impact of disability pension rules for employment of older workers, the impact of job loss on labor market outcomes of older workers; the cyclical behavior of workplace accidents; labor entry market conditions and long-run success on the labor market; the cultural determinants of unemployment; the impact of unemployment on right-wing extremist crimes, market externalities of unemployment insurance.

#### *Subproject 05: INDUSTRY DYNAMICS AND MARKET STRUCTURE*

This subproject consists of studies in industry dynamics and market structure. We contribute to the empirical analysis of firm dynamics and market structure by investigating firm entry and exit and how exogenous changes in the competitive environment are transmitted onto the output market and firms' hiring and firing decisions. The focus of this subproject is the use of the ASSD firm panel for questions related to industrial organization. The ASSD firm panel includes, as is unusual in IO, information on the characteristics of the workforce. Cross industry studies investigate industry dynamics and the interaction between market structure and firm entry and exit. We analyze the characteristics of surviving and mature firms as well as entering and exiting firms and to look at the determinants of entry modes when multinational firms are setting up affiliates in Austria. We further investigate the implications of firm heterogeneity and dynamics on the labor market and aim at understanding the source of productivity differences across firms. Three industry specific studies concentrate on the construction sector. We estimate a bidding model for first price auctions in public procurement auctions to investigate the effect of competition in the economic crisis on markups. We also investigate how employment is affected during a recession and derive labor demand from the winner and runner-up in procurement auctions. Finally, based on theoretical results examining the strategic implications of entry, we assess the effect of entry regulations in the health market.

#### *Subproject 06: HEALTH ECONOMICS*

This subproject has involved research on the socio-economic determinants of healthcare service utilization, prevention, and outpatient healthcare markets with a focus on child health, moral hazard and the role of health networks in service provision. Two different projects identify socio-economic determinants of health: (i) A causal analysis of accidents on the way to and from work finds negative and persistent effects on subsequent employment and earnings. (ii) Based on Austrian birth register data, we find that a mother's marriage is associated with a higher birth weight of the newborn, in the range of 40 to 60 grams. Moreover, we estimate the effects of a general health screening program in Austria. Based on an IV approach, we show that screening participation increases healthcare costs and does not statistically significant influence the health status of participants. Analyzing the impact of social networks on general practitioners' (GPs) referral behavior, we find that GPs refer more patients to specialists within their social networks and that patients referred within a social network have fewer follow-up consultations and are healthier as measured by the number of inpatient days. Consequently, referrals within social networks tend to decrease healthcare costs by overcoming information asymmetry with respect to specialists' abilities. Further health projects analyze the GPs' prescription behavior with respect to generic or brand name drugs, the gender wage gap among Austrian resident doctors, the effects of intensive treatment of myocardial infarction on mortality and costs, human capital effects of the Chernobyl Accident and the causal impact of family size on children's health.

#### *Subproject 07: EXPERIMENTAL INVESTIGATION OF LABOR MARKETS*

We explored questions regarding labor supply and the provision of effort. We have made contributions to study cooperation in self-governed environments, the political acceptance of reform, and aspects of discrimination in the labor market. We launched research to explore behavior in markets with asymmetric information, the measurement and determinants of motivation at work, gender sorting, and the effect of solidarity on social mobility. We have conducted conventional lab experiments with student subjects, we have administered large-scale internet experiments with participants from the general population, and we have conducted natural field experiments. Our work is published in highly-ranked economic journals such as *Review of Economic Studies*, *Journal of the European Economic Association*, *Journal of Public Economics*, *Economic Journal*, *European Economic Review*,

*Journal of Economic Behavior and Organization*, and *Experimental Economics*. Over the funding period, we have been able to establish ourselves as internationally visible and successful research group in the field of Experimental Labor Economics and the Experimental Analysis of the Welfare State. We have presented our work at numerous seminars and conferences. We have organized several workshops with high-profile participants within the profession.

#### *Subproject 08: TAXATION AND INCOME DISTRIBUTION*

Research produced important new insights into the role of inheritance taxation or – more broadly – of capital taxation in an efficient tax system which includes redistribution. In particular, the role of initial wealth of a generation was introduced in the optimal-taxation framework and in this extended framework it was indeed shown that bequest taxation can perform a redistributive role, in addition to an optimal income tax. Further research in this group established the importance of a comprehensive tax if tax evasion is taken into account, which provides a severe restriction to the government's ability to raise revenues. Moreover, the development of formulas characterizing the optimal tax mix in the presence of externalities, especially in the form of status effects, represented an important part of the research in this group.

Finally, members of the group worked on the Austrian pension system. They studied the rules governing the transition into early retirement and suggested new discounts, based on an analysis of the careers of recent cohorts of individuals retiring prematurely, in order to avoid costs to the pension system from early retirement.

#### *Subproject 09: BAYESIAN ECONOMETRICS*

The relevance of empirical research in economics relies on efficient econometric inference for highly structured flexible econometric models depending on latent variables. In Subproject 09, efficient new simulation-based algorithms for Bayesian estimation of various econometric models for discrete-valued panel data have been developed which are based on the idea of auxiliary mixture sampling. A second major scientific achievement has been to develop new techniques for model specification for latent variable models using either marginal likelihoods or model space MCMC methods which are based on Bayesian shrinkage priors. Furthermore, model-based clustering techniques have been developed for discrete-valued panel data in order to deal with unobserved heterogeneity in panels of life-time wage careers in the Austrian labor market. Finally, the Bayesian econometrics group contributed to the Abschlussbericht NFN, FWF 2014

important topic of identifying causal effects by pursuing a Bayesian approach toward instrumental variable estimation and treatment-effect modeling.

### 2.2.2 Contribution of the subprojects to the NRN as a whole

The presentation of the publications of the network shows best the close collaboration of the different subprojects: a majority of publications consists either of between-group co-authorship or interrelated topics. As all groups are using the same database very extensively, research in separate subgroups – without the coordination of the network – would in most cases be outright impossible or – in selected cases – possible but with much higher data preparation costs and with less precise knowledge about the underlying data framework.

The subprojects 1 COORDINATION and 2 AGING were instrumental in the organisation of the network in terms of data matching, cleaning and organisation as well research cooperation (workshops, public outreach). We cooperated in particular with the groups HEALTH, POPULATION ECONOMICS and LABOR MARKET POLICY, as well as with BAYESIAN ECONOMETRICS; but also with the other groups.

The focus of the research in the Subproject 3 LABOR MARKET POLICY is especially close to the subprojects AGING, POPULATION ECONOMICS, INDUSTRY DYNAMICS AND MARKET STRUCTURE, and HEALTH so that discussions, exchange of research ideas, and comments on work in progress at the regularly organized workshops and in smaller meetings had a highly productive impact on all involved researchers. Joint efforts in data processing and transmission of knowledge on Austrian institutions and laws generate large spillovers as well.

The subproject 4 POPULATION ECONOMICS conducts research close to the subprojects LABOR MARKET POLICY and AGING. Exchange at workshops and discussion of the current state of the scientific literature were very important and productive. Not only did it allow conducting research on a very high level measured on international academic standards. Furthermore, new projects on interesting and important topics emerged from the collaboration. Joint efforts to process and analyze data were very productive and had large spillovers that were beneficiary for many other subprojects.

The subproject 5 INDUSTRY DYNAMICS AND MARKET STRUCTURE has closely collaborated with subprojects LABOR MARKET POLICY, HEALTH and BAYESIAN ECONOMETRICS on topics of joint interest. There has been also a lot of discussion and comments on work in progress within the NRN workshops, but also outside on an informal basis. In addition, there

have been joint efforts in data processing and merging the ASSD firm panel with balance sheet data from Bureau van Dijk.

One important objective of the subproject 6 HEALTH ECONOMICS was the extension of research by health issues – both from the perspective of healthcare service utilization and individual health behavior. NRN network effects were in particular strengthened by a close cooperation between the HEALTH and the BAYESIAN ECONOMETRICS group who jointly worked on the causal relationship between family size and the health of children as well as with subgroups POPULATION ECONOMICS and AGING.

The research of the subproject 7 EXPERIMENTAL INVESTIGATION OF LABOR MARKETS has benefitted substantially from the input of the NRN-members, in particular, Johann Brunner and Hannes Winner (our research on tax incentives), Martin Halla and Gerald Pruckner (our research on truth telling) and Rudolf Winter-Ebmer (our research on the political acceptance of reform).

The members of the subproject 8 TAXATION AND INCOME DISTRIBUTION supported the empirical subprojects in theoretical questions of model-building. Moreover, specific collaboration with the subprojects working on aging was established in connection with the work on appropriate rules for early retirement.

The econometric tools developed by subproject 9 BAYESIAN ECONOMETRICS were of relevance for all other empirical subprojects. This concerns the application of panel data models with unobserved heterogeneity as well as Bayesian treatment effect models. Internal collaborations were closest with subproject 2 AGING, subproject 3 LABOR MARKET POLICY, subproject 5 INDUSTRY DYNAMIC AND MARKET STRUCTURE and subproject 6 HEALTH.

### **2.3 Importance of the NRN for the participating institutes**

The subproject 2 AGING fulfilled a specific role at the University of Linz: Within the excellence cluster „Social Systems, Markets, and the Welfare State” the project had a decisive role as a quantitatively oriented research project. It leads quantitative research on aging and the welfare state in the faculty. Moreover, there are close relations with the organisational unit of SHARE (Survey on Health, Aging, and the Welfare State), which is headquartered in Linz as well. The project allowed cooperation with a large number of other networks outside of Austria.

The department of Economics at the University of Mannheim has benefited from the Subproject 3 LABOR MARKET POLICY in terms of broadening the research profile of the

applied research group. In addition, a very active group of junior researchers and PhD students has been attracted who are interested in conducting empirical research with focus on Austrian labor market policies.

The subproject 04 POPULATION ECONOMICS borders on the research priority program „Behavioral Labor Economics and Social Interactions“ of the University of Zurich, which investigates altruism, social preferences and social norms on the labor market. The results from this area of research are very valuable for the better understanding of the impact of family policies and migration on the labor market. Moreover, there are important interactions with the field of research „Trade & Labor Markets“, which analyzes the effect of trade of capital, goods and services on the labor market. The field of research „Trade & Labor Markets“ is regarded as complementary to the NRN-subproject POPULATION ECONOMICS, since migrants (labor factor) as well as capital constitute production factors. Overall, the NRN-project was very valuable to start many successful research projects (many of them still ongoing) with domestic and foreign scholars.

The department of Economics at the University of Linz has benefited from the subproject 5 INDUSTRY DYNAMICS AND MARKET STRUCTURE in terms of broadening its research profile. Through this subproject the working group Industrial Organization became larger and reached a critical mass. In addition, contacts to coauthors and institutions which employ our coauthors have been strengthened: the University of Mannheim, the Austrian National Bank, the Vienna University of Economics and Business, etc. Finally, through presenting our work at conferences and workshops (eg. MaCCI Summer Institute or CEPR/IO conference) the visibility of the department and the university became larger.

The subproject 6 HEALTH ECONOMICS initiated by the NRN is the central starting point for future extra clinical health research at the Johannes Kepler University of Linz. This field of research is of great importance given that the JKU is starting a new medical faculty. One central goal of the new medical faculty is health services research as well as geriatrics: these topics are covered in a complementary – economic – way by the NRN.

In March 2013, Rupert Sausgruber became Professor at the Institute of Public Sector Economics at Departments of Economics of the WU (Vienna University of Economics and Business). Subsequently, Subproject 7 EXPERIMENTAL INVESTIGATIONS OF LABOR MARKETS was relocated from Innsbruck to Vienna, thereby strengthening already existing research institutions in Experimental Economics in Vienna (Vienna Center of Experimental Economics [VCEE]).

The department of Economics at the University of Linz has benefited from the subproject 8 TAXATION AND INCOME DISTRIBUTION by launching a new research focus on the design of an optimal tax system by extending the Mirrlees-type model by realistic and important elements. Moreover, the NRN was very helpful to initiate and strengthen various successful (national and international) collaborations.

In September 2011, Sylvia Frühwirth-Schnatter became Professor at the Institute of Statistics and Mathematics at Departments of Finance, Accounting and Statistics of the WU (Vienna University of Economics and Business). Subsequently, subproject 09 BAYESIAN ECONOMETRICS was relocated and the NRN became particularly important to shape the research profile of the Institute of Statistics and Mathematics (chaired by Sylvia Frühwirth-Schnatter since 2014) and to foster collaborations with the Departments of Socioeconomics, the Departments of Economics and the Department of Marketing at WU.

## **2.4 National and international cooperation**

The breadth of the topics covered and the exceptional data quality, which was only possible due to the cooperative work and the resources at the NRN, has attracted some of the most prominent labor economists and econometricians for joint publications. It has to be stressed, that the perspective of publishing applied papers involving data from Austria – a small country in Central Europe – did not deter them. Among the most prominent co-authors are James Heckman, David Card, Hedibert Lopez and Raj Chetty from the US, and Andrea Ichino, Jan van Ours or Giorgio Brunello as prominent European Labor Economists. Without the resources from the NRN, such interactions would have been outright impossible.

The subproject 2 AGING was very active in cooperation within the NRN, but also outside with cooperation partners from Bologna, Munich, Essex, Padova and Nottingham, Nuremberg and Barcelona. Cooperation was extensive due to the central role of coordinating the network, but also because of SHARE (The Survey on Health, Ageing, and Retirement) is coordinated in Austria by this subproject.

The work in the Subproject 3 LABOR MARKET POLICY has benefitted a lot from cooperation with partners from renowned international research institutions in Europe and in the United States. A feature that makes the NRN very attractive for international researchers is the high data quality of the ASSD and the good data access. Over the last years we were able expand existing cooperation with well-known senior researchers in labor economics and public finance such as David Card (UC Berkeley), Raj Chetty (Harvard University), David S. Lee (Princeton), Day Manoli (UT Austin), and Emilia Del Bono (University of Essex). In addition several junior researchers from international universities joined our projects and



chose topics related to Austrian labor market policies for their PhD theses, among them Arash Nekoei (Harvard), Adam Guren (Harvard), Zhuan Pei (Brandeis University).

In the subproject 4 POPULATION ECONOMICS the ability to go through with the project „Parental Leave and Mother’s Post Birth Careers: The Relative Importance of Job Protection and Cash Benefits“ greatly depended on NRN funding. Not only did it enable us to hire research assistants to prepare the data, it also facilitated the cooperation with Analia Schlosser from Tel Aviv University in terms of meetings at seminars and conferences. It would have also been much more difficult to go through the research project „Market Externalities of Large Unemployment Insurance Extension Programs“ jointly with Camille Landais. The NRN funding allowed us much flexibility in terms of hiring people to work on the data and the organisation of joint meetings whenever necessary.

The members of the subproject 5 INDUSTRY DYNAMICS AND MARKET STRUCTURE has worked together with Klaus Gugler (Vienna University of Economics and Business) on the studies of procurement auctions. Klaus Gugler has contributed additional data on procurement auctions, which became a very useful complement to the analysis of our NRN-research topics and data.

We also worked together with Esther Segalla (Austrian National Bank). Her previous research on entry modes and her experience on the Amadeus data base delivered fruitful synergies to projects to cross industry studies on firm dynamics. Collaboration with Philipp Schmidt-Dengler (University of Mannheim) concentrates on the application of estimation techniques developed to address issues in empirical research in industrial organization. In particular, we address issues of the estimation of static and dynamic entry games as well as the estimation of labor demand.

The members of the subproject 6 HEALTH ECONOMICS collaborated with Pilar Garcia Gomez (Erasmus University of Rotterdam), Benno Torgler and David A. Savage (Queensland University of Technology, Brisbane) and with J.E. Tarride and R. Goeree (McMaster University, Hamilton, Canada) via coauthorship. At the national level, we worked together with a series of hospital and resident doctors who provided helpful medical inputs in several projects (e.g. Hans Concin, gynaecologist, Institute for Social and Preventive Medicine in Bregenz; Alexander Dzien, internist in Innsbruck).

Outside the group of NRN-members, the subproject 7 EXPERIMENTAL INVESTIGATION OF LABOR MARKETS has built up cooperation, among others, with Alexander Cappelen and Bertil Tungodden (both NHH Bergen), Louis Putterman (Brown University), Joel Slemrod (University of Michigan) and Stefan Traub (University of Bremen).

The members of the subproject 8 TAXATION AND INCOME DISTRIBUTION initiated various cooperations during their time in the NRN (2009 – 2011) like e.g. with the departments of Economics at the University of Graz and the Free University Berlin. Some of these cooperations resulted later on (after 2011) in joint papers, like e.g. with Ronald Wendner (University of Graz) on optimal taxes in the presence of consumption externalities or with Viktor Steiner (Free University of Berlin) on microsimulations to analyse tax reforms in Austria. Moreover, the NRN allowed us to organize a workshop on Taxation and Redistribution at the University of Linz in 2011 which was very fruitful for us as some of the most active researchers in optimal taxation theory participated, e.g. Helmuth Cremer (University of Toulouse) and Bas Jacobs (Erasmus University Rotterdam).

Subproject 9 BAYESIAN ECONOMETRICS collaborated with national statisticians (e.g. Helga Wagner and Rudolf Frühwirth), with international statisticians (e.g. Leo Held and Saumyadipta Pyne), with international econometricians (e.g. Hedibert Lopes and Yasuhiro Omori) as well as with international economists (e.g. James J. Heckman and Liana Jacobi). The unexpected cooperation with James J. Heckman on dedicated Bayesian factor analysis was particularly rewarding and will be continued beyond the NRN by applying dynamic factor models to estimate the technology of cognitive and non-cognitive skill formation in human capital research.

**Table 3: Overview of cooperation (details under the respective subprojects)**

Subproject	leader	cooperation partner	sex	national	internat.
S 10302	Winter-Ebmer, Rudolf	Ichino, Andrea	M		x
S 10302	Winter-Ebmer, Rudolf	Schwerdt , Guido	M		x
S 10302	Winter-Ebmer, Rudolf	Del Bono, Emilia	F		x
S 10302	Winter-Ebmer, Rudolf	Tatsiramos, Kostas	M		x
S 10302	Winter-Ebmer, Rudolf	Brunello, Giorgio	M		x
S 10302	Winter-Ebmer, Rudolf	Fort, Margherita	F		x
S 10302	Winter-Ebmer, Rudolf	Stomper, Alex	M		x
S 10302	Winter-Ebmer, Rudolf	Skirbekk, Vegard	M	x	
S 10302	Winter-Ebmer, Rudolf	Cardoso, Ana Rute	F		x
S 10302	Winter-Ebmer, Rudolf	Ruf, Oliver	M		x
S 10302	Winter-Ebmer, Rudolf	Georg Wernhart	M	x	
S 10302	Schneeweis, Nicole	Brunello, Giorgio	M		x
S 10302	Schneeweis, Nicole	Danzer, Natalia	F		x
S 10302	Schneeweis, Nicole	Fort, Margherita	F		x
S 10302	Schneeweis, Nicole	Skirbekk, Vegard	M	x	
S 10302	Böheim, René	Francesconi, Marco	M		x
S 10302	Böheim, René	Leoni, Thomas	M	x	
S 10302	Böheim, René	Stephan, Gesine	F		x
S 10304	Osikominu, Aderonke	Biewen, Martin	M		x
S 10302	Halla, Martin	Francesconi, Marco	M		x
S 10302	Halla, Martin	Scharler, Johann	M	x	
S 10302	Halla, Martin	Wagner, Alexander	M		x
S 10303	Weber, Andrea	Card, David	M		x
S 10303	Weber, Andrea	Manoli, Dayanand	M		x
S 10303	Weber, Andrea	Del Bono, Emilia	F		x
S 10303	Weber, Andrea	Nekoei, Arash	M		x

S 10303	Weber, Andrea	Chetty, Raj	M		x
S 10303	Weber, Andrea	Guren, Adam	M		x
S 10303	Weber, Andrea	Lee, David S.	M		x
S 10303	Weber, Andrea	Pei, Zhuan	M		x
S 10304	Staubli, Stefan	Bütler, Monika	F		x
S 10304	Staubli, Stefan	Engler, Monika	F		x
S 10304	Zweimüller, Josef	Falk, Armin	M		x
S 10304	Osikominu, Aderonke	Fitzenberger, Bernd	M		x
S 10304	Zweimüller, Josef	Halla, Martin	M	x	
S 10304	Zweimüller, Josef	Ichino, Andrea	M		x
S 10304	Staubli, Stefan	Inderbitzin, Lukas	M		x
S 10304	Zweimüller, Josef	Landais, Camille	M		x
S 10304	Zweimüller, Josef	Morlok, Michael	M		x
S 10304	Osikominu, Aderonke	Paul, Marie	F		x
S 10304	Staubli, Stefan	Peijnenburg, Kim	F		x
S 10304	Mayr, Karin	Peri, Giovanni	M		x
S 10304	Zweimüller, Josef	Schlosser, Analia	F		x
S 10304	Zweimüller, Josef	Schwerdt, Guido	M		x
S 10304	Zweimüller, Josef	van Ours, Jan	M		x
S 10304	Zweimüller, Josef	Wagner, Alexander	M		x
S 10306	Pruckner, Gerald	Garcia-Gomez, Pilar	F		x
S 10306	Pruckner, Gerald	van Doorslaer, Eddy	M		x
S 10306	Pruckner, Gerald	Torgler, Benno	M		x
S 10306	Pruckner, Gerald	Savage, David A.	M		x
S 10306	Pruckner, Gerald	Tarride, J.E.	M		x
S 10306	Pruckner, Gerald	Goeree, R.	M		x
S 10306	Pruckner, Gerald	Teichmann, Harald	M		x

S 10306	Pruckner, Gerald	Concin, Hans	M	x	
S 10306	Pruckner, Gerald	Dzien, Alexander	M	x	
S 10306	Pruckner, Gerald	Dzien, Christine	F	x	
S 10306	Pruckner, Gerald	Lechleitner, Monika	F	x	
S 10306	Pruckner, Gerald	Leiter, Andrea	F	x	
S 10306	Pruckner, Gerald	Piribauer, Franz	M	x	
S 10306	Halla, Martin	Francesconi, Marco	M		X
S 10306	Halla, Martin	Danzer, Natalia	F		x
S 10306	Halla, Martin	Wagner, Alexander	M		x
S 10306	Halla, Martin	Scharler, Johann	M	x	
S10307	Sausgruber, Rupert	Traub, Stefan	M		x
S10307	Sausgruber, Rupert	Paetzel, Fabian	M		x
S10307	Sausgruber, Rupert	Fellner, Gerlinde	F		x
S10307	Sausgruber, Rupert	Traxler, Christian	M		x
S10307	Sausgruber, Rupert	Bayer, Ralph	M		x
S10307	Sausgruber, Rupert	Renner, Elke	M		x
S10307	Sausgruber, Rupert	Höchtel, Wolfgang	M	x	
S10307	Sausgruber, Rupert	Gantner, Antita	F	x	
S10307	Sausgruber, Rupert	Feri, Francesco	M		x
S10307	Sausgruber, Rupert	Corrazini, Luca	M		x
S10307	Sausgruber, Rupert	Galavotti, Stefano	M		x
S10307	Sausgruber, Rupert	Valbonesi, Paola	F		x
S10307	Tyran, Jean-Robert	Thöni, Christian	M		x
S10307	Tyran, Jean-Robert	Wengström, Erik	M		x
S10307	Tyran, Jean-Robert	Markussen, Thomas	M		x
S10307	Tyran, Jean-Robert	Reuben, Ernesto	M		x
S10307	Tyran, Jean-Robert	Wengström, Erik	M		x

S10307	Tyran, Jean-Robert	Putterman, Louis	M		x
S 10309	Frühwirth-Schnatter, Sylvia	Frühwirth, Rudolf	M	x	
S 10309	Frühwirth-Schnatter, Sylvia	Held, Leo	M		x
S 10309	Frühwirth-Schnatter, Sylvia	Wagner, Helga	F	x	
S 10309	Frühwirth-Schnatter, Sylvia	Jacobi, Liana	F		x
S 10309	Frühwirth-Schnatter, Sylvia	Conti, Gabriella	F		x
S 10309	Frühwirth-Schnatter, Sylvia	Heckman, James	M		x
S 10309	Frühwirth-Schnatter, Sylvia	Lopes, Hedibert	M		x
S 10309	Frühwirth-Schnatter, Sylvia	Nakajima, Jouchi	M		x
S 10309	Frühwirth-Schnatter, Sylvia	Omori, Yasuhiro	M		x
S 10309	Frühwirth-Schnatter, Sylvia	Otter, Thomas	M		x
S 10309	Frühwirth-Schnatter, Sylvia	Piatek, Rémi	M		x
S 10309	Frühwirth-Schnatter, Sylvia	Pyne, Saumyadipta	M		x
S 10309	Pamminger, Christoph	Tüchler, Regina	F	x	
S 10310	Zulehner, Christine	Gugler, Klaus	M	x	
S 10310	Zulehner, Christine	Segalla, Esther	F	x	
S 10310	Zulehner, Christine	Schmidt-Dengler, Philipp	M		x

### **3. Results of the NRN**

#### **3.1 The overall NRN**

Subproject 2 AGING covered major issues of aging both from the individual's, the firm's or society's perspective. Moreover, issues of a changing age structure in the population were covered. The group was very active in collaborating with other subprojects, in particular HEALTH, BAYESIAN ECONOMETRICS and LABOR MARKET POLICY and covered also issues in health, demography and education economics. The group was highly successful, not only given by the academic output, but also with a large number of valuable networks and follow-up projects.

Subproject 3 LABOR MARKET POLICY. Over the last 10 years empirical research in applied microeconomics has seen a huge shift in focus from research based on survey data (typically from the US) to research based on administrative data from Europe, and most noticeably from Nordic countries. One of the major achievements of the NRN has been to place Austria on the map of countries with detailed administrative data and internationally well recognized empirical research.

The subproject 4 POPULATION ECONOMICS contributed to the overall project in several dimensions. Foremost, we were able to work on various projects which would not have been possible to such a large extent without the NRN. As is evident from the summary of the publications, the projects are highly relevant from an academic perspective but also for policy. Being part of the NRN greatly enriched the ingenuity of each of the projects through various presentations and discussions at joint workshops. Looking back, being part of the NRN project was extremely valuable as it fostered the already existing network between all subprojects and created new ties. Going forward, these will be very important connections both to continue current and start new projects.

In the subproject 5 INDUSTRY DYNAMICS AND MARKET STRUCTURE, research from labor economics has interacted routinely with research from industrial organization. This was a consequence of organizing the research within the NRN for two reasons: (1) the high quality and richness of the data provided via the ASSD, which permits to combine and answer questions from the perspectives of different and often separated areas of economic research, like labor and IO (as, for example, in Weber, Zulehner, JEEA, forthc.; and Gugler, Weichselbaumer, Zulehner, WP 5/2014); (2) the proximity of researchers from different areas of economics, like IO, health economics and labor, working within the same project and on

the same database, which has allowed to realize cooperation, especially within the NRN, that surpass the level of coauthored work usually possible, even within a faculty.

The subproject 6 HEALTH ECONOMICS managed to initiate empirical academic health economics research based on matched individual healthcare service register data in Austria. This is confirmed by a number of high quality publications of subproject members and also by public attention that this research has gained (e.g. the analysis of the comprehensive screening program in Austria). Moreover, the extension of the NRN research agenda by health topics has triggered a series of health papers in other subprojects such as AGING, POPULATION ECONOMICS, and BAYESIAN ECONOMETRICS.

The experimental approach to labor economics within the NRN has been intended to complement the work of the other NRN subprojects in response to a strong trend in social sciences. The subproject 7 EXPERIMENTAL INVESTIGATION OF LABOR MARKETS has actively sought for feedback from network members to identify questions of interest that lend themselves to experimental testing and to modify their research designs on the route to increase the external validity of experimental results. This approach turned out to be very successful. The experimental group has produced a respectable number of top-class publications. Combined with a broad range of research dissemination activities (e.g., periodic invited workshops), the integration of experimental methods not only has contributed to the international visibility of the NRN; it also has helped to establish and maintain the infrastructure needed to conduct experiments and to increase the reputation of our institutions as centers of behavioral and experimental economics.

Theoretical research in the subproject 8 TAXATION AND INCOME DISTRIBUTION made important innovative steps in the understanding of the role of wealth and bequests in an appropriate tax structure. New insights provide a basis for the critical issue, namely how to guarantee the financing of the welfare state in the future.

Subproject 9 BAYESIAN ECONOMETRICS provided valuable methodological extensions to the other subprojects. The BAYESIAN ECONOMETRICS group worked together with the AGING, the LABOR MARKET POLICY, the INDUSTRY DYNAMICS AND MARKET STRUCTURE, and the HEALTH subprojects by analyzing their administrative datasets through complex statistical inference tools such as finite mixtures-of-experts of first-order Markov chains, semi-parametric Bayesian IV models, or Bayesian treatment-effect models with variable selection.



## 3.2 Results of the NRN

### 3.2.1. Scholarly / Scientific Publications

See [www.labornrn.at](http://www.labornrn.at) (publications) for downloads of published papers and official working papers. Other papers are available upon request from the authors.

Note, that some publications are connected with several project parts (either personally or topic-wise), which is indicated in the table.

Publications	Assoc. Subproject
<b>a) Refereed Journals</b>	
Aiginger, Karl, Thomas Horvath and Helmut Mahringer, 2012. Why labor market response differed in the Great Recession. <b>Danube: Law and Economic Review</b> 3.	Aging, Labor Market Policy
Bayer, Ralph C., Elke Renner and Rupert Sausgruber, 2013. Confusion and Reinforcement Learning in the Voluntary Contributions Game. <b>Experimental Economics</b> 16(4): 478-496.	Experiments
Biewen, Martin, Bernd Fitzenberger, Aderonke Osikominu and Marie Paul, 2014. The Effectiveness of Public Sponsored Training Revisited: The Importance of Data and Methodological Choices, forthcoming , <b>Journal of Labor Economics</b> .	Population Economics
Böheim, René, Thomas Horvath and Rudolf Winter-Ebmer, 2011. Great Expectations: Past wages and unemployment durations, <b>Labour Economics</b> , Vol. 18(6), 778--785.	Aging
Böheim, René and Mario Lackner, 2012. Returns to education in professional football, <b>Economics Letters</b> , Vol. 114(3), 326--328.	Aging
Böheim, René and Ulrike Muehlberger, 2009. Dependent self-employment: Workers between employment and self-employment in the UK. <b>Journal of Labour Market Research</b> . 42(2), 182-195.	Aging
Böheim, René, Alfred Stiglbauer and Rudolf Winter-Ebmer, 2009. On the persistence of job creation in old and new firms, <b>Economics Letters</b> , Vol. 105(1), 17--9.	Aging
Böheim , René and Andrea Weber, 2011. The Effects of Marginal Employment on Subsequent Labor Market Outcomes, <b>German Economic Review</b> , 12(2), 165-181.	Aging, Labor Market Policy
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Card, David, Martin Halla, and Andrea Weber, 2014. The Effect of Job Displacement on Labor Supply within Couples, in progress.	Aging, Labor Market Policy
Chetty, Raj, Adam Guren Dayanand Manoli and Andrea Weber, 2012. Does Indivisible Labor Explain the Difference between Micro and Macro Labor Supply Elasticities? A Meta-Analysis of Extensive Margin Elasticities, NBER Macroeconomics Annual 2012, eds. D. Acemoglu, J. Parker, and M. Woodford.	Market Policy
Del Bono, Emilia, Andrea Weber and Rudolf Winter-Ebmer, 2011. Fertility and Economic Instability: The Role of Unemployment and Job Displacement, NRN Working Paper 1102, Linz.	, Labor Market Policy
Eckerstorfer, Paul, 2011. A note on optimal redistributive taxation in a multi-externality model. Mimeo.	on and Income Distribution

Favre, Sandro, 2011. The Impact of Immigration on the Wage Distribution in Switzerland, , NRN: The Austrian Center for Labor Economics and the Analysis of the Welfare State, Working Paper 1108	ation Economics, Labor Market Policy
Felfe, Christina and Rafael Lalive, 2010. How Does Early Childcare affect Child Development? Learning from the Children of German Unification. Mimeo, University of Zurich and University of St. Gallen.	ation Economics
Fink, Martina and Christine Zulehner. Wage structure in Austrian Pharmacies, in progress.	Industry Dynamics
Fink, Martina, 2014. Job mobility and wage growth of young labor market entrants, mimeo.	Industry Dynamics, Labor Market Policy
Fink, Martina, Esther Kalkbrenner, Andrea Weber and Christine Zulehner, 2010. Extracting firm information from administrative records: The ASSD Firm Panel, NRN Working Paper 1004, Linz.	ry Dynamics, Labor Market Policy
Fink, Martina, Esther Kalkbrenner and Andrea Weber, 2011. Long-term effects of job displacement in Austria. Mimeo.	ry Dynamics, Labor Market Policy
Fink, Martina, Esther Kalkbrenner, Andrea Weber and Christine Zulehner, 2011. Development of the Industry Structure in Austria. Mimeo.	ry Dynamics, Labor Market Policy
Fink, Martina, Esther Segalla and Andrea Weber, 2014. Long-term career effects of job-loss during the 1980's recession in Austria, NRN Working Paper, Linz.	Industry Dynamics, Labor Market Policy
Fink, Martina. Male mommies? Fathers on parental leave, in progress.	Industry Dynamics, Population Economics
Frimmel, Wolfgang, 2012, The effect of sham marriages on income: Evidence from an aggravation of the Austrian Aliens Law, Working Paper	Aging, Population Economics
Frimmel, Wolfgang, Martin Halla and Rudolf Winter-Ebmer, 2014. Does Parental Divorce Affect Children's Long-term Outcomes? mimeo.	Aging, Population Economics
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Frimmel, Wolfgang and Gerald Pruckner, 2011. Mother's family status and its impact on the weight of newborn babies. Mimeo, University of Linz.	Aging, Health
Frühwirth-Schnatter, Sylvia., Martin Halla, Alexandra Posekany, Gerald Pruckner and Thomas Schober, 2014. The Quantity and Quality of Children – A Semi-Parametric Bayesian IV Approach.	Aging, Health, Bayesian Econometrics
Frühwirth-Schnatter, Sylvia and Gregor Kastner, 2011. Improving efficiency of Bayesian stochastic volatility estimation by non-centering and interweaving. In: Proceedings of the 17th European	Bayesian Econometrics

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- Gächter, Martin, Peter Schwazer, Engelbert Theurl and Hannes Winner, 2011. Neighbourhood effects on physician density. Mimeo, University of Innsbruck.
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Gächter, Martin, Engelbert Theurl, 2011. The Austrian Health Care System – A Global Survey, in: Sekhour, Rout, H. (ed), Health care systems around the world, New Century Publications, New Delhi, 77-102.	Health
Garcia-Gomez, Pilar, Harald Mayr and Gerald Pruckner, 2014. Cutting Fertility? The Causal Effect of Supply-Determined Cesarean Section on Fertility, Department of Economics Working Paper, University of Linz.	Health
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Gugler, Klaus, Michael Weichselbaumer and Christine Zulehner, 2014. Impact of new orders on firms' workforce: Evidence from procurement auctions, mimeo.	Industry Dynamics
Gugler, Klaus, Michael Weichselbaumer and Christine Zulehner. Entry cost in procurement auctions, in progress.	Industry Dynamics
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Hackl, Franz, Martin Halla, Michael Hummer und Gerald Pruckner, 2010. Übergewicht und Fettleibigkeit als Kostenfaktor des Gesundheitssystems: Evidenz aus Österreich, Gesundheitswissenschaftliche Schriftenreihe der Oberösterreichischen Gebietskrankenkasse.	Health
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Halla, Martin, Alexander F. Wagner and Josef Zweimüller, 2012. Does Immigration into Their Neighborhoods Incline Voters Toward the Extreme Right? The Case of the Freedom Party of Austria, , NRN: The Austrian Center for Labor Economics and the Analysis of the Welfare State, Working Paper 1204	Aging, Population Economics

