



Regional Science  
Association International  

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British and Irish Section

Registered charity No. 277247

**42nd ANNUAL CONFERENCE  
and  
3rd ANNUAL DOCTORAL COLLOQUIUM**

**Sidney Sussex College  
University of Cambridge**

20th to 22nd August, 2013

**Conference Pack**

# Welcome!

Dear Participant,

The Committee of the Regional Science Association International: British and Irish Section warmly welcomes you to Cambridge. We hope you enjoy your stay and find the conference interesting and useful.

We are very grateful to our local organisers Maria Abreu, Justin Doran and Paul Hildreth and the support of colleagues in the University of Cambridge.

The RSAI-BIS goes from strength to strength and we always welcome new members. Your conference fee includes annual membership of the Section, with all of the benefits that membership brings. Please get involved with the Section. If you have any suggestions or ideas on how to improve the Section, our annual conference or developing the Section for all members we would love to hear these. Also included in this booklet is a form to submit your name for election to the Section's committee. The committee is appointed at the AGM which takes place on Thursday afternoon. We welcome applications. The minutes of the 2012 AGM are also included in this booklet.

Please feel free to discuss any RSAI-BIS or conference matter with our Chairman Philip McCann, Treasurer Maria Abreu or myself.

On a personal note, this year is my final year as Secretary of the Section. I would like to acknowledge and thank all of the committee and members for their help, understanding and patience in my time as Secretary. In particular, the officers of the Section during my years as Secretary, Philip McCann, Alessandra Faggian and Maria Abreu have been a tremendous help and support and I would also like to acknowledge the support of my predecessor, Don Webber.

A large part of the Secretary's role is organising the Annual Conferences and I have been especially lucky to have had great local organisers for conferences in Glasgow, Cardiff, Galway and Cambridge. It is great to have been involved in conferences in each country of the Section.

I look forward to working with the new Secretary and committee as the Section goes from strength to strength.

***Declan Jordan***  
**Secretary**

Dear Delegate,

As Chair of the Section I would like to add my welcome. We are really delighted that we have so many delegates attending from different parts of the world, and not just from Ireland and the UK, and it is exciting to have the conference in the historic setting of the University of Cambridge. This promises to be a terrific conference and we are therefore very happy to welcome you all to Cambridge.

As usual among the features of this year's conference are:

- The Early Career Prize for the Best Paper (for those within 3 years of a PhD).
- The Early Career Prize for Best Presentation (for those prior to PhD). Short-listed candidates are presenting on Wednesday.
- The Moss Madden Medal for the best journal paper on a regional science topic published by a member of the Section.

Winners of all three prizes will be presented at the Conference Dinner on Wednesday night.

Of particular note this year will be the presentation of a new Moss Madden Medal. A design competition was organised in the Edinburgh School of Art and we are happy to welcome the winning designer to our conference dinner where the new medal will be awarded for the first time. Thanks to Kim Swales and John Dewhurst for their work in organising and adjudicating on that design competition. I am sure you will agree with me that the new design is wonderful.

We are very happy to welcome our plenary speakers. This year we bring some very distinguished speakers and, on behalf of the section I'd like to thank them for giving of their time.

Professor Dominique Foray will address the innovation challenges of the emerging regional policy agenda within the EU in his lecture entitled “Regional Innovation Policy in the Knowledge Age: The Need for Smart Specialisation”.

This year is also the first time that we have hosted the *Annual Spatial Economic Analysis* Lecture, which has previously been hosted by NARSC, ERSA and the RSA. This year the lecture is given by Professor Gwilym Pryce of the University of Glasgow. This is an exciting and innovative development which we hope will contribute to showcasing our outstanding journal and demonstrating the wonderful work done by the management and editorial teams.

This will be my final year as Chair of the Section. A new Chair will be elected at the AGM on Thursday. It has been a great honour for me to have been able to serve in this capacity, having been a member of the association for some twenty years now. I would like to thank all of the association, and the committee in particular, for the wonderful support they have given me over these last four years. For me it is especially important to highlight the wonderful work of Declan Jordan, Maria Abreu and Alessandra Faggian who have worked tirelessly for the association, with great diligence and expertise. The association owes a great deal to their efforts.

Finally, once again, we are delighted that you are participating in our conference, and we hope you find the conference both academically rewarding and enjoyable socially.

Best Wishes

**Philip McCann**  
**Chair**

## **Our Association**

Regional Science is an expanding field devoted to the development of theory and method in urban and regional analysis and policy. It has a conscious aim of cutting across the traditional disciplinary approaches to these issues. The British & Irish Section of the Regional Science Association International was founded in 1968. The membership is drawn, in the main, from academics, consultants and scientists in local and national government, who share an interest in spatial issues. They come from a range of disciplines including economics, geography and planning.

### **Our Main Activities**

- Organisation of an annual conference, workshops and seminars;
- Award of an annual prize, the Moss Madden Memorial Medal;
- Award of annual prizes for undergraduate, taught masters and research postgraduate students in regional science;
- Award of Early Career / Doctoral Prize for Best Presentation at the Annual Conference;
- Award of Prize for Best Paper at the Annual Conference;
- Organise joint meetings (every four years) with the Israeli Section of RSAI.

The Section is run by a committee of thirteen elected members. The committee may co-opt a further three members. The Chairman and the committee are elected at the Annual General Meeting which is held during the Annual Conference each year. The conduct of the business of the Section is governed by the Constitution.

**We are continually seeking new elected members of our committee. If you are interested in becoming an elected member then please contact our Chairman (Philip McCann), Treasurer (Maria Abreu) and/or Secretary (Declan Jordan) in the first instance.**

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# **General Information**

### *The Conference Venue*

The conference will be held in Sidney Sussex College, University of Cambridge. This is located on Sydney Road. Cambridge is not a large city and the college is a short distance from the city centre (where the train and bus stations are located).

