

# Winterseminar 2019

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## List of Abstracts

**Baumgartner, Josef** (together with Martin Falk): *The impact of investment subsidies on profitability: First evidence for ski lift operators in Austria*

**Abstract:** The aim of the study is to evaluate the impact of direct investment grants on the firm performance measured by (accounting) profitability. The empirical approach consists of a probit model explaining the funding status and a difference-in-differences model. The data set is based on balance sheet information for about 250 ski lift operators in Austria.

Methodological aspects: A combination of the non-parametric propensity score matching (PSM) estimator and the difference-in-difference specification will be applied. The PSM compiles a statistical comparison between ski lift operators receiving investment subsidies and those receiving none. A probit estimation is used to identify common denominators of the treated companies, including size, location specific variables (elevation and region), participation in a larger skiing area. In addition, to distinguish between operators with high and low profitability, the quantile difference-in-differences estimator combined with the propensity score matching method is applied. Another advantage of quantile regressions is that the possible impact of outliers and influential observations in the dependent variable is reduced as is likely to be the case for the profit rate.

Data: Information on the funding status and accounting profitability originates from balance sheet data or limited liability and stock corporations (Kapitalgesellschaften) available via the Austrian business registry (Firmenbuch). In Austria it is a common practice that investment grants are listed as separate items in the balance sheet. The profit ratio is constructed as accounting profits divided by total assets of the previous year.

First descriptive results for 2012 and 2013 show that about 40 per cent of the ski lift operators exhibit negative accounting profits. Preliminary evidence based on DID-PSM estimates tend to show that investment subsidies in the base period (2012) do not improve of the profitability in the follow up period.

One explanation for these insignificant effects might be that it takes more time for them to become visible. Hence, it is a necessity to extend the sample period to at least five to seven years. Additionally, profitability of ski operators might not be the primary goal, as the spill-over effects of a good skiing infrastructure (ski lifts and snow canons) to the whole winter tourism industry might be more important. As a consequence we will investigate the effects of skiing infrastructure investments on the number of overnight stay in winter sport resorts.

**Bentlage, Michael:** *Economies of Urbanisation and Localisation in times of the financial crisis 2008/09. Spatial structural changes in German labour markets*

**Abstract:** In times of exogenous shocks such as the crisis dated from 2009, regions depend strongly on the ability to create knowledge. The paper asks how the structure of an agglomeration influenced the response to the financial crisis of 2009. The financial crash represents a clear downturn for the German export oriented economy. Prior to this break we observe an upswing phase around 2007 and afterwards a recovery phase from 2011. Using German labor market regions (LMRs), we describe and explore how the different spatial preconditions of the regions steered the development paths through this crisis. We use indicators for

agglomeration externalities and classify LMRs by means of cluster analyses. Subsequently, we analyze employment development with a closer look at knowledge intensive sectors. We test our initial cluster analysis for the year 2005 with a discriminant analysis for the following year 2007, 2009 and 2011 onwards. We show that the spatial distribution of knowledge intensive employment changes over time. In particular, the recovery after the crisis induces very different development paths and resembles the structure of a LMR. The paper concludes with implications for the German urban systems, by looking at winners and losers.

**Blien, Uwe** (together with Wolfgang Dauth, Duncan Roth): *Occupational routine intensity and the adjustment to job loss: evidence from mass layoffs*

**Abstract:** Against the background of falling employment shares in routine-intensive occupations, this paper empirically assesses how differences in the degree of occupational routine intensity affect the impact of job loss on a worker's subsequent employment biography. Using data on mass layoffs in Germany between 1980 and 2010, we find that experiencing a mass layoff persistently reduces earnings for all affected workers, but that this effect increases with the degree of initial routine intensity. Decomposing the change in earnings reveals that this effect is driven by similarly sized reductions in the number of days in employment and the level of wages. Moreover, we find that a higher degree of routine intensity reduces employment in higher-quality jobs, while being associated with increased sectoral and reduced regional mobility.

**Falk, Martin** (together with Yang Yang): *No hotel gains from Airbnb restraints*

**Abstract:** Airbnb and other online renting service providers appearing under the flag of the so-called sharing economy, have restructured the accommodation market. Consequently, traditional establishments such as hotels feel threatened and their associations have lobbied for the implementation of laws that restrict this type of activities. In European cities with successful lobbyists (e.g. Amsterdam, Barcelona, Berlin, London and Paris), different kinds of regulation have been introduced on these short term rentals. Several other cities have followed. However, little is known about the presumptive impact of restrictions on Airbnb rentals on the performance of the hotel industry, or if the two types of accommodations even act on the same market. Thus, the aim of this study is to investigate empirically if the Airbnb regulations impact on the number of overnight stays in European cities. The method is based on the panel difference-in-difference method. In particular, the dynamic panel data model is estimated using the Fixed-effects Quasi maximum likelihood estimator (QML-FE) with robust standard errors (Hsiao et al., 2002). The method is particularly suitable for short dynamic panels with highly persistent variables as is the case for overnight stays. Data is based on overnight stays for about 100 European cities for the period 2008-2016. The control group consists of cities where there are no regulations on Airbnb rentals. The specification includes accommodation and transportation prices of the destination country, change in the VAT for accommodations, presence of terror attacks, as well as real income of the visitor countries and the destination country. Evidence based on the dynamic panel data model estimated by the Quasi maximum likelihood estimator show that the regulations do not increase the number of overnight stays in affected cities. Instead, significant drivers of overnight stays are accommodation prices, changes in VAT, terror attacks and real GDP.

**Farkas, Richárd** (together with Dániel Kehl, Roland Baczur): *Measuring market power: new evidence from gasoline market*

**Abstract:** The relations between pricing behavior and market power is a heavily investigated topic in economic literature. Pennerstorfer and Weiss (2013) give strong evidence for the role

of spatial clusters in firms' pricing. Based on Salop (1979) an index has been developed to measure this effect. However, this approach regards non neighbour firms belonging to the same brand as competitive manner, they may behave anticompetitively, if their locations are quite close to each other. The present paper seeks to extend the Pennerstorfer and Weiss (2013) model based on Hungarian data for gasoline in order to capture the effects of special spatial structure of markets in pricing mechanism.