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Halla Martin and Andrea Weber, 2014. The Effect of Prenatal Economic Stress on Infants Health at Birth, working paper, University of Linz.	Aging, Labor Market Policy, Health
Halla, Martin and Andrea Weber, 2014. Paternal Job Loss & Infants Health: The Effect of Paternal Job Loss on Infants Health at Birth, in progress.	Aging, Labor Market Policy, Health
Halla, Martin and Martina Zweimüller, 2014. Parental Response to Early Human Capital Shocks: Evidence from the Chernobyl Accident, Working Paper No. 1402, University of Linz.	Aging, Health
Halla, Martin and Martina Zweimüller, 2011. The causal effect of income on health: Quasi-experimental evidence from accidents. Mimeo.	Aging, Health
Halmdienst, Nicole, Regina Roller-Wirnsberger and Rudolf Winter-Ebmer. Determinants of frailty in later life, in progress.	Aging, Health
Höchtel Wolfgang, Rupert Sausgruber and Jean-Robert Tyran, 2011. Redistribution, Inequality Aversion and Pocketbook Voting. Mimeo.	Experiments
Hofer, Helmut, Ulrich Schuh, Dominik Walch, 2011. Effects of the Austrian Severance Pay Reform, in Holzmann, R., Vodopivec, M. (ed.), Reforming Severance Pay: An International Perspective, World Bank, 177-194	Labor Market Policy, Aging
Hofer, Helmut and Rudolf Winter-Ebmer, 2007. Regulierung am österreichischen Arbeitsmarkt, in: IZA Research Report No. 13, mimeo.	Aging, Labor Market Policy
Hofer, Helmut, Andrea Weber and Rudolf Winter-Ebmer, Labour market policy in Austria during the Crises, NRN Working Paper, Linz.	Aging, Labor Market Policy
Hofer, Helmut, 2010. La reforma de la Ley sobre indemnización por despido en Austria, Relaciones Laborales, 26, No. 9, 115-127	Labor Market Policy
Hofer, Helmut, Klaus Weyerstrass 2011. Wirtschaftliche Entwicklungen und Trends in Österreich während und nach der Wirtschaftskrise, in ÖSB-Consulting (Hrsg.), Maßnahmen der aktiven Arbeitsmarktpolitik während und nach der Wirtschaftskrise: Erfahrungen und Good-Practice-Beispiele aus Bulgarien und Österreich, Wien, 15-19.	Labor Market Policy
Hofer, Helmut, Tibor Hanappi, Sandra Müllbacher, 2012. A Note on Automatic Stabilizers in Austria: Evidence from ITABENA; NRN: The Austrian Center for Labor Economics and the Analysis of the Welfare State, Working Paper 1203.	Labor Market Policy
Hofer, Helmut, Riedel, M., Wögerbauer. B., 2013, Determinants of Transition from Work into Retirement, NEUJOBS Working Paper 17.1, 2013 also published as NRN: The Austrian Center for Labor	Labor Market Policy, Aging



Economics and the Analysis of the Welfare State, Working Paper 1310.	
Hofer, Helmut, Gerlinde Titelbach and Rudolf Winter-Ebmer, 2014. Wage discrimination against immigrants in Austria?, IHS, mimeo, 2014.	Aging, Labor Market Policy
Horvath, Thomas and Peter Huber, 2013. The Impact of Networks, Segregation and Diversity on Migrants' Labour Market Integration. WWWforEurope Working Paper No. 22	Aging, Labor Market Policy
Horvath, Thomas, 2011. The impact of immigration on the distribution of wages in Austria. Mimeo.	Aging, Labor Market Policy
Hummer, Michael and Gerald Pruckner, 2011. Einmal krank immer krank? Der Zusammenhang von Geburtsgewicht und Gesundheit. In: Nussbaumer, J., G.J. Pruckner, R. Sausgruber and Hannes Winner: Gesundheits- und Sozialpolitik im Diskurs, Springer, Berlin Heidelberg, 2011, forthcoming	Health
Hummer, Michael und Gerald Pruckner, 2013. Fördern private Zuzahlungen im Gesundheitswesen die Zweiklassenmedizin? Zeitschrift für Gesundheitspolitik (Linzer Institut für Gesundheitssystemforschung), 03/2013, 37-62.	Health
Hummer, Michael, Thomas Lehner und Gerald Pruckner, 2011. Wer zu früh kommt ... Der Zusammenhang von Geburtsgewicht und späterer Gesundheit, in J. Nussbaumer, G.J. Pruckner, R. Sausgruber und H. Winner (Hrsg.), Gesundheits- und Sozialpolitik im Diskurs, S. 81-111. Springer, Wien.	Health
Ichino, Andrea, Guido Schwerdt, Rudolf Winter-Ebmer and Josef Zweimüller, 2013. Too old work, too young to retire?, NRN: The Austrian Center for Labor Economics and the Analysis of the Welfare State, Working Paper 1309	Aging, Population Economics
Inderbitzin, Lukas, Stefan Staubli and Josef Zweimüller, 2011. Unemployment Insurance, Disability Insurance and the Early-Retirement Decision. Mimeo, University of Zurich.	Population Economics, Aging
Jacobi, Liana, Helga Wagner and Sylvia Frühwirth-Schnatter, 2014. Bayesian Treatment Effects Models with Variable Selection for Panel Outcomes with an Application to Earnings Effects of Maternity Leave.	Bayesian Econometrics
Kalkbrenner Esther, 2010. Acquired versus Non-Acquired Subsidiaries: Which Entry Mode do Parent Firms Prefer? NRN: The Austrian Center for Labor Economics and the Analysis of the Welfare State, Working Paper 1022.	Industry Dynamics
Kerschbaumer, R., Julian Rauchdobler, Rupert Sausgruber and Jean-Robert Tyran, 2011. How Non-Binding Agreements Resolve Social Dilemmas. Mimeo.	Experiments
Kerschbaumer, R., Julian Rauchdobler, Rupert Sausgruber and Jean -Robert Tyran, 2011. Social Comparison and Strategic Interaction. Mimeo.	Experiments
Kastner, Gregor, Sylvia Frühwirth-Schnatter and Hedibert Freitas Lopes, 2014. Analysis of Exchange Rates via Multivariate	Bayesian Econometrics

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Kuhn, Andreas, Jean-Philippe Wuehlrich, and Josef Zweimüller, 2010. Fatal Attraction? Access to Early Retirement and Mortality, NRN: The Austrian Center for Labor Economics and the Analysis of the Welfare State, Working Paper 1008	Population Economics, Aging, Health
Lalive, Rafael, Michael Morlok, and Josef Zweimüller, 2011. Applying for jobs: Does ALMP participation help?, University of Zurich Department of Economics Working Paper No. 19	Population Economics, Labor Market Policy
Lalive, Rafael, Michael Morlok and Josef Zweimüller, 2009. A New Approach to Evaluating Active Labour Market Programs. Mimeo, University of Zurich.	Population Economics, Labor Market Policy
Leiter, Andrea and Gerald Pruckner, 2010. Dying in an avalanche: current risk and valuation. Mimeo.	Health
Manoli, Dayanand and Andrea Weber, 2011. Nonparametric Evidence on the Effects of Financial Incentives on Retirement Decisions, NBER Working paper No. 17320.	Labor Market Policy, Aging
Manoli, Dayanand and Andrea Weber, 2014. Labor Supply Effects of the Early Retirement Age, NRN Working Paper xy, Linz.	Labor Market Policy, Aging
Manoli, Dayanand and Andrea Weber, 2014. The Effect of Firms on Retirement Decisions and Labor Supply of Older Workers, in progress.	Labor Market Policy, Aging
Nekoei, Arash and Andrea Weber, 2014. Does Extending Unemployment Benefits Improve Job Quality?, NFN Working Paper No xy.	Labor Market Policy
Oberhofer, Harry, Esther Segalla and Hannes Winner. Determinants of the entry mode, in progress.	Industry Dynamics
Paetzl, Fabian, Rupert Sausgruber and Stefan Traub, 2011. Resistance to Reform. Mimeo	Experiments
Pamminger, Christoph and Regina Tüchler, 2011. A Bayesian Analysis of Female Wage Dynamics Using Markov Chain Clustering. Mimeo.	Bayesian Econometrics

Parolini, Arno, Rupert Sausgruber and Peter Schwazer, 2011. Effort Externalities in the Workplace. Mimeo.	Experiments
Parolini, Arno, Rupert Sausgruber and Jean-Robert Tyran, 2011. Democracy and the Disincentive Effect of Redistribution. Mimeo.	Experiments
Parolini, Arno and Peter Schwazer, 2011. Take-up of Tax Refunds. Mimeo.	Experiments
Pech, Susanne, 2011, Optimal capital income taxation and wage uncertainty. Mimeo.	Taxation and Income Distribution
Pätzold, Jörg and Hannes Winner, 2014. Unwilling, Unable or Uninformed to Cheat? Tax Evasion via (Quasi-) Self-Reporting in Austria. Unpublished Working Paper, University of Salzburg, January 2014.	Taxation and Income Distribution
Perihan O. Saygin, Andrea Weber and Michèle A. Weynandt, 2014. Coworkers, Networks, and Job Search Outcome, NRN Working Paper, Linz.	Labor Market Policy
Prean, Nora and Karin Mayr, 2012. Unemployment of immigrants and natives over the business cycle: evidence from the Austrian labor market, NRN: The Austrian Center for Labor Economics and the Analysis of the Welfare State, Working Paper, September.	Labor Market Policy
Sanwald, Alice and Thomas Schober, 2014. Acute Myocardial Infarction: Access to Intensive Treatments and Mortality, Department of Economics Working Paper, University of Linz.	Health
Sausgruber, Rupert and Jean-Robert Tyran, 2011. Ramsey Tax and Fairness. Mimeo	Experiments, Taxation and Income Distribution
Schmidpeter, Bernhard and Rudolf Winter-Ebmer. Polarization and unemployment duration, in progress.	Aging, Labor Market Policy
Schnalzenberger, Mario, 2011. The causal effect of income on health: Investigating two closely related policy reforms in Austria. Mimeo.	Aging, Health
Schnalzenberger, Mario, Nicole Schneeweis, Rudolf Winter-Ebmer and Martina Zweimüller, 2008. Job Quality and Retirement Decisions. In: First Results from the Survey of Health, Ageing and Retirement in Europe (2004-2007), 215-221, Mannheim Research Institute for the Economics of Ageing.	Aging
Schnalzenberger, Mario, Thomas Schober and Rudolf Winter-Ebmer, 2011. Kündigung unter Strafe - Beschäftigungsförderung für Ältere in Österreich. Wirtschaft und Gesellschaft, 37(3):461–470.	Aging
Schneeweis, Nicole, 2008. Gerechtigkeit und Effizienz im Bildungswesen: Ergebnisse der Bildungsökonomie. In F. Eder und G. Hörl (Eds) Gerechtigkeit und Effizienz im Bildungswesen. Unterricht, Schulentwicklung und LehrerInnenbildung als	Aging, Population Economics

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| Schneeweis, Nicole, 2010. Review of the Book 'School Accountability, Autonomy and Choice around the World' by Ludger Woessmann, Elke Luedemann, Gabriela Schuetz and Martin R. West, Journal of Economics, 99/3, 283-285.   | Aging, Population Economics            |
| Schrott, Lukas, Martin Gächter and Engelbert Theurl, 2012. Regional development in advanced countries: A within-country application of the Human Development Index for Austria, imprinted in the Working Paper Series of the Faculty for Economics and Statistics, University of Innsbruck. | Health                                 |
| Schwerdt, Guido, Kostas Tatsiramos and Rudolf Winter-Ebmer. Unemployment and early retirement, in progress.   | Aging                                  |
| Segalla, Esther and Christine Zulehner, 2014. Determinants of success: Evidence from Austrian start-up and spin-off firms, mimeo.   | Industry Dynamics                      |
| Staubli, Stefan, 2009. Tightening the Purse Strings: The Effect of Stricter DI Eligibility Criteria on Labor Supply. NRN: The Austrian Center for Labor Economics and the Analysis of the Welfare State, Working Paper 0930   | Population Economics, Aging            |
| Steinhauer, Andreas, and Tobias Würgler, 2010. Leverage and Covariance Matrix Estimation in Finite-Sample IV Regressions, University of Zurich IEW Working Paper 521  | Population Economics                   |
| Stomper, Alexander, Tom Schober and Rudolf Winter-Ebmer. Risk sharing in the Hotel business, in progress.   | Aging                                  |
| Theurl, Engelbert, 2009. Internationale Entwicklungstrends in der Finanzierung von Gesundheitsleistungen, in: W. Pfeil (ed.), Finanzierungsprobleme der Gesetzlichen Krankenversicherung, Wien, Verlag Manz Signet, 29-54.  | Health                                 |
| Theurl, Engelbert, 2010. Pflegefinanzierung in Österreich: Bestandsaufnahme und ausgewählte Reformperspektiven aus ökonomischer Sicht, in Preglau M. et al. (ed.), "WHO CARES?" Pflege und Betreuung in Österreich - eine geschlechterkritische Perspektive, Innsbruck, Studienverlag.      | Health                                 |
| Weber, Andrea, Rosa Weber and Christine Zulehner, 2014, Gender Specific Wage Contracts and the Role of Females in the Labor Market, in progress.  | Labor Market Policy, Industry Dynamics |
| Weynandt, Michèle A., 2014. Selective Firing? Lemons or Sorting?, NRN Working Paper xy, Linz.   | Labor Market Policy                    |
| Zweimüller, Martina, 2011. Birthdate effects on educational attainment and labor market outcomes in Austria. Mimeo, University of Linz  | Health, Population Economics           |
| Zweimüller, Josef, Rudolf Winter-Ebmer, Rafael Lalive, Andreas Kuhn, Jean-Philippe Wuellrich, Oliver Ruf, and Simon Büchi, 2009.  | Aging, Population                      |

### 3.2.2. Most important academic awards

Specific academic awards, honours, prizes, medals or other merits

Name of award	n=national / i=international
Corresponding member of the Austrian Academy of Science (2011) Sylvia Frühwirth-Schnatter	n
WU Prämie für besondere Leistungen in der Forschung (2012) Sylvia Frühwirth-Schnatter	n
Elisabeth Altmann Gotheiner Prize Univ Mannheim 2013, Bachelor Thesis by Julia Schmieder	n
Austrian Federal Ministry for Science and Research: Graduation Award of Excellence for Martin Gächter, November 2009.	n
Austrian Federal Ministry for Science and Research: Graduation Award of Excellence for Martin Gächter, November 2011.	n
The Federal President of the Republic of Austria: Promotio sub auspiciis praesidentis rei publicae, Martin Gächter, March 2011, highest academic honor for a student in Austria.	n
Campus for Finance Association: WHU Finance Award (Best Paper Award, 1 <sup>st</sup> Prize) for Martin Gächter, Koblenz, January 2011.	i
The Austrian Economic Association (NOeG): Young Economists' Award 2013 for Martin Gächter	n
The Austrian Economic Association (NOeG): Young Economists' Award 2011 for Martina Zweimüller	n
Landeskulturpreis Upper Austria, Rudolf Winter-Ebmer	n

Best young labor economist, EALE, Martin Halla	i
Member German Academy of Sciences, Leopoldina, Rudolf Winter-Ebmer, 2010	i
Short list for Wittgenstein Award (Austria's highest science award), Rudolf Winter-Ebmer	n

### 3.2.6. Development of human resources

	In progress	Completed	Gender	
			F	M
Full professorship		10	6	4
Venia thesis (Habilitation) /Equivalent senior scientist qualification	4	4	3	5
Postdoc				
Ph.D. theses	15	17	12	20
Master's theses	3	11	4	10
Diploma theses	4	14	5	13
Bachelor's theses	11	39	16	34

Andrea Weber full professor with tenure (W3) at University of Mannheim start of employment March 2010, permanent civil servant status August 2012.

Doris Weichselbaumer accepted first a Professorship in Berlin and then at the Gender Studies Department at the JKU Linz.

Andreas Steinhauer starts a position as Assistant Professor at the University of Edinburgh as per August 2014.

Stephan Staubli has started a position as Assistant Professor at the University of Calgary as per January 2014.

Aderonke Osikominu started a position as full Professor at the Universität Hohenheim as per February.

Prof. Christine Zulehner accepted a full professorship at Goethe-University, Frankfurt, as of 1 December 2013.

Martin Halla: Professor of Economics (Public Finance), University of Innsbruck, October 2014, declined an offer for a full professorship at the University of Graz.

Hannes Winner accepted a Full Professorship at the University of Salzburg

Gerald Pruckner was promoted to a Full Professorship at the University of Linz in Health Economics

Jean-Robert Tyran accepted a Full Professorship at the University of Vienna.

Rupert Sausgruber accepted a Full Professorship at the Vienna University of Economics and Business.

Sylvia Frühwirth-Schnatter declined a professorship in Statistics at the University of Innsbruck in 2009 and accepted a professorship in Applied Statistics and Econometrics at the WU (Vienna University of Economics and Business) in 2011.

#### **4. Other activities of the NRN (overview)**

##### **4.1. Scientific events (seminars, workshops, invitation of guest speakers, etc.)**

Inauguration public meeting, Linz, October 2008, 50 participants

Internal workshop, Linz, October 2008, 30 participants

Behavioral Public Economics Workshop, Copenhagen, October 2008, 30 participants

Internal workshop, Linz, January 2009, 25 participants

Internal workshop, Linz, May 2009, 30 participants

Internal workshop, Linz, November 2009, 30 participants

Internal workshop, Salzburg, May 2010, 30 participants

Internal workshop, Linz, November 2010, 25 participants

Workshop in Experimental Labor Economics, University of Vienna, July 2011, 40 participants

Internal workshop, Bressanone, May 2011, 40 participants

Workshop on taxation and redistribution, Linz, April 2011, 15 participants

Nationalök. Gesellschaft – Austrian Economic Association, May 2009, 100 participants

Policy workshop, Vienna, June 2009, 25 participants public administration and ministries

Policy workshop, Linz, April 2010, 25 participants from public administration

Policy workshop, Vienna, January 2011, 30 participants

Internal workshop, Vienna, February 2012, 30 participants

Internal workshop, Linz, August 2012, 15 participants

Experimental Economics Workshop, University of Vienna, September 2012, 30 participants

Internal workshop, Innsbruck, September 2013, 30 participants

Behavioral Public Economics Workshop, WU Vienna, September 2013, 30 participants

Verein für Socialpolitik, Linz, January 2014, 30 participants

Final scientific workshop, Vienna, June 2014, exp. 50 participants

Behavioral Public Economics Workshop, University of Vienna, June 2014, exp. 40 participants

Final policy workshop, Linz, September/October 2014, exp. 100 participants

*Yearly meetings and recurrent events:*

Engelberg annual labor workshop – co-organising and regular participation together with University of St. Gallen, Zurich and Linz

Linz staff seminar, each year December, organisation and regular participation

Large number of invited guest speakers at the University of Linz (typically 10 per year) and the other universities.

#### **4.2 Visiting scientists / scholars**



- Angrist, Joshua, MIT, teaching in PhD program, student research seminar, 1 week
- Baştürk, Nalan, (Erasmus University Rotterdam), June 2012, Bayesian IV estimation
- Card, David (UC Berkeley), December 2012; work on project “Labor Supply Effects of Spousal Job Displacement”
- Card, David (UC Berkeley), March 2011; work on project “Regression Kink Design”
- Day, Manoli ; University of California – Los Angeles; June, 2009;
- Day, Manoli, (UCLA), December 2010
- Day, Manoli, (UCLA), June 2010
- Day, Manoli, (UCLA), June 2011; work on project “Financial Incentives and Retirement Decisions”
- Day, Manoli, (UCLA), March 2011; work on project “Labor Market Effects of the Early Retirement Age”
- Day, Manoli, (UCLA), March 2012; work on project “Labor Market Effects of the Early Retirement Age”
- Day, Manoli, (UT Austin), May 2013; work on project “Financial Incentives and Retirement Decisions”.
- Del Bono, Emilia (ISER University of Essex), March 2011
- Fitzenberger, Bernd, Freiburg, teaching in PhD program, 1 week
- Francesconi, Marco, research collaboration, 1 week
- Halla, Martin (JKU Linz), May 2011; work on project “Health at Birth”
- Halla, Martin (JKU Linz), September 2012; work on project “Health at Birth”
- Heckman, James J. and Rémi Piatek (University of Chicago), October/November 2012 and October 2013, Bayesian factor analysis
- Huber, Martin, St. Gallen, teaching in PhD program, research cooperation, one week
- Jenkins, Steve, LSE, teaching in PhD program, research cooperation, one week
- Kramarz, Francis, INSEE, teaching and research collaboration
- Landais, Camille, (LSE), 13. – 18. August, research collaboration
- Lechner, Michael, St. Gallen, teaching in PhD program, 1 week
- Lopes, Hedibert, (University of Chicago), November 2011, parsimonious Bayesian factor analysis
- Mullen, Kathleen (RAND), December 2010
- Mullen, Kathleen; RAND Corporation; June, 2009;
- Nekoei, Arash (Harvard University), April 2013; work on project “Unemployment and Job Quality
- Piatek, Rémi, February 2013
- Segalla, Esther (OeNB), April 2012; AMADEUS Data preparation

- Segalla, Esther (OeNB), July 2012; AMADEUS Data preparation
- Tatsiramos, Kostas, Nottingham, teaching and research cooperation, 2 weeks

#### **4.3 Public relations work: public presentations, lectures and publications at a general level, TV, radio, press**

- 2 TV talks
- 6 radio interviews
- 35 press articles
- 8 specific web-presentations, blogs, etc. (not counting regular web-presence).
- 28 popular presentations

#### **4.4 Practical exploitation of the results, patents, other uses**

Partly as a consequence of the research by the subproject 8 TAXATION AND INCOME DISTRIBUTION on actuarially fair pension reductions in this subproject, the Austrian Parliament decided to increase the public pension discounts in case of early retirement to 5.1% from 4.2%, for men born 1955 and later.

Subproject 6 HEALTH ECONOMICS: Hearing at the Main Association of Austrian Social Insurance Institutions in Vienna: The effectiveness of a general health screening in Austria is instrumental in decisions for further advancement of these programs.

Several results from POPULATION ECONOMICS and AGING were highly important in the public debate on policy issues: papers on maternity leave effects, part-time pensions, layoff taxes for the elderly as well as evaluations of labor market policies (programs) and changes in early retirement age. All these research results were presented in policy meetings with major players at the Ministry of Social Affairs and are influential in recurrent discussions about changes in these policies.

#### **4.5 Unexpected results, successes and/or difficulties**

In the Subproject 2 AGING were many unexpected results, in particular concerning the evaluation of actual policies; e.g. the effects of part-time retirement, of layoff taxes or the implementation of maternity leave w.r.t. further fertility and labor market effects of mothers.

Particular difficulties arose in the cooperation between groups with different research style, e.g. econometrics, bayesian, experiments and theory. In general, it took longer than

expected to start a cooperation and the project duration was typically longer; on the other side, these projects, finally, proved to be very fruitful and led to high-quality publications.

The subproject 5 INDUSTRY DYNAMICS AND MARKET STRUCTURE had several difficulties exporting the data from the access Bureau van Dijk provided (contract signed 2011). After more than one year without satisfying solution Bureau van Dijk agreed to export the data themselves and provide us with the raw format. This process has been very tedious and time consuming on both sides. In December 2013, we received a new data delivery; still some data exports have been uncompleted (missing observations, missing variables, etc.) and are still ongoing. We have partitioned the data into 3 components (basic firm information, financial firm information and ownership information). Each component is delivered in three parts due to export size limitations. We plan to have the raw data completed and transformed into panel data sets until June 2014, when we can start with the economic analysis as planned.

The collaboration of Subproject 9 (BAYESIAN ECONOMETRIC) with James J. Heckman (University of Chicago) was not planned, but started unexpectedly during a research visit Sylvia Frühwirth-Schnatter paid NRN collaborator Hedibert Lopes in Chicago in April 2011.

## B: Specific Section: Reports of the Subprojects

### **S 10301 Coordination**

#### **Project Leader**

Prof. Dr. Winter-Ebmer, Rudolf

Departement of Economics

Johannes Kepler University Linz

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Assignment to subject discipline(s) (use ÖSTAT codes)

1	%	2	%	3	%
5322	100				

## 1. Summary

In the coordination project we provided basic support to all groups. Specific tasks were web-site design, data management, support in super-computing, conference organization and support for the setup of teaching. The main task was to provide the Subprojects with access to the Austrian Social Security Database (ASSD), to maintain it, to replenish it and “translate” the administrative structure of the data base into a structure useful to statisticians and economists – as well as to provide and merge auxiliary data sources.

## 2. Report and activities

### 2.1. Data management

We merged the following datasets (using different updates to keep the records as recent as possible):

- Records of the public social security (Hauptverband der Sozialversicherungsträger) using two historical databases and a recently updated publicly available database (arbeitsmarktdatenbank.at)
- Records of the public health insurance of two regional states (Upper Austria and Vorarlberg)
- Records from the public health insurance of Upper Austria covering the detailed information about hospital stays (Leistungsorientierte Krankenanstaltenfinanzierung)
- Records from the public work accident insurance (AUVA)
- Records about the recipients of family allowances (Familienbeihilfen)
- Records of the public unemployment office (AMS)
- Records of the Ministry of Finance about Income

Additionally, birth, death, marriage and divorce registers from Statistical Austria were merged. As these data do not have anonymized social security numbers, we had to define specific, fairly time-consuming algorithms to do that. Moreover, preparations have been made to allow easy merging of admin data to SHARE survey data, which will be possible after wave 5 this fall.

As all these data come from administrative records, a lot of clarification, data cleaning and synchronisation is necessary until the data can finally be used.

The web-site [www.laborrn.at](http://www.laborrn.at) provides all necessary information for the group and the academic public. We established a working paper series, which is listed in the SSRN and RePEc network and is achieving high download numbers. Moreover, we established an internal wiki to facilitate internal communication, in particular concerning data issues.

## 2.2. Workshop organization and public outreach

We organized a bi-annual workshop, which served the purpose well to increase cooperation between the members of the network and to provide the possibility for critical discussion of research at a very early stage. (see the program of the workshops of the report).

We also organised almost each year a policy-oriented workshop held either at the Ministry of Social Affairs in Vienna or in the City of Linz. These workshops served several goals: on the one hand, the Network produced many important results, which are important for policy-makers; therefore, public presentations are worthwhile and necessary. For the scientists themselves, a close interaction and discussion with public servants and decision makers is very interesting and also necessary to understand policy measures and initiatives better in a larger context. On other hand, many results are also interesting for a more general public and the media. The workshops were a great success; we reached a large group of decision makers.

Moreover, the Network organized the Annual Meeting of the Austrian Economic Association in May 2009; the general theme of the conference was “Labor Markets, Inequality and the Welfare State”. There were about 100 participants at this conference. The invited speakers were David Card from the University of California, Berkeley (“Immigration and Inequality”), Eddy van Doorslaer from the Erasmus University of Rotterdam (“Socio-economic differences in health over the life cycle”), and Giacomo Corneo from the Free University of Berlin (“Income concentration: theory and evidence”). Moreover – as shown in the general part, several other conferences were organised with the help of the coordination project.

The coordination project was also instrumental in arranging seminar lectures and short teaching courses at the PhD level with Josh Angrist, Christian Dustmann and Konstantin Tatsiramos, Bernd Fitzenberger, Michael Lechner, Steve Jenkins, Martin Huber and Francis Kramarz.

## 2.3. Available infrastructure

As far as computing and storage capacities are concerned all members of the NRN were offered access to mainframe capacities of the University of Linz which guaranteed also an unrestricted access to the Austrian Social Security Database (ASSD). Concerning supercomputing facilities the Coordination Project provided sustainable storage capacities for the NRN in form of a Dell PowerEdge 2900 III which offered sufficient hard disc storage capacities for the ASSD and the ongoing empirical analysis of project members. Internet connections turned out to be of acceptable speed to allow a convenient access of the NRN members to the NRN mainframe resources. With increasing user requirements and additional hard and software options (see the replacement investment of supercomputing facilities below) a reinvestment of the storage facilities will probably be necessary for the

future. In addition to the supercomputer SGI Altix 3000 (shared memory system) the Coordination Project was successful to offer the project members also access to the faster Austrian-Grid Computer Altix ICE 8200 (clustered memory) which enabled for less memory intense Stata jobs much faster execution times.

For this Austrian-Grid Altix ICE 8200 the Coordination Project has invested into a new STATA multi processor version (STATA MP64) for x86-64 architecture, which should also be applicable for new generations of supercomputing resources within the NRN. As both available supercomputers for the NRN - the SGI Altix 3000 and the Altix ICE 8200 – are approaching the end of their product life cycle supercomputing resources at the JKU have to be reinvested within the next year(s). As the empirical research within the NRN occupies about 10 % of the JKU supercomputing facilities, the Coordination Project is closely involved into the technical management of the supercomputing facilities as well into procurement processes at the JKU.

### **3. Cooperation within and outside of the NRN**

Almost by definition, there has been very close cooperation with all members of the NRN, less so with outside researchers, except those invited for teaching purposes.

## **Curriculum Vitae**

**Rudolf Winter-Ebmer**

<http://www.econ.jku.at/winter>

### **Personal**

- Born 25/8/1961 in Steyr, Austria, married, two children.

### **Current Position**

- Professor of Labor Economics, Johannes Kepler University, Linz, since 2005
- Research Professor, Institute for Advanced Studies (IHS), Vienna, since 2003

### **Education**

- Habilitation in economics, University of Linz (M. Burda and W. Kohler as committee members), 1996
- Visiting Scholar University of California, Berkeley, Schrödinger-Fellowship, August 1995 – July 1996
- Dr. rer soc oec (equiv. PhD in economics), University of Linz, 1991
- Mag rer soc oec (equiv. MA in economics), University of Linz, 1985

### **Previous Academic Appointments and Visiting Positions**

- “Bank-Austria Visiting Professor” at the University of Vienna and Visiting (Teaching) Professor at the University of Zurich, W-Term 2003/04, W-Term 2002
- Visiting (Teaching) Professor at the Universities Innsbruck and Zürich, S-Term 2001
- Visiting Professor at the Université Paris II Panthéon-Assas, May - June 2000
- Offer for Full Professor of Economics at University of Graz, declined, 1999, NUI Dublin, declined 2007.
- University Assistant at the Dep. of Economics, Johannes Kepler University, Linz, 1987-04
- Visiting (Teaching) Professor at University of Zürich, W-Term 1999, Graz, S-Term 1998

### **Grants, awards and nominations**

- Member of German Academy of Sciences Leopoldina
- Short-list for the most prestigious Austrian Science Prize (Wittgensteinpreis), 2006
- Voest Alpine Science Prize, 2003
- Theodor Körner Prize, 2000
- Oberbank Research Prize, 1998



- First Novartis Science Prize for Economics, 1997
- Maria-Schaumayer-Foundation (Austrian Central Bank) for women's studies, 1995
- Quelle Science Prize, 1993
- Science Prize of the Chamber of Labour, Upper Austria, 1993

#### **Other Affiliations and Professional Services**

- Associate editor: economics. The open-access, open-assessment e-journal, since 2007
- Associate editor: Empirical Economics, 2011-
- Research Fellow of IZA (Institute for the Study of Labor), Bonn, since 1999
- Member of the population economics committee of the "Verein für Sozialpolitik" 1997-
- Research Fellow with the "Centre for Economic Policy Research", London since 1992
- Member Scientific Board IAB, Nürnberg, 2007 -9
- Secretary and Council Member, European Society for Population Economics, 1998 – 2008, President 2011
- Member of the organizing committee for meetings: "Verein für Sozialpolitik", EEA, EALE, ESPE
- Consultant at the Vienna Institute for Economic Research (WIFO), 1998 - 2002
- Consultant for the World Bank, Social Protection Unit, (Unemployment insurance in East Asia, job training programs in Austria), August 1998 and May 2003

#### **Own research projects (grants)**

- The Impact of Migration on the Host Country, CEPR, London (with J. Zweimüller), 1993
- Employment and investment in Austrian industries, Austrian Central Bank (with J. Zweimüller), 1993-1996 and 1998-2002
- Crime and the Labor Market, Forschungsförderungsfonds, Wien, Carnegie-Foundation, Pittsburgh (with S. Raphael, University of California, San Diego), 1997-1999
- Public Funding and Private Returns to Education, partners from 14 countries, TSER-EU
- Dynamics of Wages, Employment and Unemployment, Austrian Science Funds, 2002
- International Wage Flexibility Project, Austrian Partner, Brookings Institution and the European Central Bank, 2001-2003
- SHARE: A survey of Health, Aging and Retirement in Europe, Austrian Partner, 2002-2005 (with Johann K. Brunner), Austrian Science Funds

- Wage dynamics and unemployment, Austrian Science Funds, 2002-2005
- The development of a micro-simulation model, Austrian Central Bank, 2005-2011
- SHARE II: A Survey of Health, Ageing and Retirement in Europe, Second Wave, Austrian Project Leader, 2006-2008, EU and NIA (USA), SHARE-life and SHARE IV, EU, Austrian Ministry of Science

## **Publications**

- Firm-Size Wage Differentials in Switzerland: Evidence from Job-Changers, **American Economic Review, Papers and Proceedings**, May 1999; 89(2), pp. 89-93. (with Josef Zweimüller)
- A Simple Mechanism for the Efficient Private Provision of Public Goods - Experimental Evidence, **American Economic Review**, March 2000 90(1); pp. 247-264. (with J. Falkinger, E. Fehr, and S. Gächter)
- The long-run Educational Cost of World War 2, **Journal of Labor Economics**, 2004, 22/1, 57-88. (with Andrea Ichino)
- Clash of Career and Family: Fertility Decisions after Job Displacement, (with Emilia del Bono and Andrea Weber), **Journal of the European Economic Association**, 2011.
- Labour Market Entry and Earnings Dynamics: Bayesian Clustering with Finite Mixtures of Markov Chains, (with Sylvia Frühwirth-Schnatter, Christoph Pamminger and Andrea Weber), **Journal of Applied Econometrics** 2112, 27/7, 1116-1137.

# Curriculum Vitae

**Mario Schnalzenberger**

<http://www.econ.jku.at/schnalzenberger>

## Personal

- Born 20/7/1977 in Wels, Austria, married, two children.

## Current Position

- Researcher (Post Doc), Johannes Kepler University, Linz, since 2005

## Education

- Dr. rer soc oec (equiv. PhD in economics), University of Linz, 2011
- Mag rer soc oec (equiv. MA in statistic), University of Linz, 2006
- Mag rer soc oec (equiv. MA in economics), University of Linz, 2005

## Grants, awards and nominations

- Excellent student grant in statistics, University of Linz (2007)
- Excellent student grant in economics, University of Linz (2006)

## Publications

- Layoff tax and employment of the elderly (with R. Winter-Ebmer), Labour Economics, Elsevier, vol. 16(6), pages 618-624, December 2009.
- Kündigung unter Strafe - Beschäftigungsförderung für Ältere in Österreich (with T. Schober, R. Winter-Ebmer), Wirtschaft und Gesellschaft, 11-2011.
- Job Quality and Employment of Older People in Europe (with N. Schneeweis, R. Winter-Ebmer, M. Zweimüller), Labour, forthcoming.
- Job Quality and Retirement Decisions (with N. Schneeweis, R. Winter-Ebmer, M. Zweimüller), First Results from the Survey of Health, Ageing and Retirement in Europe (2004-2007), Mannheim Research Institute for the Economics of Aging, 68131 Mannheim, Seite(n) 215-221, 11-2008, ISBN: 978-3-00-024969-3.

# **S 10302 Aging**

## **Project Leader**

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Assignment to subject discipline(s) (use ÖSTAT codes)

1	%	2	%	3	%
5304	50	5322	25	5323	25

## **1. Summary**

We studied aging from the workers', the firms' and the society's perspective. Major accomplishments concern the study of early retirement after job loss, evaluations of a subsidized old-age part-time scheme and the impact of a layoff tax on the employment of elderly workers, where we explore substitution strategies of firms in some detail. Moreover, we decompose earnings into firm and worker components to test, whether elderly workers set (due to overconfidence or misperceptions) reservation wages too high. Moreover, from the perspectives of firms, we consider the impact of wage structures on worker's turnover and early retirement. Using data from SHARE (Survey of Health, Ageing and Retirement in Europe) we study retirement behaviour of European workers in relation to the "quality" of their previous job. In collaboration with other subprojects we analyze issues in the realm of population economics (in particular, family formation and fertility), gender issues, as well as questions related to health, the entry into the labor force and education.

The group reached a large number of academic publications in journals like Journal of the European Economic Association, Journal of Applied Econometrics, Demography, Scandinavian Journal of Economics, Journal of the Royal Statistical Society, Labour Economics, Economica, Industrial and Labor Relations Review, ...

## **2. Scientific background / aims of research**

The main purpose of the research was to provide innovative research on all aspects of aging; research which should use cutting edge economic and econometric methods and investigate questions which are interesting both from an international academic point of view as well as from the perspective of a policy-maker. The methodological basis was careful micro-econometric analysis of causal questions with large administrative datasets or surveys; an analysis which is able to identify important causal parameters. At the same time, such an analysis is also informative for political decision makers. While these dual aims are difficult to fulfil in general, we are convinced that applied topics in relation to aging are prime examples of such questions.

Due to our fruitful collaboration with the BAYESIAN ECONOMETRICS subgroup and almost all other subgroups, we expanded our topics of research in several dimensions: on the one hand, to include Bayesian clustering techniques and on the other hand, to include issues of a changing age structure of the population or workforce – which has ultimately large implications for related areas like education, health and population economics.