All of the sessions will take place within Sidney Sussex College. The college website is <http://www.sid.cam.ac.uk/>.

### *Dining at the Conference*

There are breaks each day for tea and coffee which will be as timed on the programme. These are included in the conference fee.

Lunch will be served each day. These are included in the conference fee.

### *Meet and Greet*

On Tuesday evening before the conference there will be a meet and greet in the Pickerel Inn in Cambridge. There is more detail on this traditional pub is available here: [http://www.tripadvisor.ie/Restaurant\\_Review-g186225-d2239343-Reviews-The\\_Pickerel\\_Inn-Cambridge\\_Cambridgeshire\\_England.html](http://www.tripadvisor.ie/Restaurant_Review-g186225-d2239343-Reviews-The_Pickerel_Inn-Cambridge_Cambridgeshire_England.html)

### *Conference Dinner*

Please note that the conference dinner this year will take place on the Wednesday night of the conference, on the 21st August, and will be held in the dining room of Sidney Sussex College. This is included in the conference fee. If you wish to bring an accompanying person (not a delegate) this can be booked on the conference website registration page.

### *Social Event*

The social event on Thursday evening will include a walking and punting ghost tour of Cambridge, followed by drinks and in a traditional local pub. Refreshments will be provided on the punting tour. The tour will leave from the Scudamore's punting station at the end of Mill Lane, opposite the Mill pub. Please note that there are two starting times, details will be provided at the conference. This is included in the conference fee. If you wish to bring an accompanying person (not a delegate) this can be booked on the conference website registration page.



Regional Science  
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British and Irish Section

**Annual General Meeting**

**Thursday 22nd August 2013 at 2 p.m.**

**Sidney Sussex College, University of Cambridge**

**Agenda**

- 1. Minutes of 2012 AGM**
- 2. Chair's Report**
- 3. Treasurers Report**
- 4. European Matters**
- 5. *Spatial Economic Analysis* Journal Report**
- 6. Election of Committee, 2013/14**
- 7. AOB**

Nominations for the Committee will close at 1 p.m. on Thursday August 22nd.



# Regional Science Association International

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## British and Irish Section

### **NOMINATION FORM FOR ELECTION TO THE COMMITTEE**

Members are encouraged to stand for election to the Committee.

If you would like to be considered for membership of the committee for 2013/14 please complete the details below and submit it to the Secretary, Declan Jordan, by Thursday August 22nd at 1 p.m.

Name: \_\_\_\_\_

Institutional Affiliation: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Signature: \_\_\_\_\_

Each committee member must be proposed and seconded by a member of the Section.

Proposer Name: \_\_\_\_\_

Proposer Signature: \_\_\_\_\_

Second Proposer Name: \_\_\_\_\_

Second Proposer Signature: \_\_\_\_\_

# Programme

Please note that the programme may be subject to minor revisions and delegates should refer to the registration desk where a daily updated programme will be posted.

## Programme Outline

<i>Tuesday 20th August- Doctoral Colloquium</i>	<i>Wednesday 21st August- Annual Conference Day 1</i>	<i>Thursday 22nd August- Annual Conference Day 2</i>
<p>Please note all delegates are welcome to attend all or part of the doctoral colloquium</p>	8.30 Onwards Conference Registration	
	9.00 -10.30 Parallel Sessions 1 (4 sessions)	9.00 -11.00 Parallel Sessions 4 (4 sessions)
	<i>10.30 – 11.00 Coffee /tea</i>	<i>11.00 – 11.30 Coffee /tea</i>
	11.00 – 13.00 Parallel Sessions 2 (4 Sessions)	11.30 – 13.00 Plenary Session 2
12.00 Onwards Registration for the Doctoral Colloquium and Conference and Light Lunch	<i>13.00 – 14.00 Lunch</i>	<i>13.00 – 14.00 Lunch</i>
	14.00 – 15.30 Plenary Session 1	14.00 – 15.00 AGM (All welcome)
13.30- 15.30 Doctoral Colloquium Session 1	<i>15.30 – 16.00 Coffee/tea</i>	15.00 – 15.30 Tea/Coffee
<i>15.30 – 16.00 Coffee /tea</i>		15.30 – 17.30 Parallel Session 5 (4 sessions)
16.00 – 17.30 Doctoral Colloquium Session 2	16.00 – 18.00 Parallel Sessions 3 (4 sessions)	17.30 – 18.30 RSAI:BIS Committee Meeting (Committee members only)
19.00 Meet and Greet for Conference Delegates Pickerel Inn	19.00 Conference Dinner (Drinks reception at 19.00 followed by dinner at 19.30)	19.00 Social Event (includes refreshments) (Punting Tour – there are two starting times) Afterwards meet-up in local pub.