**Fischer, Lorenz Benedikt** (together with Michael Pfaffermayr): *Space needs time needs space*

**Abstract:** Similar to the concept of the light cone, regions' ability to influence each other may depend on the spatial - as well as the time dimension. The distance between two spatial units, typically measured as the distance between predefined centroids, is necessarily an increasing function of the size of these units. Therefore, the possibility of spatial interaction is higher the smaller regions under investigation are. In regional economics, it has long been understood that units of observation cannot be considered independent from one another without doubt. One house's beauty may increase the value of neighboring houses. A new highway-departure may create an economic uprise in the newly connected urban area, and therefore economic downturns in close-by areas. Lastly, one region's negative employment shock does not only increase that region's unemployment but also the unemployment of neighboring regions. On the other hand, economists are also aware about the dynamics of economic processes.

The aim of this study is to pinpoint the problems regional research can encounter by neglecting dependence in either space or time. The focus of attention lies in the investigation of regional disparities, and in particular regional unemployment rates. The argumentation is threefold. In a first step, the econometric consequences of omitting time- or spatial dependence are discussed. Monte Carlo evidence provides additional evidence to the results.

Second, we provide theoretical motivation to show how dependence over time and space can be implemented in a search model with mobile labor. It appears that dynamic spatial applications are more data-driven than theoretically justified. However, there is no reason for this conjecture - besides the lack of dynamic spatial theoretical models. A novelty is the consideration of migration as well as commuting in a n-region framework.

Third, an application of the suggested econometric framework to the theoretical model presented here serves as a real-life example of the problems discussed.

**Fritz, Oliver** (together with Mark Sommer, Bartek Rokicki): *The Choice of Multi-Regional Input-Output Tables in CGE-Models*

**Abstract:** Spatial CGE-models are widely used for simulating impacts resulting from economic policy changes, larger scale investment projects and other kind of economic "shocks". They rely on more or less spatially and / or sectorally disaggregated multiregional input-output tables. While national input-output tables have become widely available in recent years, provided by national statistical offices, tables on a regional scale are still scarce. They are usually estimated based on the information contained in the corresponding national tables; the extent of regional data used to derive these tables varies considerably. Two different views on how much effort researchers should make and how much regional information they should collect or estimate when compiling such tables have emerged: Some argue that rather simple regionalization algorithms are sufficient when regional input-output tables are to be embedded in other types of models, for example CGE-models. Researchers should concentrate their efforts on calibrating the model and in the course of doing so change the underlying regional tables if simulation results seem implausible. Others, however, argue instead in favor of maximizing regional information in the process of table compilation.

The paper at hand attempts to produce some empirical evidence pointing in one or the other

direction applying two spatial CGE models for Austria. These models differ only with respect to the system of multiregional input-output tables they are based on: While one system has been compiled based on an algorithm using the national input-output table for the year 2011 and little, but freely available regional information, the other system fits the “hybrid” type of regional input-output tables: While it is based on the same national table for Austria, it makes use of a wide range of data reflecting regional differences in private and public consumption, investment and exports on the demand side and in production structures on the supply side of the table. Various simulation scenarios are carried out applying these two CGE-models to shed light on the empirical relevance of the choice of multiregional input-output tables embedded in the models.

**Giltman, Marina** (together with Maria Batyreva, Viktor Pit, Elena Sumik): *In which cities do we want to live? Empirical multinomial logit analysis*

**Abstract:** In the modern world, cities compete with each other for a variety of resources, including the most skilled and productive workers (Zenker et al., 2013). Concentration of workers with the largest human capital in certain cities is one of the most important factors for their successful economic development (Acemoglu, 1997; Glaeser, Mare, 2001; Combes et al., 2012). On the other hand, the employees are the main taxpayers and stakeholders of the social and economic policies pursued in the cities, therefore, for its successful implementation and targeting, it is necessary to understand which particular characteristics of the city are important for attracting and / or retaining talented employees in it. The theory of local labor markets predicts that mobility of workers between the cities is caused by wages in the local labor market, city amenities and individual preferences about place of living (Moretti, 2011). A number of empirical studies have shown that the natural, cultural, and other characteristics of cities have a positive impact on the increase of the concentration of highly qualified workers in cities (Waltert, Schläpfer, 2010; Nilsson, 2014; Bauer et al., 2015). The question is - which city amenities do affect the employees attitude to the city? Many studies on the concept of city branding work show that not only the possibility of obtaining high wages makes the city attractive for its residents (Kavaratzis, 2005; Virgo, de Chernatony, 2006; Baker, Cameron, 2008; Merrilees et al., 2009; Zenker, 2011; Zenker et al., 2013; Zenker, Rütter, 2014, etc.).

In our work we use the case of the administrative centers of the Ural Federal District regions (UrFD), Russia. We interviewed the employed population aged 20-64. The survey was conducted in September-October 2017, a total of 2,520 respondents were interviewed (420 people in each city). The case of the UrFD is informative for analyzing satisfaction with city amenities, since the cities in the case are different in their size, economic structure, level of economic development, innovative and cultural potential, etc. The respondents were asked about for their satisfaction with the city amenities where they live / work on a scale: 1 - completely no satisfied, 5 - completely satisfied. The attitude to the city was taken into account in the answer to the question “Do you like the city you live in?” with four possible answers: yes, surely / rather yes, than no / rather no, than yes / no, I do not like. For empirical estimates, we apply a multi-nominal logit regression. The choice of the answer to the question “Do you like the city you live in?” is a dependent variable.

Analysis has shown that for the entire sample, such characteristics as good landscape, opportunities for the realization of active hobbies in nature, an effective system of city management, transport infrastructure, the health care system, the system of institutions of art, culture and leisure are significant. There are also some differences for men and women, skilled and not skilled workers, and for different aged groups.

**Haas, Anette** (together with Kerstin Tanis): *Does spatial clustering limit immigrants' wage growth? – A life cycle perspective*

**Abstract:** It is widely known that spatial concentration of immigrants within the host country is the norm (e.g. Bartel, 1989; Bauer et al., 2005; Jayet et al., 2016). The impact of immigrants' spatial clustering on labour market outcomes was subject to a huge body of literature. However, economic theory as well as empirical evidence is inconclusive. Empirical research on this topic has to overcome an important issue: the endogeneity of immigrants' location choices. The residential sorting of immigrants may be based on labour market relevant unobservable variables such as risk aversion or motivation to learn a new language. Our identification strategy uses a placement policy, which validates the assumption of exogenous location choices (e.g. Damm, 2014; Edin, Fredriksson, & Åslund, 2003).