### 3. Results and discussion

#### 3.1. Topic 1: Aging from the perspective of workers

In longstanding cooperation with Andrea Ichino (Bologna), Guido Schwerdt (Munich) and Josef Zweimüller (Zürich) we explore the employability of elderly workers using a quasi-experimental situation after firm breakdown. Schwerdt, Ruf, Ichino, Zweimüller and Winter-Ebmer (2010) show that post-displacement outcomes for white-collar workers are very different from those of blue-collar workers. In the short run earnings and employment losses are substantial for both groups, but stronger for white-collar workers. In the long run, there are only weak effects for blue-collar workers, but strong and persistent effects for white-collar workers. Moreover, workers losing their jobs after age 50 or 55 initially lose a lot in terms of employment rates, but their employment catches up after several years relative to workers in a control group (Ichino, Schwerdt, Winter-Ebmer, Zweimüller, 2013); this puzzle can be explained by (too) easy access to early retirement, whereas unemployment benefits or severance pay schedules do not play a major role. The empirical work is compatible with a theoretical search/matching model. This line of research was also taken up in collaboration with Konstantin Tatsiramos (Nottingham), as well as with the Subproject ECONOMETRICS to cluster plant closure effects into different ex-ante unknown groups (Frühwirth-Schnatter, Pittner, Weber and Winter-Ebmer, 2014).

Another determinant for the retirement or job exit decision of women could be the fertility decision of their daughters. Older women could reduce their labor supply when they become grandmother in order to provide childcare and to support their daughters in raising the grandchildren. We use exogenous variation in the number of grandchildren (twins) as an instrument as well as a timing-of-events hazard rate approach to estimate this causal effect at different parities and find convincing effects such that the presence of grandchildren reduces labor supply and increases early retirement.

Another, very innovative application – but unrelated to aging – concerned the impact of plant closure on fertility. Del Bono, Weber and Winter-Ebmer (2011 and 2012) show that unexpected career interruptions can lead to postponed and finally reduced fertility decisions of career-oriented women, whereas no effect for blue-collar women is found. We explain these results with the help of a model of firm-specific human capital.

Graf, Hofer and Winter-Ebmer (2011) evaluate the impact of a subsidized old-age part-time scheme (OAPT) on the Austrian labour market. This policy allows flexible retirement options for the elderly with an aim to increase labour supply. According to our matching estimates, employment probability increases slightly; especially in the first two years after entrance into the programme. Furthermore, the programme seems to reduce the measured unemployment risk. However, the total number of hours worked is significantly

reduced by OAPT. While the policy is meant to reduce early exit from the labour force by allowing part-time work, our analysis indicates that most workers substitute part-time work for full-time work and thus the overall effect is rather negative.

In the proposal we also mentioned projects using the Survey of Health, Aging and Retirement in Europe (SHARE) where we also contribute to the data collection. Over the last years we worked on several issues: Using data from several waves of SHARE we (Schnalzenberger, Schneeweis, Winter-Ebmer and Zweimüller 2008 and 2014) studied the relationship between job quality and subsequent employment decisions of individuals aged 50 years or older in ten European countries. Our binary and multinomial probit estimations suggest, that job satisfaction is negatively related to subsequent retirement decisions; especially for female workers. Further, an effort-reward-imbalance in the job (Siegrist, 1996, *Journal of Occupational Health Psychology*) is connected to retirement and disability pensions of women.

Together with Giorgio Brunello (Padova) and Margherita Fort (Bologna), we study the impact of compulsory schooling reforms in the 1930s–1960s in nine European countries on health in old age. Therefore, we use data from SHARE and ELSA (English Longitudinal Study of Ageing). For instance, Brunello, Fort, Schneeweis and Winter-Ebmer (2011) examine the relationship between education and health, as well as health-related behavior, using the variation of compulsory education (across countries and cohorts) as instrument for educational attainment. For women, we find a negative causal impact of education on chronic diseases, self-perceived poor health, hypertension and obesity. One additional year of education reduces the likelihood of having any chronic diseases by 11%-points, of self-perceived poor health by about 8%-points, hypertension by 9%-points and obesity by 8%-points. The main innovative part of the study is the decomposition of the impact of education on health into direct and indirect effects – coming through changes in lifestyle. In a related project, we (Fort, Schneeweis and Winter-Ebmer, 2011) identify the causal impact of schooling on fertility. 2SLS regressions yield surprising results: education increases the number of biological kids per woman and decreases childlessness. We interpret our estimates as Local Average Treatment Effects, applying to individuals at the bottom of the education distribution. We have two economic explanations for this result: First, if the income effect exceeds the substitution effect, education increases wages and hence fertility. Second, education improves chances on the marriage market and family orientation, which in turn, may increase fertility. Similarly, we found convincing causal estimates of education on cognitive functioning at older ages (Schneeweis, Skirbekk and Winter-Ebmer, 2014).

### 3.2. Topic 2: Aging from the firm's perspective

From the side of employers, we made a big progress by decomposing wages into firm and worker components. The first application of this concerns unemployment duration of (elderly) workers. Old age unemployment is often argued to stem from overly high wage claims made by older workers. If older workers receive wages that are in excess of their productivity due to seniority-based wages, and they mistakenly assume that such wages reflect their true productivity, they will have reservation wages that are too high, and end up with long unemployment spells.

To shed light on this issue Böheim, Horvath and Winter-Ebmer (2010) decompose wages into worker and firm wage components, and find that firm-fixed components are sizeable parts of workers' wages. If workers can only imperfectly observe the extent of firm-fixed components in their wages, they might be misled about the overall wage distribution. Such misperceptions may lead to unjustified high reservation wages, resulting in overly long unemployment durations. We examine the influence of previous wages on unemployment durations for workers after exogenous lay-offs and, we find that younger workers are, in fact, unemployed longer if they profited from high firm-fixed components in the past. For older workers in contrast we do not find any adverse effects of high firm wage components on unemployment durations. The findings can be interpreted as evidence for overconfidence generated by imperfectly observed productivity.

Frimmel, Horvath, Schnalzenberger and Winter-Ebmer (2014) focus on the role of firms in individual retirement decisions, because firms can have strong incentives to send expensive older workers into retirement. Based on the seniority wage model developed by Lazear (1979), we discuss steep seniority wage profiles as incentives for firms to dismiss older workers before retirement. Conditional on individual retirement incentives, e.g. social security wealth or health status, the steepness of the wage profile will have different incentives for workers as compared to firms when it comes to the retirement date. Using an instrumental variable approach to account for selection of workers in our firms, we find that conditional on individual retirement incentives, firms with higher labor costs for older workers are associated with lower retirement age. Consistently, the probability that firms offer special severance payments ("Golden Handshakes") at job exit increases with the steepness of the wage profiles.

### 3.3. Topic 3: Aging from society's perspective

We started with an investigation of a layoff tax on the employment of male workers aged 50 and above (Schnalzenberger and Winter-Ebmer, 2009). In 1996 Austria introduced a tax for the layoff of older workers, which was further tightened in 2000. These regulations require employers to pay a tax of up to 170 percent of the gross monthly income when they give



notice to employees aged 50 or more. Using data from Austrian social security records we investigate if such layoff taxes lead to less firing of older workers. Therefore, we compare a control group of workers aged nearly 50 with the treatment group above 50. Our difference-in-difference approach allows us to analyze the difference in the displacement probability of all prime aged workers. No effects on layoff rates could be observed for the introduction of the initially relatively low tax - which might be due to a crowding out of social norms by too small financial incentives. However, after increasing the tax in 2000, layoff rates - in particular for the group of the oldest workers - decreased significantly.

In a final step we use two methods to check if firms use substitution strategies to avoid the tax. Mobbing or bribing - to quit voluntarily - could be used to get rid of the older workers without formally laying them off. In the data, we could not find convincing evidence for firms using such strategies. The effects of the tax do also vary with the size of the firm. The more similar workers are at hand, the easier the firm can choose a slightly younger worker instead of the older taxed worker for a potential layoff. As most firms in Austria are relatively small, such an unbalanced reaction is certainly troublesome for the policy makers, as only small firms had internalized the higher costs to the social insurance administration. Larger firms have been advantaged and might have gained even more market share.

In a project, related to the Subproject HEALTH, we look at the impact of pension payments on health outcomes. In 2000, the European Court of Justice abolished a type of early retirement in Austria. This reduced the gross pension of affected retirees up to 25 percent, i.e. a huge drop in income. The government acted after a short period of 4 months and reinstalled a similar replacement rate regime for those retirees. These two reforms constitute two natural experiments to analyze the causal effect of income on mortality and health (Schnalzenberger, 2011). Results suggest that this reduction in income did not change the seven-year survival probability of the retirees. The results are confirmed using both reforms and different methods of estimation. Finally, there is also no evidence for a significant impact on health outcomes, such as number of visits to either a general practitioner or a specialist or expenditure on medical expenditures.

### 3.4 Topic 4: The extent and impact of a changing age structure

A changing age structure has important consequences on the employment system; therefore, issues of entry into and exit from the labor force are equally important, as is education of the workforce.

In Fersterer, Pischke and Winter-Ebmer (2008) we analyse the Austrian apprenticeship system and its returns using data on failed firms as identification device. In a collaboration with the subprojects ECONOMETRICS and LABOR MARKET POLICY we (Frühwirth-Schnatter, Pamminer, Weber and Winter-Ebmer, 2011) developed a new Bayesian

clustering framework to analyse patterns in the earnings development of young labour market entrants over their life cycle; several follow-up projects succeeded.

In a series of papers we looked at the relation between immigration and the educational system in Austria. Schneeweis (2011) investigates the educational integration of immigrant students in various countries and studies its relation to institutional characteristics of the education system. Schneeweis (2014) investigates education peer effects between native Austrian students and students with migration background.

Schneeweis and Zweimüller (2012), analyze career choices of female students in Austria using school register data. In most OECD countries, occupational segregation of males and females in the labor market is still pronounced. This may be partly explained by women's reluctance to choose technical occupations, although the foundations for career choices are laid earlier, during education. Educational experts claim that female students are doing better in math and science, and are more likely to choose those subjects if they are in single-sex classes. Possible explanations are the lack of self-confidence in male dominated subjects, the dominating behavior of boys in the classroom and unequal treatment by teachers. Accordingly, we identify a causal impact of gender composition in coeducational classes on the choice of school type of female students. We find that girls are less likely to choose a female dominated school type, and are more likely to choose a technical school type at the age of 14 after spending the previous years in classes with a higher share of female students. The problem of endogenous school choice was addressed by using natural variation in gender composition of adjacent cohorts within schools. School-specific time trends control for unobserved factors that may change over time. In Schneeweis and Zweimüller (2014), we estimate the relative age effect on track choice in Austria, a country where students are first tracked at the age of 10 and again tracked at the age of 14.

Research on marginally attached groups in the labor market complement the analysis. In Austria, workers who claim unemployment benefits do not lose their entitlement if they earn below a threshold from concurrent work. Such work while claiming unemployment benefits might improve their labour market status by signalling effort or worsen it through reduced job-search effort. Our research shows that those who work while claiming benefits have less employment and lower earnings afterwards than those who do not. Even after three years, these workers fare worse than their peers (Böheim and Weber, 2011). Trade unions will oppose the employment of temporary agency workers if it is a move to replace workers or to curb union power. Alternatively, trade unions may encourage the employment of agency workers if it leads to higher wages for their members. Using British data from 1998 and 2004, we find no evidence for a negative association between trade union activity and the hiring of agency workers. Wages are typically higher in unionized workplaces; however, the trade union premium is lower in the presence of agency workers. Results by Böheim and

Zweimüller (2013) suggest that trade unions cannot effectively oppose the hiring of agency workers.

#### **4. Cooperation within and outside of the NRN**

Our research interests are widespread and often interact with other Subprojects. As the aging of the population is also changing the age structure of the (potential) work force, issues like entry into the labor market are of prime importance as well. Therefore, we broadened our research interests in the direction of entry into the labor force (education) and female labor supply (gender economics).

In several papers (Winter-Ebmer and Cardoso, 2010, Winter-Ebmer, Weichselbaumer and Zweimüller, 2008, Böheim, Himpele, Mahringer and Zulehner, 2011) we explore gender wage gaps, how they are related to Becker's theory of discrimination (competition, see also Subproject LABOR MARKET POLICY) and how firms' personnel policies may influence gender pay gaps. Winter-Ebmer and Wernhart (2011) explore female labor supply and the development of wage elasticities over time in a contribution to understand employment effects of different policies for different groups of workers.

In collaboration with the Subproject POPULATION ECONOMICS, Horvath (2011) analyzes how immigration affects the distribution of wages in Austria over a time period of 12 years. Using non top-coded pay-slip data covering the universe of Austrian workers we are able to derive the precise wage distribution for blue- and white-collar workers. That means, we are able to study in detail how immigration affected earnings at different percentiles of the region specific wage distribution.

In several papers - together with researcher from the HEALTH subproject – we study different aspects of the formation and dissolution of families which are related to Subproject POPULATION ECONOMICS (Böheim, Francesconi and Halla 2011; Frimmel, Halla and Winter-Ebmer, 2010 and 2011; Halla, 2011; Halla, Lackner and Scharler 2011). For instance, we estimate the causal effect of joint custody reforms in the United States (and in Austria) on a range of family outcomes, such as the incidence of (re)marriage, divorce, (marital) fertility, suicide, female labor supply, and alimony payments after divorce.. Our results suggest that the introduction of joint custody led to a long-run increase in marriage rates, and an increase in divorce rates for older couples. We observe a shift from non-marital to marital fertility; and an overall increase in fertility. Accordingly, female labor market participation decreased. Further, male suicide rates and domestic violence fell. The empirical evidence is consistent with the supposition that joint custody increased the relative bargaining power of men within marriage.

In another project, we exploit the suspension of a cash-on hand marriage subsidy in Austria to examine the differential divorce and fertility behavior of marginal marriages. Or, we

study the effect of the size of the welfare state on demographic outcomes by exploiting the exogenous variation in public (social) spending due to varying degree of political fragmentation. Finally, we document how changes in assortative mating patterns over the last four decades along the dimensions of age, ethnicity, religion and education influenced marital instability in Austria. These issues are important prerequisites for a thorough analysis of the impact of family situation on retirement behaviour, wages and employment, which we plan in the continuation project (Frimmel, Halla and Winter-Ebmer, 2014, 2013).

We continued our collaboration with Guido Schwert (Munich), Andrea Ichino (Bologna) on employment of elderly workers, with Ana Rute Cardoso (Barcelona) we collaborated on gender issues and Steve Pischke (LSE) on education as well as with Emilia del Bono (Essex). We took up new collaborations with Marco Francesconi (Essex) on family issues and Giorgio Brunello (Padova) and Margherita Fort (Bologna) on issues concerning SHARE data. In the collection of SHARE data we cooperated with a large group of international scholar from many disciplines, in particular Axel Börsch-Supan (Mannheim). New collaborations with David Card (Berkeley) on German-Austrian migration was started.

# Curriculum Vitae

**Rudolf Winter-Ebmer**

<http://www.econ.jku.at/winter>

## Personal

- Born 25/8/1961 in Steyr, Austria, married, two children.

## Current Position

- Professor of Labor Economics, Johannes Kepler University, Linz, since 2005
- Research Professor, Institute for Advanced Studies (IHS), Vienna, since 2003

## Education

- Habilitation in economics, University of Linz (M. Burda and W. Kohler as committee members), 1996
- Visiting Scholar University of California, Berkeley, Schrödinger-Fellowship, August 1995 – July 1996
- Dr. rer soc oec (equiv. PhD in economics), University of Linz, 1991
- Mag rer soc oec (equiv. MA in economics), University of Linz, 1985

## Previous Academic Appointments and Visiting Positions

- “Bank-Austria Visiting Professor” at the University of Vienna and Visiting (Teaching) Professor at the University of Zurich, W-Term 2003/04, W-Term 2002
- Visiting (Teaching) Professor at the Universities Innsbruck and Zürich, S-Term 2001
- Visiting Professor at the Université Paris II Panthéon-Assas, May - June 2000
- Offer for Full Professor of Economics at University of Graz, declined, 1999, NUI Dublin, declined 2007.
- University Assistant at the Dep. of Economics, Johannes Kepler University, Linz, 1987-04
- Visiting (Teaching) Professor at University of Zürich, W-Term 1999, Graz, S-Term 1998

## Grants, awards and nominations

- Member of German Academy of Sciences Leopoldina
- Short-list for the most prestigious Austrian Science Prize (Wittgensteinpreis), 2006
- Voestalpine Science Prize, 2003
- Theodor Körner Prize, 2000
- Oberbank Research Prize, 1998

- First Novartis Science Prize for Economics, 1997
- Maria-Schaumayer-Foundation (Austrian Central Bank) for women's studies, 1995
- Quelle Science Prize, 1993
- Science Prize of the Chamber of Labour, Upper Austria, 1993

#### **Other Affiliations and Professional Services**

- Associate editor: economics. The open-access, open-assessment e-journal, since 2007
- Associate editor: Empirical Economics, 2011-
- Research Fellow of IZA (Institute for the Study of Labor), Bonn, since 1999
- Member of the population economics committee of the "Verein für Sozialpolitik" 1997-
- Research Fellow with the "Centre for Economic Policy Research", London since 1992
- Member Scientific Board IAB, Nürnberg, 2007 -9
- Secretary and Council Member, European Society for Population Economics, 1998 – 2008, President 2011
- Member of the organizing committee for meetings: "Verein für Sozialpolitik", EEA, EALE, ESPE
- Consultant at the Vienna Institute for Economic Research (WIFO), 1998 - 2002
- Consultant for the World Bank, Social Protection Unit, (Unemployment insurance in East Asia, job training programs in Austria), August 1998 and May 2003

#### **Own research projects (grants)**

- The Impact of Migration on the Host Country, CEPR, London (with J. Zweimüller), 1993
- Employment and investment in Austrian industries, Austrian Central Bank (with J. Zweimüller), 1993-1996 and 1998-2002
- Crime and the Labor Market, Forschungsförderungsfonds, Wien, Carnegie-Foundation, Pittsburgh (with S. Raphael, University of California, San Diego), 1997-1999
- Public Funding and Private Returns to Education, partners from 14 countries, TSER-EU
- Dynamics of Wages, Employment and Unemployment, Austrian Science Funds, 2002
- International Wage Flexibility Project, Austrian Partner, Brookings Institution and the European Central Bank, 2001-2003
- SHARE: A survey of Health, Aging and Retirement in Europe, Austrian Partner, 2002-2005 (with Johann K. Brunner), Austrian Science Funds

- Wage dynamics and unemployment, Austrian Science Funds, 2002-2005
- The development of a micro-simulation model, Austrian Central Bank, 2005-2011
- SHARE II: A Survey of Health, Ageing and Retirement in Europe, Second Wave, Austrian Project Leader, 2006-2008, EU and NIA (USA), SHARE-life and SHARE IV, EU, Austrian Ministry of Science

## **Publications**

- Firm-Size Wage Differentials in Switzerland: Evidence from Job-Changers, **American Economic Review, Papers and Proceedings**, May 1999; 89(2), pp. 89-93. (with Josef Zweimüller)
- A Simple Mechanism for the Efficient Private Provision of Public Goods - Experimental Evidence, **American Economic Review**, March 2000 90(1); pp. 247-264. (with J. Falkinger, E. Fehr, and S. Gächter)
- The long-run Educational Cost of World War 2, **Journal of Labor Economics**, 2004, 22/1, 57-88. (with Andrea Ichino)
- Clash of Career and Family: Fertility Decisions after Job Displacement, (with Emilia del Bono and Andrea Weber), **Journal of the European Economic Association**, 2011.
- Labour Market Entry and Earnings Dynamics: Bayesian Clustering with Finite Mixtures of Markov Chains, (with Sylvia Frühwirth-Schnatter, Christoph Pamminger and Andrea Weber), **Journal of Applied Econometrics** 2112, 27/7, 1116-1137.

## Curriculum Vitae

**Gerard Thomas Horvath**

[http://www.wifo.ac.at/thomas\\_horvath](http://www.wifo.ac.at/thomas_horvath)

### Personal

- Born 23/2/1981 in Vienna, Austria, unmarried

### Current Position

- Research fellow, Austrian Institute for Economic Research (WIFO), since 2010

### Education

- Dr. rer.soc.oec. (equiv. to PhD in economics), University of Linz, **planned** for 2014
- Bakk.rer.soc.oec (Bachelor in statistics), University of Vienna, 2009
- Mag rer.soc.oec. (equiv. MA in economics), University of Vienna, 2007

### Previous Academic Appointments and Visiting Positions

- Research Fellow, University of Linz, 2008 – 2011
- Research Fellow, Austrian Institute for Economic Research (WIFO), 2008

### Grants, awards and nominations

- IZA European Summer School in Labor Economics 2010, Mai 2010, Buch am Ammersee (Germany)

### Own research projects (grants)

- Temporary Layoffs in Austria: Quantitative importance, Structure and Consequences for Workers, Firms and the Social Security System, Anniversary Fund of the Austrian Central Bank (with Rainer Eppel and Helmut Mahringer)

### Publications

- Thomas Horvath, Immigration and the Distribution of Wages in Austria, Danube: **Law and Economic Review**, (3) 2012
- Karl Aiginger, Thomas Horvath und Helmut Mahringer, Why Labor Market Response Differed in the Great Recession, Danube: **Law and Economic Review**, (3) 2012
- René Böheim, Thomas Horvath und Rudolf Winter-Ebmer, Great Expectations: Past Wages and Unemployment Durations. **Labour Economics** Vol. 18 (6), 2011



# Curriculum Vitae

Thomas Schober

<http://www.econ.jku.at/1771/>

## Personal

- Born 8/3/1984 in Rohrbach, Austria

## Current Position

- Researcher at the Dep. of Economics, Johannes Kepler University, Linz, since 2013

## Education

- PhD Program in Economics at the Universities of Innsbruck and Linz, since 2010
- Mag rer soc oec, University of Linz, 2010

## Previous Academic Appointments and Visiting Positions

- Researcher at the Institute for Public Sector Economics, Vienna University of Economics and Business, 2012-13
- Researcher at the Dep. of Economics, Johannes Kepler University, Linz, 2010-12

## Publications

- Gender wage inequality and economic growth: Is there really a Puzzle?—A comment. **World Development**, 2011, 39(8):1476–1484. (with Rudolf Winter-Ebmer)
- Kündigung unter Strafe - Beschäftigungsförderung für Ältere in Österreich. **Wirtschaft und Gesellschaft - WuG**, 2011, 37(3):461–470. (with Mario Schnalzenberger and Rudolf Winter-Ebmer)
- The Quantity and Quality of Children: A Semi-Parametric Bayesian IV Approach. **IZA Discussion Papers**, 2014, No. 8024. (with Sylvia Frühwirth-Schnatter, Martin Halla, Alexandra Posekany and Gerald J. Pruckner)

## Personal

- Born 29/10/1984 in Roth, Germany

## Current Position

- Researcher at the Austrian Center for Labor Economics and Analysis of the Welfare State, Linz, since 2012

## Education

- PhD. In Economics, Johannes Kepler University Linz, since 2013
- Graduate Studies in Economics, Universidad Carlos III de Madrid, 2011-2012
- M.Sc. in Economics, University of Mannheim, 2011
- Visiting Student (ENTER Master Program), Universidad Carlos III de Madrid, 2010-2011
- Diploma (equivalent M.A.) in Business Administration, Georg-Simon-Ohm University of Applied Sciences Nuremberg, 2004-2008

## Grants and awards

- Graduate Program Scholarship, Universidad Carlos III de Madrid, 2011-2012
- Prize for Excellent Academic Achievements (among top 5% of Business Graduate Students), 2008

## Academic Experience

- Teaching Assistant for Prof. Tom Krebs: Macroeconomics A (Undergraduate Level), University of Mannheim, Spring 2010
- Topics in Finance (Undergraduate Level), Georg-Simon-Ohm-University Nuremberg, Spring 2009
- Research Assistant in Finance, Georg-Simon-Ohm-University Nuremberg, 2008-2009

## Professional Experience

- Internship at Société Générale Global Equity and Derivatives Solutions Department, Paris, 2007
- Internship at Siemens A&D Global Procurement Department, Ratisbon, 2006

# Curriculum Vitae

**Mario Schnalzenberger**

<http://www.econ.jku.at/schnalzenberger>

## Personal

- Born 20/7/1977 in Wels, Austria, married, two children.

## Current Position

- Researcher (Post Doc), Johannes Kepler University, Linz, since 2005

## Education

- Dr. rer soc oec (equiv. PhD in economics), University of Linz, 2011
- Mag rer soc oec (equiv. MA in statistic), University of Linz, 2006
- Mag rer soc oec (equiv. MA in economics), University of Linz, 2005

## Grants, awards and nominations

- Excellent student grant in statistics, University of Linz (2007)
- Excellent student grant in economics, University of Linz (2006)

## Publications

- Layoff tax and employment of the elderly (with R. Winter-Ebmer), Labour Economics, Elsevier, vol. 16(6), pages 618-624, December 2009.
- Kündigung unter Strafe - Beschäftigungsförderung für Ältere in Österreich (with T. Schober, R. Winter-Ebmer), Wirtschaft und Gesellschaft, 11-2011.
- Job Quality and Employment of Older People in Europe (with N. Schneeweis, R. Winter-Ebmer, M. Zweimüller), Labour, forthcoming.
- Job Quality and Retirement Decisions (with N. Schneeweis, R. Winter-Ebmer, M. Zweimüller), First Results from the Survey of Health, Ageing and Retirement in Europe (2004-2007), Mannheim Research Institute for the Economics of Aging, 68131 Mannheim, Seite(n) 215-221, 11-2008, ISBN: 978-3-00-024969-3.

# Curriculum Vitae

**Nicole Schneeweis**

<http://www.econ.jku.at/schneeweis>

## Personal

- Born 25/9/1978 in Salzburg, Austria.

## Current Position

- Assistant Professor at the Department of Economics, Johannes Kepler University Linz, since 2010

## Education

- Dr.<sup>in</sup> rer soc oec (equiv. PhD in economics), Johannes Kepler University Linz, 2009
- Mag.<sup>a</sup> Mag.<sup>a</sup> rer soc oec (equiv. MA in economics and MA in Business and Education), Johannes Kepler University Linz, 2004

## Previous Academic Appointments and Visiting Positions

- Visiting Scholar at the University of California, Berkeley, 07/2011-06/2012 (Erwin-Schrödinger Fellowship)
- Researcher at the Austrian Center for Labor Economics and the Analysis of the Welfare State (<http://www.laborrn.at>), Department of Economics, Johannes Kepler University Linz, Project Manager: Rudolf Winter-Ebmer, 09/2008-03/2010.
- Researcher for SHARE 50+ Survey for Health, Ageing and Retirement in Europe (<http://www.share-project.org>), Department of Economics, Johannes Kepler University Linz, Project Manager (Austria): Rudolf Winter-Ebmer, 10/2005-03/2010.
- Marie Curie Early Career Research Fellow at the Centre for the Economics of Education (CEE), London School of Economics, 01/2007-04/2007.
- University Assistant at the Department of Economics, Johannes Kepler University Linz, 11/2004-06/2009.

## Grants, awards and nominations

- Erwin Schrödinger Fellowship, Austrian Science Fund, 2011
- Young Economists' Award, Austrian Economic Association, 2009
- Research Grant, City of Linz, 2008
- Excellent Student Award, Johannes Kepler University Linz, 2004.
- Research Grant for diploma thesis, Johannes Kepler University Linz, 2004

## Other Affiliations and Professional Services

- Research Fellow at IZA (Institute for the Study of Labor), Bonn, since 2013
- Member of the education economics committee of the “Verein für Socialpolitik”, since 2013
- Financial Auditor for the European Society for Population Economics, since 2011.

#### **Own research projects (grants)**

- “Ethnic segregation in schools, firms & neighborhoods”, Erwin Schrödinger Fellowship 2011-2012.
- “Research in education economics using education register of the city of Linz”, Grant by the city of Linz, 2008.

#### **Publications**

- Does education improve cognitive performance four decades after finishing school? **Demography**, forthcoming (with Vegard Skirbekk and Rudolf Winter-Ebmer).
- Early tracking and the misfortune of being young. **Scandinavian Journal of Economics**, 116/2, pp. 394-428, 2014 (with Martina Zweimüller).
- Girls, girls, girls: Gender composition and female school choice. **Economics of Education Review**, 31/4, pp. 482-500, 2012 (with Martina Zweimüller).
- Educational institutions and the integration of migrants. **Journal of Population Economics**, 24/4, pp. 1281-1308, 2011.
- Peer Effects in Austrian Schools. **Empirical Economics**, 32/2-3, pp. 387-409, 2007 (with Rudolf Winter-Ebmer).

# **S 10303 Labor Market Policy**

## **Project Leader**

Prof. Dr. Andrea Weber

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Assignment to subject discipline(s) (use ÖSTAT codes)

1	%	2	%	3	%
5304	60	5323	20	5311	20

## **1. Summary**

An important determinant of the efficiency of the labor market is the institutional framework. Well designed labor market policies facilitate a smooth allocation process of workers to firms, insure workers against temporary income losses from unemployment or sickness, or allow older workers to withdraw from the labor force while receiving a government pension. These policies while increasing the welfare of certain population groups, can impose a large cost to the general public. For the implementation of well functioning policy measures it is therefore crucial to understand how all agents in the labor market react to the institutional environment. In this subproject have studied a broad range labor market policies and their impacts on the labor market as well as on individual outcomes, which will be discussed in detail in Section 3. Our main focus throughout these studies has been on recovering causal effects and on the identification of policy relevant parameters. Many of studies resulting from this subproject are based on standard econometric technologies, but in some of them we developed novel methods for identification and estimation.

Overall, our research led to a considerable number of publications in international journals and has received a lot of attention by the research community in various seminar, workshop, and conference presentations.

The research in this project has also opened up novel research strategies and topics, which we will continue to pursue in the future. Among them are the effects of social networks on information transmission in the labor market, the impacts of gender diversity in management on firm outcomes, the migration of workers between Germany and Austria, and the role of firms in the labor market.

## **2. Scientific background / aims of research**

Our aim in this subproject was to cover a broad range of aspects of the interaction of labor market institutions and labor market outcomes. Therefore we have considered behavioral responses of both workers and firms in an empirical setup.

From the workers' side we have focused on the effects of the unemployment insurance and pensions systems on labor supply decisions and on decisions how to search for work. Furthermore, we have evaluated the effects of job displacement on employment, earnings, fertility, and health outcomes. Workers represent only one group of agents in the labor market; their counterparts are employers or firms. Motivated by the availability of extensive linked employer-employee data, recent literature increasingly focuses on understanding the implications of firm heterogeneity and dynamics for the labor market. An important aim of this subproject is therefore to include the firm's perspective in the analysis of labor market policies. The first step in this project part was to collect data with firm information that can be linked to the individual worker records in the ASSD. We started by

constructing a comprehensive firm database, the ASSD firm panel, based on the linked worker-firm component in the ASSD. This quarterly firm panel is described in the working paper by Fink, Kalkbrenner, Weber, Zulehner (2010). In particular we use a worker flow approach to categorize firm entries and exits and then collect quarterly information on workforce characteristics in the time of firm existence. The second step links the ASSD firm panel to detailed firm level information based on balance sheet data, which we purchased from Bureau van Dijk. One strategy to link the two databases consisted in matching the BvD AURELIA database for firms that are in the Austrian commercial register ("Firmenbuch"). Via this link, information on shareholders, subsidiaries, owners and managers can be added to the 60% of ASSD enterprises that operate in 2009. Furthermore, legal form, capital, revenues, and exports/imports can be observed for these matched ASSD-Aurelia firms. The combination of these data sets provides substantial scope for future research. The second strategy matches a large international BvD database of listed firms, AMADEUS. This database is much larger as it consists of firms in all European countries and their ownership structure. Over the period of the project, we encountered several difficulties exporting the data from the access Bureau van Dijk provided. Therefore the planned work on the AMADEUS data has been delayed. But research in this direction still receives our full attention and Christine Zulehner and Andrea Weber are currently preparing a proposal for a DFG grant that will support ongoing work.

### **3. Results and discussion**

In the thist section we introduce the results of studies that were conducted in the subproject "Labor Market Policy" since the start of the project in 2008. The structure of the discussion follows the four main research topics of the subproject: Analysis of the Unemployment Insurance System, Evaluation of Active Labor Market Policy, Effects of Job Displacement, and Demand Side Responses to Labor Market Institutions.

#### **3.1. Topic 1: Unemployment Insurance System**

Under the first topic we are primarily interested in the effects of the design of the Austrian unemployment insurance system on individual labor supply decisions. The main strategy is to recover behavioral responses to the system parameters from policy reforms or discontinuities in the policy rules and to link the empirical results to parameters from theoretical economic models.

The first paper under this topic we estimate the elasticity of joblessness with respect to unemployment insurance (UI) benefit rates. In joint work with David Card (UC Berkeley), David S. Lee (Princeton) and Zhuan Pei (Brandeis University) and Andrea Weber, we develop a nonparametric identification and estimation approach in a nonseparable model



where a continuous regressor of interest is a known, deterministic, but kinked function of an observed assignment variable (Card et al. 2012). This design arises in the Austrian UI setting, where unemployment benefits are determined by previous earnings, an observed but potentially endogenous assignment variable, and the benefit schedule has kinks at the minimum and maximum benefit level. We characterize a broad class of models in which a “Regression Kink Design” provides valid inferences for the treatment-on-the-treated parameter that would be identified in an ideal randomized experiment. Our estimates based on a fuzzy RKD approach for Austria suggest that the elasticity of joblessness with respect to the benefit rate is on the order of 1.5. A revision of the paper by Card et al. (2012) has been requested at Econometrica.

Arash Nekoei (Harvard University) and Andrea Weber study the question whether extending unemployment benefits improves job quality (Nekoei and Weber, 2014). Contrary to the predictions of standard reservation-wage search models, empirical studies consistently find that an extension of unemployment insurance increases unemployment duration without improving subsequent wages. Our paper addresses this puzzle in two steps. First, using administrative data from Austria and an age-based regression discontinuity design, we show that an extension of UI eligibility by nine weeks increases the average reemployment wage by a statistically significant 0.5%. Second, we show both theoretically and empirically that the UI effect on expected wages is determined by two offsetting forces: (i) agents on UI increase their reservation wages, which raises subsequent wages, but (ii) they also stay unemployed longer and thus experience a greater decrease in job opportunities, which reduces subsequent wages. Together, these results show that UI does have an economically significant impact on job quality consistent with theoretical predictions. Connecting these results to a normative model of UI points to an overlooked welfare benefit: UI increases future tax revenue through higher wages.

Two further studies examine labor supply decisions of older workers in the institutional context of unemployment insurance and pension regulations. Day Manoli (UT Austin) and Andrea Weber present new evidence on the effects of severance payments at retirement on labor force participation decisions (Manoli and Weber, 2014a). The analysis is based on a mandated rule in Austria that creates discontinuities in the incentives for workers to delay retirement. We present graphical evidence on labor supply responses and effective financial incentives and develop nonparametric methods to estimate extensive margin labor supply elasticities. Overall, multiple results highlight modest impacts of financial incentives on retirement decisions.

Manoli and Weber (2014b) presents empirical evidence on the effects of increasing the Early Retirement Age on individuals' labor supply. We examine the impacts of two pension reforms in Austria in 2000 and 2004 that increased the Early Retirement Ages

(ERAs) for men and women. This data allows us to distinguish between two retirement-related outcomes: pension claims and job exits. Our results indicate that men and women delay their pension claims and job exits in response to the increased ERAs and there is little evidence of substitution to disability insurance or unemployment insurance as alternative pathways into retirement. Furthermore, there is evidence of spillover effects as individuals who are not directly affected or even exempt from the increased ERAs also delay their retirements. Overall our results indicate that the reforms shifted the whole age distribution at retirement and thus had economically significant impacts on the labor force participation of older workers.

Related work on labor supply decisions at the participation margin compares the microeconomic and macroeconomic literatures, which diverge in their views about the magnitude of labor supply elasticities. Raj Chetty (Harvard), Adam Guren (Harvard), Day Manonli (UT Austin) and Andrea Weber present a meta-analysis of quasi-experimental estimates of extensive margin elasticities (Chetty et al. 2011). In Chetty et al. (2012) they use a calibrated standard macro model to simulate the impacts of tax policy changes on labor supply. We find that micro estimates are consistent with macro evidence on the steady-state elasticities relevant for cross-country comparisons. However, micro estimates of extensive-margin elasticities are an order of magnitude smaller than the values needed to explain business cycle fluctuations in aggregate hours.