## Programme Schedule

Tuesday 20 August 2013

### 12.00 onwards

Registration for the Doctoral Colloquium and Annual Conference at Sidney Sussex College University of Cambridge  
Knox-Shaw Room

### 13.30 – 15.30

#### Doctoral Colloquium Session 1a (Knox-Shaw Room)

Eoin Moynihan, Cork Institute of Technology

*An economic evaluation of the historical development and growth of the maritime sector in Ireland*

Andrew Ross University of Strathclyde

*A more detailed treatment of the labour market within the Scottish Government CGE model*

Marta Casanova, University of Valencia

*Distance-Based Methods: Ripley's K function vs. K density function*

#### Doctoral Colloquium Session 1b (Old Library)

Thanos Fragkandreas, Birkbeck, University of London  
*Competitiveness in seven European regions*

Mary Carey, University College Dublin

*Modelling the Spatial Footprint of the Irish Agri-business Sector*

Eoin Byrne, Cork Institute of Technology

*An investigation into the Cork information, communication and technology (ICT) Cluster*

### 15.30 – 16.00

Coffee/tea (Knox-Shaw Room)

### 16.00 – 17.30

#### Doctoral Colloquium Session 2a (Knox-Shaw Room)

Roberto Ercole, University of Huddersfield

*An exploratory spatial data analysis of geographic agglomeration and concentration of two-digit manufacturing industries in Vietnam*

Nat Tharpanisch, University of Cambridge

*Increasing Returns to Scale in Manufacturing Industry: A Case Study of Thailand*

#### Doctoral Colloquium Session 2b (Old Library)

Lisa Noonan, University College Cork

*Effects of Location on Irish Business Performance*

Tobias Emonts Holley, University of Strathclyde

*Augmenting and extending the existing CGE model of the Scottish economy.*

### 19.00 onwards

Meet and Greet Social Event – Pickerel Inn

**Wednesday 21 August 2013 (Sidney Sussex College) - 8.30 Onwards – Registration (Know Shaw Room)**

**9.00 – 10.30**

<b>Parallel Session 1</b>		
<p style="text-align: center;"><i>William Mong Hall</i></p> <p><b>A Computable New Economic Geography General Equilibrium Model</b> Patrizio Lecca, Peter McGregor and Kim Swales</p> <p><b>The Density Function and Regional Boundaries</b> John B. Parr and Daryl Holden</p> <p><b>Geodemographics and its place in the history of planning methods</b> Peter Batey</p>	<p style="text-align: center;"><i>Old Library</i></p> <p><b>Working while in a university: Does it mean greater attachment to the regional labour market?</b> Mika Haapanen and Hannu Karhunen</p> <p><b>The Application of Retail Geography Models to Spatial Consumption Patterns</b> Mary Carey</p> <p><b>Activity rates among Equality Groups in Northern Ireland during the crisis</b> Ronald McQuaid, Robert Raeside, Jesus Canduela, Helen Graham and Valerie Egdell</p>	<p style="text-align: center;"><i>Junior Combination Room (JCR)</i></p> <p><b>The Effects of Agglomeration Economies on Firm Productivity in Ireland: Evidence from the Census of Industrial Production 2009</b> Lisa Noonan and Eoin O’Leary</p> <p><b>Sub-Regional Trends in British Inward FDI: A Spatial Analysis</b> Colin Wren and Jonathan Jones</p> <p><b>Spatial determinants of social entrepreneurship in the UK</b> Maria Abreu</p>
<p style="text-align: center;"><i>Chapel Court Room 1</i></p> <p><b>Regional patterns in entrepreneurship in the Netherlands and the crisis</b> Sierdjan Koster</p> <p><b>The Regional Entrepreneurship and Development Index (REDI): The Case of Spain</b> Zoltán J. Ács, László Szerb, Raquel Ortega-Argilés, Ruta Aidis and Alicia Coduras</p> <p><b>Entrepreneurship and local inventive activity: Testing the knowledge filter across Chilean comunas</b> Félix Modrego, Philip McCann, William E. Foster and M. Rose Olfert</p>		

**10.30 – 11.00**

Coffee /tea (Knox-Shaw Room)

11.00 – 13.00

<b>Parallel Sessions 2</b>		
<i>William Mong Hall</i>	<i>Old Library</i>	<i>Junior Combination Room (JCR)</i>
<p><b>Early Career Best Presentation Award 1</b></p> <p><b>The performance of Iterative Proportional Fitting for spatial microsimulation: applying new tests to an old technique</b> Robin Lovelace, Dimitris Ballas and Eveline van Leeuwen</p> <p><b>Triple Helix Approach to Clustering: The European ICT Sector</b> Eoin Byrne, John Hobbs, Richard Moloney and Michael Walsh</p> <p><b>Distance-Based Methods: Ripley’s K function vs. K density function</b> Marta R. Casanova</p>	<p><b>Personal indebtedness, community characteristics and theft crime</b> Stuart McIntyre</p> <p><b>Housing preferences and attribute importance among Dutch older adults: a conjoint choice experiment</b> Petra de Jong, Jan Rouwendal and Aleid Brouwer</p> <p><b>Increasing Returns to Scale in Manufacturing Industry: A Case Study of Thailand</b> Nat Tharnpanich</p> <p><b>How much does a single graduation cohort from further education colleges contribute to the Scottish economy?</b> Kristinn Hermannsson, Patrizio Lecca and Kim Swales</p>	<p><b>Regional Research Driven Clusters in the European Maritime Sector</b> Eoin Moynihan, John Hobbs and Michael P. Walsh</p> <p><b>Dynamic Modeling for Consensus Generation On Regional Climate Change Impacts And Adaptation Options: The Case Of Germany’s Northwest Metropolitan Region</b> Matthias Ruth Andrew Blohm, Rebecca Gasper, Onur Ozgun, Nana Karlstetter, Jakob Wachsmuth, Marina Beermann, Tobias Eickemeier, Stefan Gößling-Reisemann, and Marion Akamp</p> <p><b>Renewable Resources, Environmental Pollution, and International Migration</b> Kenji Kondoh</p> <p><b>Consumption Expenditures in Economic Impact Studies: An Application to University Students</b> Kristinn Hermannsson, Kim Swales and Peter McGregor</p>
<i>Chapel Court Room 1</i>		
<p><b>Cross-national comparisons of internal migration using the IMAGE studio</b> Konstantinos Daras, John Stillwell and Martin Bell</p> <p><b>Tax competition with commuting workers and agglomeration</b> Michiel Gerritse</p> <p><b>The effect of location on the determinants of innovation in Vietnamese businesses</b> Declan Jordan</p>		