The German guest worker program provides a quasi-experimental setting for three reasons. First, we are able to follow them over the lifecycle with precise information about wage growth and working life. Second, guest workers have influenced the population and migration pattern in Germany crucially, who came in economically important times of labour force shortage. Third, we make use of the fact that guest workers did not freely choose their location or region. They were assigned to the companies by the recruitment offices. The companies recruited them that means there was no spatial job search in that sense that migrants choose explicitly to live near the same nationality or to go to their favoured place. This is a crucial point for our identification strategy, because it allows us to identify the causal influence of spatial clustering on wage growth. Employing Borjas' (2000) wage convergence model, we analyse differences in wage levels and wage growth of guest workers by comparing immigrants assigned to cities with high ethnic concentration, and immigrants, who were assigned to cities without existing immigrant stocks. Our measures of concentration include exposure index and relative clustering index.

The analysis is based on a thirty percent sample of the Integrated Employment Histories (IEB) of all immigrants from Turkey, the former Yugoslavia, Italy, Spain and Greece registered employed or unemployed in Germany since 1975. The data set allows us to track individuals over a long period. Using this rich panel data set in combination with a quasi-experimental setting, we are able to contribute to literature in several ways. We study the most important group for the impact of immigration on host-countries' welfare: economic long-term migrants. Furthermore, we are able to detect a causal relationship of the effect of spatial clustering on immigrants' labour market performance during their life course. Lastly, we offer an additional regional explanation for immigrants' general lower performance in the host country labour market. Our results indicate that immigrants, who were distributed close to compatriots, face lower wage growth rates than immigrants, who were allocated close to natives. Moreover, the effect varies across nationality groups. The results are robust to both concentration measures and outcome variables.

**Hagsten, Eva** (together with Martin Falk): *Time for carbon neutrality and other emission reduction measures at European airports*

**Abstract:** Firms are increasingly aware of environmental issues and try to reduce their energy consumption and greenhouse emissions, increase their use of clean energy and environmentally-friendly business practices. Different environmental certification schemes have been developed since the 1990s and are now widespread. Examples include ISO14000 and EMAS. Firms operating in fields particularly environmentally-sensitive, such as airports, are more likely to disclose their efforts or participate in environmental management programmes. However, the timing of introduction and its intensity differ widely across airports. Since 2009, one fourth of the European airports participate in carbon reduction programmes, although only ten per cent of the airports are certified as carbon neutral (source: Airport Carbon Accreditation agency). Airports in the Nordic countries are at the forefront of these environmental standards, with Stockholm Arlanda being the first worldwide airport certified as carbon neutral. The certification rests on several pillars, including use of renewable energy, energy conservation and

energy efficiency, fuel switch (electrical vehicles in airside, alternative fuels), environmentally-friendly passenger access to the airport, off-site waste management, sourcing of carbon credits, waste management and reduction of emissions during aircraft landing and take-off. The aim of this study is to investigate the determinants of the introduction and timing of carbon reduction programmes at European airports. A Cox proportional hazard model is used to estimate the determinants. Information on the type of carbon reduction programmes originates from the Airport Carbon Accreditation. The survival model allows an identification of the main determinants of green certification, including airport specific characteristics, location and country-level sustainable development indicators. Participation in carbon reduction programmes and carbon neutral certification is distinguished. The analysis encompasses information on 385 European airports for the period 2008-2016.

The main contribution is this first study investigating the determinants of participation of airports in carbon reduction programmes, based on the hypothesis that the willingness to introduce carbon emission measures at airports varies across countries, characteristics of airports and ownership. The progress in economic sustainability at the country level is also considered. Duration models are advantageous because they account for both the participation and the start year. In this case, the dependent variable is the number of years an airport has participated in one of the certification programmes.

Estimations of the duration model reveal that the decision to participate in carbon reduction programmes and the timing of its introduction depends on size (number of passengers), ownership, presence of low cost carriers and speed of reduction of greenhouse gas emissions per capita at the country level. Airports predominantly used by low-cost carriers and airports under private ownership are less likely to participate in carbon reduction programmes, while larger airports are more interested in these standards. Airports in the Nordic countries, in BENELUX and those in countries with a strong reduction of greenhouse gas emissions per capita are overrepresented among those with a high level of environmental awareness. The results are robust with respect to different levels of participation in the emission reduction programmes.

**Häse, Sophie:** *The impact of unexpected and recurring flood events on housing prices*

**Abstract:** Associated with climate change is the increase of the frequency and probability of natural hazards even in the temperate zone and river floods caused by torrential rain periods are one of the potentially increasing challenges for cities. In our analysis we therefore observe causal impacts of expected and unexpected flood events on housing prices. We investigate whether location inside a flooded area or hazard zone leads to a discount in prices, if there is a (greater) effect after an actual flood event and whether this effect is declining over time. To answer those questions we take a closer look on two major flood events that occurred in 2002 and 2013 in the city of Dresden, Germany, using a unique set of lot transaction data from 2000 to 2017. We consider flooded areas as well as official hazard zones, which describe the probability of being flooded in a given period (i.e. each 50 years in the so-called HQ 50 hazard zone). In contrast to the literature that studies inundations in the USA or Asia (Bin et al., 2008 Bin and Landry, 2013 Atreya et al., 2013), the large share of rented houses has to be taken into account when dealing with the German housing market, which is why we only look at single-family houses in this study. The theoretical groundwork is the hedonic price analysis. The hedonic price function is estimated by an ordinary-least-squares regression using a difference in differences approach to account for causality. For identification we choose control groups that are based on their elevation relative to the river Elbe. Robustness is checked on the one hand by using several sub-samples and on the other hand by controlling for spatial dependencies. The results for the analysis on single-family houses reveal a discount in lot prices for the location inside the hazard zones HQ 20 and HQ 50. However, the effect is not solely driven by location but rather by the actual flood event in 2002. We assume that

this is due to the adaption of hazard zones and subsequently adjusted insurance categories and premiums afterwards. Interestingly, in contrast to Bin and Landry (2013) and Atreya et al. (2013), a significantly declining effect over time cannot be found. The overall findings of our study implicate that greater and more frequent floods might cause higher discounts due to further increased insurance premiums or no insurances at all in the specific hazard zones.