### 3.2. Topic 2: Evaluation of Active Labor Market Policy

The effectiveness of active labor market policies – including subsidized employment, training, and job search assistance – has been a matter of vigorous debate over the past half century. In a joint project with David Card (UC Berkeley) and Jochen Kluve (RWI) we synthesize some of the main lessons in the recent microeconomic evaluation literature, using a new and comprehensive sample of program estimates from the latest generation of studies (Card, Kluve, Weber, 2010). We conduct a meta-analysis based on 97 studies of active labor market policies between 1995 and 2007 and extract a sample of 199 “program estimates” – estimated effects for a particular program on a specific group of participants. We find that job search assistance programs are relatively effective, whereas public sector employment programs are relatively ineffective. Training programs are associated with favorable medium term outcomes, although in the short-term they often appear ineffective. We also find that the outcome variable used to measure program impact matters, but neither the publication status of a study nor the use of a randomized design is related to the sign or significance of the program estimate. Card et al. (2010) has been cited in 375 studies according to Google Scholar and the authors are currently working on an update with the aim of investigating the effects of ALMP over the business cycle.

Rene Böheim (JKU Linz) and Andrea Weber investigate the effects of marginal employment, which is a type of wage subsidy paid to unemployed workers (Böheim and Weber, 2011). Using a propensity score matching technique they find that unemployed workers who start a marginal job during their unemployment spell suffer a (causal) penalty for doing so, relative to their peers who do not. The penalty, in terms of less employment, more unemployment, lower wages, lessens over time but is still present after three years.

### 3.3. Topic 3: The Effects of Job Displacement

A broad literature analyzes the effects of job displacement on a variety of outcomes. With the help of administrative matched employer-employee data displacements from firm closures can be exploited as an exogenous source of job loss. We contribute to this literature by examining the effects of job loss on labor market and fertility outcomes in a series of papers. Joint work by Martina Fink (JKU Linz), Esther Segalla (OeNB), and Andrea Weber investigates the long-term effects of job loss from firm closures and mass layoffs (Fink et al. 2014). We focus on job displacements during the 1980's downturn in Austria and find significant long-lasting effects from displacement. However, we show that these effects can be decomposed into a participation effect and an employment or earnings effect conditional on participation. Our results indicate that the permanent effect is on participation, while individuals who remain in the labor force catch up with non-displaced after approximately 5 years.

In cooperation with the subproject "AGING" and Emilia Del Bono (University of Essex), we investigate how fertility decisions respond to unexpected career interruptions which occur as a consequence of job displacement (Del Bono, Weber, Winter-Ebmer, 2010). Using an event study approach we find that job displacement reduces average fertility by 5 to 10% in both the short and medium term, and that these effects are largely explained by the response of women who are more likely to invest in human capital. The results are interpreted in the light of a model in which the rate of human capital accumulation slows down after the birth of a child and all specific human capital is destroyed upon job loss. A companion paper we separate the effects of unemployment and job displacement on fertility (Del Bono et al. 2014). Using an instrumental variables approach we show that unemployment incidence as such has no negative effect on fertility decisions, but the very fact of being displaced from a career-oriented job has. A revised version of Del Bono et al (2014) has been resubmitted to the Journal of Population Economics.

A different aspect of job displacement is the subject of the study by Peri Saygin (Univ Mannheim), Michèle Weynandt (Univ Mannheim) and Andrea Weber, who analyze the effect of social networks on job finding rates after job loss (Saygin et al. 2014). Social networks are seen as an important channel of information transmission in the labor market. In this paper

we set out to explore whether social contacts relate general information about job opportunities or if they provide specific information in terms of job referrals to vacancies at their own workplace. Our results indicate that employment status and the firm types of former coworkers are crucial for the job finding success of their displaced contacts. Moreover, 25% of displaced workers find a new job in a firm that is connected by social ties to their former workplace. Among all workers that were displaced from the same closing firm those with a direct link to a former coworker are three times more likely to be hired by the connected firm than workers without a link. These results highlight the role of work related networks in the transmission of job related information and strongly suggest that job referrals are an important mechanism. With this project we have started a new line of research with the aim of studying the impacts of social networks on the Austrian labor markets. Planned projects involve the effects of referral hirings on firm outcomes, the effects of social interactions on the take-up of social insurance programs, and the importance of social networks on labor market outcomes of young workers.

#### 3.4. Topic 4: Firms' Responses to the labor market policies

We continue with a list of results from studies that explicitly exploit the linked firm-worker structure of the ASSD and the match between ASSD and AURELIA.

In (Weber and Zulehner, 2014) we revisit Becker's (1957) famous theory on discrimination, according to which entrepreneurs with a strong prejudice against female workers forgo profits by submitting to their tastes. In a competitive market their firms lack efficiency and are therefore forced to leave. We present new empirical evidence for this prediction by studying the survival of start-up firms in longitudinal matched employer-employee data. We find that firms with strong preferences for discrimination approximated by a low share of female employees relative to the industry average have significantly shorter survival rates. This is especially relevant for firms starting out with female shares in the lower tail of the distribution. Competition at the industry level additionally reduces firm survival and accelerates the rate at which prejudiced firms are weeded out.

In a related paper (Weber and Zulehner, 2010) we study whether women make better managers by examining the relationship between females among the first hires of start-up companies, whom we take as a proxy for employees in executive positions, and business success. Our results show that firms with female first hires have a higher share of female workers at the end of the first year after entry. This either means that they are a positive signal which encourages other female workers to join the company or that they actively influence the selection process. Further, we find that firms with female first hires are more successful by staying longer in the market. We conclude that our results support the hypothesis that gender-diversity in leading positions is an advantage for start-up firms.

Ongoing work by Andrea Weber jointly with two graduate students at University of Mannheim, Julia Schmieder and Jasper Scheppe, continues to examine the role of female executives on firm success. This work is based on more precise information on the managers' age and gender extracted from the AURELIA database. We use statistical matching to identify managers in the ASSD records and link the gender of managers to firm and worker outcomes such as productivity, gender wage gaps, and employment shares at the firm level. In a second project based on this database, we are planning to study labor market careers of individuals who reach management positions with other workers who were similar at labor market entry. This should give us a sense at which point in the life cycle the careers of higher achieving workers diverge from the rest.

In one chapter of her PhD thesis Michèle Weynandt (2014) explores what type of information firms infer from the three common types of displacement: individual layoffs, individuals displaced due to firm closure and individuals displaced due to a mass layoff. This research brings together the literatures on signaling and sorting and makes three new contributions. Using the Abowd et al. (1999) wage decomposition, the paper first shows that individual layoffs are the least productive measured by the person fixed effect. Second the signaling argument by Gibbons and Katz (1991) implying that individual layoffs are perceived as "lemons" also for high ability individuals is confirmed empirically. Third, the argument of Gibbons and Katz (1991) against the matching model by Becker (1973) is rejected. Using different measures of sorting, Weynandt finds that matching in new jobs changes differentially for the three layoff types. This leads to the tentative conclusion that both sorting and signaling take place after a job loss.

## **4. Cooperation within and outside of the NRN**

### **4.1. NRN Internal Cooperation**

This subproject is well integrated in the national research network. Our research has particularly benefited from the exchange of research ideas and discussions at the regularly organized workshops and from joint efforts in data processing and transmission of knowledge on Austrian institutions. In the previous section we have already described joint work with subgroups "AGEING" and "INDUSTRY DYNAMICS AND MARKET STRUCTURE". In addition, we have conducted joint projects in collaboration with the subprojects "BAYESIAN ECONOMETRICS" and "HEALTH", which demonstrate the success of the network effects on our research output.

In cooperation with Sylvia Frühwirth-Schnatter, Christoph Pamminger, Rudolf Winter-Ebmer and Andrea Weber, we analyze patterns in the earnings paths of young labor market entrants over the life cycle (Frühwirth-Schnatter et al. 2012). Using a Bayesian approach based on Markov chain clustering, we identify four distinctly different types of transitions

between discrete earnings states in the ASSD. Further we investigate the effects of labor market conditions at the time of entry on the probability of belonging to each transition type. We apply an extension of this estimation approach to analyze career patterns of young mothers after the birth of their first child in (Frühwirth-Schnatter et al. 2014). In particular, we investigate the connection between the mother's age at first birth and her chances to continue a high profile career track. Distinguishing between four different career types our results indicate that giving birth early in the career is to be preferred over a situation where the potential mother has already a long professional experience.

In cooperation with the "HEALTH" group, Martin Halla (JKU Linz) and Andrea Weber estimate the impact of paternal job displacement on the health of their unborn children (Halla and Weber, 2014). The focus is on children whose fathers were exposed to a firm closure during pregnancy. We find that children of displaced fathers have statistically significant different birth outcomes compared to children of never-displaced fathers. The interpretation of our results requires a consideration of so-called culling (fetal death) and scarring effects (harm of survivors). We find very strong culling effects, suggesting that wives of treated workers have 25 percent more miscarriages. The surviving treated children are a positively selected group with better birth outcomes.

#### 4.2. External Cooperations

Beside the internal cooperation, our work has benefitted a lot from cooperation with partners from renowned international research institutions in Europe and in the United States. A feature that makes the NRN very attractive for international researchers is the high data quality of the ASSD and the good data access. Over the last years we were able to expand existing cooperations with well known senior researchers in labor economics and public finance such as David Card (UC Berkeley), Raj Chetty (Harvard University), David S. Lee (Princeton), Day Manoli (UT Austin), and Emilia Del Bono (University of Essex). In addition several junior researchers from international universities joined our projects and chose topics related to Austrian labor market policies for their PhD theses, among them Arash Nekoei (Harvard), Adam Guren (Harvard), Zhuan Pei (Brandeis University).

# Curriculum Vitae

**Andrea Weber**

<http://www.econ.jku.at/winter>

## Personal

- Born on January 12th, 1965 in Mödling, Austria, two children

## Current Position

- Professor of Economics, University of Mannheim, 03/2010 – present

## Education

- Habilitation in Economics, Johannes Kepler University Linz, December 2008
- Ph.D. of Technical Sciences (Dr. techn.), Vienna University of Technology, June 2002, Supervisors: Manfred Deistler, Rudolf Winter-Ebmer
- Diploma in Economics, Institute for Advanced Studies, 1996
- Master in Mathematics (Dipl. Ing.), Vienna University of Technology, June 1990

## Previous Academic Appointments and Visiting Positions

- Senior Researcher, RWI Essen, Germany, 1/2008 – 2/2010
- Visiting Assistant Professor, Economics Department, Univ. of California at Berkeley, 7/2006 – 6/2009
- Post-Doctoral Research Fellow, Center for Labor Economics, Univ. of California at Berkeley, 8/2004 – 6/2006
- Assistant Professor, Institute for Advanced Studies (IHS), Vienna, Austria, 3/2000 – 7/2004
- Research Staff Member, Austrian Institute of Economic Research (WIFO), Vienna, Austria, 7/1997 – 2/2000
- Economist, Austrian Postal and Savings Bank, Vienna, Austria, 11/1996 – 6/1997
- Research Assistant, Vienna University of Technology, Institute for Econometrics OR and System Theory, 9/1990 – 5/1991.

## Grants, awards and nominations

- 2014 – 18 SFB 884: Political Economy of Reforms, leader of the project B7 “Health insurance, reforms, and impacts” joint with Markus Frölich.
- 2011 – 14 National Research Network: Austrian Center for Labor Economics and the Welfare State, leader of the project part “Labor Market Policy”, Austrian Science Foundation (FWF), see also <http://www.labornrn.at/>

- 2008 – 11 National Research Network: Austrian Center for Labor Economics and the Welfare State, leader of the project part “Labor Market Policy”, Austrian Science Foundation (FWF).
- 2008 – 10 Leibniz Society Research Grant, project title “Labor Market Institutions”, RWI Essen. (Pakt für Forschung und Entwicklung, Förderlinie Frauen in Führungspositionen)
- 2007 Oskar Morgenstern Award, Institute for Advanced Studies (IHS), Vienna
- 2004 Postdoctoral scholarship from the Austrian Science Foundation (FWF), Schrödinger Funds

#### **Other Affiliations and Professional Services**

- Coeditor, Labour Economics, since 03/2014
- Research Associate, Center for Economic Policy Research (CEPR), London, 02/2010 – present
- Research Consultant, Austrian Institute of Economic Research (WIFO), Vienna, 06/2008 – present
- Fellow of the CESifo Research Network, Munich, 4/2013 – present; (Affiliate 2006-2013)
- Research Fellow, Institute for the Study of Labor (IZA), Bonn, 09/2003 – present
- Member, Council for Social Policy, Verein für Socialpolitik, 10/2012 – present
- Member, Council for Population Economics, Verein für Socialpolitik, 2/2013 – present
- Member, Council for Econometrics, Verein für Socialpolitik, 2/2014 – present

#### **Publications**

- Competition and Gender Prejudice: Are Discriminatory Employers Doomed to Fail? (with Christine Zulehner), **Journal of the European Economic Association**, 12(2), 2014.
- Clash of Career and Family: Fertility Decisions after Job Displacement (with Emilia Del Bono and Rudolf Winter-Ebmer), **Journal of the European Economic Association**, 10(4), 659-683, 2012.
- Active Labor Market Policy Evaluations: A Meta-analysis (2010), **The Economic Journal**, 120, F452-F477, 2010.(joint with David Card and Jochen Kluve )
- Do Wages Compensate for Anticipated Working Time Restrictions? Evidence from Seasonal Employment in Austria, (2008), **Journal of Labor Economics**, 26(1), 181-221, (joint with Emilia Del Bono)



- Cash-on-Hand and Competing Models of Intertemporal Behavior: New Evidence from the Labor Market, (2007), **Quarterly Journal of Economics**, 122(4), 1511-1560, (joint with David Card and Raj Chetty).

## **Curriculum Vitae**

**Michèle A. Weynandt**

<http://vandenbergh.vwl.uni-mannheim.de/3020.0.html>

### **Personal**

- Born 03/05/1986 in Dudelange, Luxembourg

### **Current Position**

- Research Assistant, University of Mannheim, since 2013

### **Education**

- PhD Student, University of Mannheim (G. van den Berg and A. Weber as committee members), expected June 2014
- Visiting Scholar University of California, Berkeley, ISAP Fellowship, August 2010 – May 2011
- Master in Economic Research, University of Mannheim (with distinction), 2011
- Bachelor of Science in Business Economics, Miami University, 2009

### **Grants, awards and nominations**

- PhD Scholarship granted by the German Science Foundation (2011-2013)
- ISAP Visiting Scholarship, German Academic Exchange Service (DAAD) (2010-2011)
- Mid-American Conference Presidential Award (2008/2009)
- Macroeconomics Award, Department of Economics, Miami University (2009)
- Lifetime member of Beta Gamma Sigma Organization (2009)
- Dean's List every Semester at Miami University (2007-2009)

### **Working Papers**

- Selective Firing and Lemons
- Explaining Differences between the Expected and Actual Duration Until Return Migration: Economic Changes and Behavioral Factors (with Gerard van den Berg)
- Effect of Past Coworkers on Job Search: Evidence from Austria (with Perihan Saygin and Andrea Weber)
- Bereavement Effects and Early Life Circumstances (with Gerard van den Berg and Anna Hammerschmid)

### **Publications**

- Explaining Differences between the Expected and Actual Duration Until Return Migration: Economic Changes, **Journal of Applied Social Science Studies**, 2013; 133, 249-262. (with Gerard van den Berg)

## Personal

- Born 08/09/1989 in Rottweil, Germany, single

## Current Position

- Researcher (“wissenschaftliche Mitarbeiterin”), Chair of Prof. Dr. Andrea Weber, University of Mannheim, since 09/2013

## Education

- Master of Science in Economics, University College London, 2014 (exp.)
- Bachelor of Science in Economics, University of Mannheim, 2012

## Grants, awards and nominations

- Elisabeth Altmann-Gottheiner Prize awarded to Bachelor dissertation in order to honour excellent academic research in field of gender studies (2013)
- Member of the German National Academic Foundation (since 2012)
- Scholarship (free tuition waver) by the University of Mannheim (2011)
- Honours for outstanding results by the German Mathematical Society (2008)

## Other Affiliations and Professional Services

- Research Assistant to Michela Tincani at University College London, Jan.-Sep. 2013
- Research Assistant at the Centre for European Economics Research in Mannheim, 2010 – 2011

## Own research projects

- A reassessment of the relationship between fertility and female labour supply, Master dissertation, 2014
- Gender differences in the effect of potential unemployment benefit duration on job search behaviour – Evidence from the Austrian labour market, Bachelor dissertation, 2014

## **Curriculum Vitae**

**Perihan Ozge Saygin**

<http://saygin.vwl.uni-mannheim.de/>

### **Personal**

- Born 01/01/1984 in Denizli, Turkey, single.

### **Current Position**

- Post-Doctoral Researcher, University of Mannheim, Department of Economics, since 2012

### **Education**

- Visiting Scholar, University of California Berkeley, USA, 2009 – 2012
- Ph.D. in Economics, IMT Lucca Institute for Advanced Studies, 2012
- Visiting Scholar, Koc University, Istanbul, Turkey, June 2011 – August 2011
- M.S. Development Economics, Universite Paris I Pantheon Sorbonne, France 2006
- B.S. Economics, Hacettepe University, Ankara, Turkey 2005

### **Grants, awards and nominations**

- Best Paper Prize, 9th Augustin Cournot Doctoral Days, 2012
- Fellowship for Visiting Period Abroad awarded by the Italian Ministry of Education, University, and Research (2009-2011)
- Full Ph.D. Scholarship awarded by the Italian Ministry of Education, University, and Research (2008-2011)
- TUBITAK (Scientific and Technological Research Council of Turkey) Fellowship (2007-2008)
- Full Master Scholarship awarded by French Government (via French Embassy in Turkey) in 2005-2006 academic year

### **Other Affiliations and Professional Services**

- Refereeing for Review of Economic Studies, Journal of Labor Economics, Labor Economics.
- Consultant at FEMISE (Forum Euroméditerranéen des Instituts de Sciences Économiques), 2012
- Consultant at Centre for Economic Research on Mediterranean Countries (Akdeniz University, Turkey), 2009-2011

### Current research projects

- Coworkers, Networks, and Job Search Outcomes (with Andrea Weber and Michele Weynandt)
- Heterogeneity in Preferences over University Programs' Attributes: Evidence from the Centralized System in Turkey
- Guessing on a Multiple Choice Test: A Gender Comparison

### Publications

- Do Girls Really Outperform Boys in Educational Outcomes?, 2014, (Under Review)
- Gender Differences in Preferences for Taking Risk in College Applications, 2014, (Under Review)
- International Migration, Remittances, and the Human Capital Formation of Egyptian Children, **International Review of Economics and Finance**, 2013 28; pp. 38-50 (with Onur A. Koska, Selim Çagatay, Andrés Artal Tur)
- Demographic and Structural Effects on Labor Demand in Incomplete Markets: Testing “Separability Hypothesis, **Iktisat, Isletme ve Finans**, 2010 25 (292); pp. 71-95
- Türkiye’de Tarım Politikaları: Buğday Üzerinden bir Değerlendirme (Agricultural Policies in Turkey: an Evaluation via Wheat Production), **KEBIKEC (special volume for History of Agriculture)**, 2007, *Abstract is available in English.*

# **S 10304 Population Economics**

## **Project Leader**

Prof. Dr. Josef Zweimüller

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Assignment to subject discipline(s) (use ÖSTAT codes)

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## 1. Summary

Members of project Part 04 produced papers on the impact of family policy on fertility and employment. One study, entitled „How does parental leave affect fertility and return-to-work? Evidence from two natural experiments“ by Rafael Lalive and Josef Zweimüller has been published in the Quarterly Journal of Economics. Another study related to the first one, entitled “Parental Leave and Mothers' Careers: The Relative Importance of Job Protection and Cash Benefits” is forthcoming in the Review of Economic Studies. Two further papers explore the effects of family policy on labor market outcomes and child development. A paper, entitled „The Effects of Labor Market Interruptions on Employment and Wages“ by Beatrice Brunner analyzes the causal effects of changes career interruptions of women due to child birth. The study „How Does Early Childcare affect Child Development? Learning from the Children of German Unification“ by Christina Felfe and Rafael Lalive investigates the causal effect of center-based care versus care provided by the mother during early childhood (age 0-3) on a wide range of cognitive and non-cognitive skills. Identification is based on German Unification.

Members of the project Part 04 were also studying other topics that related to both population and health economics and/or are more closely related to other subprojects of the NRN. The Papers include the impact of early retirement on mortality; the impact of financial incentives and quota rule for employment of disabled workers; the impact of disability pension rules for employment of older workers, the impact of job loss on labor market outcomes of older workers; the cyclical behavior of workplace accidents; labor entry market conditions and long-run success on the labor market; the cultural determinants of unemployment; the impact of unemployment on right-wing extremist crimes; effects of the abolition of Austria's baby bonus; cyclicity of unemployment benefits take-up; the impact of immigration on voting behaviour, market externalities of unemployment insurance.

Several papers have been published during the time of the project, including Quarterly Journal of Economics, Review of Economic Studies, Journal of Labor Economics, Journal of Health Economics, Journal of Public Economics, Journal of the European Economic Association, European Journal of Health Economics, European Journal of Political Economics, Economics Letters, Scandinavian Journal of Economics, Empirica, Empirical Economics, German Economic Review, Swiss Journal of Economics and Statistics and Journal of Population Economics. Other papers were invited for a revise and resubmit, including the American Economic Review, Journal of the European Economic Association, Economic Journal, Journal of Public Economics, Journal of Health Economics, Journal of Human Resources, American Economic Journal: Economic Policy.



## **2. Scientific background / aims of research**

As all other subprojects, the group of the Population Economics project was always aiming at scientific excellence. On the one hand, the group followed the academic literature very closely and was working at the research frontier in its projects. This implies that the group answered not only questions relevant for policy but also questions that enrich the scientific knowledge and our understanding of labor markets and the greater economy. On the other hand the group was not only at the frontier in terms of content but also in its approach in terms of methodology, pushing the boundaries of existing methods where appropriate. Using state-of-the-art methods to analyse policy changes or trying to establish a causal relationship to answer policy relevant questions greatly enriched each single project. The NRN provided important means to ensure both aims as it enabled us to interact with the best scholars of the field, provided the resources necessary to hire the best people, and work with modern tools on comprehensive data sets. Besides there being significant spill-overs to students and the general quality of higher education, these projects advanced the reputation of the involved research centers and generally contributed to Europe's pursuit of being a center of academic excellence.

## **3. Results and discussion**

### 3.1. Topic 1: The Long-Run: Family Policies

The study „How does parental leave affect fertility and return-to-work? Evidence from two natural experiments“ by Rafael Lalive and Josef Zweimüller analyzes the effects of changes in the duration of paid, job-protected parental leave on mothers' higher-order fertility and postbirth labor market careers. Identification is based on a major Austrian reform increasing the duration of parental leave from one year to two years for any child born on or after July 1, 1990. We find that mothers who give birth to their first child immediately after the reform have more second children than prereform mothers, and that extended parental leave significantly reduces return to work. Employment and earnings also decrease in the short run, but not in the long run. Fertility and work responses vary across the population in ways suggesting that both cash transfers and job protection are relevant. Increasing parental leave for a future child increases fertility strongly but leaves short-run postbirth careers relatively unaffected. Partially reversing the 1990 extension, a second 1996 reform improves employment and earnings while compressing the time between births.

Parental leave regulations in most OECD countries have two key policy instruments: job protection and cash benefits. The study „Parental Leave and Mothers' Careers: The Relative Importance of Job Protection and Cash Benefits“ by Rafael Lalive, Analia Schlosser, Andreas Steinhauer and Josef Zweimüller studies how mothers' labor market outcomes

depend on alternative mixes of these key policy parameters. Exploiting a series of major parental leave policy changes in Austria, we find that longer cash benefits lead to a significant delay in return to work and that the magnitude of this effect depends on the relative length of job protection and cash benefits. We do not find a significant impact on labor market success in the medium run, neither of benefit duration nor of job-protection duration. To understand the relative importance (and interaction) of the two instruments we set up a non-stationary job search model in which cash benefits and job protection determine the decisions of both when to return to work and whether or not to return to the pre-birth employer. Despite its lean structure, the model does surprisingly well in matching empirically observed return to work profiles. The simulation of alternative counterfactual regimes shows that a policy that combines both job protection and benefits payments succeeds to induce mothers to spend some time with the child after birth without jeopardizing their medium run labor market attachment.

### 3.2. Topic 2: The Short- and Medium Run I: Labor Supply

The study „The effects of increasing financial incentives for firms to promote employment of disabled workers“ by Jean-Philippe Wüllrich studies the effect of an increase in financial incentives for firms to promote employment of disabled workers in the context of the Austrian employment quota for disabled workers. Adopting the interrupted time-series design and using comprehensive register data, I find that an increase in a tax charged for non-compliance with the employment requirement from EUR 150.- to EUR 196.- in July 2001 had an immediate as well as short-run impact on the promotion of employment for disabled workers. By the end of 2002, one in 15 firms employ one disabled worker more than they would have without the tax increase. In terms of the average number of disabled workers, this corresponds to a 6.4% increase in the number of disabled workers per firm.

The study „The Impact of Labor Market Entry Condition on Initial Job Assignment and Wages“ by Beatrice Brunner and Andreas Kuhn estimates the effects of labor market entry conditions on wages for male individuals first entering the Austrian labor market between 1978 and 2000. We find a large negative effect of unfavorable entry conditions on starting wages as well as a sizeable negative long-run effect. Specifically, we estimate that a one percentage point increase in the initial local unemployment rate is associated with an approximate shortfall in lifetime earnings of 6.5%. We also show that bad entry conditions are associated with lower quality of a worker's first job and that initial wage shortfalls associated with bad entry conditions only partially evaporate upon involuntary job change. These and additional findings support the view that initial job assignment, in combination with accumulation of occupation or industry-specific human capital while on this first job, plays a key role in generating the observed wage persistencies.

A number of OECD countries aim to encourage work integration of disabled persons using quota policies. For instance, Austrian firms must provide at least one job to a disabled worker per 25 nondisabled workers and are subject to a tax if they do not. This “threshold design” provides causal estimates of the noncompliance tax on disabled employment if firms do not manipulate nondisabled employment; a lower and upper bound on the causal effect can be constructed if they do. Results indicate that firms with 25 nondisabled workers employ about 0.04 (or 12%) more disabled workers than without the tax; firms do manipulate employment of nondisabled workers but the lower bound on the employment effect of the quota remains positive; employment effects are stronger in low-wage firms than in high-wage firms; and firms subject to the quota of two disabled workers or more hire 0.08 more disabled workers per additional quota job. Moreover, increasing the noncompliance tax increases excess disabled employment, whereas paying a bonus to overcomplying firms slightly dampens the employment effects of the tax.

The study „A New Approach to Evaluating Active Labour Market Programs“ by Rafael Lalive, Michael Morlok and Josef Zweimüller calculates the impact of Active Labour Market Programmes through the use of three new indicators measuring the application performance of the unemployed. These indicators can be measured repeatedly and therefore allow the usage of Panel Regression methods, cancelling out any unobserved individual heterogeneity. To implement the new approach, data on 30,000 applications has been collected. Using this data, a large positive effect for unemployed with a long term unemployment forecast was estimated. For unemployed without such a forecast, the effect is much smaller. The paper also shows that the new evaluation approach fulfils the requirements of a good controlling instrument: It is accurate, detailed, non-intrusive, inexpensive and therefore easy to keep up to date, easy to understand and communicate.

The study „The Impact of Stricter Disability Insurance on Labor Force Participation“ by Stefan Staubli studies the effect of a large-scale policy change in the Austrian disability insurance program, which tightened eligibility criteria for men above a certain age. Using administrative data on the universe of Austrian private-sector employees, the results of difference-in-difference regressions suggest a substantial and statistically significant decline in disability enrollment of 6 to 7.4 percentage points and an increase in employment of 1.6 to 3.4 percentage points. The policy change had important spillover effects into the unemployment and sickness insurance program. Specifically, the share of individuals receiving unemployment benefits increased by 3.5 to 3.9 percentage points, and the share receiving sickness insurance benefits, by roughly 0.7 percentage points.

The study “Extended Unemployment Benefits and Early Retirement: Program Complementarity and Program Substitution” by Lukas Inderbitzin, Stefan Staubli and Josef Zweimüller explores how more generous unemployment insurance (UI) rules affect the early-

retirement decision of older unemployed workers. In Austria, workers aged 55+ enjoy relaxed access to disability insurance (DI) and take-up of a disability pension essentially allows workers to withdraw permanently from the labor market. To identify the causal impact of more generous UI benefits on early retirement we exploit a policy change that increased the maximum duration of UI benefits from initially 30 weeks to 209 (!) weeks. Since the UI benefit extension was confined to a sub-set of Austrian regions, this policy change allows us to compare residents in eligible regions to residents in non-eligible regions. We find that workers in the age group 50-54 exploit the more generous unemployment benefits as a channel that allows them to retire early by taking advantage of longer UI benefits followed by relaxed access to DI benefits. We also find a very large increase in early retirement rates for individuals closer to the retirement age (age group 55-57). These individuals do not only strongly reduce their labor supply, they also substitute UI for DI in order to bridge the gap to eligibility for regular public pensions.

The study “The Impact of Raising the Retirement Age on Labor Force Participation” by Stefan Staubli and Josef Zweimüller studies the effect of a large-scale policy change in the Austrian old-age pension scheme, which increased the minimum retirement age from 60 to 61.5 for men and from 55 to 56.5 for women. Using administrative data on the universe of Austrian private-sector employees, the results of difference-in-difference regressions suggest a substantial and statistically significant increase in employment of 8.1 to 11.7 percentage points among men and 17.6 to 21 percentage points among women. The policy change had important spillover effects into the unemployment insurance program. Specifically, the share of individuals receiving unemployment benefits increased by 5.7 to 6.3 percentage points among men and 8.9 to 11.5 percentage points among women. For men we also find a significant increase disability enrollment by roughly 6.8 to 7.4 percentage points.

Workplace accidents are an important economic phenomenon. Yet, the pro-cyclical fluctuations in workplace accidents are not well understood. They could be related to fluctuations in effort and working hours, but workplace accidents may also be affected by reporting behavior. The study „Recessions are bad for workplace safety“ by Jan Boone, Jan van Ours, Jean-Philippe Wüllrich and Josef Zweimüller uses unique data on workplace accidents from an Austrian matched worker-firm dataset to study in detail how economic incentives affect workplace accidents. We find that workers who reported an accident in a particular period of time are more likely to be fired later on. And, we find support for the idea that recessions influence the reporting of moderate workplace accidents: if workers think the probability of dismissals at the firm level is high, they are less likely to report a moderate workplace accident.

The study „The public health costs of job loss“ by Andreas Kuhn, Rafael Lalive and Josef Zweimüller studies the short-run effect of involuntary job loss on comprehensive

measures of public health costs. We focus on job loss induced by plant closure, thereby addressing the reverse causality problem as job displacements due to plant closure are unlikely caused by workers' health status, but potentially have important effects on individual workers' health and associated public health costs. Our empirical analysis is based on a rich data set from Austria providing comprehensive information on various types of health care costs and day-by-day work history at the individual level. Our central findings are (i) overall expenditures on medical treatments are not strongly affected by job displacement; (ii) job loss significantly increases expenditures for antidepressants and related drugs, as well as for hospitalizations due to mental health problems for men (but not for women) although the effects are economically rather small; and (iii) sickness benefits strongly increase due to job loss.

### 3.3. Topic 3: The Short- and Medium Run II: Immigration

The study „Brain Drain and Brain Return: Theory and Application to Eastern-Western Europe“ by Karin Mayr and Giovanni Peri develops a novel model of optimal education, migration and return by heterogeneous, forward-looking agents. The model is parameterized and simulated to analyze the effects of immigration policies, identifying the brain-drain, brain-gain and brain-return effects when barriers to migration are reduced. We use parameters from the literature to inform our model and simulate migration and return from middle-income to industrialized countries. In particular, we apply the model to study migration and return between Eastern and Western Europe. We find that, for plausible degrees of openness, the possibility of return migration combined with the education incentive channel turns the brain drain into a brain gain for Eastern Europe.

It is frequently argued that unemployment plays a crucial role in the occurrence of right-wing extremist crimes. The study „Unemployment and Right-wing Extremist Crime“ by Armin Falk, Andreas Kuhn and Josef Zweimüller tests this hypothesis empirically using data from Germany. We find that right-wing criminal activities occur more frequently when unemployment is high. The substantial difference in right-wing crime between East and West German states can mostly be attributed to differences in unemployment. This finding reinforces the importance of unemployment as an explanatory factor for right-wing crime and questions explanations based solely on the different socialization in former communist East Germany and the liberal West German states.

Immigration control is high on the political agenda and part of any election campaign throughout Europe and the United States. Although immigration has potential positive effects on the receiving economy, negative aspects of immigration attract the most attention. Extreme rightwing parties with restrictive position towards immigration became very popular in many European countries. The study „Immigration and Voting for the Extreme Right“ by

Martin Halla, Alexander F. Wagner and Josef Zweimüller studies the relationship between the success of the extreme right-wing Freedom Party of Austria (FPOE) and several waves of (labour) immigration to Austria. Therefore, we utilize highly disaggregated data on election results in combination with census data. We exploit specific features of the history of immigration into Austria to identify a causal effect of immigration on extreme-right-wing voting results. We find that the percentage immigrants in a community is an important causal factor behind support for the extreme right, explaining roughly a quarter of the cross-community variance in votes for the FPÖ. The effect varies across immigrants (e.g., based on their skill levels) as well as across communities (e.g., based on the degree of skill overlap between immigrants and natives), supporting the idea that voters worry about labor market competition. We find more limited indications that compositional amenities play a role for ERW votes.

#### **4. Cooperation within and outside of the NRN**

Cooperations within the NRN include the paper “Too Old To Work, Too Young To Retire” and the paper “Does the Color of the Collar Matter?” which is joint effort with the subproject AGING. The paper “Immigration and Voting for the Extreme Right” is joint effort with the subproject HEALTH.

Further cooperations include efforts to acquire new data, including the individual data from the demographic statistics on births, mortality (as well as marriages and divorces) from Statistics Austria; tax record data from the Austrian Ministry of Finance, Vienna and unemployment register data from the Public Employment Service Austria.

External co-operations include joint projects with Jan van Ours and Jan Boone from Tilburg University; Andrea Ichino from University of Bologna, Analia Schlosser from Tel Aviv University, Guido Schwerdt from CESifo Munich, Armin Falk from the University of Bonn, Bernd Fitzenberger, Olga Orlanski and Marie Waller from the Albert-Ludwigs University Freiburg, Martin Biewen from University of Tübingen, Marie Paul from Univeristy of Duisburg-Essen and Camille Landais from the London School of Economics.