**13.00 – 14.00**

Lunch

**14.00 – 15.30**

**Plenary Session 1 – Annual *Spatial Economic Analysis* Lecture** (William Mong Hall)

Professor Gwilym Pryce, Professor of Urban Studies at the University of Glasgow

“Residential Segregation and the Statistics of Space, Economy and Society”

**15.30 – 16.00**

Coffee /tea (Knox-Shaw Room)

**16:00 – 18.00**

**Parallel Sessions 3**

<i>William Mong Hall</i>	<i>Old Library</i>	<i>Junior Combination Room (JCR)</i>
<p><b>Early Career Best Presentation Award 2</b></p> <p><b>When innovation does not pay-off: A tale of competitiveness in seven European regions</b> Thanos Fragakandreas</p> <p><b>The impact of regional diversity and entrepreneurial activity on Innovative Human Capital: evidence from Ireland</b> Helen McGuirk and Helena Lenihan</p> <p><b>Exploratory discrete-space data analysis of two-digits manufacturing in Vietnam</b> Roberto Ercole</p>	<p><b>Special Organised Session: Augmenting Economic Accounts for Policy Analysis</b></p> <p><b>Peak-load disaggregation of energy supply and demand</b> Kristinn Hermannson and Stuart McIntyre</p> <p><b>The analysis of devolved tax policies and a more detailed treatment of the labour market within the Scottish Government CGE model</b> Andrew Ross and Tobias Emonts-Holley</p> <p><b>UK National Accounts: meeting international standard</b> Hervey Gibson</p> <p><b>Computable General Equilibrium modelling at a regional economy level: a study into the impacts of tax policy</b> Leila Akhoundova and Angela Nolte</p>	<p><b>Spatially unbalanced growth in the British economy</b> Ben Gardiner, Ron Martin, Pete Tyler and Peter Sunley</p> <p><b>Why Irish Policymakers Don't Do Bottom-up Regional Development</b> Eoin O'Leary</p> <p><b>The economic impact of LEADER in England</b> Gary Bosworth</p> <p><b>The Economics Behind the Move to 'Localism' in England</b> Paul Hildreth and David Bailey</p>

Chapel Court Room 1

**The Influence of Scientific Research Funding, National Innovation Policies and Institution-Level Supports on Academic Patenting in the Republic of Ireland**

Martin Ryan and James Cunningham

**Government Supports & Innovation - Interactions Between Subsidies & Firm Capabilities**

Timothy Crowley

**A shift-share-approach to measure regional competitiveness in east and west Germany**

Oliver Fiala

**Establishment productivity, agglomerations and the occupational structure of the regional workforce: does tradability make a difference? Some evidence from German establishment data**

Oliver Ludewig

**19:00**

**Conference Dinner**

Sidney Sussex College

Drinks reception at 19:00 followed by dinner at 19:30

**Thursday 22 August 2013 - 9.00-11.00**

<b>Parallel Session 4</b>		
<p style="text-align: center;"><i>William Mong Hall</i></p> <p><b>Please, stand on the right: are Dutch recent graduates stepping off the escalator faster?</b> Viktor Venhorst and Jouke van Dijk</p> <p><b>Shrinking Cities and the Migration of the College Educated</b> Rachel Franklin</p> <p><b>Policy competition for highly skilled workers</b> Michiel Gerritse</p> <p><b>The Inter-Regional and Intra-Regional Labour Mobility of Finnish High-Technology Workers</b> Jaakko Simonen, Pauli Svento and Philip McCann</p>	<p style="text-align: center;"><i>Old Library</i></p> <p><b>Using dynamic spatial panels to understand varying resilience across US MSAs</b> Justin Doran and Bernard Fingleton</p> <p><b>Can regional bank mutualisation substitute for fiscal federalism in the Eurozone</b> Leslie Budd</p> <p><b>Can ageing Scotland afford independence?</b> Katerina Lisenkova and Marcel Merette</p> <p><b>Determinants and distribution of individual unemployment risk across the Greek regions during the crisis</b> Vassilis Monastiritis</p>	<p style="text-align: center;"><i>Junior Combination Room (JCR)</i></p> <p><b>Informality and the city: integrating the informal economy into urban search-matching models</b> Ana Isabel Moreno Monroy and Hector M. Posada</p> <p><b>A Study on Symbiosis strategy between Regeneration of Original Downtown using the Urban Decline Analysis and Development of Innovation City</b> Yeong Kim and Seongmoon Kim</p> <p><b>Assessing Competition and Convergence Among Mega-Cities</b> Fernando Barreiro-Pareira</p> <p><b>Spatial Networks for Sustainable Urban Development</b> Paul Hildreth</p>
<p style="text-align: center;"><i>Chapel Court Room 1</i></p> <p><b>Studying micro and macro effects of regional economic developments in the energy sector in the Western Isles of Scotland</b> Eveline van Leeuwen, Graham Clarke, Grant Allan, Peter McGregor<sup>3</sup>, Dimitris Ballas and Kim Swales</p> <p><b>Electricity Demand forecast: A case study of repowering option in Shetland Islands</b> Cathy Xin Cui and Kim Swales</p> <p><b>An assessment of the Economic Value of Food Tourism to the Irish Economy</b> Richard Moloney, Marie Ryan and Martin Kenneally</p>		

**11.00 -11.30**

Coffee /tea (Knox-Shaw Room)

**11.30 – 13.00**

**Plenary Session 2 (William Mong Hall)**

Professor Dominique Foray, Chair of Economics and Management of Innovation at the Ecole Polytechnique Fédérale de Lausanne  
“Regional Innovation Policy in the Knowledge Age: The Need for Smart Specialisation”