**Hauser, Christoph** (together with Uta Schirpke, Ulrike Tappeiner, Gottfried Tappeiner, Janette Walde): *Picture Perfect Landscapes: Combining the Information from Social Media Photographs and Landscape Metrics to Assess the Scenic Beauty of a Landscape Area*

**Abstract:** When is a landscape perceived as beautiful? Answering this question is of critical importance for providing recreational resources in tourism destinations such as the Alpine regions. A detailed understanding of landscape preferences can furthermore sustain landscape planning and management. Whereas perception based studies (relying on survey answers to rank photographs of different landscapes) have so far been successful in linking landscape indicators to explain general preferences, they were not suitable to investigate preferences on an individual level that possibly exhibit non-linear relationships with indicators. In contrast, Schirpke et al (2018) investigate landscape preferences at the individual level based on a set of landscape indicators and the implementation of a conjoint analysis. Investigating survey answers on rankings of landscapes pictures with a conjoint analysis permits to establish the part-worth utilities of each person and thereby assess individual preferences. Accordingly, the homogeneity of the assessed preferences can be analyzed with a potential identification of different groups. Schirpke et al. (2018) find that in their data set 11 indicators (represented by a set of landscape metrics and features) were sufficient to predict the individual choice between to landscapes regarding its beauty for ca. 90% of the respondents. In addition, the results indicate non-linear relations between the levels of landscape indicators and the perceived beauty of a landscape with the identification of four dominant preference groups through cluster analysis.

The present article aims to test and generalize the findings by Schirpke et al. (2018) with the computation of an alternative indicator for scenic beauty of a landscape: the number of photographs with landscape pictures uploaded to social media platforms. As main data source the raster layers of landscape photographs uploaded to Flickr, Panoramio and Instagram created by Van Zanten et al (2016) will be used for the analyses. The underlying assumption is that the more photos are uploaded of a place, the more beautiful the surroundings are perceived. Hence, this indicator serves as a proxy variable for perception based data. The core advantage of such an indicator consists in its broad availability and the highly condensed information it provides. In order to accurately interpret the data a spatial model is estimated that links the number of photographs in a given area to the landscape preferences identified in Schirpke et al (2018) and a number of control variables such as accessibility indicators. Each area comprises a quadrant of 5x5 km to potentially capture a complete landscape scene. The overall observation area is constituted by the whole Alpine region.

The results provide answers to the following three questions: Which places in the Alpine area exhibit a high density of uploaded landscape photographs relative to their population size? Are these places perceived as beautiful based on the characteristics identified by Schirpke et al. (2018)? Is the density of photographs more strongly associated with the scenic beauty or the accessibility of a place?

**Huber, Peter** (together with Martin Guzi, Stepan Mikula): *Old sins cast long shadows: The Long-term impact of the resettlement of the Sudetenland on residential mobility*

**Abstract:** We analyze the long-term impact of the resettlement of the Sudetenland after WWII on the emigration rates from these regions. Using two identification strategies we find

that gross emigration rates are by about 0.4-0.6 percentage points higher per year in settlements affected by resettlement to this day. These results are robust across various specification tests are limited to the difference between the Sudetenland and the remainder of the Czech Republic according to falsification tests. This suggests a sizeable and rather long-term causal impact of this resettlement on mobility. Affected settlements also have significantly lower social capital (mainly related to civic participation) than unaffected settlements. We argue that this finding provides support to the hypothesis that lacking social capital makes the Sudeten settlement a less attractive place to live in.

**Illmann, Ulrike** (together with Jan Kluge): *The Impact of public charging infrastructure on the diffusion of electromobility*

**Abstract:** The German government plans to build 100,000 public charging points and bring one million electric vehicles (EVs) onto the streets by the year 2020 in order to stimulate eco-friendly mobility. EVs potentially lower greenhouse gas emissions in the transport sector and help to increase urban air quality. Despite their potential, EV adoption in Germany remains low. According to the German Kraftfahrt-Bundesamt (KBA) only 25,000 EVs were registered by the year 2017 compared to 3.4 million admissions of conventional cars. To understand the diffusion process of EV admissions in Germany, we estimate the effect of increasing local public charging infrastructure on consumer's decisions to purchase EVs. Our data covers monthly admissions of EVs as well as conventional cars (both for private as well as for commercial use) at the ZIP Code level from January 2009 until December 2017 and is provided by KBA. We assume that EV admissions are a function of the stock of charging stations within the ZIP codes (including its neighboring ZIP codes) and further control variables such as average charging capacity per station, overall admissions within the ZIP Code and the share of commercial cars. Using ordinary least squares models as our baseline regression we find a positive highly significant effect of charging stations on the EV admissions. Since our data set comes with several issues, we consider them thoroughly in our robustness checks and verify if the relationship between EV admissions and public charging stations differs from the baseline result. First, the number of admitted electric cars in a particular ZIP Code area is rather small, in many Zip Codes zero and always non-negative. Hence, estimation techniques that rely on the normality assumption are not appropriate we, therefore, deploy techniques based on poisson models or, in the case of overdispersion, negative binomial models. Second, our data suffers from spatial autocorrelation as ZIP Code areas with many and those with less (or none) EV admissions tend to be spatially clustered. We use the spatial filtering approach based on eigenvector decomposition as proposed by Griffith (2003). Third, as our dataset starts at the very beginning of the EV era, both EV admissions as well as the number of charging points show steep trends and are non-stationary. We, then, employ a cointegration technique (ARDL model) in order to estimate the long-run relationship between EV admissions and charging stations. So far, the results are robust and show that an increase of charging stations pushes the consumer's choice of purchasing an EV. This is crucial to policy makers in Europe as the promotion of electromobility ranks high on their agendas and as the comprehensive rollout of public charging infrastructure is costly. It seems worthwhile to investigate whether charging infrastructure indeed increases the diffusion of electromobility or whether raising awareness or time alone might eventually make electric cars the preferred choice for consumers.