## Curriculum Vitae

**Aderonke Osikominu**

<http://www.statistik.uni-hohenheim.de>

### Personal

- Born 25/8/1961 in Steyr, Austria

### Current Position

- Professor of Economics and Head of the Chair in Statistics and Econometrics I, University of Hohenheim, 2014-present
- Postdoctoral Research Officer, University of Zurich (on leave since 10/2013), 2012-2014
- Head of the research group "The Empirics of Education" (joint with Dr. Antje von Suchodoletz), Albert-Ludwigs-University Freiburg, 2009-2014

### Education

- Dr. rer pol. (equiv. PhD in economics), Albert-Ludwigs-University Freiburg, 2008
- Diplom-Volkswirtin (M.Sc. in Economics), 2004
- Maîtrise es Sciences Economiques – Economie Internationale / Développement Université Paris I Panthéon-Sorbonne, 2000

### Previous Academic Appointments and Visiting Positions

- Visiting Professor of Economics and Head of the Chair in Statistics and Econometrics I (Lehrstuhlvertretung), University of Hohenheim, 2013-2014
- Postdoctoral Research Officer in the research group of Prof. Christian Dustmann, University College London, 2008-2009
- Research and Teaching Assistant to Prof. Bernd Fitzenberger at Goethe-University Frankfurt and Albert-Ludwigs-University Freiburg, 2004-2008
- Student Research Assistant to Prof. Bernd Fitzenberger at University of Mannheim and Goethe-University Frankfurt, 2001-2004

### Grants, awards and nominations

- CESifo Distinguished Affiliate Award in Employment and Social Protection, 2012
- Participant in the 4th Nobel Laureate Meeting in Economic Sciences at Lindau, 2011
- Südwestmetall Prize for doctoral dissertation, 2009
- Fellow in the "Fast Track" program of the Robert Bosch Foundation (includes grant and career training workshops), 2009-2011

- Grant from the German Academic Exchange Service (DAAD) and the Italian Government to study at Università degli Studi di Firenze, 2000-2001
- Grant from the German Academic Exchange Service (DAAD) to study at Université Paris I Panthéon-Sorbonne, 1999-2000

#### **Other Affiliations and Professional Services**

- Research Affiliate, CESifo Research Network, Munich, 2012-present
- Since 01/2009 Research Fellow IZA (Institute for the Study of Labor), 2009-present

#### **Own research projects (grants)**

- Grant from the German Science Foundation for the project “Education, Vocational Training, Transitions, and Labor Market Outcomes” (joint PI with Bernd Fitzenberger and Christian Dustmann as foreign cooperation partner), 2012-2014
- Grant from the Volkswagen Foundation for the symposium “Skill Development in Childhood and Adolescence: Economic and Behavioral Perspectives” (joint PI with Antje von Suchodoletz), 2010
- Grant for the research group “The Empirics of Education” from the German Excellence Initiative (approx. 1.1 million €, joint PI with Antje von Suchodoletz), 2009-2014

#### **Publications**

- The Effectiveness of Public Sponsored Training Revisited: The Importance of Data and Methodological Choices, forthcoming in **Journal of Labor Economics**, 32 (3) (with Martin Biewen, Bernd Fitzenberger, and Marie Paul)
- Quick Job Entry or Long-Term Human Capital Development? The Dynamic Effects of Alternative Training Schemes, **Review of Economic Studies**, 80 (1), 2013, 313-342
- Déjà Vu? Short-Term Training in Germany 1980-1992 and 2000-2003, **Empirical Economics**, 44 (1), 2013, 289-328 (with Bernd Fitzenberger, Olga Orlanski, and Marie Paul)
- Get Training or Wait? Long-Run Employment Effects of Training Programs for the Unemployed in West Germany, **Annales d'Economie et de Statistique**, 91-92, 2008, 321-355 (with Bernd Fitzenberger and Robert Völter)
- Beschäftigungseffekte ausgewählter Maßnahmen der beruflichen Weiterbildung in Deutschland: Eine Bestandsaufnahme, **Journal for Labour Market Research**, 39 (3-4), 2006, 365-390 (with Martin Biewen, Bernd Fitzenberger, Robert Völter and Marie Waller)



- Imputation Rules to Improve the Education Variable in the IAB Employment Subsample, **Journal of Applied Social Science Studies**, 126 (3), 2006, 405-436 (with Bernd Fitzenberger and Robert Völter)

# Curriculum Vitae

**Andreas Kuhn**

<http://www.econ.uzh.ch/faculty/kuhn.html>

## Personal

- Born 17/08/1975 in St. Gallen, Switzerland

## Current Position

- Senior Researcher, Swiss Federal Institute for Vocational Education and Training, since 2012
- Lecturer at the University of Lucerne

## Education

- Doctorate in Economics, University of Zurich, 2008
- Graduation in sociology, economics and economic & social history, University of Zurich, 2003

## Previous Academic Appointments and Visiting Positions

- Lecturer at the University of Lucerne, 2014-present
- Senior researcher/economist at the Swiss Federal Institute for Vocational Education and Training, 2012-present
- Senior research associate ("Oberassistent") at the Economics Department, University of Zurich, 2009-2012
- Research associate at the Institute for Empirical Research in Economics (IEW), University of Zurich, 2004-2008
- Lecturer at the Sociological Institute, University of Zurich, 2003-2007
- Research associate at the Sociological Institute, University of Zurich, 2003-2004
- Research assistant at the Sociological Institute, University of Zurich, 2001-2003

## Other Affiliations and Professional Services

- Research Fellow, IZA, 2009-present

## Publications

- The Impact of Labor Market Entry Conditions on Initial Job Assignment and Wages. **Journal of Population Economics**, forthcoming (with Beatrice Brunner)
- Announcement Effects of Health Policy Reforms: Evidence from the Abolition of Austria's Baby Bonus. **European Journal of Health Economics**, forthcoming (with Beatrice Brunner)

- In the Eye of the Beholder: Subjective Inequality Measures and Individuals' Assessment of Market Justice. **European Journal of Political Economy**, 27(4), 625-641, 2011
- Unemployment and Right-Wing Extremist Crime. **Scandinavian Journal of Economics**, 113(2), 260-285, 2011 (with Armin Falk and Josef Zweimüller)
- The Public Health Costs of Job Loss. **Journal of Health Economics**, 28(6), 1099-1115, 2009 (with Rafael Lalive and Josef Zweimüller)

### Personal

- Born 13/07/1983 in Zürich, Switzerland

### Current Position

- PhD Candidate at the Department of Economics, Chair of Macroeconomics and Labor Markets, University of Zurich, since 2009

### Education

- M.Sc. Economics, University of Zurich, 2012
- B.A. Economics, University of Zurich, 2008

### Previous Academic Appointments and Visiting Positions

- Visiting Student Researcher, CLE, UC Berkeley, Fall 2012 (Sponsor: David Card)
- Research Assistant for Prof. Josef Zweimüller, University of Zurich, 2007-2010

### Grants, awards and nominations

- Swiss National Science Foundation fellowship for prospective researchers, Fall 2012

### Publications

- Parental Leave and Mother's Post Birth Careers: The Relative Importance of Job Protection and Cash Benefits, **Review of Economic Studies**, forthcoming (with Rafael Lalive, Analía Schlosser and Josef Zweimüller)
- The Demand for Social Insurance: Does Culture Matter?, **Economic Journal**, November 2011 121(556), 413-448 (with Beatrix Eugster, Rafael Lalive and Josef Zweimüller)

## Curriculum Vitae

**Beatrice Brunner**

<http://www.econ.uzh.ch/faculty/brunner.html>

### Personal

- Born 05/08/1980, Switzerland

### Current Position

- Research Associate at the Winterthur Institute of Health Economics, ZHAW Zurich University of Applied Sciences, since 2013

### Education

- Doctorate in Economics, University of Zurich ("summa cum laude"), 2013
- Swiss Program for Beginning Doctoral Students, Microeconomics and Econometrics Sequences at the Study Center of the Swiss National Bank in Gerzensee, Switzerland ("summa cum laude"), 2010
- Graduation in Economics with Major Finance at the University of Zurich ("magna cum laude"), 2008

### Previous Academic Appointments and Visiting Positions

- Assistant at the Department of Economics (former Institute for Empirical Research in Economics), Chair of Macroeconomics and Labor Markets, University of Zurich, 2008 - 2013
- Research Assistant at the Institute for Empirical Research in Economics, Chair of Macroeconomics and Labor Markets, University of Zurich, 2008

### Publications

- The Impact of Labor Market Entry Conditions on Initial Job Assignment and Wages. **Journal of Population Economics**, forthcoming (with Andreas Kuhn)
- Announcement Effects of Health Policy Reforms: Evidence from the Abolition of Austria's Baby Bonus. **European Journal of Health Economics**, forthcoming (with Andreas Kuhn)

# Curriculum Vitae

**Jean-Philippe Wüllrich**

<http://www.econ.uzh.ch/faculty/wuellrich.html>

## Personal

- Born 14/11/1980 in Switzerland

## Current Position

- left academia

## Education

- Doctorate in Economics, University of Zurich, 2001
- Graduation in economics, University of Zurich, 2006
- Graduate Studies in Macroeconomics and Econometrics at the Study Center Gerzensee, Switzerland, 2008

## Previous Academic Appointments and Visiting Positions

- Graduate Visiting Student at MIT Department of Economics, 2010-2011
- Researcher at the Institute for Empirical Research in Economics, Chair of Macroeconomics, University of Zurich, 2006-2011
- Research assistant at the Institute for Empirical Research in Economics Chair for Macroeconomics, University of Zurich, 2006

## Grants, awards and nominations

- Forschungskredit, University of Zurich, 2011
- Fellowship for prospective researchers, Swiss National Science Foundation, 2010-2011
- Forschungskredit, University of Zurich, 2009-2010

## Publications

- Do Financial Incentives Affect Firms' Demand For Disabled Workers?, **Journal of the European Economic Association**, 2013, 11, 25-58 (with Rafael Lalive and Josef Zweimüller)
- Recessions are Bad for Workplace Security, **Journal of Health Economics**, 2011 30, 764-773 (with Jan Boone, Jan C. van Ours and Josef Zweimüller)
- The Effects of Increasing Financial Incentives for Firms to Promote Employment of Disabled Workers. **Economics Letters**, 2010, 107(2), 173{176.

## Curriculum Vitae

**Josef Zweimüller**

<http://www.econ.uzh.ch/faculty/zweimueller.html>

### Personal

- Born 11/2/1959

### Current Position

- Professor of Economics, University of Zürich, since 1997

### Education

- Habilitation („venia docendi“ in Volkswirtschaftslehre), University of Linz, Austria, 1995
- PhD in Economics, University of Linz, Austria, 1989
- Master in Economics, University of Linz, Austria, 1985

### Previous Academic Appointments and Visiting Positions

- Associate Professor, University of Linz, 1996-1997
- Assistant Professor, Institute for Advanced Studies, Vienna, 1995-1997
- Visiting Scholar, Stanford University, Spring Term 1991
- Postdoctoral Fellow, University of California Berkeley, 1991-1993
- Assistant Professor (Universitätsassistent), University of Linz, 1988-1996
- Research Assistant, University of Linz, 1985-1988

### Grants, awards and nominations

- Associate Editor, Journal of the European Economic Association (JEEA), 2009-present
- Member, Economic Policy Panel , 2007-2008
- Editorial Board, Applied Economics Quarterly, 2002-present
- Editorial Board, Nordic Journal of Political Economy, 1995-present
- Member, Executive Committee, Swiss Society of Economics and Statistics, 2007-2010
- Member, Scientific Advisory Board, Rheinisch-Westfälisches Institut für Wirtschaftsforschung (RWI), 2002-2007
- Member, Kuratorium, Deutsches Institut für Wirtschaftsforschung (DIW), Berlin, 2002-2006
- Member, Kommission für Konjunkturfragen (Board of Economic Advisors), Berne, 2000-2002

- Programme Committee, German Economic Association Meeting, Kiel, 2010
- Programme Committee, European Economic Association Meeting, Glasgow, 2010
- Programme Committee, European Economic Association Meeting, Venice, 2002
- Programme Committee, Econometric Society Meeting, Santiago de Compostela, 1999
- Keynote Lecture, Annual Austrian Economic Association (NOeG) Meeting, Linz, 1999
- Schaumaier Prize, Austrian National Bank, 1992
- Erwin Schrödinger Fellowship, Austrian Science Foundation, 1991-1993
- Prize for Best Dissertation, Büche-Preis, Sparkasse Oberösterreich, 1989
- Prize for Best Diploma Thesis, Arbeiterkammer Oberösterreich, 1984

#### **Other Affiliations and Professional Services**

- Co-Director, Labour Economics Programme, CEPR London, 2009-present
- Research Fellow, CESifo Munich, 2001-present
- Research Fellow, IZA Bonn, 1999-present
- Research Fellow, CEPR London, 1996-present
- Member, Ausschuss für Makroökonomie, Verein für Socialpolitik, 2000-present
- Member, Ausschuss für Bevölkerungsökonomie, Verein für Socialpolitik, 1997-present

#### **Own research projects (grants)**

- Employment Effects of the Agreement of Free Movement and Settlement between Switzerland and the EU, Swiss Ministry of Social Affairs (seco), (Joint Project with Rafael Lalive, University of Lausanne), 2012-2013
- International Trade and Income Inequality, SNF Synergia Project, Principal Investigator, (Partners: Peter Egger, ETH Zurich and Reto Foellmi, University of St.Gallen), 2011-2014
- Labor Market and Welfare State (part II of the project), National Research Network, Austrian National Priority Programme (PI: Rudolf Winter-Ebmer), Leader of Subproject Population Economics, 2011-2014
- Labor Market and Welfare State, NRN, Austrian National Priority Programme (PI: Rudolf Winter-Ebmer), Leader of Subproject Population Economics, 2008-2011
- Disabled Individuals on the Austrian Labor Market: Integration or Segregation?, Jubiläumsfonds, Austrian National Bank, 2006-2007
- Regional Disparities in Unemployment, Swiss Ministry of Economic Affairs (seco), 2005-2006
- Parental Leave and Fertility, Endowment for Research, University of Zurich, 2005



- Compensating Wage Differentials, Swiss National Science Foundation, 2004-2006
- Evaluating the Macroeconomic Effects of Active Labor Market Policy, Swiss Ministry of Economic Affairs (seco), 2004-2006
- Employment and Health, Jubiläumsfonds, Austrian National Bank, 2004-2005

## **Publications**

- How Does Parental Leave Duration Affect Parents' Subsequent Labor Market Careers: Job Protection versus Cash Transfers, **Review of Economic Studies**, forthcoming, (with R. Lalive, A.Schlosser, and A.Steinhauer).
- How Does Parental Leave Affect Fertility and Return-to-Work? Evidence from Two Natural Experiments, **Quarterly Journal of Economics**, 124 (2009): 1363-1402, (with R. Lalive).
- How Changes in Financial Incentives Affect the Duration of Unemployment, **Review of Economic Studies**, 73 (2006): 1009-1038, (with R. Lalive and J. van Ours).
- Do Financial Incentives Affect Firms' Demand For Disabled Workers?, **Journal of the European Economic Association** 11 (2013): 25-58, (with R. Lalive and J. P. Wuellrich).
- Does Raising the Early Retirement Age Increase Employment of Older Workers?, **Journal of Public Economics**, forthcoming, (with S. Staubli).

## **Curriculum Vitae**

**Philippe Ruh**

<http://www.econ.uzh.ch/faculty/ruh.html>

### **Personal**

- Born 19/05/1985, Switzerland

### **Current Position**

- PhD candidate at the Department of Economics, Chair of Macroeconomics and Labor Markets, University of Zurich, since 2011

### **Education**

- Graduation in Economics at the University of Zurich, 2011

### **Previous Academic Appointments and Visiting Positions**

- Assistant at the Department of Economics, Chair of Macroeconomics and Labor Markets, University of Zurich, 2009 - 2011

# Curriculum Vitae

**Rafael Lalive**

<http://www.lalive.org>

## Personal

- Born 25/8/1961 in Steyr, Austria, married, two children.

## Current Position

- Professor, University of Lausanne, since 2006

## Education

- Doctorate in Economics, University of Zurich ("summa cum laude"), 1998-2001
- Licentiate in Economics (major: Econometrics), University of Zurich ("summa cum laude"), 1992-1997

## Previous Academic Appointments and Visiting Positions

- Visiting Scholar, Center for Labor Economics, UC Berkeley (host: D. Card), January-June 2014
- Visiting Scholar, LIEPP, Sciences Po (host: Etienne Wasmer), April 2012
- Visiting Scholar, Economics Department, Aarhus University, February 2010
- Assistant Professor (non tenure track), University of Zurich, 2001-2006
- Visiting Scholar, Tinbergen Institute, Amsterdam (host: G. van den Berg), 2002-2003

## Grants, awards and nominations

- Member of German Academy of Sciences Leopoldina
- Short-list for the most prestigious Austrian Science Prize (Wittgensteinpreis), 2006
- Voestalpine Science Prize, 2003
- Theodor Körner Prize, 2000
- Oberbank Research Prize, 1998
- First Novartis Science Prize for Economics, 1997
- Maria-Schaumayer-Foundation (Austrian Central Bank) for women's studies, 1995
- Quelle Science Prize, 1993
- Science Prize of the Chamber of Labour, Upper Austria, 1993

## Other Affiliations and Professional Services

- NBER Affiliate (Retirement Research Center), 2013-2014
- Federal Commission on Family Policy in Switzerland (member), 2012-present
- CESifo Fellow, 2012-present

- Swiss Society for Economics and Statistics (executive board member), 2010-present
- Supervisory Board, CREST, Paris (member), 2010-present
- IfW Research Affiliate, 2008-present
- CEPR Research Affiliate (Labour Economics and Public Economics), 2006-present
- IFAU Research Affiliate, 2006-present
- Population Economics Committee of the VfS, 2006-present
- IZA Research Fellow, 2004-present

#### **Own research projects (grants)**

- Labor Market Effects from Raising the Full Retirement Age: Evidence from Switzerland (with Stefan Staubli), NBER Retirement Research Center, CoPI, 2013-2014
- Does Immigration Displace Native Workers in Switzerland?, State Secretariate of Economnic Affairs, Co-PI with Josef Zweimüller, 2012-2013
- Education and Employment: Pathways Out Of Vulnerability?, National Center for Competence in Research Lives (Director: Dario Spini; IP4 leader: Rafael Lalive), 2011-present
- Designing Rating Systems, Conference of Rectors of Swiss Universities (PI: Dominique Foray), 2010-2012
- Field experiment for Zurich power utility ewz, Swiss Ministry of Energy (PIs: Lorenz Goette and Rafael Lalive), 2010-2013
- Public policy and post unemployment experiences, Swiss national science foundation (PI: Rafael Lalive), 2010-2012
- Fertility and Immigration, Austrian National Priority Programme "Welfare State", (PIs: Josef Zweimüller; Karin Mayr), 2008-2012
- Institutions and Unemployment, Swiss National Science Foundation (PI. Rafael Lalive), 2008-2010

#### **Publications**

- Parental Leave and Mother's Post Birth Careers: The Relative Importance of Job Protection and Cash Benefits, **Review of Economic Studies**, forthcoming (with Andreas Steinhauer, Analía Schlosser and Josef Zweimüller)
- Coordination on Networks: Does Topology Matter? **PLOSone**, **2013**, February 6, <http://dx.plos.org/10.1371/journal.pone.0055033> (with Alberto Antonioni, Maria-Paula Cacault and Marco Tomassini).

- Does Parental Leave Affect Fertility and Return-to-Work? Evidence from Two Natural Experiments, **Quarterly Journal of Economics**, 2009, 24(3), 13631402 (with Josef Zweimüller)
- How Changes in Financial Incentives Affect the Duration of Unemployment, **Review of Economic Studies**, 2006, 73(4), 10091038 (with van Ours, Jan C. and Zweimüller, Josef)
- The Coevolution of Cultural Groups and In-Group Favoritism, **Science**, 26 September (321): 18441849, 2008. (with Charles Efferson and Ernst Fehr)

# Curriculum Vitae

**Stefan Staubli**

<http://econ.ucalgary.ca/profiles/stefan-staubli>

## Personal

- Born 25/8/1961 in Steyr, Austria, married

## Current Position

- Assistant Professor, University of Calgary, since 2014

## Education

- Ph.D. Economics, University of St. Gallen, 2005-2009
- Graduate Studies (Macroeconomics, Microeconomics, Econometrics), Study Center Gerzensee, 2005-2006
- M.Sc. Economics and Statistics, grande distinction, Free University of Brussels, 2003-2004
- Licentiate in Economics, summa cum laude, University of Zurich, 1997-2003

## Previous Academic Appointments and Visiting Positions

- Associate Economist, RAND (Adjunct Affiliate, 2011-2012), 2011-2013
- Senior Research Associate, Department of Economics, University of Zurich, 2011-2013
- Senior Research Associate, Department of Economics, University of St. Gallen, 2009-2012
- Visiting Scholar, Department of Economics, University of Maryland, 2010-2011
- Research Assistant, Department of Economics, University of St. Gallen, 2005-2009
- Visiting Ph.D. Student, Department of Economics, University of Maryland, 2007-2008

## Grants, awards and nominations

- Post-Doctoral Fellowship, University of St. Gallen, 2010-2012
- Swiss National Science Foundation Fellowships for Research at University of Maryland, 2007-2008

## Other Affiliations and Professional Services

- Affiliated Adjunct, RAND Corporation, 2014-present
- Affiliated Member, Department of Economics, University of Zurich, 2014-present
- Research Economist, National Bureau of Economic Research, 2013-present
- Research Fellow, IZA, 2011-present

- Research Fellow, Netspar, 2009-2013

#### **Own research projects (grants)**

- Co-Principal Investigator, NBER Retirement Research Consortium, 2013-2014 (with Rafael Lalive)
- Co-Principal Investigator, NBER Disability Research Consortium, 2013-2014 (with Josef Zweimüller)
- Principal Investigator, National Institute on Aging R03AG045456, The Labor Supply and Well-Being Effects of Employment Disincentives on Older Workers, 2013-2014
- Principal Investigator, National Institute on Aging R03AG045451, Benefit Generosity and Disabled Workers, 2013-2015
- Co-Investigator, National Institute on Aging R21AG037891, Alternative Pathways to Retirement, 2011-2013 (PI: Kathleen Mullen)
- Center for Pensions and Superannuation Paper Grant, 2010 (with Monika Bütler and Kim Peijnenburg)
- Co-Investigator, Federal Social Insurance Office, Pilot Project Seed Capital, 2009-2013 (PIs: Monika Bütler and Michael Lechner)

#### **Publications**

- “Does Raising the Early Retirement Age Increase Employment of Older Workers?,” with Josef Zweimüller, **Journal of Public Economics**, 108, 17-32, 2013.
- “How Much Does Annuity Demand React to a Large Price Change?,” with Monika Bütler and Maria Grazia Zito, **The Scandinavian Journal of Economics**, 115(3), 808-824, 2013.
- “Die Auswirkungen bedarfsabhängiger Leistungen: Ergänzungsleistungen in der Schweiz,” with Monika Bütler, Lukas Inderbitzin, and Jonathan Schulz, **Perspektiven der Wirtschaftspolitik**, 13(3), 137–265, 2012.
- “The Impact of Stricter Criteria for Disability Insurance on Labor Force Participation,” **Journal of Public Economics**, 95 (9-10), 1223–1235, 2011.

# **S 10310 Industry Dynamics and Market Structure**

## **Project Leader**

Since December, 2013:

Prof. Dr. Winter-Ebmer, Rudolf

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Until November, 2013:

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E-mail: [zulehner@safe.uni-frankfurt.de](mailto:zulehner@safe.uni-frankfurt.de)

Assignment to subject discipline(s) (use ÖSTAT codes)

1	%	2	%	3	%
5370	70	5304	30		



## 1. Summary

The objective of this subproject is to investigate topics related to industry dynamics and market structure. Among other things, research in the field of IO aims at understanding market structure, i.e., the number of firms in a market, their sizes and the products they offer, and the role market structure plays in determining the extent of market competition. In particular, antitrust and regulatory authorities are interested to know how many firms it takes to sustain competition in a market. We aim at contributing to the empirical analysis of firm dynamics and market structure by investigating firm entry and exit and how exogenous changes in the competitive environment are transmitted onto the output market and firms' hiring and firing decisions. To understand the role of market structure on competition, we consider the strategic interaction among firms and structurally estimate the underlying parameters of interest.

This is a new subproject (start in September 2010) and evolved from two joint papers by Andrea Weber (SP 03 Labor Market Policy) and Christine Zulehner. We investigated the effect of gender diversity of first employees on the success of start-ups and presented empirical evidence for Becker (1957)'s theory on discrimination by studying the survival of start-up firms in Austria. Both papers made use of the firm data available in the ASSD data. The idea of this subproject is to use the ASSD firm panel for questions related to industrial organization. The ASSD firm panel is available for a period from 1978 to 2012, and includes, as is unusual in IO, information on the characteristics of the workforce. We conduct cross industry studies as well as specific industry studies based on the ASSD firm panel and additional industry specific data such as bids from procurement auctions and balance sheet data from the Amadeus data base. In this way we obtained unique data sets.

The cross industry studies investigate industry dynamics and the interaction between market structure and firm entry and exit. We analyze the characteristics of surviving and mature firms as well as entering and exiting firms and to look at the determinants of entry modes when multinational firms are setting up affiliates in Austria. We further investigate the implications of firm heterogeneity and dynamics on the labor market and aim at understanding the source of productivity differences across firms. To identify the interaction among firms, we concentrate on industry specific studies in the construction and health sector. We estimate a bidding model for first price auctions in public procurement auctions to investigate the effect of competition in the economic crisis on markups. We also investigate how employment is affected during a recession and derive labor demand from the winner and runner-up in procurement auctions. Finally, based examining the strategic implications of entry, we assess the effect of entry regulations in the health market.

Our research led to a number of working papers which we expect to be published in international journals. It has also received attention by the research community in various seminar, workshop, and conference presentations.

## **2. Scientific background / aims of research**

This subproject contributes to two literature strands. The first strand explores firm heterogeneity and summarizes turnover patterns in different industries aiming to provide stylized facts on market structure as well as firm and industry dynamics (see Geroski (1995) and Caves (1998) for surveys). The effects of selection and turnover on productivity growth have been studied in theoretical models (Jovanovic 1982, Asplund and Nocke 2006) and in empirical studies (Foster, Haltiwanger and Syverson 2008). Weber and Zulehner (2010a, 2010b) study the determinants of the success of Austrian start-up firms. Klepper and Thompson (2010) discuss spin-offs as particular type of entry and Kalkbrenner (2010) analyzes the mode of entry like establishing new affiliates in different markets.

The cross industry studies aim at understanding industry dynamics and the interaction between market structure and firm entry and exit. For example, we investigate the determinants of the survival of start-up firms and spinoff firms with a special focus on the driving factors for spin-off creation. We extend our research to evaluate the social ties of first hires and how these determine a firm's survival. In an additional study, we investigate the determinants of the mode of entry (subsidiary) depending on firm characteristics. We also analyze the effects of mode choices on labor demand in Austria. These patterns of firm dynamics in different industries or sectors provide stylized facts, which are the basis for future theoretical and empirical work.

The second literature strand analyzes the structural estimation of game theoretical models (see Akerberg et al. 2006 for a survey). For the industry studies on the construction sector, we estimate bidders' cost distribution from submitted bids in construction procurement auctions. By focusing on one industry and imposing the structure of a game-theoretic model, we are able to back out firm specific cost and do not have to rely on data averaged over firms. We have to assume, however, that bidders behave according to the theoretical model. For the empirical implementation, we follow and simplify Athey et al. (2011) and use a parametric version of Guerre et al. (2000) to recover the distribution of bidder costs from the observed bids. We assume that the demand shock exogenously changed bidders' participation. Within this framework we also apply a treatment-control group approach to identify labor demand in the construction sector. The approach to establish a comparison group by using the runner-up is somewhat similar to the strategy of Greenstone et al. (2010) and Lee and Mas (2012).

When entry is modeled as a strategic game, it is possible to draw inferences about unobserved payoffs from the equilibrium relationship between the observed market structure and market characteristics like market size. Bresnahan and Reiss (1990, 1991) and Berry (1992) pioneered this approach of revealed preferences for entry games and Mazzeo (2002), Seim (2006) and Schaumans and Verboven (2008) provided useful extensions.

### **3. Results and discussion**

#### **3.1 Industry dynamics**

*Startups:* According to Becker's (1957) famous theory on discrimination, entrepreneurs with a strong prejudice against female workers forgo profits by submitting to their tastes. In a competitive market their firms lack efficiency and are therefore forced to leave. We present new empirical evidence for this prediction by studying the survival of start-up firms in longitudinal matched employer-employee data. We find that firms with strong preferences for discrimination approximated by a low share of female employees relative to the industry average have significantly shorter survival rates. This is especially relevant for firms starting out with female shares in the lower tail of the distribution. Competition at the industry level additionally reduces firm survival and accelerates the rate at which prejudiced firms are weeded out. We also find evidence for employer learning as highly discriminatory start-up firms that manage to survive submit to market powers and increase their female workforce over time.

*Spinoffs:* We analyze the characteristics of surviving and mature firms as well as entering and exiting firms. We begin by focusing on entering firms where the workforce originates to a large extent from a more mature parent firm, i.e. spin-off firms. We compare results for spinoff firms to the performance of start-up firms. We quantify horizontal and vertical spin-off activities and estimate the likelihood of parent and spin-off survival, with special emphasis on the driving factors for spin-off creation: Is spinning off a survival strategy because the parent firm is going out of business or is it a branching out of new economic potential, whereby both the parent firm and the spin-off entrant perform jointly in the market. Eriksson and Kuhn (2006) use a similar approach to analyze firm entry and exit of Danish spin-offs, which allows for a comparison with Austrian firm dynamics. The aim of this research is to identify patterns of firm evolution over time. Using a firm panel for the years 1976-2009 we identify 962,726 firms, whereby 21,780 firms are spin-offs and 31,243 firms are start-up firms. We use these definitions to estimate survival probabilities with hazard rate models taking entrant firm characteristics, parent firm characteristics and geographic distance between the firms into account. We extend the research question to evaluate if social ties of high potential employees matter for the survival of entrant firms. For the entrants firm we have identified in the first step, we concentrate now on the first hired

Abschlussbericht NFN, FWF 2014

workers and establish their network links to other first hire workers in entrant firms. A hypothesis suggests that entrepreneurs which have strong links to other innovative entrepreneurs will be more successful than those with less network links.

*Entry mode:* We investigate firm dynamics from yet another angle. The Amadeus database offers the possibility to analyze how firms organize their production internationally. We use the ownership structure between parent firms and subsidiaries at different points in time to determine new entry of parent firms into domestic and foreign markets. Entry is defined by setting up new affiliates. A firm's entry mode details how a firm operates between its home and a foreign market. The literature distinguishes between local producers, exporters and foreign affiliates. We then match a variety of firm-level, market-based performance measures, such as sales growth and financial development, to the firm and its affiliates. We construct a panel data set using parent firms and their subsidiaries over time and countries including a variable indicating the entry mode of the parent. This allows us to estimate a dynamic model of mode choice and its determinants depending on firm characteristics. Further it allows studying industry effects and interlinking them for the case of Austria with results obtained from the ASSD firm panel. Within this framework, we intend to analyze the effects of mode choices on labor demand in Austria at the industry level and compare it to existing results in the literature. Becker et al. (2005) compare the effects on location choice on German and Swedish employment using cross-section data for the year 2000; Mayer et al. (2010) present results for French multinational firms. Data exports of the ownership data of Bureau van Dijk Amadeus data base have been delivered in December 2013. The past months we have recoded and cleaned the data to make further economic analysis possible. The next step is to create panels of all European firms and to determine the entry variable.

### 3.2 Industry studies

*Auctions:* For an industry level estimation of the effect of the number of firms on market competition we base our empirical strategy on the effect of the recent financial crisis on the Austrian construction sector. The estimation of auction outcomes has obtained a lot of interest and structural empirical work has gained much importance in recent time. We build on that literature (especially Jofre-Bonet, Pesendorfer, 2004; Athey et al., 2011). From the negative demand shock that followed the financial crisis, we exploit the sudden variation in the number of bidders per auction as a quasi-experiment.

From the study on bidding behavior we estimated the effect that a change in the number of bidders has on markups. The markups are based on identification of bidders' costs from observed bids. Our results show a decrease of markups during the economic downturn of 1.5 percentage points (or 12.6 percent). The decrease is 3.3 percentage points

for the winning bids, which is about the same in relative terms (14.3 percent). Some of the difference can be explained by differences in projects. The majority of the markup drop emerges from the additional bidder(s) and the decrease in backlogs of firms. These results show that besides the number of bidders in an auction, their free capacity plays an equally important role.

*Labor Demand* Within the framework of sealed-bid procurement auctions we apply a treatment-control group approach to identify labor demand in the construction sector. The approach will identify the labor demand that is driven by winning additional construction projects. Further comparison of the treatment and controls to the population of all bidding firms will provide evidence on the extent of hoarding. The development alongside the financial crisis will show if the extent of hoarding/spot-market like contracting depends on the overall state of the economy. This will also give more insight into the drivers of lower markups of firms' bids, observed in our previous study.

The effect of winning a project on the labor demand of a company shows that within the first two months after a project is announced, labor demand increases significantly for the winner, compared to the runner-up. The development before the announcement date is not significantly different. Regression results with additional controls confirm the descriptive findings. We control for the general development of employment in the firms that are not winner or runner-up on a particular day. Any general development therefore is controlled for on a daily basis. For the winner, there is an average increase of half a percentage point in the number of employees over the whole post-announcement window of 90 days; for the runner-up, there is no effect. Additional controls for competition and backlog give (preliminary) results for the effect of competition on employment: after the announcement, more competition in the corresponding auction leads to lower levels of employment for both groups, but no additional effect for the winners. In and after October 2008 the economy-wide development of stocks of contracts and new orders shows strong signs of declining demand. When we split the sample accordingly to a pre-crisis and crisis-period, we observe during the crisis (i) an additional negative effect of competition overall for the periods after the announcement and (ii) an additional negative effect of competition for the winners.

*Entry cost* We extend our empirical model to the estimation of entry costs. The focus will be on analysing if geographical and product submarkets are present and if entering these markets is reflected in higher entry costs. Detailed data on the location of each potential bidder and information on the construction subsector has already been compiled.

*Health* As in other European countries, the health market in Austria is highly regulated. Pharmacies as well as doctors are subject to entry and conduct regulation argued to ensure a minimum availability of supply in less profitable, mostly rural areas without inducing excessive entry elsewhere. We evaluate the effect of these regulations on the

number of pharmacies and doctors and specify an empirical entry model in the spirit of Bresnahan and Reiss (1990, 1991). The model will accommodate the Austrian institutional characteristics. Pharmacies receive high regulated markups over wholesale costs and are protected from additional competition through geographic entry restrictions. The market for physicians works in the following way. Patients in Austria hold a mandatory health insurance with the health insurance funds at the provincial level. These funds conclude contracts with resident physicians and medical specialists ("Vertragsarzt", i.e., contracted doctor). The number of contracted doctors in a region depends on the population density and on epidemiological benchmarks. The contracted doctors receive their payments for provided services directly from the insurance fund based on pre-negotiated tariff. In addition, doctors who are not offered such a social security contract provide their services on the free market, choosing their location autonomously ("Wahlarzt", i.e., free doctors). Their services are always directly paid by the patients rather than by the health insurance company. However, patients will be refunded part of the expenses for those services that would also be covered in case of contracted partners. Based on Schaumans and Verboven (2008) and Schaumans (2010), our model will allow for the strategic interaction between pharmacies and two groups of physicians, i.e. contracted and free doctors. The entry model can be used to draw inferences about the competitive interaction within and between professions and about unobserved payoffs from the equilibrium relationship between the observed market structure and market characteristics like market size.

### 3.3 Labor market outcomes

*Long-term effects:* This paper uses an extensive employer-employee matched data set covering more than 30 years to present the immediate and the long-term effect of job displacement in Austria during the economic down turn in the 1980's. We use worker flows between firms to identify workers who separate from their stable job during a mass-layoff or firm closure. We find large immediate and long-term losses in quarterly earnings and employment. Both effects are mainly driven by the lower labor force participation of workers displaced from their jobs compared to similar non-displaced workers.

*Parental leave:* In line with traditional gender roles the Austrian parental leave system focused on mothers for a long time. Nowadays after several reforms fathers have exactly the same requirements, duties and rights as their female counterparts. Still, the number of fathers on parental leave is relatively low compared to countries which adopted similar systems. This paper gives a descriptive analysis of fathers on parental leave – where did they work, how much did they earn, are they clustered in specific industries or firms et

cetera. Additionally, these findings are compared to the pre and post leave careers of women.

*Labor market entrants:* New labor market entrants can expect about 45 years of work. As their careers progress wages will increase, and they will change jobs several times. At ten years of potential experience which translates to 5.5-6.0 years of actual experience almost 20-25 percent of workers held at least five jobs. Turnover rates measured as the mean additional number of jobs decline with each additional year of potential experience. In the first year of potential experience men hold 1.34 and women hold 1.41 jobs on average. At ten years of potential experience these numbers reduce to 0.22 for men and 0.18 for women. The average rate of job changing declines with current job tenure. After twelve months staying at the same firm, the hazard rate declines by 70 percent for men and by 77 percent for women. It stabilizes at about Looking at the accumulation of experience there is a great difference by sex. While the additional experience gained per year is increasing for men, it is decreasing for women. This is attributable to the lower labor market attachment of women.

*Wage structure:* Exploiting the special nature of the Pharmaceutical Salary Fund and the strict legal regulations concerning the establishment of new pharmacies, we plan to investigate the behavior of pharmacies and changes in the market structure using supply and demand shocks. Furthermore we aim to analyze the hiring and firing behavior of pharmacies given the incentives arising from the payment system of the Pharmaceutical Salary Fund.

<b>SUMMARY OF ( PLANNED) OUTPUT</b>			
<i>Industry Dynamics</i>			
Startups	A. Weber C. Zulehner	Competition and gender prejudice: Are discriminatory employers doomed to fail?	JEEA, forthcoming
Spinoffs	E. Segalla C. Zulehner	Determinants of success: Evidence from Austrian start-up and spin-off firms	Working Paper
Entry mode	H. Oberhofer E. Segalla H. Winner	Determinants of the entry mode	Data preparation Working Paper by 08/2014
<i>Industry studies</i>			
Auctions	K. Gugler M. Weichselbaumer C. Zulehner	Competition in the economic crisis: Analysis of procurement auctions	Working Paper Submitted to EER

Labor Demand	K. Gugler M. Weichselbaumer C. Zulehner	Employment in a recession: Evidence from procurement auctions in the Great Recession	Working Paper by 05/2014
Entry cost	K. Gugler M. Weichselbaumer C. Zulehner	Entry cost in procurement auctions	Working Paper by 08/2014
Health	S. Bernhard M. Hummer C. Zulehner	Entry regulation in the Austrian health sector	Working Paper by 05/2014
Cement	N. Fink C. Zulehner	Cement industry	Data preparation Working Paper by 12/2014
<i>Labor market outcomes</i>			
Long-term effects	M. Fink E. Segalla A. Weber	Long-term Effects of Job Loss in the 1980's in Austria	Working Paper
Parental Leave	M. Fink	Male mommies? Fathers on parental leave	Working Paper by 06/2014
Labor market entrants	M. Fink	Job mobility and wage growth of young labor market entrants	Working Paper by 04/2014
Wage structure	M. Fink C. Zulehner	Wage structure in Austrian Pharmacies	Data preparation Working Paper by 08/2014

#### 4. Cooperation within and outside of the NRN

The subproject departed from the joint work with subgroup 3 (Labor market policy) on the development of the ASSD firm panel, the documentation of industry dynamics in Austria and the study of determinants of the success of start-up firms. We collaborate with this subgroup on the further development and maintenance of the ASSD firm panel as well as the linkage of the ASSD firm panel with data from the Amadeus database. In addition, we closely work together on research questions related to industry and firm dynamics and on investigating the implications of firm heterogeneity and dynamics for the labor market. We also plan further projects on the role of firms in the labor market that go beyond this one.