**13.00 – 14.00**

**Lunch**

**14.00 – 15.00**

**AGM – All welcome (William Mong Hall)**

**15.00 – 15.30**

Coffee /tea (Knox-Shaw Room)

**15.30 – 17.30**

**Parallel Session 5**

<i>William Mong Hall</i>	<i>Old Library</i>	<i>Junior Combination Room (JCR)</i>
<b>Tourism Clustering, Policy and Performance: An Irish Perspective</b> Kate Howey	<b>Regional network as an entrepreneurial opportunity for older adults: a case study</b> Alied Brouwer and Inga Noback	<b>An Analysis of the Choice of Transport Mode for Travel to Work and Shopping</b> John Eakins
<b>Economic impact of medical schools and teaching hospitals: implications for a region</b> Oliver Fiala, Dennis Haeckl and Hans Wiesmeth	<b>A cellular automata simulation of the Russian housing privatization decision</b> Maria Plotnikova	<b>An assessment of policy attempts in the UK to stimulate the uptake of alternatively fuelled vehicles</b> Nigel Berkeley, David Jarvis and Jason Begley
<b>Starting a rural business in an ageing society, a UK &amp; NL case study</b> Heike Delfman	<b>The Effect of Regional Knowledge Spillover on the GDP Growth of Chinese Regions</b> Xiao Zheng	<b>Hierarchy and Substructures in the Global Airports Network</b> Aisling Reynolds-Feighan and Amaya Vega
	<b>Firm Innovation, HRM Practices and ICT Complementarities: Evidence from Transition Economies.</b> Jane Bourke and Frank Crowley	<b>Forecasting spatial spillover effects of local housing submarkets</b> Bernard Fingleton and Franz Fuerst

Chapel Court Room 1

**Spatial determinants of small-scale renewable energy in the United Kingdom**

Stuart McIntyre and Grant Allan

**Can the U.S. Achieve Energy Independence and Should That be The Goal of Public Policy?**

Bernard Weinstein

**An Input-Output analysis of the impact of offshore wind energy expenditure on the UK economy**

Amangeldi Kenjegaliev

**Renewable energy development = regional economic development?**

Grant Allan, Peter McGregor and Kim Swales

**17.30 – 18.30**

**Committee Meeting** (Committee members only)

**19.00**

**Social Event**

**End of Conference**

# Abstracts

Abstracts are listed in alphabetical order, based on the surname of first author.

## **Spatial determinants of social entrepreneurship in the UK**

Maria Abreu

University of Cambridge

Social enterprises are a growing sector of the UK economy. As the state withdraws public services, these are increasingly being supplied by social enterprises. However, their impact is strongly shaped by space, since social enterprises require access to donations and volunteer labour, in particular, highly-educated volunteers with management experience. The most effective social enterprises are therefore located in deprived areas that are on the edge of more prosperous neighbourhoods. This paper analyses the spatial distribution of social enterprises in the UK. It focuses particularly on the role played by human capital in the form of skilled volunteers and graduate entrepreneurs.

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## **The Regional Entrepreneurship and Development Index (REDI): The Case of Spain**

Zoltán J. Ács<sup>1</sup>, László Szerb<sup>2</sup>, Raquel Ortega-Argilés<sup>3</sup>, Ruta Aidis<sup>1</sup>, Alicia Coduras<sup>4</sup>

1. School of Public Policy, George Mason University
2. Faculty of Business and Economics, University of Pécs
3. Faculty of Economics and Business, University of Groningen
4. Business School, Instituto de Empresa, Madrid

This paper constructs a Regional Entrepreneurship and Development Index (REDI) that captures the contextual features of entrepreneurship across regions. Using both institutional data and survey data weaknesses in the incentive structure that affects regional development can be identified. The entrepreneurial disparities among regions are analysed at the country and regional level using a penalty for bottleneck methodology. The methodology allows us to coordinate public policy action at national and regional levels.

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## **Computable General Equilibrium modelling at a regional economy level: a study into the impacts of tax policy**

Leila Akhoundova and Angela Nolte

The Scottish Government

This paper discusses the applications of Computable General Equilibrium (CGE) modelling in a UK regional context. It explores the impacts of various taxation policies, based on simulations using a regional CGE framework developed by the University of Strathclyde and currently employed for policy analysis by the Scottish Government.

The study is based on recent experimental simulations undertaken by the Scottish Government which highlight specific features of regional CGE modelling, concentrating in particular on the assumptions around the behaviour of the labour market in response to policy shifts.

The study compares how hypothetical changes in some of the headline tax rates (Employer National Insurance Contributions, Income Tax and Corporation Tax

are used as examples), if introduced at the regional level, can differ in their impacts on the economy. The transmission paths are examined to explain the findings and a number of direct and indirect channels is taken into account reflecting the general equilibrium nature of this modelling. One of the key conclusions of this work is that depending upon the level of assumed integration of the regional labour market with the rest of the national economy, as well as workers' bargaining behaviour, the relative effectiveness of these policies can differ widely. The results presented will use data for Scotland to illustrate the results but can be used to inform similar type of analyses for other parts of the UK.

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### **Renewable energy development = regional economic development?**

Grant Allan, Peter McGregor and Kim Swales

Fraser of Allander Institute, Department of Economics, University of Strathclyde

It is claimed that renewable energy could solve the energy policy “trilemma” of atmospheric emissions, energy security and reduced prices/price volatility. Additionally, developing renewable capacity is seen by many regions as being an “opportunity”, able to confer economic benefits to the host region, and driving a range of regional policy measures.