**Köck, Petra** (together with Elisabeth Gruber, Alois Humer): *Depopulation and multi-level planning responses – The example of Eastern Tyrol*

**Abstract:** In the recent years, urbanization and rural decline have been observed across European regions, as well as in Austria (ÖROK 2018). This has economic and demographic reasons

mutually reinforcing a downward cycle. Although regional development attempts could mitigate the processes to some extent, the concentration of economic development and innovation – in central regions - is ongoing (Musil 2013). Coupled with the current demographic development of low fertility and migration towards urban areas, peripheral regions are experiencing depopulation and shrinkage. Followed by feedback effects and challenges due to the selectiveness of outmigration (Rauhut & Littke 2016, Wiest 2016) tackling shrinkage becomes difficult. With fewer population also local life quality is vanishing due to less disposable taxes. Furthermore the missing of a critical mass leads to a lower interest of investment by the private market and fewer capacities for public service provision (Humer & Palma 2013, Maly 2016). Policywise there is a wide array of responses like neglecting, countering or accepting shrinkage (Hospers 2014). Due to the negative connotation of shrinkage, growth-oriented countering policies are being favoured by the involved actors while adaptive, pro-active planning for shrinkage is seen as a taboo (Sousa & Pinho 2015). Nevertheless shrinkage and planning of shrinkage needs to be treated “as a normal phenomenon of the developed world” (Wolff & Wiechmann 2018). The following paper seeks to find out how multi-level planning responses deal with depopulation and shrinkage in Austria. Especially in Austria, dealing with a conflicting issue such as shrinkage challenges the complex Austrian multi-level spatial planning system. The levels of decision-making are distributed along a vertical axe between municipalities on the one end and the national state on the other hand with a multitude of other relevant levels in-between. All of them with their own policies and political realms. By looking closely on different shrinking municipalities in one federal state of Austria this paper aims to carve out the deviations and overlaps when dealing with shrinkage along this vertical axe but also on a horizontal level (e.g. different municipalities).

The results are processed in two analytical steps: (1) Instruments of various levels will be compared by locating them into the policy response typology by Hospers (2014). (2) It will be discussed, how instruments and strategies support or contradict each other in tackling shrinkage. Based on this, recommendations are made on how future policy responses to shrinkage can take place in a coordinated approach, within a complex multi-level planning system.

Based on researches in Lower Austria (Gruber, Humer & Fassmann 2015) and Eastern Tyrol (Köck 2018) diverging policies along the vertical axe have so far been observed and also are being expected for future research. While on national state level policies for accepting shrinkage can be identified, interviews with actors on lower levels showed that growth-oriented policies are still favoured (Gruber, Rauhut & Humer 2017). By looking closely on current strategies this research may foster a better understanding on why coordinating policies for shrinkage is challenging and lacking acceptance.

**Naqvi, Asjad** (together with Klara Zwickl): *Analyzing Regional Environmental Inequality in the EU*

**Abstract:** For over thirty years, environmental justice has been a thriving research field in the United States. Numerous empirical studies have highlighted large and persistent disparities in environmental quality by race/ethnicity, income, educational attainment, and other socio-economic factors. The establishment of the research field was accompanied by steadily improving data quality, allowing to measure environmental and population data at an increasingly fine spatial disaggregation. Until recently, similar disaggregated databases on environmental quality were not available for most European countries and no consistent databases existed for the European Union as a whole. However, over the last decade, strong improvements in data availability have made it possible to extend analyses of environmental justice to the EU. While pioneer European studies so far have only provided country or regional case studies, we conduct the an empirical analysis of environmental justice for the EU.

Using a unique panel of grid cell level emissions data for EU, we create a NUTS2 and NUTS3 level database to explore environmental inequality across the regions. We analyzing emission

trends of air pollutants by generating decoupling indicators based on both the OECD (2002) and the Tapio (2005) classifications. Our results show that while on average emission trends have declined across the EU, not all emissions, economic sectors (defined by NACE rev. 2), and regions (NUTS2) show the same effects. Through this research we aim to highlight that national level aggregates often hide underlying distributions that might be driven by socio-economic factors, industrial clusters, and region specific environmental policies.

**Niebuhr, Annkatrin** (together with Moritz Meister): *Comparing ethnic segregation across German cities – measurement issues matter*

**Abstract:** We investigate ethnic segregation in German cities based on geocoded data. The analysis takes into account some important measurement issues such as the modifiable areal unit problem (MAUP), random unevenness and spatial autocorrelation. Our results point to a significant variation in ethnic segregation across cities. Urban areas in the south-west of the country tend to show a moderate degree of segregation whereas cities in East Germany and the Ruhr area are characterized by relatively high levels of segregation if we apply the most common segregation measure, the dissimilarity index. The ranking of cities is, however, sensitive to the assumptions regarding reallocation of population across neighborhoods that the use of different segregation measures involve. Moreover, the findings suggest that standard approaches tend to underrate the degree of segregation because they ignore the spatial clustering of ethnic groups. In contrast, non-consideration of random unevenness and the MAUP introduce a moderate upward bias into the standard segregation. However, in the German case previous studies that ignore these measurement issues provide fairly good approximations of both average level of segregation and city ranking. We also analyze the relationship between the degree of ethnic segregation and some basic features of cities. The regression results indicate that segregation tends to increase with city size and the share of the largest foreign group.