Additional internal collaborations will be closest with working groups 6 (Health) and 9 (Bayesian Econometrics). Collaboration with working group 6 concentrates on the joint research topic "Entry regulation in the health market". Here, we jointly evaluate the effect of the regulations on the number of pharmacies and doctors in Austria and to address health as



well as policy related questions with methods developed in industrial organization. We also collaborate with members of working group 6 regarding the research question “Determinants of the entry mode”. The group around Hannes Winner at the University of Salzburg is focusing on the effects of foreign or domestic ownership of enterprises and the differences in tax contributions. Their research agenda is directly linked to questions about the corporate decision to enter a market by establishing subsidiaries. We would like to explore those synergies. Collaboration with working group 9 concentrate on the application of new estimation techniques developed to address issues in empirical research. In particular, we address issues of unobserved heterogeneity in models with discrete dependent variables with Bayesian econometrics, one of the core topics of working group 9.

Outside the NRN, we have worked together with Klaus Gugler (Vienna University of Economics and Business) on the studies of procurement auctions. Klaus Gugler has done extensive research in Empirical Industrial Organization with an emphasis on Mergers and Acquisitions. He has contributed additional data on procurement auctions, which became a useful complement to the analysis of our NRN-research topics and data. The two joint papers from the cooperation have benefitted from frequent meetings of this coauthors subgroup. A third working paper is in progress, as well as work on a follow-up project.

Esther Segalla (Austrian National Bank) has coauthored one paper with subproject leader Christine Zulehner. Esther Segalla's previous research on entry modes delivered fruitful synergies together with the detailed data available for Austrian start-ups and spin-offs (Working paper: Determinants of success: Evidence from Austrian start-up and spin-off firms). The cooperation has also produced a second working paper with a focus on the labor market (Working paper: Long-term Effects of Job Loss in the 1980's in Austria). The cooperation extends to ongoing work on entry mode from an international perspective.

# Curriculum Vitae

**Christine Zulehner**

<http://www.wiwi.uni-frankfurt.de/christine.zulehner>

## Personal

- Born on March 1, 1968, Austrian citizen

## Current positions

- Professor at Goethe University Frankfurt, Department of Management and Microeconomics, since 12/2013
- Research staff member at Austrian Institute of Economic Research, since 06/2008
- Member of the Economic Advisory Group on Competition Policy, since 11/2013
- Member of the Scientific Advisory Council of ZEW Mannheim, since 02/2012
- Associate member of the Austrian Competition Commission, since 04/2008
- Research fellow, Center for Economic Policy Research (CEPR), since 10/2013
- Member of the Council for Industrial Organization, German Economic Association, since 02/2010

## Past Experience

- Professor at Johannes Kepler University Linz, 09/2010–11/2013
- Associate professor (with tenure) at the University Vienna, 09/2009–08/2010
- Lecturer at the University Vienna, 11/2008–06/2009
- Lecturer at the University Graz, 03/2009–06/2009
- Assistant professor at the University Vienna, 09/1999–11/2008
- Visiting fellow at the University of California, Berkeley, 01/2008–03/2008
- Visiting fellow at Purdue University, 08/2005–07/2006
- Visiting fellow at the Social Science Research Center Berlin, 07/2000
- Research fellow at the Social Science Research Center Berlin, 08/1997–08/1999
- Research fellow at the Institute for Advanced Studies Vienna, 10/1996–07/1997

## Education

- Habilitation in Economics, University Vienna, 11/2008
- PhD in Economics, Humboldt University Berlin, 11/2001
- Masters in Economics, Institute for Advanced Studies Vienna, 10/1996
- Masters in Mathematics, Vienna University of Technology, 04/1994

## Research Grants

- "What do legal cartels tell us about illegal ones?", Research Program Strengthening Efficiency and Competitiveness in the European Knowledge Economy (SEEK), joint with Matthias Hunold (Center for European Economic Research – ZEW Mannheim) and Konrad Stahl (University Mannheim), April 2013–September 2014.
- "Industry dynamics and market structure", Austrian Science Fund (FWF), subproject of the National Research Network Austrian Center for Labor Economics and the Analysis of the Welfare State, September 2011–August 2014.
- "Registered cartels in Austria - Mechanisms to enforce cartel agreements", Jubiläumsfonds Oesterreichische Nationalbank, joint with Nikolaus Fink (Austrian Federal Competition Authority), Philipp Schmidt-Dengler and Konrad Stahl (both University Mannheim), August 2011–July 2014.
- "Firm behavior over the product life cycle: entry, exit and pricing on online price-comparison sites", Research Program Strengthening Efficiency and Competitiveness in the European Knowledge Economy (SEEK), joint with Franz Hackl (University Linz), Michael Kummer (ZEW Mannheim) and Rudolf Winter-Ebmer (University Linz), October 2010–January 2012.
- "Determinants of the gender wage gap in Austria", Jubiläumsfonds Oesterreichische Nationalbank, joint with Rene Böheim (University Linz), Justus Henke (Statistik Austria), Hedwig Lutz and Helmut Mahringer (both Austrian Institute of Economic Research), July 2008–June 2010.
- "Discrimination of women in the labor market and the determinants of firm survival", Berkeley-Austria-Exchange Program, January–March 2008.
- "Estimation of dynamic games with asymmetric players", Austrian Science Fund (FWF), Schrödinger Fellowship, August 2005–July 2006.
- "Testing for asymmetric oligopoly models", Jubiläumsfonds Oesterreichische Nationalbank, joint with Ralph Siebert (Purdue University), January 2005–December 2006.

## Publications

- "Market structure and market performance in e-commerce", joint with Franz Hackl, Michael Kummer and Rudolf Winter-Ebmer, **European Economic Review**, 2014, forthcoming.
- "Competition and gender prejudice: Are discriminatory employers doomed to fail?", joint with Andrea Weber, **Journal of the European Economic Association**, 2014, 12(2), 492–521.

- "Is fixed-mobile substitution high enough to deregulate fixed voice telephony? Evidence from the Austrian markets", joint with Wolfgang Briglauer and Anton Schwarz, **Journal of Regulatory Economics**, 2011, 39(1), 50-67.
- "Female hires and the success of start-up firms", joint with Andrea Weber, *American Economic Review Papers and Proceedings*, 2010, 100(2), 356-361.
- "Bidding behavior in sequential cattle auctions", **International Journal of Industrial Organization**, 2009, 27(1), 33-42.

# Curriculum Vitae

**Michael Weichselbaumer**

<http://www.econ.jku.at/2403/>

## Personal

- Born 26/8/1978 in Wels, Austria, single, two children.

## Current Position

- Researcher, Johannes Kepler University, Linz, since 9/2011

## Education

- Dr rer soc oec, University of Vienna, 2010
- Mag rer soc oec, University of Vienna, 2004

## Previous Academic Positions

- Assistant professor, Vienna University of Technology, 10/2009-8/2011
- Researcher, University of Vienna, Vienna, 9/2004-9/2009

## Publications

- Competition in the economic crisis: Analysis of procurement auctions, 2013 (with Klaus Gugler and Christine Zulehner), mimeo (submitted).
- Market optimism and merger waves, 2012 (with Klaus Gugler, Dennis C. Mueller and B. Burcin Yurtoglu), **Managerial and Decision Economics**, 33(3): 159-175.
- The determinants of merger waves: an international perspective, 2012, (with Klaus Gugler and Dennis C. Mueller), **International Journal of Industrial Organization**, 30(1), 1-15.

# Curriculum Vitae

**Martina Fink**

<http://www.econ.jku.at/2317/>

## Personal

- Born 14/3/1984 in Vienna, Austria, single

## Current Position

- Researcher, Johannes Kepler University, Linz, since 2011

## Education

- Mag rer soc oec (equiv. MA in economics), University of Vienna, 2009

## Previous Academic Positions

- Researcher, University of Vienna, Vienna, 2010-2011
- Researcher, Institute for Advanced Studies (IHS), Vienna, since 2008-2010
- Tutor for Applied Econometrics at the University of Vienna, 2007-2008

## Publication

- Fink, Martina: "Job mobility and wage growth of young labor market entrants"; March 2014.
- Fink, Martina, Esther Segalla and Andrea Weber: "Long-term Effects of Job Loss in the 1980's in Austria"; March 2014.
- Martina Fink, Esther Kalkbrenner, Andrea Weber, Christine Zulehner: "Extracting Firm Information from Administrative Records: The ASSD Firm Panel"; NRN: The Austrian Center for Labor Economics and the Analysis of the Welfare State, Working Paper 1004, April 2010.

# **S 10306 Health Economics**

## **Project Leader**

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Assignment to subject discipline(s) (use ÖSTAT codes)

1	%	2	%	3	%
3911	70	5323	30		

## 1. Summary

Health economics projects in both funding periods have involved research on the socio-economic determinants of health, the economics of prevention, and the analysis of healthcare markets with a focus on child health, moral hazard and the role of health networks in service provision.

### 1.1. Socioeconomics and health

We study the socio-economic determinants of birth weight, with a focus on the mother's family status. We use Austrian birth register data covering all births between 1984 and 2007 and find that a mother's marriage is associated with a higher birth weight of the newborn, in the range of 40 to 60 g. The significant impact is retained if we include mother fixed effects or use an instrumental variable approach to account for unobserved mother heterogeneity. However, the magnitude of the causal effect (37 g) indicates selection into marriage.

In comparing traditional 2SLS estimates with a semi-parametric Bayesian IV approach, we also study the causal effects of family size on health and human capital outcomes of children. We build on exogenous variation in family size due to twin births and same sex sibship and find zero estimates with an increased precision as compared to available empirical evidence.

Another health-related project covers human capital effects of the Chernobyl Accident in Austria. Relying on exogenous variation in the exposure to radioactive fallout (over time and) between communities due to geographic differences in precipitation at the time of the Chernobyl Accident, we find evidence for compensating investment behavior. Families with low socio-economic status reduce their family size, while families with higher status respond with reduced maternal labor supply.

Finally, a causal analysis of accidents on the way to and from work finds negative and persistent effects on subsequent employment and earnings.

### 1.2. Prevention

We estimate the causal effects of participating in voluntary general health checks in Austria on a number of outcomes such as extramural expenditure, hospitalization, drug intake, sick leave, and mortality. Our IV approach exploits regional variation in screening uptake as a consequence of general practitioners' medical service inducement. We find an increase in extramural expenditure and hospital days in the short-run (1-3 years) whereas we do not find long run cost saving potentials for both outcomes. Moreover, there is no evidence for a causal effect on the incidence of sick leave or mortality in both the short and long-run.



### 1.3. Healthcare service research

Analyzing the impact of social networks on general practitioners' (GPs) referral behavior, we find that GPs refer more patients to specialists within their social networks and that patients referred within a social network have fewer follow-up consultations and are healthier as measured by the number of inpatient days. Consequently, referrals within social networks tend to decrease healthcare costs by overcoming information asymmetry with respect to specialists' abilities.

Another research project on primary health care markets focuses on the physician gender wage gap in Austria. Based on panel data of annual earnings of resident doctors in the Austrian province of Tyrol, we observe a gender earnings gap of approximately 32 percent and find that a substantial part of this difference cannot be explained by individual or market characteristics.

And finally, we analyze the effectiveness of heart attack treatment based on administrative data from the Upper Austrian Sickness Fund (OÖGKK). Using instrumental variables to account for non-random selection of patients into hospitals, we show that the immediate access to invasive treatments has significant effects on mortality and negligible effects on costs.

## **2. Scientific background / aims of research**

The objective of the HEALTH ECONOMICS subproject was to analyze the relationship between the utilization of healthcare services, an individual's health status, her socio-economic characteristics, and the behavior of service providers. For this purpose, we compiled unique data from three Austrian provinces (Tyrol, Vorarlberg and Upper Austria) covering (i) individual health insurance records and information on healthcare utilization and, (ii) provider characteristics at the level of physicians. These data were matched with the NRN datasets (i.e., taxpayer records and social security records including work-related information at the individual level).

According to the proposals for both funding periods, our research contributes to three main areas: First, we investigate the interdependencies between individuals' socioeconomic characteristics and their health status. In particular, we analyze to what extent a mother's family background would influence the birth weight of her babies, and whether low birth weights of newborns increase healthcare costs in childhood and early adolescence. The identification of causal effects of health on earnings based on commuting accidents and those of family size on children's health are two further projects covered in this area.

Second, we analyse the determinants of participating in preventive medical examinations and their long-term consequences on individual health and on the costs of the healthcare system. It is often claimed that preventive health screening lowers the probability

of becoming ill and reduces the overall costs of the health system. Others argue that health checks may only postpone medical expenditures. Using data from individual health checks and the socio-economic characteristics of patients over a time period of more than 10 years, we address the selection issue and analyse the effectiveness of screening programs appropriately.

Third, we focus on the economic behavior of service providers. In particular, we analyze service provision in primary healthcare markets and study the referral and prescription behavior of general practitioners (GPs) depending on their individual characteristics, market structure and social networks. Finally, we analyze health and cost consequences of intensive treatment after heart attacks.

### **3. Results and discussion**

Here we provide a short overview of the conducted research. On the basis of single projects we motivate the research questions, present the applied methodology and results and finish with concluding remarks.

#### **3.1. Socio-economics and health**

##### *Birth weight and family status revisited: evidence from Austrian register data*

Frimmel and Pruckner (2013) study the socio-economic determinants of birth weight, with a focus on the mother's family status. They use Austrian birth register data covering all births between 1984 and 2007 and find that a mother's marriage is associated with a higher birth weight of the newborn, in the range of 40 to 60 grams. The significant impact is retained if mother fixed effects are included or an instrumental variable approach to account for unobserved mother heterogeneity is used. However, the magnitude of the causal effect (37 grams) clearly indicates the importance of selection into marriage. Divorce around pregnancy results in significantly lower birth weights than the birth weights of babies born to single mothers. Family status effects in the 2000s are stronger than they were in the 1980s, and quantile regressions suggest that family effects are more pronounced at the lower quantiles of the birth weight distribution and less pronounced at higher quantiles. The authors conclude that the life situation of expectant mothers has an important influence on the birth weight of newborns, especially at the lower tail of the birth weight distribution.

*Project status: Health Economics, 23 (2014), 264-445.*

##### *Health Expenditures of Early Birds from Birth to Late Adolescence*

The aim of this paper is to analyze the impact of low birth weight (LBW) and very low birth weight (VLBW) on health care utilization in childhood and early adolescence. Based on Austrian health insurance administrative panel data linked to the Austrian birth register,

Hummer, Lehner and Pruckner (2014) estimate the effects of LBW and VLBW in comparison to normal birth weight (NBW) on the number of days spent in hospital and on the expenditures for medical assistance and medical drugs among children and young adults between birth and 21 years old. To account for time-invariant heterogeneity of mothers, the authors control for sibling fixed effects (FE). They find that LBW infants – in comparison to their NBW counterparts – spend more days hospitalized and spend more on medical drugs (particularly on anti-infectives) in their first year of life. Although the absolute differences in health service utilization between NBW and LBW groups diminish over time, LBW newborns still spend more days hospitalized, and their expenses on medical drugs and medical assistance are significantly higher in early childhood. During compulsory schooling, a shift can be observed towards diseases of the nervous system and mental and behavioral disorders among children born with LBW. Some of these effects persist until early adulthood. The authors argue for further efforts in counseling for expectant mothers on the determinants and risk factors of LBW. Moreover, pre-school screenings especially tailored at LBW infants with a particular focus on mental health and behavioral disorders may be easily integrated in the existing postnatal mother child care program in Austria to mitigate the consequences of negative conditions during pregnancy.

*Project status: European Journal of Health Economics, 15/3 (2014), 229-242.*

#### *The effect of health on earnings: Quasi-experimental evidence from commuting accidents*

This paper interprets accidents occurring on the way to and from work as negative health shocks to identify the causal effect of health on labor market outcomes. Halla and Zweimüller (2013) argue that in their sample of exactly matched injured and non-injured workers, these health shocks (predominantly impairments in the musculoskeletal system) are quasi-randomly assigned. A fixed-effects difference-in-differences approach estimates a negative and persistent effect on subsequent employment and earnings. After initial periods with a higher incidence of sick leave, injured workers are more likely to be unemployed, and a growing share of them leave the labor market via disability retirement. Injured workers who manage to stay in employment incur persistent earnings losses. The effects are somewhat stronger for sub-groups of workers who are typically less attached to the labor market.

*Project status: Labor Economics, 24 (2013), 23-38.*

#### *The Quantity and Quality of Children: A Semi-Parametric Bayesian IV Approach*

Prior empirical research on the theoretically proposed interaction between the quantity and the quality of children builds on exogenous variation in family size due to twin births and focuses on human capital outcomes. The typical finding can be described as a statistically nonsignificant two-stage least squares (2SLS) estimate, with substantial standard errors. Frühwirth-Schnatter, Halla, Posekany, Pruckner and Schober (2014) regard these

conclusions of no empirical support for the quantity-quality trade-off as premature and, therefore, extend the empirical approach in two ways. First, they add health as an additional outcome dimension. Second, they apply a semi-parametric Bayesian IV approach for econometric inference. The estimation results substantiate the finding of a zero effect: the authors provide estimates with an increased precision by a factor of approximately twenty-three, for a broader set of outcomes.

*Project status: NRN Working Paper 1402*

#### *Parental Response to Early Human Capital Shocks: Evidence from the Chernobyl Accident*

Little is known about the response behavior of parents whose children are exposed to an early-life shock. Halla and Zweimüller (2014) interpret the prenatal exposure of the Austrian 1986 cohort to radioactive fallout from the Chernobyl accident as a negative human capital shock and examine their parents' response behavior. To identify causal effects, the authors rely on exogenous variation in the exposure to radioactive fallout (over time and) between communities due to geographic differences in precipitation at the time of the accident. The design-based approach (which accounts for culling effects) provides robust empirical evidence for compensating investment behavior. Families with low socio-economic status reduce their family size, while families with higher status respond with reduced maternal labor supply. The results urge caution in the interpretation of estimates of the long-term effects of early-life shocks on children. These estimates should only be interpreted as reduced-form estimates, and one has to account for parental response behavior to reach a deeper understanding on the relationship between early-life shocks and the formation of human capital. In the case of our application, the authors interpret the estimates as the lower bound of the biological effect. For exposed children from higher socio-economic backgrounds, there are no detrimental effects discernable. In contrast, exposed children from lower socio-economic backgrounds have significantly worse human capital outcomes as young adults. This suggests that compensating investment by parents with higher socio-economic status is relatively more effective.

*Project status: NRN Working Paper 1401*

### 3.2. Prevention

#### *The effectiveness of health screening*

Using a matched insurant-general practitioner panel data set, Hackl, Halla, Hummer and Pruckner (2014) estimated the effect of a general health-screening program on individuals' health status and health care cost. To account for selection into treatment, they used regional variations in the intensity of exposure to supply-determined screening recommendations as an instrumental variable. The authors found that screening participation

substantially increased inpatient and outpatient health care costs for up to two years after treatment. In the medium term, cost savings in the outpatient sector occurred, whereas in the long run, no statistically significant effects of screening on either healthcare cost component could be discerned. In summary, screening participation increases health care costs. Since the authors did not find any statistically significant effect of screening participation on insurants' health status at any point in time, a general health-screening program is not recommended. However, given that some evidence for cost-saving potentials for the sub-sample of younger insurants was found, the authors suggest more targeted screening programs.

*Project status: Health Economics, forthcoming*

### 3.3. Healthcare service research

#### *Old Boys' Network in General Practitioner's Referral Behavior?*

Hackl, Hummer and Pruckner (2013) analyzed the impact of social networks on general practitioners' (GPs) referral behavior based on administrative panel data from 2,684,273 referrals to resident specialists made between 1998 and 2007. To construct estimated social networks, the authors used information on the doctors' place and time of study and their hospital work history. It was found that GPs referred more patients to specialists within their social networks and that patients referred within a social network had fewer follow-up consultations and were healthier as measured by the number of inpatient days. Consequently, referrals within social networks tended to decrease healthcare costs by overcoming information asymmetry with respect to specialists' abilities. This is supported by evidence suggesting that within a social network, better specialists receive more referrals than worse specialists in the same network.

*Project status: NRN Working Paper 1308, revise and resubmit Journal of Health Economics*

#### *The Male-Female Gap in Physician Earnings: Evidence from a Public Health Insurance System*

Empirical evidence from US studies suggests that female physicians earn less than their male counterparts, on average. The earnings gap does not disappear when individual and market characteristics are controlled for. This paper investigates whether a gender earnings difference can also be observed in a healthcare system predominantly financed by public insurance companies. Using a unique data set of physicians' earnings recorded by a public social security agency in an Austrian province between 2000 and 2004, Theurl and Winner (2011) find a gender gap in average earnings of about 32%. A substantial share of this gap (20–47%) cannot be explained by individual and market characteristics, leaving labor market

discrimination as one possible explanation for the observed gender earnings difference of physicians.

*Project status: Health Economics, 20 (2011), 1184-1200.*

#### *Mortality and costs after heart attacks – an instrumental variables approach*

Sanwald and Schober (2014) analyze cardiac catheterization treatment effects on mortality, hospital and outpatient costs for patients with acute myocardial infarction (AMI), using administrative data from the Upper Austrian Sickness Fund (OÖGKK) with detailed individual information on patient characteristics and healthcare service utilization. The intensity of treatment of heart attack patients largely depends on the availability of a catheterization laboratory in the hospital. To account for non-random selection of patients into hospitals, the authors exploit the geographic location of the residence as a source of exogenous variation in an instrumental variable framework. The distance to a catheterization hospital is a strong predictor of treatment intensity but is plausibly unrelated to important unobserved factors, including the severity of the heart attack.

The results show that the initial admission to a catheterization hospital at the day of the infarction is associated with a 9.4 percentage point reduced 2-year mortality rate in comparison to the admission to a non-catheterization hospital, which represents 34 percent of the mean mortality. Among the analyzed subgroups (patients above/below 65 years, sex and medical history), the strongest effect is found in patients under 65. Comparing hospital costs, the analysis suggests that the initial treatment at catheterization hospitals is more expensive only in the short-term perspective and there are no statistically significant differences for inpatient costs for the period up to two years after the heart attack. Cost estimates for the individual patient subgroups show that most effects on inpatient and outpatient costs are either statistically or economically insignificant, suggesting that expanding the access to catheterization treatments can be seen as a highly cost-effective measure.

*Project status: Department of Economics Working paper, University of Linz, May 2014*

### 3.4. Ongoing research

#### *Prescription of generic and brand name medical drugs*

The analysis of comprehensive healthcare service data provided by the Upper Austrian Sickness Fund on resident doctors' prescription behavior reveals that a physician's decision to prescribe a generic substitute instead of a brand name drug depends significantly on the availability of generics, patient and doctor characteristics and in particular on whether a patient required an inpatient stay in the last couple of month. The latter effect indicates that

the physicians' prescription behavior is significantly influenced by hospital doctors and their interactions with pharmaceutical industries.

*Project status: work in progress*

#### *Cost Effectiveness of Financial Incentives in the Promotion of Healthy Behavior: Evidence from a Field Experiment*

In this project we analyze the role of economic incentives to improve health-related lifestyle and the potential cost-saving potential due to individual lifestyle improvements. In order to identify the relevant parameters, we conduct a randomized controlled field experiment on financial incentives for participation in a weight control program. We cooperate with the Austrian Sickness Fund for the Self-Employed (SVA) from which we draw our treatment and control groups. This setting has the advantage that we observe all individuals—participants and non-participants—before, during and after the experiment along many dimensions of healthcare costs included in the administrative database of the SVA. Our econometric analysis therefore allows us to estimate the intention-to-treat and the local average treatment effects of financial incentives in the promotion of healthy behavior.

*Project status: work in progress*

#### *Family size and parental mortality*

Being a parent is both detrimental and rewarding. Surprisingly little is known which effect dominates. This paper contributes to fill this gap by evaluating the effect of family size on parental wellbeing. We use exogenous variation in the number of children beyond the first child and mainly focus on its effect on the long-term measure of parental mortality. Based on administrative data from Austria, we find that unexpected increases in family size (due to multiple births) significantly decrease parental mortality, while expected and desired increases (due to same-sex sibling pairs) tend to have no impact. The life-prolonging effects of family size are more pronounced for the second (compared to the third) child and for parents with low educational attainment.

*Project status: work in progress*

## **4. Cooperation within and outside of the NRN**

The subgroup members presented their research at conferences and workshops and worked together with international and national partners. At the international level, we cooperated with Eddy van Doorslaer, a well-known health economist at the Erasmus University of Rotterdam. He participated in our NRN workshop in May 2009, and we also invited him as a plenary speaker at the annual conference of the Austrian Economic Association that was

being held in Linz. Pilar Garcia-Gomez, also affiliated with the Erasmus University in Rotterdam, is co-author of our joint paper on fertility effects of Caesarean sections. Further international and national coauthors of subgroup members are Benno Torgler and David A. Savage, (both Queensland University of Technology, Brisbane), J.E. Tarride and Ron Goeree (both McMaster, Hamilton, Canada). Together with Maria Hofmarcher (European Centre for Social Welfare Policy and Research) and Adam Oliver (London School of Economics), the subgroup leader has organized a workshop on monetary incentives and individual lifestyle at the European Forum in Alpbach, Austria in August 2013.

The invited health economics guest speaker at our final NRN workshop to be held in Vienna in June 2014 is Harald Tauchmann from the University of Nuremberg/Erlangen in Germany. He is expected to present his research on economic incentives for a more healthy lifestyle that is closely related to the subgroups' current research agenda. Other health economics colleagues presented their papers in our research seminar at the Department of Economics of the University of Linz. For instance, Hendrik Jürges (University of Wuppertal), Peter Zweifel (University of Zurich), and Pia Pinger (University of Mannheim) visited the health group in Linz. And finally, one of our members, Martin Halla, visited Ming-Jen Lin at the National Taiwan University to discuss the projects on screening and obesity.

At the national level, we collaborated with several partners. We have been working together with the Institute for Social and Preventive Medicine in Bregenz. Hans Concin, the head of the institute, made access to individual preventive health data possible. As a gynaecologist, he furthermore provided necessary medical input for our papers on birth weight and children's health. Cooperation with representatives of medical sciences and medical practice (e.g. Alexander Dzien, Christine Dzien-Bischinger and Monika Lechleitner) has also enlarged the interdisciplinary competence of the group and enabled us to establish a very interesting panel data set on the health status and nutrition. Joint work with Andrea Leiter from the University of Innsbruck increased the econometric competence of the working group. The cooperation included topics of mutual interest such as the convergence of health and healthcare financing, economic evaluation of health and health care. The group also cooperated with Franz Piribauer, head of the Austrian Screening Committee.

The NRN network effects were in particular strengthened by a close cooperation between the health and the Bayesian econometrics group who jointly worked on the causal relationship between family size and the health status of children. Moreover, we had and still have a close cooperation with the Aging and the Experimental group via coauthorship of group members.



# Curriculum Vitae

**Gerald J. Pruckner**

<http://www.econ.iku.at/Pruckner>

## Personal

- Born 06/09/1964 in Wels, Austria, married, two children

## Current Position

- Professor of Economics, Johannes Kepler University, Linz, since January 2011

## Education

- Habilitation in economics, University of Linz, 2001 (Committee members: Michael Ahlheim and Wolfgang Buchholz)
- Visiting Scholar, University of California, Berkeley, FWF Schrödinger-Fellowship, August 1993 – August 1994
- Dr. rer soc oec (equiv. PhD in economics), University of Linz, 1993
- Mag rer soc oec (equiv. MA in economics), University of Linz, 1989

## Previous Academic Appointments and Visiting Positions

- Associate Professor of Economics, Johannes Kepler University, 2006-2010
- Professor of Public Economics, University of Innsbruck, 2002 - 2006
- Visiting Professor at the School of Economics, University of Adelaide, 09/2005 – 12/2005
- Key researcher, AlpS Competence Center for Alpine Natural Hazards in Innsbruck, 2003
- Associate Professor of Economics, Johannes Kepler University, 2001
- Assistant Professor (Universitätsassistent), Department of Economics, Johannes Kepler University, Linz, 1991-2001
- Research Assistant, Department of Economics (Prof. Schneider), Johannes Kepler University, Linz, 1988 - 1991

## Grants, awards and nominations

- Richard Büche Prize (Allgemeine Sparkasse), 1993
- Quelle Science Prize, 1989

## Other Affiliations and Professional Services

- Reviewer for the European Commission (DG11, DG12), "Environment and Climate", "LIFE", "ENRICH"

- Member in organizing committees for meetings: “Verein für Socialpolitik”, NOeG, IIPF
- Member of the Austrian Social and Health Forum, 2009-2012
- Secretary General of the Austrian Economic Association, 2011-2012
- Member of the Upper Austrian Oncology Advisory Forum, 2012-
- Member of the health economics committee of the “Verein für Socialpolitik”, 2013

### **Referee**

- Applied Economics, Conservation and Recycling, Empirica, Environmental and Resource Economics, European Review of Agricultural Economics, Health Economics, Perspektiven der Wirtschaftspolitik, Public Choice, Resources, Quarterly Journal of Agricultural Economics

### **Own research projects (grants)**

- Volunteering and the economic value of the Red Cross, Upper Austrian Red Cross organization, (with F. Hackl and Ch. Altenstraßer), 2002
- Empirical analysis of international taxation: the taxation of frontier workers, FWF Research Package (with E. Theurl and R. Sendlhofer), 2004 - 2007
- Individual payment behavior: experiments and field studies, Austrian Central Bank, (with R. Sausgruber), 2004-2005
- Agricultural non market service provision, Province of Upper Austria, 2007
- National Research Network “The Austrian Center for Labor Economics and the Analysis of the Welfare State: Health”, Austrian Science Fund (FWF), 2008-2011.
- National Research Network “The Austrian Center for Labor Economics and the Analysis of the Welfare State: Health”, Austrian Science Fund (FWF), 2011-2014.
- Study by order of the Austrian Sickness Fund for the Self Employed (SVA): Economic Evaluation of the incentive program “Selbständig gesund”, (with Martin Halla), 2012-2013.
- Study by order of the Austrian Sickness Fund for the Self Employed (SVA): Economic Evaluation of the screening program “Gesundheitscheck Junior”, (with Martin Halla and Thomas Schober), 2014-2015.
- Research Fund of the Austrian Central Bank (OeNB): Cost Effectiveness of Financial Incentives in the Promotion of Healthy Behavior, (with Martin Halla), 2013-2015.
- Christian Doppler Laboratory “Aging, Health, and the Labor Market”, (with R. Winter-Ebmer), 2014-

### **Publications**

- Proportionality of willingness to pay to small risk changes - the impact of attitudinal factors in scope tests (with Andrea Leiter), **Environmental and Resource Economics**, 2009, 42, 169-186.
- Volunteering and the state (with Franz Hackl and Martin Halla), **Public Choice**, 2012, 151(3-4), 465-495.
- Honesty on the Streets: A Field Study on Newspaper Purchasing (with Rupert Sausgruber), **Journal of the European Economic Association**, 2013, 11(3), 661-679.
- Birth Weight and Family Status Revisited: Evidence from Austrian Register Data (with Wolfgang Frimmel), **Health Economics**, 2014, 23, 426-445.
- The Effectiveness of Health Screening (with Franz Hackl, Martin Halla, and Michael Hummer), **Health Economics**, 2014 forthcoming.

# Curriculum Vitae

**Martina Zweimüller**

<http://www.econ.jku.at/Zweimuller>

## Personal

- Born 23/2/1978 in Linz, Austria.

## Current Position

- Postdoc Researcher at the Austrian Center for Labor Economics and the Analysis of the Welfare State, Johannes Kepler University, Linz, since 2010

## Education

- Dr. rer soc oec (equiv. PhD in economics), University of Linz, 2010.
- Mag rer soc oec (equiv. MA in economics), University of Linz, 2005.

## Previous Academic Appointments and Visiting Positions

- The Austrian Center for Labor Economics and the Analysis of the Welfare State (Working group: Health economics), National Research Network funded by the Austrian Science Fund (FWF) since 2008.
- SHARE 50+ in Europe (Survey of Health, Ageing and Retirement in Europe), funded by the 6th EU framework programme and the U.S. National Institute on Aging, 2006-2008.
- LEED (EU Labour Market Analysis using Linked Employer-Employee Data), funded by the European Commission, DG Employment, 2006-2008.
- Atypical Employment, funded by the Anniversary Fund of the Austrian Central Bank, 2005-2007.

## Grants, awards and nominations

- Theodor Körner Prize, 2011.
- Young Economists' Award, Austrian Economic Association, 2009.
- JKU goes Gender Award (diploma thesis), University of Linz, 2006.

## Publications

- Early tracking and the misfortune of being young (with Nicole Schneeweis), **Scandinavian Journal of Economics**, 2014, Volume 116, Issue 2, 394-428.
- The effect of income on health: Quasi-experimental evidence from commuting accidents (with Martin Halla), **Labour Economics**, 2013, Vol. 24, 23-38.

- The employment of temporary agency workers in the UK: For or against the trade unions? (with René Böheim), **Economica**, 2013, Vol 80, Issue 370, 65-95.
- The effect of school entry laws on educational attainment and starting wages in an early tracking system, **Annals of Economics and Statistics (Annales d'Economie et de Statistique)**, 2013, Vol. 111-112, 141-169.
- Girls, girls, girls: Gender composition and female school choice (with Nicole Schneeweis), **Economics of Education Review**, 2012, Vol. 31, Issue 4, 482-500.

## Personal

- Born 29/7/1989 in Linz, Austria, single

## Current Position

- Consultant, Wolfgang Bayer Beratung GmbH, Linz, since 10/2013

## Education

- Dr. rer soc oec (equiv. PhD in economics), University of Linz, 9/2012
- Mag rer soc oec (equiv. MA in economics), University of Linz, 9/2010

## Previous Academic Appointments and Visiting Positions

Researcher, Department of Economics, University of Linz, 10/2009-9/2013

## Grants, awards and nominations

- Excellent Student Grant of the University Linz, 2009.
- Excellent Student Grant of the University Linz, 2012

## Publications

- The Effectiveness of Health Screening (with Franz Hackl, Martin Halla, and Gerald J. Pruckner), **Health Economics**, 2014 forthcoming.
- Low birth weight and health expenditures from birth to late adolescence (with Thomas Lehner and Gerald J. Pruckner), **European Journal of Health Economics**, 2014, Vol. 15, Issue 3, 229-242.
- Old Boys' Networks in GP's Referral Behavior (with Franz Hackl and Gerald J. Pruckner)? **NRN Working Paper 1308**; revise and resubmit to Journal of Health Economics.
- Soziale Netzwerke und Diskriminierung im Überweisungsverhalten von Ärzten (mit Franz Hackl), in J. Nussbaumer, G.J. Pruckner, R. Sausgruber und H. Winner (Hrsg.), **Gesundheits- und Sozialpolitik im Diskurs**, S. 139-160. Springer, Wien, 2011.
- Übergewicht und Fettleibigkeit als Kostenfaktor des Gesundheitssystems: Evidenz aus Österreich (mit Hackl, Franz, Martin Halla und Gerald J. Pruckner (2010), **Gesundheitswissenschaftliche Schriftenreihe der Oberösterreichischen Gebietskrankenkasse**, 2010.

## Curriculum Vitae

Thomas Schober

<http://www.econ.jku.at/1771/>

### Personal

- Born 8/3/1984 in Rohrbach, Austria.

### Current Position

- Researcher at the Dep. of Economics, Johannes Kepler University, Linz, since 2013

### Education

- PhD Program in Economics at the Universities of Innsbruck and Linz, since 2010
- Mag rer soc oec, University of Linz, 2010

### Previous Academic Appointments and Visiting Positions

- Researcher at the Institute for Public Sector Economics, Vienna University of Economics and Business, 2012-13
- Researcher at the Dep. of Economics, Johannes Kepler University, Linz, 2010-12

### Publications

- Gender wage inequality and economic growth: Is there really a Puzzle?—A comment (with Rudolf Winter-Ebmer), **World Development**, 2011, 39(8), 1476–1484.
- Kündigung unter Strafe - Beschäftigungsförderung für Ältere in Österreich (with Mario Schnalzenberger and Rudolf Winter-Ebmer), **Wirtschaft und Gesellschaft - WuG**, 2011, 37(3), 461–470.
- The Quantity and Quality of Children: A Semi-Parametric Bayesian IV Approach (with Sylvia Frühwirth-Schnatter, Martin Halla, Alexandra Posekany and Gerald J. Pruckner), **IZA Discussion Papers**, 2014, No. 8024.