This paper examines renewable energy policies across regions of the UK. It then evaluates the principal transmission mechanisms between the growth of renewable energy capacity and regional economic development. Reviewing these in light of recent developments in the UK, we conclude by examining the appropriateness of current policy stances.

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### **Assessing Competition and Convergence among Mega-Cities**

Fernando Barreiro-Pereira

UNED University, Madrid, Spain

**ABSTRACT.** A new urban revolution begun in the second half of the XX century and it is going to challenge the relation between the size and economic role of cities: on one side, the last decades have witnessed the emergence and the never seen growth of a number of Mega-cities, with more than 9 million inhabitants, most of them being located in less developed countries. On the other side, the globalization of the post-industrial economy generates a new urban spatial organization where a few number of cities concentrate a disproportionate part of economic power, creation, decision and control. These global cities have been called World-cities or World metropolises. Most of the largest cities are in the less developed countries, while the most powerful world cities are mainly located in the developed countries. It results that size seems to be neither a necessary nor a sufficient condition for obtaining the status of global city. A condition to be a global city is the access to the economic power. The possible divergence among Mega and Global cities seems related to the level of development of the countries where Mega-cities are located, and its globalization degree. The main aim of this

paper is to analyze the competition, and real convergence-divergence among 47 Global-cities and Mega-cities using several growth models, studying the possible existence of Clubs convergence among these cities.

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## **Geodemographics and its place in the history of planning methods**

Peter Batey

University of Liverpool

Thirty years ago, Michael Breheny and I wrote a paper that was critical of the field of planning history (Breheny and Batey, 1982). We commented that much of what was written under that heading concentrated too narrowly on physical planning, design and the realisation of particular planning proposals, such as new settlements, by specific eminent planners. We observed that important aspects of planning were being ignored, such as studies giving an insight into the motives or ideologies underlying the practice of planning. We commented in particular that planning history up to that point omitted discussions of how plans were produced, that is the methodology of planning or the planning process.

In the same paper we began to sketch out the agenda for a systematic study of the history of planning methodology, raising a number of questions that might justify further investigation by planning historians. This publication of this agenda was followed by a series of workshops, organised under the auspices of the RSAIBIS, each of which examined a particular topic (for example, surveys in planning; or the role of Coventry's planning department in advancing planning techniques), or period (for example, the 1940s). The workshops stimulated a series of publications in the early and mid-1980s, a good example being 'rationality in plan-making', the subject of a collection of essays edited by Breheny and Hooper (1985) and the article by Hebbert on the impact of social scientists on 1940s land-use planning (Hebbert, 1983).

The present paper marks a return to the history of planning methods after a pause of more than twenty years. It focuses on one particular analytical topic, namely social area analysis, the precursor of what would today be described as geodemographics. It describes the work of local authority planning departments in the 1970s when it was common practice for larger departments to undertake an ambitious programme of applied research, much of which drew heavily on quantitative methods and on large datasets including the Census of Population. The paper describes early attempts to employ social area analysis in local authority planning departments in North West England, with particular reference to Greater Manchester and Merseyside. It points to the main influences – academic and professional – that shaped the content, design and purpose of these pioneering studies. It ends by drawing comparisons with current efforts to design and implement geodemographic classifications systems based on the 2011 Census.

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## **An assessment of policy attempts in the uk to stimulate the uptake of alternatively fuelled vehicles**

Nigel Berkeley, David Jarvis and Jason Begley  
Coventry University

The automotive industry continues to face tremendous competitive pressures, an issue brought into sharp focus during the recent economic downturn. However, new opportunities are emerging through the application of 'green' technologies to alternatively fuelled vehicles (AFVs). Such opportunities are influenced by both environmental and economic drivers, including the challenge of meeting the demands of the climate change agenda and reducing CO<sub>2</sub> emissions from road transport, as well as the economic potential for the automotive industry arising from the exploitation of such niche technologies. Governments across the world have introduced stimulus packages in various forms in order to promote the design, manufacture and take-up of AFVs (typically hybrids, extended range electric vehicles and battery electric vehicles (EVs)). Stimuli have included: R&D grants, public investment in the installation of charging infrastructure, consumer purchase grants, tax rebates and discounts, free parking and free recharging; alongside penalties for purchase of higher CO<sub>2</sub> emitting vehicles. However, despite some rather optimistic forecasts, sales, particularly of electric vehicles have been disappointing to say the least. Estimates suggest that around 40,000 EVs were sold in 2011, a tiny fraction of the overall market and some way to go to achieving the Electric Vehicles Initiative's (EVI) goal of 20 million on the road by 2020 (OECD/IEA, 2012). Why are sales so disappointing and what can be done to help stimulate demand? This paper looks at these issues through a case study of the UK

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## **The economic impact of LEADER in England**

Gary Bosworth  
University of Lincoln

LEADER has provided funding for rural development activities across Europe for over 20 years and is founded on the principles of local, bottom-up approaches. This paper is based on a research project undertaken for Defra in the autumn/winter of 2012-2013 which included a combination of survey and interview-based research. Based largely on interviews with 80 beneficiaries of LEADER funding, analysis examines the economic impact of LEADER for small businesses and the rural economy. In particular, the analysis focuses on the extent to which LEADER has enabled activity that would otherwise not have been possible and the scale of resultant local multiplier effects. In addition, the paper considers how the process of promoting, allocating and monitoring grants could be improved for future LEADER programmes at a time when the EU's rural

development agenda from 2014 remains uncertain. LEADER has certain synergies with the rural growth agenda set out by the current government making this research particularly timely.