**Peer, Stefanie** (together with Basil Schmid, Simona Jokubauskaite, Reinhard Hössinger, Florian Aschauer, Regine Gerike, Sergio Jara-Diaz, Kay W. Axhausen): *Relating time use and mode choice - evidence from Austrian workers*

**Abstract:** The integration of travel decisions into the framework of time use and activity scheduling has received increasing attention in recent years (see e.g. Bhat (1998), Bradley and Vovsha (2005), Bhat et al. (2013), as well as Jara-Diaz and Rosales-Salas (2017) for a recent summary of different approaches). Jara-Diaz and co-authors have developed a time-use framework model that yields values for different time use categories. A key output is the value of leisure (VoL) which represents the value of the marginal utility of all activities that persons assign more time to than the minimum necessary. The VoL allows for a deeper examination of the value of travel time savings (VTTS) obtained from travel choice models because the VTTS equals the VoL minus the value of time assigned to travel (VTAT). The underlying intuition is that the VTTS summarizes the value of the liberated time (opportunity cost of travel), while the VTAT represents the direct utility (or disutility) derived from the time spent in the travel activity. The VTAT differs between modes and according to specific conditions of travel such as comfort, reliability, crowding, and the possibility to use in-vehicle time productively. So far, only few attempts have been made to jointly estimate time use and mode choice equations. Munizaga et al. (2008) identifies strong correlations between the two types of decisions when using Chilean data from long-distance commuters and taking into account only the mode choice decision for the morning trip to work. Despite the strong correlations, the estimated parameters differ only slightly across independent and simultaneous estimation approaches. Jokubauskaite et al. (2018) use data based on a novel survey procedure, the so-called Mobility-Activity-Expenditure Diary (MAED) (see Aschauer et al., 2015) which collects time

use, expenditure and mode choice data from the same individuals (a representative sample of Austrian workers). In line with Munizaga et al. (2008) they find little difference in the results for simultaneous and independent estimation approaches. However, in contrast to Munizaga et al. (2008) they also find little correlation between mode choices and time use decisions to be present.

Both papers that so far have jointly estimated time use and mode choice equations (Munizaga et al., 2008; Jokubauskaite et al., 2018) make use of complex analytical derivations and strong assumptions to link the error terms of the time use and the mode choice equations. In this paper, we revisit the same dataset that has also been used by Jokubauskaite et al. (2018) with the aim to shed more light on the correlations between mode and time use choices by using more flexible estimation approaches. We first employ a two-stage approach in which the mode choice model (stage II) takes into account the residuals obtained in the time use model (stage I). Second, we estimate a latent class model in which we allow time use and mode choice parameters to be correlated within each class.

**Ramboer, Sander** (together with Lorenz Fischer): *Local Fiscal Interaction: Evidence from a Finance Reform in Flanders*

**Abstract:** In this paper, we aim to causally identify the extent of strategic interaction between municipalities in local fiscal policy. To analyse tax competition, the empirical literature has traditionally relied on tax reaction functions which it estimates using spatial econometrics, concluding that tax rates are interdependent. Finding positive spatial correlation in tax rates, they interpreted their results as evidence for potentially harmful tax competition. However, such evaluations of tax competition have been criticized for not being able to distinguish spatial correlation in tax rates from actual strategic interaction in tax setting behaviour that would constitute tax competition (Gibbons and Overman, 2012).

More generally, the identification of tax competition is problematic because it is impossible to know what the level of taxation would have been had there been no external pressures. This is the central problem in the program evaluation literature, which proposes to look for a source of random variation in “treatment” (e.g. a tax cut) so as to estimate the causal effect of a policy change by comparing a treated unit to an untreated unit that might as well have been treated and therefore reflects what “would have been” had there been no policy change. Translating this to our setting, the unbiased identification of strategic interaction between governments requires a credible source of exogenous variation that directly affects tax rates or spending in some jurisdictions but not all. This variation allows to test whether unaffected jurisdictions strategically react to changes in affected jurisdictions’ fiscal policy.

Only a handful of studies have applied such a research strategy, relying on exogenous variation in tax rates induced by fiscal reforms implemented by higher level government. In contrast to the bulk of the literature, they find no evidence of interdependence (Baskaran, 2014; Isen, 2014 and Lyytikainen, 2012) and in one particular case (Parchet, 2014) the slope of the reaction function is negative, suggesting that some jurisdictions respond to other jurisdictions’ tax cuts by increasing theirs, so as to maintain the same or even a higher level of quality of public goods provision.

Similarly, by exploiting a reform that differently affected municipalities in Flanders, Belgium, we can analyse the extent of interaction among jurisdictions. More in particular, the reform we consider affected the budgets of some, but not all jurisdiction, through the grants they received, allowing them to alter their fiscal policy as they saw fit. Unlike most of the other aforementioned studies, we therefore do not explicitly focus on reactions to tax rate increases induced by reform but instead consider reactions to any type of policy change that followed the grant reform. Seeing as the reform relaxed budget constraints, the most important implication is that we capture the response to tax cuts (rather than increases), which is most clearly

associated with tax competition. However, it is also possible that some jurisdictions responded by expanding public services or changed nothing and opted instead to pay off debts. The plethora of policy choices therefore makes this an interesting study on government interaction.

**Renner, Anna-Theresa** (together with Dieter Pennerstorfer): *Interregional patient flows and the spatial accessibility of outpatient healthcare services*

**Abstract:** Background: The determinants of healthcare utilization are much debated, and while theoretical models exist, empirical analyses, especially for outpatient utilization, are still scarce. Theoretical models usually distinguish between (1) need determinants (such as age, gender and socio-economic status), (2) demand factors (e.g. health literacy and beliefs), and (3) supply-side factors (e.g. accessibility and availability of services). Most empirical socio- and health economic research in this field focuses on the socio-economic gradient (need), supplier-induced-demand (demand and supply) and competition among providers (supply). The latter two usually investigate the general availability of services, but not necessarily the geographic distribution of public and private services. Objectives: We aim to fill this gap by linking research methods and approaches from health economics, regional science and geography. More specifically, we aim to investigate availability and spatial accessibility of public outpatient healthcare services and their predictive power for patient flows between regions within a healthcare system.

Methods: We are exploiting a panel data set on the patient flows between 115 political districts in the Austrian public outpatient sector from 2009 – 2016. Furthermore, we use web-scraping data on the exact location and other characteristics of all outpatient physicians in Austria, as well as  $250 \times 250$  grid data on population size.

In a first step, we estimate a gravity-like model using different distance decay functions and controlling for regional fixed effect. Based on different goodness-of-fit measures ( $R^2$ , BIC, AIC) we elicit which distance function best describes the observed status quo of patient flows. In a second step, we introduce weighted Floating Catchment Areas (FCA) as a refined measure of accessibility of the regions to investigate whether these add any explanatory power to the gravity model and should therefore not be omitted when analysing patient flows. The 2-step FCA are a grid-level measure of accessibility and can be aggregated to the regional level to get the relative accessibility of one region’s physicians to another region’s potential patients. Results and discussion: Based on our final results, we expect to gain insights into (1) the importance of distance for interregional patient flows, and (2) the relevance of the geographic distribution of public and private outpatient care provision for utilization.