# Curriculum Vitae

**Martin Gächter**

<http://www.gaechter.cc/>

## Personal

- Born 12/5/1984 in Bregenz, Austria, single

## Current Positions

- Economist, Foreign Research Division, Oesterreichische Nationalbank (Austrian Central Bank), Vienna, since 2011.
- Academic Lecturer, Vienna University of Economics and Business, Vienna, since 2012.
- Academic Lecturer, University of Liechtenstein, Vaduz, since 2012.
- Academic Lecturer, University of Innsbruck, Innsbruck, since 2009.

## Academic Education

- Dr.rer.soc.oec. (equiv. PhD in Economics), University of Innsbruck, 2011.
- Mag.rer.soc.oec. (equiv. MA in Economics), University of Innsbruck, 2008.
- Mag.rer.soc.oec. (equiv. MA in International Business), University of Innsbruck, 2008.
- Mag.phil. (equiv. MA in Political Science), University of Innsbruck, 2008.

## Previous Professional Experience

- University Assistant / Assistant Professor, Department of Economics, University of Innsbruck, 2008-2011.
- Project Associate, National Research Network (NRN) Labour Economics & the Welfare State, Department of Economics, University of Linz, 2008-2011.
- Academic Lecturer, University for Health and Life Sciences, Hall i.T., 2010-2011.

## Professional Education and Training Activities

- Central Banking Seminar, Federal Reserve Bank of New York, October 2013.
- Certified Financial Risk Manager (FRM), Global Association of Risk Professionals (GARP), September 2013.
- IMF Training Course in 'Macroeconomic Diagnostics', Joint Vienna Institute, May 2013.
- OeNB Summer School in 'Network Economics', Joint Vienna Institute, August 2012.
- IMF Training Course in 'Financial Programming and Policies', February 2012.
- Chartered Financial Analyst (CFA) Program, CFA Institute, CFA Level 1 Exam, passed in December 2010.



## Awards & Honors

- Young Economists Award, Austrian Economic Association (NOeG), Innsbruck, May 2013.
- Recognition Award of the Committee for the Science Prize Innsbruck, December 2011.
- Graduation Award of Excellence, Austrian Federal Ministry for Science and Research, Vienna, November 2011.
- Promotio sub auspiciis praesidentis rei publicae, The Federal President of the Republic of Austria, March 2011.
- WHU Finance Award (Best Paper Award, 1<sup>st</sup> Prize), Campus for Finance Association, Koblenz, January 2011.
- Graduation Award of Excellence, Austrian Federal Ministry for Science and Research, Vienna, November 2009.
- Franz Weninger Award, Oesterreichische Nationalbank (Austrian Central Bank), Vienna, November 2008.
- Annual scholarships for academic excellence, Faculty for Economics & Statistics, University of Innsbruck, 2005 – 2008.

## Publications

- Does monetary policy determine stock market liquidity? New evidence from the euro zone, (with O. Fernandez-Amador, M. Larch and G. Peter), **Journal of Empirical Finance**, 2013, 21, 54-68.
- Business Cycles in the Euro Area and the Impact of the Financial Crisis (with A. Riedl and D. Ritzberger-Grünwald), **Monetary Policy & the Economy**, 2012, 33-60.
- Retaining the Thin Blue Line: What Shapes Workers' Intentions not to Quit the Current Work Environment (with D.A. Savage and B. Torgler)? 2013, **International Journal of Social Economics**, 40(5), 479-503.
- Physician density in a two-tiered health care system (with P. Schwazer, E. Theurl and H. Winner), **Health Policy**, 2012, 106(3), 257-68.
- Health Status Convergence at the Local Level: Empirical Evidence from Austria (with E. Theurl), **International Journal for Equity in Health**, 2011, 10:34.

## Curriculum Vitae

Alice Sanwald

<http://www.uibk.ac.at/publicfinance/personal/personal/sanwald.html>

### Personal

- Born 9/5/1984 in Friedrichshafen, Germany

### Current Position

- Researcher at the Dep. of Public Finance, University of Innsbruck, since 2012

### Education

- PhD Program in Economics at the Universities of Innsbruck and Linz, since 2010
- Mag. rer. soc. oec., University of Innsbruck , 2009

### Publications

- What drives out-of pocket health expenditures of private households? - Empirical evidence from the Austrian household budget survey. **Working Paper**, No. 2014-04. (with E. Theurl)

# **S 10307 Experimental Investigation of Labor Markets**

## **Project Leader**

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Assignment to subject discipline(s) (use ÖSTAT codes)

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## 1. Summary

We conducted innovative experiments to examine questions regarding labor supply and the provision of effort. For most parts we have followed precisely the directions outlined in the original project proposal. We have started our work on the project in October 2008. The second funding period commenced in September 2011. Our research during this time falls on three topics.

First, we have studied the *role of fairness as a determinant of labor supply*. Our findings suggest that people who collaborate, for instance, in work teams, tend to prefer informal sanctions and that choosing informal sanctions is profitable because they are used with circumspection and therefore quite effectively deter free-riding. We also show that the (dis-) incentive effects of a tax to finance redistribution depends on whether taxation is chosen democratically or imposed exogenously on the subjects. In a related study, we provide evidence suggesting that effort externalities give rise to peer effect that matter particularly for the motivation of workers.

Second, we have conducted research to broaden our understanding of *gender differences in labor market outcomes*. As part of this research, we have conducted natural field experiments to study the role of discrimination. We find evidence for sexual orientation discrimination against lesbians in Germany. Furthermore, we have implemented large-scale experiments on the internet with participants from all walks of life to study incentive and sorting effects of performance pay. This research suggests that an important part of the gender difference in labor market outcomes may arise because of gender differences in skills and preferences regarding specificities of a work task.

Finally, we have started research to explore the *power of social identification on labor market sorting and social mobility*. Our findings support that that loyalty among socially identified peers gives indeed rise to inefficient sorting.

Next to our work in these core areas, we published a sizable number of papers on basic research question, which also contribute insights for labor markets and the analysis of the welfare state.

Over the past 3 years, we have been able to establish ourselves as internationally visible and successful research group in the field of Experimental Labor Economics and the Experimental Analysis of the Welfare State. We have presented our work at numerous seminars and conferences. We have organized several workshops with high-profile participants within the profession.

## 2. Scientific background / aims of research

Both Principal Investigators have advanced experience in experimental research. They have established large networks of international coauthors and they have access to the

infrastructure necessary to conduct experiments of sufficient quality and statistical power. We strive at publishing our work in internationally renowned journals and we regard it as our responsibility to contribute to the diffusion of knowledge, for instance, in academic teaching as well as in popular talks.

### **3. Results and discussion**

We structure this section as follows. We first provide a summary and a discussion of our research on the topics that are well aligned to the directions set in the project proposal of the last funding period. On top of that, we briefly summarize a number of projects in the areas of basic research about behavior in social dilemma type of situations, voting on reform and the political acceptance of taxation with possible applications to labor economics and the analysis of the welfare state.

#### **3.1. Topic 1: Fairness and Labor Supply**

Following our plans, we have conducted a number of novel studies to explore the role of fairness as a determinant of labor supply. In *Markussen, Putterman and Tyran* (RESTUD, 2014) we focus on social dilemmas that groups navigate without the aid of formal authority, for instance the elicitation of effort in work teams. The study tests whether subjects choose a formal sanction scheme that costs less than the surplus it makes possible, as predicted by standard economic theory, or instead opt for the use of informal sanctions or no sanctions. We find that the subjects choose informal sanctions surprisingly often, their voting decisions being responsive to the cost of formal sanctions. For example, between 40 and 70 percent of groups select informal over formal sanctions in the final match-up of the two options. And these choices turn out to be smart. In fact, choosing informal sanctions is profitable because they are used with circumspection and therefore quite effectively deter free-riding. We also find that the popularity of formal sanctions depends more on their fixed costs than on their deterrence. For example, about 70 percent prefer no sanctions over deterrent but costly formal sanctions. These findings are surprising from the perspective of standard theory which assumes that decision makers and voters are rational and strictly self-interested. Yet, these (and some other) observations from our experiment are consistent with theories postulating that decision makers have social preferences.

The project by *Parolini, Sausgruber, and Tyran* (Working Paper, 2013) has already been started in the first funding period; in the second funding period we have extended the design in various dimensions. In this study, we explore the responsiveness of labor supply to changes in wages due to redistribution. We have designed an innovative experiment in which subjects can generate income by calculating the total of digits in a row shown on the computer screen. The subjects can do these calculations at their own speed, but they have

an incentive to use their time efficiently. The key issue of our design is that it provides an opportunity cost of work time, i.e., we pay subjects per unit of alternative time use in which they do not work on solving calculations. We make the calculations increasingly difficult over time, such that subjects have an optimal “switching point” at which they should no longer spend time on solving tasks. Obviously, subjects who are fast at solving the tasks have an incentive to switch later than other subjects who are less productive. This source of heterogeneity is important when it comes to analyze our results. Our study provides evidence that a redistributive tax system has a large disincentive effect. This result supports a main premise of the standard median-voter model of redistribution with endogenous labor supply. However, we find that the disincentive effect of redistribution is mitigated when it is chosen endogenously by means of a democratic vote. Surprisingly, this result obtains for all subjects independently of whether they voted for redistribution themselves. This finding suggests that the voting outcome provides a signal of the social desirability of redistribution, which in turn matters for the provision of effort.

In *Gaspari and Sausgruber* (Working Paper, 2014), we study a related argument regarding the provision of effort in a real-effort work environment with positive effort externalities. Such effort externalities may exist, for instance, because of technological reasons which render efforts strategic complements, or in situations where workers are compensated based on the performance of the team. The results show that the average effort is higher in the presence of externalities as compared to a control where subjects work individually. The details reveal that the effect comes mostly from the subjects whose productivity is low. Interestingly, many low productive subjects under-provide effort as compared to the point that maximizes their income in own monetary terms; behavior is more aligned with optimizing behavior with effort externalities. Low productive subjects also tend to increase effort by more in when matched in a team of high productive rather than low-productive teammates; this suggests that effort externalities give rise to peer effect that matter particularly for the motivation of low-productive subjects.

### 3.2. Topic 2. Field Experiments on Labor Market Discrimination

The work on our second topic has dealt with explaining gender differences in labor market outcomes. An obvious explanation is discrimination. In *Weichselbaumer* (2014) we conducted a natural field experiment (correspondence testing experiment) to examine sexual orientation discrimination against lesbians in Germany. Applications for four fictional female characters are sent out in response to job advertisements: a heterosexual single, a married heterosexual, a single lesbian and a lesbian who is in a ‘same-sex registered partnership’. Different results are obtained for the two cities investigated, Munich and Berlin. While single lesbians and lesbians in a registered partnership are equally discriminated in comparison to

the heterosexual women in the city of Munich, no discrimination based on sexual orientation has been found in Berlin. Furthermore, for a subset of our data we can compare the effects of a randomized versus a paired testing approach, which suggests that under certain conditions, due to increased conspicuity, the paired testing approach may lead to biased results.

Next to discrimination, labor market outcomes may differ if women have different skills and preferences regarding the work task. In this case, sorting may become an important determinant of gender differences in the labor market. In *Rabas, Sausgruber, and Tyran* (work in progress) we conducted a large-scale internet experiment with participants from the general population to study sorting of workers into output-based pay in a controlled experiment with a real effort task. In this task, men and women are equally productive. Nevertheless, we find that women are less likely than men to choose a pay scheme involving a strong link between pay and performance. We measure Big Five personality traits and show that this result is mediated by neuroticism and productivity beliefs, and that the differences in personality account for women's underconfidence. Suggestive evidence from the Danish labor market supports that our results may generalize to the field.

### 3.3. Topic 3. Fair Wages, Effort, and Unemployment

Our research in Topic 3 deals with the question of what determines a fair wage and possible implications for unemployment and sorting. One of our ideas has been that the notion of a fair wage depends on structural conditions as well as the social environment of a worker's past employment (see Winter-Ebmer, Böheim and Horvath 2010). As a first step into this direction, in Gaspari, Paetzel, and Sausgruber (work in progress), we explore the power of social identification on labor market sorting and social mobility. Our starting point is that taking advantage of an opportunity of moving socially upward is often seen as being disloyal to one's peers. This is problematic, for instance, if loyalty frustrates efficient sorting of labor into its most productive use (cf. "Acting White" as prominent example). In our experiment, subjects opt between "stay" or "move" (e.g., stay in a firm or apply for a job at another firm). In the experiment staying maintains the status-quo distribution of equal incomes in the group; moving is advantageous to the decision maker, but it comes at a cost for the ones who are left behind. We study potential determinants of loyalty by imposing experimental variation in group identity (based on the minimal group paradigm) and status (based on a measure of cognitive ability). Furthermore, we vary punishment opportunities of those who are left behind. Our findings support that that loyalty among socially identified peers gives indeed rise to inefficient sorting.

### 3.4. Other related topics

Next to the above mentioned projects, which have been explicitly mentioned in our proposal for the 2<sup>nd</sup> funding period, we have accomplished a number of publications that contribute to basic research in the area of cooperation, self-governance, taxation, and political reform. We regard the results from our work as important for a deeper understanding of labor markets and the analysis of the welfare state in general. Here, we reprint the abstracts of some of our studies.

In *Markussen, Reuben and Tyran* (EJ, 2014): The ability of groups to implement efficiency-enhancing institutions is emerging as a central theme of research in economics. This study explores voting on a scheme of intergroup competition, which facilitates cooperation in a social dilemma situation. Experimental results show that the competitive scheme fosters cooperation. Competition is popular but the electoral outcome depends strongly on specific voting rules of institutional choice. If the majority decides, competition is almost always adopted. If likely losers from competition have veto power, it is often not, and substantial gains in efficiency are foregone.

In *Paetzl, Traub and Sausgruber* (EER, 2014): Debating over efficiency-enhancing but inequality-increasing reforms accounts for the routine business of democratic institutions. Fernandez and Rodrik (1991) hold that anti-reform bias can be attributed to individual-specific uncertainty regarding the distribution of gains and losses resulting from a reform. In this paper, we experimentally demonstrate that anti-reform bias arising from uncertainty is mitigated by social preferences. We show that, paradoxically, many who stand to lose from reforms vote in favor because they value efficiency, while many who will potentially gain from reforms oppose them due to inequality aversion.

*Sausgruber, and Tyran* (JEBO, 2014). We explore the political acceptance of taxation in commodity markets. Participants in our experiment earn incomes by trading and must collectively choose one of two tax regimes to raise a given tax revenue. A “uniform tax” (UT) imposes the same tax rate on all markets and is fair in that it yields the same – but low – income to participants in all markets. The “discriminatory tax” (DT) imposes a higher burden on markets with inelastic demand and is therefore efficient but it is also unfair in that incomes are unequal across markets. We find that DT are unpopular, as predicted. Surprisingly, however, DT remain unpopular when they are both efficient and produce a fair (equal) distribution. We conclude that non-discrimination (equal treatment) is a salient fairness principle in taxation that shapes voting on commodity taxes above and beyond concerns for efficiency and equal distribution.

*Feri, Gantner, Höchtel, Sausgruber* (ExEc, 2013). This paper studies the vulnerability of the pivotal mechanism with respect to manipulation by groups. In a lab experiment, groups decide on the implementation of various alternatives, some of which imply opposite interests



for the two subgroups. We investigate the occurrence of tacit and explicit collusion by allowing for communication within subgroups in one treatment and prohibiting it in another. Even though all agents' preferences are common knowledge and there exists a simple symmetric collusive strategy for one subgroup, we find little evidence for tacit collusion. Only when explicit communication is allowed, collusion is established. A behavioral model using quantal response equilibrium in which subjects have beliefs over the correlation of errors of same-type subjects helps explain the main features of our data.

*Höchtl, Sausgruber, and Tyran* (EER, 2012): Some people have a concern for a fair distribution of incomes while others do not. Does such a concern matter for majority voting on redistribution? Fairness preferences are relevant for redistribution outcomes only if fair-minded voters are pivotal. Pivotality, in turn, depends on the structure of income classes. We experimentally study voting on redistribution between two income classes and show that the effect of inequality aversion is asymmetric. Inequality aversion is more likely to matter if the "rich" are in majority. With a "poor" majority, we find that redistribution outcomes look as if all voters were exclusively motivated by self-interest.

*Thöni, Tyran, and Wengström* (JPubEc, 2012): Research on social capital routinely relies on survey measures of trust which can be collected in large and heterogeneous samples at low cost. We validate such survey measures in an incentivized public good experiment and show that they are importantly related to cooperation behavior in a large and heterogeneous sample. We provide evidence on the microfoundation of this relation by use of an experimental design that enables us to disentangle preferences for cooperation from beliefs about others' cooperation. Our analysis suggests that the standard trust question used in the World Values Survey is a proxy for cooperation preferences rather than beliefs about others' cooperation. In contrast, the "fairness question", a recently proposed alternative to the standard trust question, seems to operate through beliefs rather than preferences.

#### **4. Cooperation within and outside of the NRN**

Over the last funding period, within the NRN *Rupert Sausgruber* (Vienna University of Economics and Business) and *Jean-Robert Tyran* (University of Vienna) collaborated intensively on the proposed projects. We hired *Diana Gaspari* (Pre-Doc, Vienna University of Economics and Business), *Alexander Rabas* (Pre-Doc, University of Vienna), *Florian Spitzer* (Pre-Doc, University of Vienna), and *Adam Zylberstejn* (Post-Doc, Vienna University of Economics and Business). Diana Gaspari will graduate from University of Padua; the defense of her PhD-thesis is scheduled for the end of March 2014. Diana worked has been mostly on lab experiments to study labor supply. Alexander Rabas collaborates with us on the development and analysis of internet experiments. He intends to complete his PhD by the end of summer 2014. Florian Spitzer research is on markets for credence goods. He

intends to graduate by March 2015. Finally, Adam Zylberstejn started to work with us in September 2013. We are working on a joint project to explore the legitimacy effects of self-governed rules in social-dilemma type situations. We also collaborated intensively with *Doris Weichselbaumer* (University of Linz) and funded part of her research on discrimination.

Inside NRN, our research has benefitted substantially from the input of the NRN-members, in particular, Johann Brunner (University of Linz) and Hannes Winner (University of Salzburg) (our research on tax incentives), Martin Halla and Gerald Pruckner (both University of Linz) (our research on truth telling) and Rudolf Winter-Ebmer (University of Linz) (our research on the political acceptance of reform).

At the international level we have collaborated, among others, with Alexander Cappelen and Bertil Tungodden (both NHH Bergen), Louis Putterman (Brown University), Joel Slemrod (University of Michigan), and Stefan Traub (University of Bremen). The work within the project has contributed significantly to the international visibility of our research units. We have constantly presented the outcome of our work at research seminars and international conferences. Finally, we have organized a number of workshops with high-profile participants (e.g., Workshop in Behavioral Public Economics - September 19-20, 2013; Workshop in Experimental Economics - September 10-11, 2012; Workshop in Experimental Labor Economics - July 14-15, 2011). For June 5-6, 2014, we have scheduled another “*Workshop in Experimental Labor Economics*” at the University of Vienna, with the following list of presenting (external) participants: Johannes Abeler (Oxford), Marina Agranov (Caltech), Björn Bartling (U Zürich), Gary Bolton (UT Dallas), Kai Konrad (MPI Munich), Lydia Mechtenberg (U Hamburg), Stefan Meier (Columbia), Charles Noussair (Tilburg), Erte Xiao (Carnegie Mellon U).

# Curriculum Vitae

**Rupert Sausgruber**

<http://www.wu.ac.at/finanz/mitarbeiterinnen/sausgruber>

## Personal

- Born 30/11/1968 in Kufstein, Austria

## Current Position

- Professor of Public Economics, Vienna University of Economics and Business (WU Wien)
- Associate Professor of Economics, University of Innsbruck, Austria: 2005-2013

## Education

- Venia Legendi (Habilitation) in Economics, University of Innsbruck: 2005
- Doctoral Degree in Economics at the University of Innsbruck: 2001
- Post-Graduate Program at the Institute for Advanced Studies (IAS); Vienna: 1997-98
- Master in Economics at the University of Innsbruck: 1993

## Previous Academic Appointments and Visiting Positions

- Visiting Scholar at the University of Michigan, Office of Tax Policy Research, Ann Arbor: Sept. 2010.
- Visiting Professor at the Department of Economics, University of Bremen, Germany: March-April 2009.
- Visiting Associate Professor at the Department of Economics, University of Copenhagen, Denmark: Feb.-July 2008
- Visiting Associate Professor at the Department of Economics, University of Copenhagen, Denmark: Sept. 2005-Jan. 2006
- Visitor at the University of Adelaide, Australia: Sept.-Oct. 2004
- Research Fellow at the Max Planck Institute for Research into Economic Systems in Jena, Germany: Sept. 2002-Dec. 2002
- Research Fellow at the Center for Research in Experimental Economics and Political Decision Making (CREED), University of Amsterdam, Netherlands: Sept.-Nov. 2001
- Visiting Graduate Research Scholar (IFREE Pre-Doctoral Fellowship) at the Economic Science Laboratory, University of Arizona, USA: Jan.-June 2000

## Own research projects (grants)

- Australian Research Council (ARC) (with Ralph C. Bayer and Frank Cowell): "Effective and Efficient Corporate Tax Enforcement" (Project ID: DP120101831): 2012-2015
- Austrian Science Fund (FWF) (with Jean-Robert Tyran): "Experimental Investigations of Labor Markets" (Project Number: S10307): 2011-2014 (part of the "The Austrian Center for Labor Economics and the Analysis of the Welfare State", National Research Network S103).
- Austrian Science Fund (FWF) (with Doris Weichselbaumer): "Experimental Investigations of Labor Markets" (Project Number: S10307): 2008-2011 (part of the "The Austrian Center for Labor Economics and the Analysis of the Welfare State", National Research Network S103).
- Austrian National Bank (OeNB Jubilaefonds) (with Gerlinde Fellner and Christian Traxler): "Compliance in the Field: A Large-Scale Field Experiment on the Evasion of Broadcasting Fees in Austria". 2007-2009.
- Austrian Science Fund (FWF) (with Jean-Robert Tyran): "A Behavioral Approach to International Taxation" (Project Number: P17029): 2004-2008
- Austrian National Bank (OeNB Jubilaefonds) (with Jean-Robert Tyran): "Perception and Efficiency of Taxation of Market Transactions" 2001-2005.

## Publications

- Social Preferences and Voting on Reform – An Experimental Study (2014), with Fabian Paetzl and Stefan Traub. **European Economic Review**. Forthcoming.
- Honesty on the Streets: A Natural Field Experiment on Newspaper Purchasing (2013), with G. Pruckner. **Journal of the European Economic Association** 11 (3): 661–679.
- Testing Enforcement Strategies in the Field: Threat, Moral Appeal and Social Information (2013), with G. Fellner and C. Traxler. **Journal of the European Economic Association** 11 (3): 634–660
- Inequality Aversion and Voting on Redistribution (2012), with W. Höchtl and J.-R. Tyran. **European Economic Review** 56: 1406–1421.
- Are We Taxing Ourselves? How Deliberation and Experience Shape Voting on Taxes (2011), with J.-R. Tyran. **Journal of Public Economics** 95: 164–76

## **Curriculum Vitae**

**Jean-Robert Tyran**

<http://homepage.univie.ac.at/jean-robert.tyran/>

### **Personal**

- Born 1967 in Zürich, Swiss

### **Current Position**

- Professor of Economics, Department of Economics, University of Vienna
- Professor of Economics, Department of Economics, University of Copenhagen (since 09/2011 part time)

### **Education**

- Habilitation in "Economics" PD, University of St. Gallen, 1997-2004
- Doctoral studies at U of Zurich, LSE, University of Arizona (Tucson), 1994-1997
- Studies in Economics and Political Science, University of Zurich, 1988-1997

### **Previous Academic Appointments and Visiting Positions**

- New York University, NYU Abu Dhabi Campus, 2011
- Université de Rennes I, 2008
- Université Paris I, 2004
- Université Louis Pasteur, Strasbourg 2005 & 2006
- Université Lumière II, Lyon 2003
- Kennedy School of Government, Harvard University, 2001
- University of Amsterdam, 2001)
- Stockholm School of Economics, 2000
- London School of Economics , 2000

### **Other Affiliations and Professional Services**

- Director: Vienna Center for Experimental Economics (VCEE)
- Research fellow: Center for Economic Policy Research (CEPR, London)
- Economic Policy Research Unit (EPRU, Copenhagen)
- Center for Applied Macroeconomic Analysis (CAMA, Australian National University)
- Member of Executive Committee: Economic Science Association (ESA)
- Board member: Society for the Advancement of Behavioral Economics (SABE)

## **Publications**

- Self-Organization for Collective Action: An Experimental Study of Voting on Sanction Regimes, **Review of Economic Studies**, 81(1), 2014, 301-24 (with Markussen, T. and Putterman, L.)
- Competition, Cooperation, and Collective Choice, **Economic Journal**, 124(574), 2014, 163-95 (with Markussen, T. and Reuben, E.)
- Microfoundations of Social Capital, **Journal of Public Economics**, 96, 2012, 635-43 (with Thöni, C. and Wengström, E.)
- Limited Rationality and Strategic Interaction. The Impact of the Strategic Environment on Nominal Inertia, **Econometrica**, 76(2), 2008, 353-94 (with Fehr, E.)
- Does Money Illusion Matter? , **American Economic Review**, 91(5), 2001, 1239-62 (with Fehr, E.)

# **S 10308 Taxation and Income Distribution**

## **Project Leader**

Prof. Dr. Johann K. Brunner

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Assignment to subject discipline(s) (use ÖSTAT codes)

1	%	2	%	3	%
5311	100				

## **1. Summary**

Research in this subproject has focused on the revenue side of the welfare state, mainly from a theoretical point of view. The objective was to improve our understanding of the optimal tax structure when both efficiency and redistribution are taken into account. In particular, we studied the potential role of additional taxes, especially those on bequests, capital income and consumption, to supplement the labor income tax. As a starting point we took the well-known result by Atkinson and Stiglitz (1976, JPubE), which essentially says that the latter tax alone is a sufficient instrument, as welfare is not improved if part of the revenues is raised through other taxes.

Our approach was to extend the Mirrlees-type model of optimal taxation (which provides the framework for the Atkinson-Stiglitz result) to include realistic elements that have mostly been neglected so far in the literature. One such element we investigated in detail is the fact that individuals differ not only in labor productivity (as is usually assumed) but also in (inherited) wealth. This is especially important for the analysis of the bequest tax (or any wealth-related tax), because the intergenerational transmission of wealth indeed creates differences in capital endowments. We showed that taking account of this fact gives rise to a welfare-improving role of taxes on bequests and on consumption, and this holds independently of whether one assumes a joy-of-giving or an altruistic bequest motive, and even if part of the respective tax basis is evaded.

Further, we contributed to the growing literature on optimal policy issues in the presence of relative consumption concerns. The fact that individuals compare their consumption for some goods with the consumption levels of others seems well established by now, but the effect on optimal policy is still a subject of ongoing research. In a first paper, we studied the optimal tax mix (on income and commodities) if there are both positional and nonpositional goods.

Empirical research within the project focused on the pension system, in particular on the regulations for early retirement. These regulations are known to be rather generous in Austria, with the consequence of an average retirement age below 60, while the statutory retirement age is 65 for men and 60 for women. We calculated actuarially fair (or neutral, in the sense that early retirement does not impose a burden on the public pension system) pension reductions per year of early retirement on the basis of past earnings careers of a sample of (early) pensioners in 2008. These fair reductions turned out to be considerably higher than the actually applied ones.

## **2. Scientific background / aims of research**

The design of an optimal tax system has always been a primary goal of research in public economics. Whereas the older tradition favored a comprehensive income tax, falling on all



kinds of income and possibly accompanied by a sales tax (Simons 1938), the modern approach considers taxes on different types of income separately. In particular, in the standard model introduced by Mirrlees (1971) only the design of labor income taxation was analyzed. Later work within the framework of this model, where the individuals are fully characterized by their abilities to earn labor income, showed that – as a rule – no other tax can improve welfare in addition to the optimal income tax. So the appropriateness of other taxes depends on an extension of the Mirrlees model, by introducing other additional characteristics which might be relevant for taxation. For instance, differences in tastes (Saez 2002) or the desirability of publicly provided goods (Blomquist and Christansen 1995) were considered.

Our approach concentrated on the role of inherited wealth as an important source of lifetime consumption. We studied the consequences of this fact for the design of an optimal tax system.

### **3. Results and discussion**

The outcome of our research in the first NRN period is documented in a number of papers. In the following we summarize and discuss our main findings.

*Optimal taxation of wealth transfers when bequests are motivated by joy of giving (by Johann K. Brunner and Susanne Pech 2012)*

The standard approach to analyze bequest taxation in an optimum taxation framework (e.g., Blumkin and Sadka 2003, JPubE) is based on the Mirrlees model, where individuals differ in labor productivity only, and deals with the question of whether leaving bequests – as a special way of spending income – might represent a reason for a specific tax. However, this immediately leads one to the well-known Atkinson-Stiglitz theorem, which essentially says that an optimal tax on labor income alone is a sufficient instrument to raise tax revenues and redistribute income. As a consequence, bequest taxation has no role in this approach. Even a subsidy turns out to be optimal (Farhi and Werning 2010, QJE), because bequests create twofold utility: for the donor and the donee (a positive external effect).

In our paper we extended the basic model by the essential consequence of intergenerational wealth transfers: inheritances create a second distinguishing characteristic of individuals, in addition to earning abilities. We incorporated this fact into an optimum income taxation model with bequests motivated by joy of giving. We showed that taxes on bequests or on inheritances allow further redistribution if, in the parent generation, initial wealth and earning abilities are positively related. However, these taxes distort the bequest decision and thus, the overall effect on social welfare is ambiguous. On the other hand, a tax

on all expenditures of a generation (a uniform tax on consumption plus bequests) has the same redistributive effect as an inheritance tax but does not distort the bequest decision.

*Optimum taxation of bequest in a model with initial wealth (by Johann K. Brunner and Susanne Pech 2012)*

In this paper we analyzed the welfare effect of bequest taxation in a dynastic model. That is, in contrast to the above-mentioned paper (Brunner and Pech 2012) we assumed that generations are linked via altruistic preferences (Barro 1974, JPE), where parents directly care for the welfare of their descendants. We formulated an optimal-taxation model of three generations, where each consists of the same number of individuals and parents leave bequests to their immediate descendants. In contrast to the standard model, we assumed that individuals in the first generation differ not only in earning abilities, but also in initial wealth. We showed that also in this model a redistributive motive for a bequest tax in later generation arises, given that initial wealth increases with earning abilities. However, with altruistic preferences taxing bequests of one generation turned out to be equivalent to uniformly taxing all expenditures of the subsequent generation. The introduction of these taxes increases intertemporal social welfare or has an ambiguous effect, depending on whether the external effect related to altruism is accounted for in the social objective.

*Optimal taxation of wealth and consumption in the presence of tax evasion (by Johann K. Brunner, Paul Eckerstorfer and Susanne Pech 2013)*

In this paper we took into account the fact that inherited wealth might not be fully observable as it is suggested by the two papers above. In particular, we argue that financial wealth can easily be concealed from tax authorities by moving assets offshore or by simply not reporting the true amount of wealth. Another important issue in tax policy is the evasion of indirect taxes, such as the value added tax in the European Union. Accordingly, we extended the optimum taxation model by allowing individuals (with differing abilities and wealth) to evade taxes on wealth and consumption at some cost and we analyzed whether taxes on wealth and on consumption are still adequate instruments in such a framework. Thus, we combined the issues of tax evasion and optimal taxation, which by most part of the literature have been analyzed separately (exceptions are e.g. Cremer and Gahvari 1993, and Boadway et al., 1995, both JPubE, in a different context). We found that despite the possibility of its evasion a tax on initial (inherited) wealth should supplement the optimal nonlinear income tax, given a positive correlation between wealth and earning abilities. Further, even if income and initial wealth are taxed optimally, it is still desirable to levy a tax on commodities, though it can be evaded as well. Accordingly, our result provides a rationale for a comprehensive tax, as we find it in most industrialized countries. Optimal tax rates on commodities differ in general,

however for the special case of a uniform evasion technology it turns out that equal rates are optimal if preferences are homothetic and weakly separable.

*Die Erbschaftssteuer im Modell der optimalen Besteuerung (Taxation of bequests in the optimal-taxation model), by Johann K. Brunner 2010*

In this survey paper the bequest tax is discussed in a broader context. Various arguments of the public debate are confronted with the results from the standard optimal-taxation model. The most striking discrepancy is that the latter suggest a subsidy of wealth transfers as the optimal solution (Farhi and Werning 2010, QJE), while the public debate is on whether or not bequests should be taxed. The main reason for this discrepancy seems to be the restricted framework of the optimal-taxation approach, which does not allow for other characteristics than labor productivity, in particular not for differences in inherited wealth. Proponents of the bequest tax, on the other hand, frequently stress its role in increasing equality of opportunity. The paper surveys how an incorporation of this idea changes standard optimal-taxation results.

*Relative consumption concerns and the optimal tax mix (by Paul Eckerstorfer 2014 forthcoming)*

In the final year of the first NRN period we also started with research on the effect of relative consumption concerns on the optimal tax structure. Most part of the optimal taxation literature assumes that the utility of individuals depends only on their own consumption of goods and leisure. However, there is increasing empirical evidence suggesting that individuals value not only their own absolute consumption but also their relative consumption with respect to others (see for example Clark et al. 2008, JEL). Moreover, there is also empirical evidence indicating that some goods are more positional than others (e.g. Solnick and Hemenway 2005, AER). In accordance with this empirical evidence we constructed a model that allows us to analyze the optimal tax mix (income and commodities) when some but not all goods are positional. By putting a special emphasis on the taxation of commodities we contributed to the literature on optimal policy issues in the presence of relative consumption concerns which mainly considered the optimal income tax and the optimal provision of public goods (e.g. Aronsson and Stenman-Johansson 2008, JPubE; Micheletto 2010, JPET). We found that in general the whole tax system is affected by the externalities induced by the consumption of the positional goods, notably also the taxes on income and on the nonpositional good. Thus, the ‘additivity property’ first discovered by Sandmo (1975, SJE), which states that an externality is best addressed by imposing a tax directly on the externality-generating good, does not apply. The tax rates on the positional goods are higher

than in the absence of status effects, reflecting their Pigouvian role. Further, it is shown that with plausible assumptions the Pigouvian part in the income tax schedule is progressive.

*Optimal redistributive taxation in a multi-externality model (by Paul Eckerstorfer 2012)*

The main contribution of this note is to extend the previous literature on optimal redistributive taxation in the presence of externalities (e.g. Cremer et al. 1998, JPubE; Kopczuk 2003, EL; Micheletto 2008, JPubE) to a multi-externality setting. In contrast to the paper on the mixed taxes case in the presences of relative consumption concerns (see above), externalities are assumed to be of the ‘atmospheric’ type, i.e. the externalities are created by the total consumption of a specific good. While taxes on income and on ‘clean’ commodities are still unaffected by the externalities confirming previous results (e.g. Kopczuk 2003, EL), we found that the existence of more than one externality-generating commodity has important implications for the optimal Pigouvian tax rates. The Pigouvian parts of taxation depend in general also on the externalities induced by the consumption of the other commodities, implying that the interdependence of the externality-generating commodities is indeed relevant for optimal tax policy.

*Versicherungsmathematisch korrekte Pensionsabschläge (Actuarially fair public pension reductions in case of early retirement, by Johann K. Brunner and Bernd Hoffmann 2010)*

A well-known problem of the public pension system in many countries is that most individuals retire much earlier than at the statutory age. This is especially the case in Austria, where the actual average retirement age is below 60, while for most groups of employees the statutory age is 65 for men and 60 for women. There are studies which show that the generosity of the pension system represents a major incentive for individuals to retire early (Gruber and Wise 1999, AER; Hofer and Koman 2006, Empirica). As a consequence, there is an intensive debate on what are the appropriate rules for a reduction of the pension claims in case of early retirement.

In this project we calculated (for the first time) actuarially fair or neutral pension reductions for the Austrian public pension system, on the basis of a sample of earnings careers of employees retiring in 2008. Of course, actuarial fairness is not a well-defined concept in a pay-as-you-go system (as opposed to a funded system), so the idea was to find those reductions which imply that early retirement of an individual does not impose an additional burden on the pension system. Our main finding was that for men the statutory reductions in Austria (4,2% per year of early retirement) are considerably lower than neutral ones (which vary between 5% and 8% for different groups). Moreover, individuals retiring

early were on average found to have a higher past income and a less disconnected employment career than individuals retiring later.