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**Firm Innovation, HRM Practices and ICT Complementarities:  
Evidence from Transition Economies**

Jane Bourke and Frank Crowley

School of Economics, University College Cork

Innovation is of critical importance for business productivity and economic growth. Firm characteristics, such as size and sector, and geography have been identified as influential drivers of innovation output. More recently, scholars have investigated the influence of human resource practices (HRM) on innovation performance. We hypothesise that HRM practices are important in explaining product/service innovation. In addition, there is evidence that productivity gains from adapting HRM practices are higher if supported by investments in information and communication technologies (ICT). Therefore, we hypothesise that ICT use and HRM practices are complementary inputs with respect to firm innovation. Our data source is the Management, Organisation and Innovation (MOI) Survey which assesses management practices in manufacturing establishments with between 50 and 5000 employees. We have firm data pertaining to 10 transition economies. Using an innovation production function, we examine the influence of firm characteristics, ICT use and HRM practices on innovation output. We find that firms that employ HRM practices are more likely to innovate relative to firms that do not use HRM practices. Our analysis also reveals a complementary relationship between ICT use and HRM practices which positively influences firm innovation performance.

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**Regional network as an entrepreneurial opportunity for older adults: a case study.**

Aleid Brouwer and Inga Noback

Faculty of Spatial Sciences, University of Groningen

Entrepreneurship is found to be dependent on age and entrepreneurship comes in three different sorts: parallel founders, serial founders and novice founders. Furthermore, conventional wisdom argues that older people are risk averse and therefore less inclined to take the chances associated with starting a business. Combining these facts would generate the conclusion that there are a few older novice entrepreneurs. However, popular media coverage seems to indicate that older entrepreneurs are around and can be successful. Maybe for elder entrepreneurs different forms of entrepreneurship are better suited than the conventional ideas of what and how entrepreneurs do operate. In this paper we analyze a regional network in which elder entrepreneurs are operating. How is the network constructed, how is it spatially delineated, who are the actors and how does this strengthen entrepreneurial opportunities.

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## **Can regional bank mutualisation substitute for fiscal federalism in the eurozone**

Leslie Budd

Open University

The recent attempts to address the crisis in the Eurozone have centred on the efficacy of the mutualisation of sovereign debt and banking liabilities. The faultline in the design of the eurozone system is that in the absence of fiscal federalism it cannot be considered an optimal currency area. This paper explores how a regionally based system of bank mutualisation could compensate for the lack of a fully functioning system of fiscal transfers. In doing so, the paper examines the debates on optimal current areas that consist of different sized- economies. It then examines evidence of how the claims for fiscal contractionary growth in the EU have led to the locking-in of deflationary bias in macroeconomic policy and its regional outcomes. In the context of the current crisis and the continuing commitment to the economic nonsense of the Maastricht rules, regionally-based forms of economic intermediation are assessed. These forms are investigated in the light of how the cumulative causation of austerity and deflation may be combated. The paper concludes by suggesting that in attempting to avoid addressing the fundamental flaws in the Eurozone, policy makers will continue to create sharp divergences because of a lack of commitment to regional mutualisation.

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## **Triple Helix Approach to Clustering: The European ICT Sector**

Eoin Byrne<sup>1</sup>, John Hobbs<sup>1</sup>, Richard Moloney<sup>2</sup> and Michael Walsh<sup>1</sup>

1. Cork Institute of Technology
2. University College Cork

Europe views Information and Communications Technology (ICT) as integral to rebooting economic recovery, which is set out in the “Digital Agenda for Europe” (EC, 2012). In terms of its economic contribution it employs over 7 million people and produces almost 6% of GDP in Europe (EC, 2012). Ireland plays a key role in supporting Europe’s agenda with nine of the top ten global ICT companies maintaining a strong presence in Ireland, and over 70,000 people currently employed in the sector (CSO, 2012).

Funded through an FP7 ‘Regions of Knowledge’ European Project entitled ‘BeWiser’, the project aims to strengthen the research, innovation potential and global competitiveness of European regions. This will be achieved by bringing together research actors, enterprises, institutions and policy makers into a collaboration network and applying the Triple Helix (Leydesdorff, 2012) model of cluster development to the ICT sector. Models such as Porter’s (1998) ‘Industry

Clusters' and Markusen's (1996) variants of 'Industrial Districts', share similarities with the Triple Helix but also have striking differences.

This paper presents the theoretical differences and similarities between the aforementioned cluster typologies. A linkages analysis drawing from the methodology used by Hobbs (2010) is undertaken to gain a better understanding of the trading and non-trading relationships that occur between firms in the ICT sector in Cork.

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## **The Application of Retail Geography Models to Spatial Consumption Patterns in Ireland**

Mary Carey

University College Dublin and Teagasc

The objective of this research is to understand the spatial variation in consumption patterns across Ireland for different types of goods (higher-order versus lower-order) and to examine if a rural-urban variation in consumption patterns exists. A combination of the normative spatial models of retail geography are utilised to understand spatial consumption patterns in Ireland. In particular, this paper builds on Central Place Theory (CPT) literature to understand the patterns of consumer shopping behaviour in Ireland using a simple Spatial Interaction Model. The examination includes analysing the extent of the market area served by central places (village, town, or city) and calibrating distance decay parameters and the associated influencing factors. Using this framework and a variety of descriptive statistics, the spatial flows of goods and services for households are described and analysed. Spatial household consumption patterns have not been analysed in Ireland previously, thus this research provides a useful contribution to the more general domestic demand debate arising from the drop in consumption experienced in Ireland since the onset of the 'Great Recession'.

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## **Distance-Based Methods: Ripley's K function vs. K density function**

Marta R. Casanova

University of Valencia

This paper incorporates an extension of Ripley's K function, which we named M marginal function, to measure concentration of economic activity more precisely. We achieve moving closer the tradition of spatial statistics, by means of M marginal, to the spatial economics approach, K-density function, thanks to the conversion of a technique coming from the spatial statistics path in a non cumulative measure. Both measures of concentration are distance-based methods, can detect the spatial location pattern at every scale, let us know the distance at which significant concentration appears, test the significance of its results in the

same way and satisfy the five requirements that any test for measuring concentration should fulfil.