**Rossen, Anja:** *Work experience and graduate migration in Germany – new evidence from an event history analysis*

**Abstract:** Human capital is a key determinant of regional development, and universities evidently play a crucial role for human capital accumulation in regions (Harrison & Turok, 2017; Winters, 2013). However, graduates of local universities will only increase the human capital endowment if they stay in the university region (e.g. Fratesi, 2014). Outward migration might especially be an issue for smaller and lagging regions, which usually have problems attracting young, highly skilled workers. Instead, graduates tend to move to large urban agglomerations (Frenkel & Leck, 2017). According to Haussen & Uebelmesser (2017), the options of economically weak regions to increase their human capital endowment via keeping and attracting graduates are rather limited. Therefore, understanding the migration decision of graduates when looking for a job after studies is of particular importance for lagging regions with institutions of higher education (Haapanen & Tervo, 2012).

There is an extensive literature on student and graduate migration which provides robust

evidence on the importance of individual characteristics, various study-related and regional factors (e.g. Buenstorf et al., 2016; Faggian et al., 2006). However, the impact of the graduates' prior work experience on the decision where to take up a job after having obtained the degree has received only little attention so far. This is surprising as previous studies highlight that the majority of graduates has several jobs before graduating and thus gains considerable work experience (e.g., Evans & Richardson, 2017). For example, full-time students often work part-time due to financial necessity and some students have even completed a vocational training in a firm prior to enrolment at university. Moreover, universities increasingly seek to provide students with practical learning opportunities, e.g. via mandatory internships (Evans & Richardson, 2017). Hence, previous work experience seems to have gained in importance for graduates when they enter the labour market.

This study aims at providing new evidence on the importance of different types of work experience for the migration decision after graduation. We use a unique micro-panel data set which combines student records of five German universities with administrative social security records. We investigate the migration behaviour of a sample of about 25,000 students who graduated between 1996 and 2012 with a focus on moves that are linked to labour market entry outside the region of study. As the data at hand encompasses the employment biographies of the graduates on a daily basis, we are able to identify very precisely graduates' entire employment episodes.

Our results indicate that the majority of the migration events take place during the first 2 years after graduation. The regression analysis provides very robust evidence on significant effects of the work experience gained inside or outside the university region, pointing to the importance of labour market contacts, local human capital accumulation and social networks. However, the size of the effects depends on the type of work experience. We detect stronger effects of regular jobs as compared to marginal employment. The same applies to sector- and occupation-specific versus non-specific work experience.

**Sampaio, Fábio** (together with Hugo Pinto): *Assessing small-scale solutions to societal challenges: An impact assessment of social innovation pilot actions in the Atlantic Area*

**Abstract:** Social innovation can be considered as a process of developing and implementing new ideas to respond to new explicit or latent challenges using shared and co-produced knowledge that is innovative both in its ends and in its means. The current relevance of the concept results from the fact that contemporary societies face unprecedented problems in a variety of domains, such as the following four: (i) welfare services, (ii) active public engagement, (iii) green inclusive economy, and (iv) social economy and social responsibility in the private sector. These problems can be seen not only as alarming issues but also as opportunities for the implementation of new forms and methods to answer existing needs. This communication is based on the results of the Atlantic Social Lab project, co-financed by the Atlantic Area Program. After identifying social needs in the Atlantic Area regions involved, the project implemented, tested and suggested the scaling-up of small-scale interventions in the four domains indicated before. The goal was to design and structure pilot actions to test solutions to emerging social needs as a consequence of renewed social preferences and structural change. The analysis presented in this communication comprises data resulting from the impact assessment of the pilot actions carried out, using Theory of Change and Contribution Analysis. The communication seeks to contribute to the debate about the existence of different responses to the challenges and needs that influence the generation and diffusion of social innovations.

**Schindler, Nora** (together with Dieter Pennerstorfer, Christoph Weiss, Biliana Yontcheva): *Income Inequality and Hierarchical Product Differentiation: An Analysis of the Austrian Restaurant Market*

**Abstract:** Many Western economies have experienced significant changes in the distribution of personal incomes over the last decades. The rising income inequality in the U.S. and in some European countries has attracted public, political as well as scholarly attention. A large empirical and theoretical literature relates income distribution and inequality to a number of social and economic outcomes (such as economic growth, international trade, well-being, health and infant mortality, criminality, education, to mention a few dimensions only). The present project aims at studying a type of interaction between income inequality and market outcomes that has not yet been explored extensively: the effects of different degrees of income inequality on firms behaviour (product differentiation strategies) in imperfectly competitive product markets. The analysis is motivated by the following simple argument. Since rich and poor consumers buy different consumer goods in different amounts, the initial degree of income inequality influences the size of market demand and/or its elasticity and hence the intensity of competition, oligopolistic pricing, entry and product differentiation strategies. Income inequality entails heterogeneity in consumer preferences, and product differentiation is the market response to this heterogeneity. The empirical analysis will be carried out for an important non-tradeable consumption amenity: restaurants. The market for restaurants is particularly well-suited to the aims of the proposed project. Firstly, different dimensions of product differentiation are relevant in this market and are significant in the consumers decision to eat out in a restaurant: the quality of restaurants (measured by consumer ratings and/or expert reviews), the variety of restaurants (i.e. different cuisines), as well as the geographical location of restaurants (the spatial distribution of restaurants relative to population). The empirical analysis will thus be closely linked to theoretical models of vertical and horizontal product differentiation. Secondly, the different dimensions of product differentiation in this market are easily measured. Conveniently, there exists a wealth of information about restaurants on the Internet, including quality indicators as well as precise address information which allows accurate geographic matching of restaurants to demographic data. Thirdly, consumer heterogeneity is important in this market, since consumer demand for high quality and specific cuisines will differ between rich and poor consumers. The availability of detailed information on the spatial distribution of population, income and income inequality allows an empirical identification of the impact of income inequality on consumer demand and firm conduct (product differentiation). And finally, the restaurant market represents a good case for investigating the hierarchical structure of demand: we expect to find a relationship between the number of varieties and the composition of those varieties.