#### **4. Cooperation within and outside of the NRN**

Within the NRN the members of the subprojects participated in a number of meetings, presented their work and discussed the work of others.

On the international level our group has participated actively in meetings of the scientific community. We presented and discussed our work at a number of international conferences, e.g. at the annual congresses of the EEA, IIPF or APET. In addition we presented our papers at a number of workshops and research seminars, e.g. at the University of Zürich or at the Free University of Berlin.

In April 2011 we will host a workshop on *Taxation and Redistribution* in Linz, to which some of the most active researchers in the field agreed to present papers. We will use this meeting to discuss our work with them and to intensify our international contacts.

## Curriculum Vitae

**Johann K. Brunner**

<http://www.econ.jku.at/brunner>

### Personal

- Born 31/10/1951 in Zell/Pram, Austria, married, three children

### Current Position

- Professor of Public Economics, Johannes Kepler University, Linz, since 1995
- Head of the Department of Economics, since 2012

### Education

- Habilitation in economics, University of Linz, 1987
- Dr. rer soc oec. with honours (equiv. PhD in economics), University of Linz, 1983
- Dr. techn.sub auspiciis praesidentis rei publicae, University of Linz, 1981

### Previous Academic Appointments and Visiting Positions

- Dean of the Faculty of Business, Economics and Social Sciences 2007-2007
- Head of the Department of Economics, 1996-2000
- Lecturer at the University of Zurich, 2000
- Lecturer at the University of Graz, 1989, 1990
- Visiting Professor at the University of Innsbruck, 1998
- Visiting Professor at the University of Constance, 1992-1993.
- Visiting Scholar at the University of British Columbia, Vancouver, 1992
- Visiting Scholar at the University of Oxford (1987)
- University Assistant at the Dep. of Economics, Johannes Kepler University, Linz, 1981-1995
- University Assistant at the Dep. of Economics, University of Salzburg, Salzburg, 1977-1981.

### Publications

- Optimal taxation of bequests in a model with initial wealth, **Scandinavian Journal of Economics**, December 2012; 114(4), pp. 1368-1392. (with Susanne Pech)
- Optimum taxation of life-annuities, **Social Choice and Welfare**, 2008; 30(2), pp. 285-303. (with Susanne Pech)

- Adverse selection in the annuity market when payoffs vary over the time of retirement, 2005, **Journal of Institutional and Theoretical Economics**, 161(1), pp. 155-183.
- Transition from a pay-as-you-go to a fully funded pension system: The case of differing individuals and intragenerational fairness, **Journal of Public Economics**, 1996, 60, 131-146.
- A note on optimum income tax, **Journal of Public Economics**, 1993, 50, p. 445-451.

## Curriculum Vitae

**Paul Eckerstorfer**

[http://www.parlament.gv.at/WWER/PDION/L/L3/L3\\_3.shtml](http://www.parlament.gv.at/WWER/PDION/L/L3/L3_3.shtml)

### Personal

- Born 21/04/1982 in Wels, Austria, married, one child

### Current Position

- Budgetdienst, Parlament, Vienna, since 2013

### Education

- PhD in economics, University of Linz, 2012
- Mag rer soc oec (equiv. MA in economics), University of Vienna, 2007

### Previous Academic Appointments and Visiting Positions

- Researcher (NRN) at the Dep. of Economics, Johannes Kepler University, Linz, 2008-2011
- Assistant Professor at the Dep. of Economics, Johannes Kepler University, Linz, 2011-2013

### Publications

- Asymmetric and Non-atmospheric Consumption Externalities, and Efficient Consumption Taxation, **Journal of Public Economics**, 2013; 106, pp. 42-56. (with Ronald Wendner)
- Optimal Taxation of wealth and consumption in the presence of tax evasion, **Journal of Economics**, 2013; 110, pp. 107-124. (with Johann K. Brunner, Susanne Pech)
- Relative consumption concerns and the optimal tax mix, **Journal of Public Economic Theory**, 2014 (forthcoming).
- Optimal redistributive taxation in a multi-externality model, **Finanzarchiv**, 2012, 68(4), pp. 1-14.



### Personal

- Born 02/07/1983 in Linz, Austria

### Education

- Mag rer soc oec (equiv. MA in economics), University of Linz, 2009

### Publications

- Versicherungsmathematisch korrekte Pensionsabschläge, **Soziale Sicherheit**, 2010; 10, pp. 614-621.

# **S 10309 Bayesian Econometrics**

## **Project Leader**

Univ.Prof. Dipl.-Ing. Dr.techn. Sylvia Frühwirth-Schnatter

Institute for Statistics and Mathematics

Vienna University of Economics and Business

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Assignment to subject discipline(s) (use ÖSTAT codes)

1	%	2	%	3	%
5701	40	1145	30	1133	30

## 1. Summary

The relevance of empirical research in economics not only depends on a high quality data base but also on employing appropriate econometric methods. The analysis of longitudinal individual data, in particular, for discrete dynamic panels, requires highly structured, flexible econometric models where the model specification depends on latent variables. A typical example is the application of random-effects models to discrete dynamic panel data to capture unobserved heterogeneity.

Econometric estimation of such models is far from straightforward and Bayesian inference using Markov chain Monte Carlo (MCMC) methods often is the only feasible approach. However, the application of the Bayesian approach to panel data techniques has been a matter of routine only for Gaussian data. One major scientific achievement has been to develop new and efficient simulation-based algorithms for Bayesian estimation of various econometric models for discrete-valued panel data. Several efficient MCMC techniques based on the idea of auxiliary mixture sampling have been developed for latent variable models for binary, multinomial and count data, both for cross-sectional data as well as large panels with repeated measurements.

Correct model specification, in addition to efficient estimation, is also of great importance for obtaining valid and accurate econometric inference. However, model selection for non-Gaussian latent variable models constitutes an even larger challenge than estimation. Another major scientific has been to develop new techniques for computing marginal likelihoods based on auxiliary mixture sampling for non-Gaussian data. Stochastic model specification search for latent variable models such as factor models, state space models and other models for panel data analysis has been developed. Bayesian shrinkage priors were employed to achieve parsimony and to protect inference against misspecification at the same time. These techniques have been applied to model selection problems such as identifying hidden factors in multiple measurements, testing for the presence of unobserved heterogeneity in panel data models, testing for endogeneity in treatment-effects models or selecting the number of clusters in model-based clustering based on finite mixture models.

A further major scientific achievement has been the development of clustering technique for discrete-valued panel data, in order to deal with unobserved heterogeneity in panels of individual data. Following the framework of model-based clustering of time series, clustering is achieved by formulating dynamic finite mixture models for panels of transition data based on time-homogeneous first-order Markov chains. Using panels from the ASSD, this technique has been applied to analyse unobserved heterogeneity in life-time wage careers in the Austrian labour market, to investigate the influence of having children on the wage career of women and to investigate earning dynamics of female workers and to identify the best time to give birth. Further applications investigate on the impact of plant closures on

retirement to solve a long-standing question about heterogeneous impact of such events on individual.

A major challenge in the empirical projects is to identify causal effects in policy and program evaluation. In addition to common econometric tools like instrumental variable estimation, propensity scores and matching, Bayesian methods for IV estimation and Bayesian treatment-effect models were investigated. Flexible Bayesian treatment-effect models including variable selection were applied to a large panel to analyse the labour market effects of a mother's time spent at home after childbirth. A semi-parametric Bayesian instrumental variable approach was applied to study causal effects that determine child health and labour market outcome.

## **2. Scientific background / aims of research**

The estimation of complex and flexible panel data models using traditional approaches like maximum likelihood estimation is possible but usually far from straightforward, see e.g. McFadden and Train (2000) and Honore and Kyriazidou (2000). Furthermore testing hypotheses like homogeneity against the presence of unobserved heterogeneity using traditional methods such as likelihood ratio statistics leads to nonregular problems. For this reason, more and more empirical research in economics is based on a fully Bayesian approach both for inference and hypothesis testing as well as model selection.

Bayesian econometrics dates back to the exceptional work of Arnold Zellner (1971). The broader application in economic research, however, was hindered by numerical difficulties associated with the practical implementation of the Bayesian approach. Since the early '90, the availability of Markov chain Monte Carlo (MCMC) algorithms has led to an enormous increase in applied Bayesian econometrics. Leading researchers both in Europe as well as in the U.S. have developed efficient MCMC algorithms for the estimation of highly flexible models for complex economic data sets, see Koop (2003), Geweke (2005) and Rossi, Allenby and McCulloch (2005) for a comprehensive review.

Efficient Bayesian estimators often provide considerable improvement compared to standard procedures such as generalized method of moments or two-stage-least-square estimation as documented recently by Conley, Hansen, McCulloch and Rossi (2008) and Jiang, Manchanda and Rossi (2009). Empirical research where the Bayesian approach has been applied successfully in analyzing complex labour market data include Geweke and Keane (2000) and Hirano (2002).

The computational challenge one has to face is even larger, if the ultimate goal is to discriminate between different competing models. The Bayesian approach offers a principled and coherent way of model discrimination. The classical strategy toward Bayesian model selection determines the posterior probabilities of each model by computing marginal

likelihoods; see Ardia, Bastürk, Hoogerheide and van Dijk (2011) for a recent review of various methods of solving the associated high dimensional numerical integration problem. In the recent literature, focus has shifted toward developing efficient MCMC algorithms for stochastic model specification search which are based on choosing suitable Bayesian shrinkage priors; see e.g. Fahrmeir, Kneib and Konrath (2010) for a recent review. One approach is to apply model space MCMC methods by sampling jointly model indicators and parameters, using the stochastic variable selection approach (George and McCulloch, 1997). An alternative approach is to apply shrinkage priors to achieve parsimony in an implicit manner, e.g. the Bayesian Lasso prior (Park and Casella, 2008) or the normal-Gamma prior (Griffin and Brown, 2010). While these methods are very well-developed for variable selection in standard regression models, little work has been done concerning latent variable models such as factor models, state space models and other panel data models.

### **3. Results and discussion**

#### **3.1. Topic 1: Efficient MCMC Algorithms for Binary and Multinomial Models**

One major scientific achievement has been to develop new and efficient simulation-based algorithms for Bayesian estimation of various econometric models for discrete-valued outcomes. Frühwirth-Schnatter and Frühwirth (2007) introduced auxiliary mixture sampling as a convenient technique to perform Bayesian inference for binary and multinomial data. This sampler has been improved considerably by using the differenced random utility representation (RUM) of such models instead of the standard RUM representation, see Frühwirth-Schnatter and Frühwirth (2010). Comparisons of this sampler to other MCMC techniques like the Metropolis-Hastings algorithm (Rossi et al., 2005) or the data-augmented Metropolis-Hastings algorithm (Scott, 2011) revealed that auxiliary mixture sampling is more efficient and easy to implement. Frühwirth-Schnatter *et al.* (2009) showed how to improve auxiliary mixture sampling under repeated measurements by aggregating the latent utilities in the RUM representation. Fussl *et al.* (2013) obtained additional improvement by aggregating the latent utilities in the dRUM representation, instead. The latent errors in this model follow a generalized logistic distribution which is symmetric, approaches the normal distribution as the number of repetitions increases, and is easily approximated by a mixture of normal distribution. Furthermore, computing time compared to individual auxiliary mixture sampling could be reduced considerably.

Auxiliary mixture sampling renders the Bayesian estimation of any binary or multinomial model with or without unobserved heterogeneity or any other latent structure feasible and leads to fast MCMC algorithms which are easily implemented even for complex models because they require draws from standard distributions only. An important field for empirical applications of these efficient Bayesian estimation techniques are discrete choice

models where the outcome variable is a discrete multinomial response variable. These models have been applied in many area of economic research including labour economics and industrial organization, see e.g. Athey and Imbens (2007), Imai, Jain and Ching (2009), and Jiang, Manchanda and Rossi (2009).

Efficient Bayesian estimation techniques for discrete choice models, including models with unobserved heterogeneity have been applied in cooperation with other subprojects, in particular with Subproject 2 (AGING) to study the impact of job displacements on employment and wages and with Subproject 5 (INDUSTRY DYNAMICS AND MARKET STRUCTURE) to model household labor supply in Austria.

### 3.2. Topic 2: Model-based Clustering of Dynamic Discrete-valued Panel Data

A second major scientific achievement of the project has been the development of clustering technique for discrete-valued panel data, in order to deal with unobserved heterogeneity in panels of individual outcome data. To deal with unobserved heterogeneity in panels of individual outcome data, it is assumed that unknown segments or hidden groups are present with a group-specific behaviour differing across groups. Following the framework of model-based clustering of time series introduced by Frühwirth-Schnatter and Kaufmann (2007), clustering is achieved by formulating appropriate dynamic finite mixture models. The framework of model-based clustering is particularly useful for clustering panels of categorical time series, where the application of more traditional clustering techniques is hampered by the difficulty to define appropriate distance measures, see also Frühwirth-Schnatter (2011) for a comprehensive review of model-based clustering of time series.

Pamminger and Frühwirth-Schnatter (2010) developed two approaches for model-based clustering of categorical time series based on finite mixtures of time-homogeneous first-order Markov chains. In *Markov chain clustering*, the individual transition probabilities are fixed to a group-specific transition matrix. In *Dirichlet multinomial clustering*, the rows of each individual transition matrix deviate from the group mean and follow a Dirichlet distribution with unknown group-specific hyperparameters. Estimation is carried out through Markov chain Monte Carlo. Various well-known clustering criteria are applied to select the number of groups.

Subgroup 9 (BAYESIAN ECONOMETRICS) collaborated actively with the subprojects AGING and LABOR MARKET POLICY on an application of clustering of discrete-valued panel data through mixtures-of-experts Markov chain models. The application to earnings dynamics and the long-term consequences of early life events turned particularly fruitful because, on the one hand, the economic problem was difficult to solve with traditional econometric methods and, on the other hand, the specific problem of understanding why different clusters evolve (or what individual characteristics are correlated with specific

clusters) led to the extension of the Bayesian framework to include multinomial logits to model prior probability to belong to a certain cluster.

A related collaboration applies mixtures-of-experts Markov chain clustering to investigate earning dynamics of female workers and to identify the best time to give birth. Five different clusters of mothers with similar career paths emerged through this analysis: a cluster of women who return to their jobs quickly after childbirth and move to high-paying jobs on a steep earnings profile, a cluster of women who decide to work in part-time jobs, a cluster of mothers who take an extended family break before returning to work, a cluster of women who drop out of the labor force after the birth of the first child, and a cluster of mothers with highly mobile careers switching in and out of employment multiple times. Further applications investigate on the impact of plant closures on retirement to solve a long-standing question about heterogeneous impact of such events on individual. To this aim, clustering based on non-homogenous Markov chains has been developed.

Pamminger and Tüchler (2011) apply mixtures-of-experts Markov chain clustering to investigate the influence of having children on the wage career of women. They analyze patterns in the earnings development of female employees in order to identify groups of similar transition patterns between discrete earnings states and investigate the effect of having children and/or going on maternity leave on the individual probability of belonging to each of these groups. This project cooperated closely with the subproject AGING in terms of data and modelling issues.

### 3.3. Topic 3: Bayesian IV and Bayesian Treatment-Effect Models

The Bayesian econometrics group contributed to the important topic of identifying causal effects, by pursuing a Bayesian approach toward instrumental variables (IV) estimation and treatment-effect modeling. Treatment-effect modeling is closely related to more common econometric techniques such as propensity score matching, sample selection and instrumental variable estimation, see e.g. Heckman and Navarro-Lozano (2004) and Lee (2005).

For IV approach as well as treatment-effect models, Bayesian inference is more efficient than popular alternative approaches. Propensity score matching estimators (Rosenbaum und Rubin, 1983), for instance, are widely used to estimate treatment effects, because matching is reduced to a single dimension as compared to matching on the covariates. However, propensity scores need to be estimated prior to matching which makes it difficult to derive the asymptotic distribution of matching estimators, see e.g. Abadie and Imbens (2009).

In the instrumental variables approach toward identifying causal effects, see e.g. Angrist, Imbens, and Rubin (1996), researchers typically face the problem of weak

instruments, which leads to high standard errors in the IV regressions, making precise estimation very difficult. In particular, for survey data, many policy applications suffer from the weak-instrument problem. Efficient Bayesian estimators provides a big improvement as documented by Conley, Hansen, McCulloch and Rossi (2008) who compared inferences from non-parametric Bayesian procedures with those based on two stage least squares and procedures from the recent literature on weak instrument asymptotic.

An additional advantage of the Bayesian approach in this context is that more flexible assumptions can be made about the error distribution in the IV or the treatment-effect model. The usual “text-book” assumption is that of joint normality of the errors in the selection and outcome equation, see e.g. Chib (2007). Recent Bayesian approaches assume instead more flexible error distributions like Student-t distributions or finite mixtures of normal distributions (Chib and Hamilton, 2000; Li, Poirier and Tobias, 2004). Chib and Hamilton (2002) use a Bayesian non-parametric approach based on countably infinite mixtures of Student-t distributions. This flexibility allows considering IV and treatment-effect models also for intrinsic non-Gaussian data such as binary outcome data or count outcomes. Furthermore, it is possible to deal with complicated data structures. Chib and Hamilton (2000), for instance, consider clustered data, while Chib and Jacobi (2007) consider panel data and analyze the effect of treatment at the baseline. Both papers include random effects to capture unobserved heterogeneity.

Flexible Bayesian IV models have been applied in cooperation with Subproject 6 (HEALTH) to study causal effects that determine child health and labour market outcome. Prior research on the interaction between the quantity and the quality of children builds on exogenous variation in family size due to twin births, however estimation based on two-stage least squares yields statistically insignificant estimates with substantial standard errors. By using a semi-parametric Bayesian IV approach as in Conley *et al.* (2008) for econometric inference, the main contribution of this collaboration is to substantiate the finding of a zero effect both for labour market as well as health outcomes with a substantially increased precision by an order of magnitude.

Flexible Bayesian treatment-effect models were applied in cooperation with Liana Jacobi (University of Melbourne) and Helga Wagner (JKU Linz) to the analysis of the labor market effects of a mother's time spent at home after childbirth, using data from the ASSD. This project cooperated in terms of data issues with the Subproject 4 (POPULATION ECONOMICS). The project exploited the variation in time spent at home as a result of a recent change in the parental leave policy in Austria (Lalive, Schlosser, Steinhauer and Zweimüller, 2010) in the context of a Bayesian treatment effects model for multilevel treatments and panel outcomes with variable selection to estimate the effects of the time spent at home on the mother's subsequent labor market performance. For Bayesian treatment effect models,



common treatment effects like the average treatment effect (ATE), the average effect of treatment on treated (ATT) and the average effect of treatment on untreated (ATU) are easily estimated as demonstrated, for instance, by Poirier and Tobias (2003). The estimated ATT and ATU for the data at hand indicate that there is no permanent effect of the time spent at home for mothers taking a long maternity leave, whereas mothers taking a short maternity leave would have suffered permanently from a long leave (Jacobi, Wagner, and Frühwirth-Schnatter, 2014).

#### **4. Cooperation within and outside of the NRN**

Internal collaborations of Subgroup 9 (BAYESIAN ECONOMETRICS) were closest with Subproject 2 (AGING), Subproject 3 (LABOR MARKET POLICY), Subproject 5 (INDUSTRY DYNAMIC AND MARKET STRUCTURE) and Subproject 6 (HEALTH). These internal collaborations within the NRN definitely strengthened the position of the researchers in Subgroup 9 within the scientific community, in particular due to the application of very powerful and demanding Bayesian techniques to outstanding administrative data.

Sylvia Frühwirth-Schnatter has been well-connected with leading researchers in Bayesian econometrics (Herman van Dijk, Rotterdam; Gary Koop, Glasgow; Mark Steel, Warwick; Hedibert Lopes, Chicago; Peter Rossi, UCLA) for many years. She is Co-Chair of the ESOBE (European Seminar on Bayesian Econometrics) and Chair-Elect 2014 of the Section EFaB (Economics, Finance, and Business) of the International Society for Bayesian Analysis. In November 2012, she organized the annual ESOBE meeting at the WU Wien with James J. Heckman (University of Chicago) and Xiao-Li Meng (Harvard University) as keynote speakers.

Sylvia Frühwirth-Schnatter collaborated with Hedibert Lopes on parsimonious Bayesian factor analysis using Bayesian variable selection methods (Frühwirth-Schnatter and Lopes, 2014). This work led to a collaboration with James J. Heckman, Gabriella Conti and Remi Piatek on developing dedicated Bayesian factor analysis to examine the effect of early-life conditions and education on health (Conti *et al.*, 2014).

The cooperation of Sylvia Frühwirth-Schnatter with Rudolf Frühwirth, Leo Held and Harvard Rue led to a series of publications on MCMC estimation for latent variable models for binary and multinomial data, see e.g. Frühwirth-Schnatter *et al.* (2009), Frühwirth-Schnatter and Frühwirth (2010), and Fussl *et al.* (2013). The cooperation of Sylvia Frühwirth-Schnatter with Liana Jacobi and Helga Wagner on Bayesian analysis of the labor market effects of a mother's time spent at home after childbirth led to a joint publication (Jacobi *et al.*, 2014).

Further cooperations of Subgroup 9 (BAYESIAN ECONOMETRICS) outside the NRN applied methods related to tools developed within the NRN to important further research areas. Examples include the application of a random coefficient model to determine

willingness-to-pay (Reichl and Frühwirth-Schnatter, 2012), the application of finite mixtures of multivariate skew-t distributions in bioinformatics (Frühwirth-Schnatter and Pyne, 2010), modeling multivariate time-series in financial markets using Markov mixtures models (Hahn *et al.*, 2009, 2010), and modeling time series of extremes values (Nakajima *et al.*, 2012).

## Curriculum Vitae

**Sylvia Frühwirth-Schnatter**

<http://statmath.wu.ac.at/~fruehwirth>

### Personal

- Born 21/5/1959 in Vienna, Austria, married, three children

### Current Position

- Chair of the Institute for Statistics and Mathematics, Vienna University of Economics and Business, since 2014
- Full Professor of Applied Statistics and Econometrics, Vienna University of Economics and Business, since 2011

### Education

- Habilitation in Statistics, Vienna University of Economics and Business, 1996
- Doctorate in Technical Mathematics, University of Technology, Vienna, 1988
- Master's degree (Dipl.-Ing.) in Technical Mathematics, University of Technology, Vienna, 1982

### Previous Academic Appointments and Visiting Positions

- Full Professor of Applied Statistics and Econometrics, Johannes Kepler University Linz, 2003-2011; Head of the Department, 2004 – 2010
- Appointment for a professorship in Statistics at the University of Innsbruck (declined), 2009
- Assistant Professor, and from 1996, Associate Professor, Vienna University of Economics and Business Administration, Department of Statistics, 1990-2003
- Visiting Professor, Vienna University of Technology, Summer term 1991
- Post-doc, Vienna University of Technology, Department of Statistics and Probability Theory, 1988-1990
- Research Assistant, Vienna University of Technology, Department for Hydraulics, Hydrology and Water Resources Management, 1982-1988

### Grants, Awards and Nominations

- Corresponding member of the Austrian Academy of Science, 2011
- DeGroot Prize (Prize of the International Society of Bayesian Analysis for an outstanding monograph in Statistics), 2007
- Elected member of the International Statistical Institute, 2007

- WU Best Paper Award (Prize of the Jubiläumsfonds der Stadt Wien, for outstanding publications at the Vienna University of Economics and Business), 2005
- Förderungspreis der Senator Wilfling Stiftung (for advancement of scientific research at the Vienna University of Economics and Business), 1997

#### **Other Affiliations and Professional Services**

- Editor: Statistical Papers, 2003 – 2010
- Associate Editor: Journal of Econometrics, since 2007
- Associate Editor: Statistics and Computing, 2011 – 2013
- Guest Editor: Computational Statistics and Data Analysis, 2011 – 2013
- Chair-Elect of the Section Economics, Finance, and Business: International Society for Bayesian Analysis, 2014
- Member of the Chikio Hayashi Award Committee: International Federation of Classification Societies (IFCS), 2013
- Member of the Program Committee of the Section EFaB (Economics, Finance, and Business), International Society for Bayesian Analysis, 2013-2015
- Member of the Savage Award Committee: International Society for Bayesian Analysis, 2013
- Member of the Price Committee: International Society for Bayesian Analysis, 2011-2013
- Member of the Board: International Society for Bayesian Analysis, 2008-2010
- Member of the DeGroot Prize Committee: International Society for Bayesian Analysis, 2008
- Corresponding Member: Österreichische Akademie der Wissenschaften, since 2011
- Elected Member: International Statistical Institute, since 2008
- Member: American Statistical Association, since 2003
- Lifetime member: International Society for Bayesian Analysis, since 2002
- Member: Österreichische Statistische Gesellschaft, since 1992
- Local Organizer and Chair Scientific Program Committee: Stochastics, Economics and Architecture, Opening Conference of the Institute for Statistics and Mathematics at the new WU Campus, Vienna University of Business and Economics, November 22, 2013
- Local Organizer and Chair Scientific Program Committee: ESOBE 2012 (European Seminar of Bayesian Econometrics), Vienna University of Business and Economics, November 1-2, 2012

- Local Organizer: Biannual Workshop of the National Research Network (NRN), “The Austrian Center for Labor Economics and the Analysis of the Welfare State”, Vienna University of Business and Economics, February 27-28, 2012
- Organizer: Conference on Bayesian Applications and Methods in Marketing, Johannes Kepler University Linz, September 19-21, 2005
- Organizer: Workshop on Econometric Time Series Analysis, Johannes Kepler University Linz, September 29 - October 1, 2003

### **Own Research Projects (Grants)**

- National Research Network “The Austrian Center for Labor Economics and the Analysis of the Welfare State”, Project Bayesian Econometrics (FWF S10309-G14), 2008-2014 (funding for a PostDoc and a PhD)
- Gibbs Sampling for Discrete Data (FWF P17959-N12), 2005-2008 (funding for a PhD)
- SFB “Adaptive Information Systems and Modelling in Economics and Management Science”, Project MCMC Analysis of Bayesian Models with Latent Structures (FWF SFB F010), 2000-2004 (funding for a PhD)
- Conjoint-Analysis Using Tools from State Space Modelling (founded by the Kuratorium der Wirtschaftsuniversität Wien), 1999-2001 (funding for a PhD)

### **Publications**

- Finite Mixture and Markov Switching Models. Springer Series in Statistics. New York: Springer-Verlag, 2006.
- Model-based clustering of multiple time series. **Journal of Business and Economic Statistics**, 2008; 26, 78-89 (with S. Kaufmann)
- Improved Auxiliary Mixture Sampling for Hierarchical Models of Non-Gaussian Data. **Statistics and Computing**, 2009; 19, 479-492 (with R. Frühwirth, L. Held and H. Rue)
- Stochastic Model Specification Search for Gaussian and Non-Gaussian State Space Models, **Journal of Econometrics**, 2010; 154, 85-100 (with H. Wagner)
- Labor Market Entry and Earnings Dynamics: Bayesian Inference Using Mixtures-of-Experts Markov Chain Clustering. **Journal of Applied Econometrics**, 2012; 27, 1116-1137 (with C. Pamminer, A. Weber and R. Winter-Ebmer)

## Personal

- Born 24/02/1986 in Salzburg, Austria

## Current Position

- Research associate (FWF-project) at the Institute for Statistics and Mathematics, Vienna University of Economics and Business

## Education

- PhD studies at Johannes Kepler University, Linz, 02/2010 – present
- Master studies at Johannes Kepler University, Linz, 10/2008 – 09/2009  
Master's degree graduated with honors
- Bachelor studies at Johannes Kepler University, Linz, 10/2004 – 09/2008  
Bachelor's degree graduated with honors

## Previous Academic Appointments

- Research and Teaching associate at the Department of Applied Statistics, Johannes Kepler University, Linz, 02/2010 – 02/2014
- Lecturer in the Bachelor's programme Public Management, University of Applied Sciences Upper Austria, Linz, 10/2013 – 02/2014
- Lecturer in the Master's programme Business Consultancy International, University of Applied Sciences, Wiener Neustadt, 09/2011 – 02/2012
- Teaching assistant at the Department of Applied Statistics, Johannes Kepler University, Linz, 03/2006 – 01/2009

## Publications

- Efficient MCMC for Binomial Logit Models, **ACM Transactions on Modeling and Computer Simulation**, 2013, 23(1), Pages 1-21 (with S. Frühwirth-Schnatter and R. Frühwirth)
- R package binomlogit: Efficient MCMC for Binomial Logit Models, 2012. R package version 1.0, <http://CRAN.R-project.org/package=binomlogit>
- Exploratory Designs for Assessing Spatial Dependence, Book chapter in: **Spatio-temporal Design: Advances in Efficient Data Acquisition**, W.G. Müller, J. Mateu (ed.), Wiley & Sons, Chichester 2012, Pages 170-206. (with W.G. Müller and J. Rodríguez-Díaz)

## Personal

- Born 19/5/1977 in Kirchdorf an der Krems, Austria.

## Current Position

- Software Analyst (and Statistician) at the RACON Software GmbH, Linz, Austria, since February 2012

## Education

- Dr. rer. soc. oec. (equiv. PhD in statistics) passed with distinction, Johannes Kepler University, Linz, in 2007
- Mag. rer. soc. oec. (equiv. MA in statistics) passed with distinction, Johannes Kepler University, Linz, in 2005

## Previous Academic Appointments and Visiting Positions

- Post Doctoral Researcher at the National Research Network: "The Austrian Center for Labor Economics and the Analysis of the Welfare State", Institute for Statistics and Mathematics, Vienna University of Economics and Business, September 2011 – January 2012
- Post Doctoral Researcher at the National Research Network: "The Austrian Center for Labor Economics and the Analysis of the Welfare State", Department of Applied Statistics (IFAS), Johannes Kepler University, Linz, March 2011 – August 2011
- University Assistant, Department of Applied Statistics (IFAS), Johannes Kepler University, Linz, October 2010 – February 2011
- Research Assistant (FWF research project), Department of Applied Statistics (IFAS), Johannes Kepler University, Linz, since 2008
- Teaching and research assistant at the Department of Applied Statistics (IFAS), Johannes Kepler University, Linz, 2002 – 2005

## Grants, Awards and Nominations

- ÖSG Förderpreis 2008

## Other Affiliations and Professional Services

- Referee: Statistical Papers, Austrian Journal of Statistics

## Publications

- Bayesian Clustering of Categorical Time Series – An Approach Using Finite Mixtures of Markov Chain Models. VDM Verlag Dr. Müller, 2008, ISBN 978-3-8364-9805-0.
- Labor Market Entry and Earnings Dynamics: Bayesian Inference Using Mixtures-of-Experts Markov Chain Clustering, **Journal of Applied Econometrics**, Vol 27, No 7, pp. 1116-1137, 2012 (with Sylvia Frühwirth-Schnatter, Andrea Weber and Rudolf Winter-Ebmer).
- A Bayesian Analysis of Female Wage Dynamics Using Markov Chain Clustering. **Austrian Journal of Statistics**, Vol 40, No 4, pp. 281-296, 2011 (with Regina Tüchler).
- Model-based Clustering of Categorical Time Series, **Bayesian Analysis**, Vol 5, No 2, pp. 345-368, 2010 (with Sylvia Frühwirth-Schnatter).
- Model-based Clustering of Categorical Time Series with Multinomial Logit Classification. In **Proceedings of the 8th International Conference of Numerical Analysis and Applied Mathematics**, pp. 1897-1900, edited by T. E. Simos, AIP Conference Proceedings 1281, American Institute of Physics, 2010 (joint with Sylvia Frühwirth-Schnatter, Rudolf Winter-Ebmer and Andrea Weber).



## Personal

- Born 1/6/1968 in Vienna, Austria

## Current Position

- Postdoctoral Research Associate (FWF project), Institute for Statistics and Mathematics, Vienna University of Economics and Business, since 2011

## Education

- Visiting Research Scholar, Northeastern University, Boston, USA, Erwin Schrödinger Fellowship, July 1995 – July 1997
- Doctor technicae (equiv. PhD in Applied Mathematics), Vienna University of Technology, 1994
- Studies in Economic Computer Science, Vienna University of Technology, University of Vienna, 1988 – 1993
- Diplomingenieur (equiv. MS in Computational Mathematics), Vienna University of Technology, 1990

## Previous Academic Appointments

- Research and Teaching Associate at the Salzburg University of Applied Sciences, November 2010 – August 2011
- Research Associate at the St. Pölten University of Applied Sciences, August 2009 – March 2010
- Postdoctoral Research Associate, Northeastern University, Boston, USA, July 1997 – June 2003

## Industrial Appointments

- Senior Software Engineer for intelligent video detection systems at the Kapsch TrafficCom AG, Vienna, 2008 – 2009
- Senior Software Engineer for intelligent video detection systems at the ArtiBrain Software Development Corporation, Vienna, 2006 – 2008
- Researcher in intelligent video detection systems at the ArtiBrain Research and Development Corporation, Klosterneuburg, 2003 – 2006
- Computer engineer for mobile communication at the SIEMENS AG, Vienna, 1991 – 1995

### Grants, Awards and Nominations

- Selected by Marquis for inclusion in Who's Who in America, 2001 – 2003
- Erwin Schrödinger Fellowship, 1995 – 1997

### Other Affiliations and Professional Services

- Member of the International Society for Bayesian Analysis, Durham, USA, since 2014
- Member of the American Society of Mechanical Engineers, New York, USA, 2002 – 2003
- Chair of the session "Smart Engineering Systems I" at the conference "Artificial Neural Networks in Engineering", St. Louis, USA, 2001
- Journal refereeing for: IEEE Transactions on Pattern Analysis and Machine Intelligence, IEEE Transactions on Neural Networks, IMA Journal of Applied Mathematics, IEEE Transactions on Signal Processing, INFORMS Journal on Computing, International Journal of Smart Engineering System Design, IIE Transactions, ASME Journal of Manufacturing Science and Engineering, Connection Science

### Publications

- On the Parametrization of the Coefficients of Dilation Equations for Compactly Supported Wavelets, **Computing**, June 1993, 51(2), pp. 165-173. (with J. Schneid)
- Foundations for Analytical Models of Staircase Traversal of Convex Polygonal Surfaces, **International Journal of Production Research**, July 1997, 35(7), pp. 2009-2024. (with S.V. Kamarthi and S.T.S. Bukkapatnam)
- Fourier and Wavelet Transform for Flank Wear Estimation – A Comparison, **Mechanical Systems and Signal Processing**, November 1997, 11(6), pp. 791-809. (with S.V. Kamarthi)
- Feature Extraction from Wavelet Coefficients for Pattern Recognition Tasks, **IEEE Transactions on Pattern Analysis and Machine Intelligence**, January 1999, 21(1), pp. 83-88. (with S.V. Kamarthi)
- Accelerating Neural Network Training Using Weight Extrapolations, **Neural Networks**, November 1999, 12(9), pp. 1285-1299. (with S.V. Kamarthi)

# Curriculum Vitae

Alexandra Posekany

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## Personal

- Born 20/06/1984 in Vienna, Austria

## Current Position

- PostDoc (non-tenure track) at the Institute for Statistics and Mathematics, Vienna University of Economics and Business

## Education

- PhD studies at Technical University, Vienna, 09/2009 – 06/2013  
Doctoral degree graduated with honors
- Master studies at Technical University, Vienna, 09/2002 – 06/2009  
Master's degree graduated with honors

## Previous Academic Appointments

- Teaching assignment at the Institute for Statistics and Mathematics, Vienna University of Economics and Business funded by NRN "The Austrian Center for Labor Economics and the Analysis of the Welfare State", Vienna, 10/2013 – 02/2014
- Research associate at the Institute for Statistics and Mathematics, Vienna University of Economics and Business, Vienna, 03/2012 – 01/2014
- Lecturer in the Master's programme "Bioinformatics", University of Applied Sciences, Campus Wien, Vienna, 09/2012 – 02/2013
- Research associate at the University of Natural Resources and Life Sciences funded by WWTF (Call for Life Sciences 2008), Vienna, 09/2009 – 02/2012
- Statistical Consultant at the Campus Science Support Facilities GmbH, Vienna Bio Center, Vienna, 04/2013 – present

## Publications

- S. Frühwirth-Schnatter, M. Halla, A. Posekany, G. Pruckner, and S. Schober. The quantity and quality of children: A semi-parametric Bayesian iv approach, 2014.
- U. Mückstein, G. Leparç, A. Posekany, I. Hofacker, and D. Kreil. Hybridization thermodynamics of NimbleGen microarrays. **BMC Bioinformatics**, 11(35), 2010.
- A. Posekany. Outlier detection with mixtures of Gaussian and heavy-tailed distributions. Unpublished Manuscript, to be submitted for publication, 2012.
- A. Posekany, K. Felsenstein, and P. Sykacek. Biological assessment of robust noise models in microarray data analysis. **Bioinformatics**, 27(6):807–814, 2011.