**Tranos, Emmanouil** (together with Tasos Kitsos, Raquel Ortega Argiles): *Digital economy in the UK regions: the effect of the early adopters*

**Abstract:** This paper maps the early adoption patterns of digital economic activities in UK regions and tests whether they have affected regional economic development by successfully moving towards technologically advanced related industrial activities. Gaining an understanding of such effects can provide valuable inputs to digital economy strategies as it can justify demand-side interventions.

In order to do so, we use unique data from the Internet Archive, the most complete archive of web pages (Holzmann et al., 2016; Ainsworth et al., 2011). Specifically, we employ the JISC UK Web Domain Dataset, which is a subset of the Internet Archive and contains billions of URLs of webpages within the .uk domain. These webpages have been archived during the period 1996-2013 and the data also include the archiving timestamp. The British Library, which curates these data, has generated a subset of circa 2.5 billion URLs of archived webpages which contain at least one UK postcode. We first employ extensive data-cleaning routines in order to remove noise from these data and then we use them to create proxies of the aggregated, online, commercial activities, which take place within UK regions. While the spatial dimension of these data enables us to study the spatiality of the online commercial activities,

the longitudinal dimension enables us to identify regions with early adopters of such technologies.

These proxies are utilised in an econometric framework in order to test their effect on productivity. Our hypothesis is that the concentration of early adopters of web technologies in UK regions has positively affected future productivity patterns. The latter builds upon an evolutionary economic geography framework, according to which the distribution of economic activities in space is the outcome of path-dependent historical processes (Dosi and Nelson, 2010). In addition, our research framework investigates the capacity of regions to move towards related industrial activities of higher value added (Boschma and Frenken, 2006; Boschma and Martin, 2007; Frenken et al., 2007; Boschma, Mirondo and Navarro, 2012) and, therefore, move towards smart specialisation (Foray, 2014). Apart from these web data, our econometric framework also includes rich business data including variables from the Business Register and Employment Survey (BRES), the ONS' Business Demography and UK Business – Activity, Size and Location series, the Annual Population Survey (APS) as well as the Eurostat regional GVA series.

**Umbach, Tim Thomas:** *A Vicious Cycle of Regional Unemployment and Crime - Evidence from German Counties*

**Abstract:** My work answers the question whether there exists a vicious cycle of unemployment and crime. Much research has been done showing that unemployment can cause crime (Baller et al. 2001, Gould et al. 2002, Messner et al. 2013, Bennett and Ouazad 2016, Tarling and Dennis 2016), and some that crime adversely impacts economic activity (Gottlieb 1995, Willis 1999, Berger et al. 2008, Torres-Preciado et al. 2015, Nuñez et al. 2017). However, very few have considered the possibility of a simultaneous relationship between the two, with mostly inconclusive results. This is the first piece of research that answers this question using panel data, an IV set-up and also the first that considers this question from a regional, i.e. county, perspective. My data ranges over all 401 German counties and over the years 2003-2015, giving me a total of 4812 observations. This gives the great advantage of fairly granular data, but comes with the need to control for spatial autocorrelation. For this, I utilize the spatial error fixed effects set-up proposed by Mutl and Pfaffermayr (2011). Here, the data is first within-transformed to eliminate the fixed-effects component and then the spatial errors are filtered out using a modified Cochrane-Orcutt transformation. To control for temporal autocorrelation, I use a similar Cochrane-Orcutt procedure which then lets me estimate my model using 2SLS. To check whether my model is specified correctly and that the various transformations worked as expected, I use a range of post-estimation tests. Lastly, to check the robustness of my model, several possible specifications are tested. As my results show for the first time there is strong evidence for the existence of such a vicious cycle, with unemployment leading to higher crime rates and crime rates lowering both GDP growth and raising unemployment. This result has strong policy implications. It suggests that crime and unemployment are both social problems that can spiral out of control if policy makers do not intervene. However, it also suggests that policy interventions lowering either crime or unemployment could in turn lead to a virtuous cycle of lower crime rates leading to lower unemployment and that in turn lowering crime. The existence of spatial autocorrelation suggests that such feedback loops are not isolated to one region, instead a rise or a decrease in either crime or unemployment could spill over into neighboring regions and cause a vicious or virtuous cycle to start there, which in turn would then again spill over into other regions and so on.

**Wieser, Robert** (together with Wolfgang Brunauer): *Assessing regional house price developments in Austria*

**Abstract:** Austrian house prices have risen rapidly in recent years and there has been considerable debate on the underlying factors. Much of the debate focuses on increasing trends in real house price indexes and the ratio of house prices to disposable income as a measure of affordability. While it is generally accepted that the low interest rate environment is a key driver of house prices, there is uncertainty as of the sustainability of the level of house prices in some European countries. The OeNB fundamental indicator for residential property prices, launched in January 2014, points to an overvaluation in property prices by 21.7% in Vienna in the first quarter of 2018. For Austria as a whole, the indicator reached 11.2%. Several international studies also point to overvaluation in Austrian housing markets. House prices can fluctuate more than fundamentally justified because agents overreact to current fundamentals as well as past returns and are influenced by their sentiment. Reliable valuation metrics are therefore very important for monitoring residential property markets. While different approaches to identify overvaluation have strengths and weaknesses, theoretical consistency should be a prerequisite of any model of house price behaviour. Furthermore, examining national price indices is an ineffective means of early detection of housing bubbles. Speculative overvaluations arise in individual local and regional markets before spreading to the national market. This paper, for the first time, analyses regional house price developments in Austria based on the longest available regional house price time series in Austria. We follow Bourassa et al. (2016) and use an asset pricing approach to compare actual price levels with implied fundamental or equilibrium levels. We model prices for existing condominiums as a function of the present value of expected market rents, allowing for a time-varying risk premium and state dependent rental growth expectations. Model results are then compared with results produced by alternative methods to assess house price developments. We also discuss the theoretical weaknesses of the OeNB-Indicator and the critical assumptions underlying our model.