We implement the two distance-based methods to Spanish manufacturing sectors in order to observe how they behave and we conclude that both of them detect perfectly the existence of concentration or dispersion; however M marginal function can quantify its magnitude while it is impossible for K-density, and only M marginal detects the size of the clusters and also their position in the area of study. Furthermore, as M marginal becomes a non-cumulative function, it does not accumulate spatial information on the distribution of points up to a certain distance and, thus, it can identify with total precision local clusters, as K-density does. In this way, M marginal function can provide even more information than K-density function.

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## **Government Supports & Innovation - Interactions Between Subsidies & Firm Capabilities**

Timothy Crowley  
University College Cork

This research programme aims to contribute to answering a central question, ‘Do government supports for innovation work? While there is a great deal of literature on the subject of innovation, and potential policy instruments to encourage it, there has been relatively little published quantitative analysis of the net impact of government’s sponsorship of the concept. Furthermore, there appears to be little literature measuring the interactive effect between a firm’s already developed innovation capabilities, and the supplemental enterprise benefits of the receipt of significant government supports. The potential for examining how these relationships may change depending on the overall industrial environment, including the nation’s stage of development, is currently insufficiently understood. The aim of the present research is to contribute in an effective manner to this field of economic thinking that clearly has enormous potential to contribute to the financial and social wellbeing of society. This will be performed using Business Environment and Enterprise Performance Survey (BEEPS) 2005 data for selected European nations, categorised by stage of development according to the Global Competitiveness Report). Regression techniques, most likely a probit model, will be used to assess the impact of government subsidies on firms’ innovation capabilities.

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## **Cross-national comparisons of internal migration using the IMAGE studio**

Konstantinos Daras<sup>1</sup>, John Stillwell<sup>1</sup> and Martin Bell<sup>2</sup>

1. School of Geography, University of Leeds
2. School of Geography Planning and Environmental Management, University of Queensland

This paper describes the IMAGE studio, an analytical software system developed as part of the IMAGE (Internal Migration Around the Globe) project to address the Modifiable Areal Unit Problem affecting the analysis of internal migration. At the core of the studio is an algorithm that generates a sequence of random aggregations of zones at sequential geographic levels, and then computes a set of selected indicators that capture key dimensions of the associated migration propensities and patterns. We introduce the structure and operation of the studio and present how it will facilitate modelling of internal migration in any country, given an origin-destination matrix, a vector of area populations and a set of digital boundaries. In addition, we report on some initial experiments that explore the stability of the frictional effect of distance on migration as Basic Spatial Units (BSUs) are aggregated into larger Aggregate Spatial Regions (ASRs) in a stepwise manner. The objectives of the chapter are as follows: 1) to distinguish the sources and types of internal migration data that can be used in the system, 2) to explain the purpose and the general structure of the computational system, 3) to outline the alternative spatial aggregation routines, 4) to explain the spatial interaction modelling component, and 5) to present some model results using data for selected countries.

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## **Housing preferences and attribute importance among Dutch older adults: a conjoint choice experiment**

Petra de Jong, Jan Rouwendal and Aleid Brouwer  
University of Groningen

The “ageing” of the developed world population is a well-known and well documented phenomenon. In the year 2012 16 percent of the Dutch population is aged 65 and older. By the year 2040 this figure will rise to approximately 26 percent. The change in the number and the proportion of older adults in our society will have numerous implications. For one, the increase of older adults will place an enormous burden on existing income systems, health care systems, social services and retirement programs. It has also been estimated that, for the period 2006 to 2015, there is a shortage of 406.000 houses suitable for older adults in the Netherlands. One of the biggest challenges is to provide proper housing conditions that correspond with the diverse housing preferences of an ageing population. In order to respond accurately to this challenge we need to develop a further understanding of the housing preferences of Dutch older adults.

Over the years, several modelling approaches have been proposed and applied in research to measure preferences. An emerging, and one of the most popular modelling approaches at the time, is the stated preferences approach. In this research the stated housing preferences of Dutch older adults will be analysed based on a carefully constructed survey, which is designed as conjoint choice

experiment. A conjoint choice experiment is an approach that seeks to describe and predict preferences of respondents by looking at their responses to hypothetical residential profiles that can be viewed as integral descriptions of housing situations (characteristics of the house, the environment, etc.).

In this study, approximately 1000 older adults are presented with 24 so-called choice sets, each existing out of three residential profiles. The older adults are asked to indicate the first and second most preferred residential profile, thereby revealing their complete orderings of the three. Subsequently, the utility function (e.g. preference) can be estimated by using logistic regression analysis. Based on these estimates it is possible to determine the relative importance of certain housing attributes.

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### **Starting a rural business in an ageing society, a UK – NL case study**

Heike Delfmann

University of Groningen

A key step in gaining further insights to entrepreneurship in areas facing a declining workforce and that are strongly ageing, is to develop understanding of entrepreneurial motivations. People have various motivations for becoming an entrepreneur. Entrepreneurs in deprived regions and disadvantaged populations are assumed to be more likely motivated by necessity, as employment opportunities are limited and people have little to lose in starting their own business. Decline can also lead to restructuring, or motivate people to start a social enterprise. At the same time, start-up risk will be higher in a declining region given the uncertainties that accompany decline. Therefore, population decline is likely to have an adverse impact on the level of new firm formation by increasing the risk of starting up a new business. In addition, the likely reduction in support systems caused by out-migration might also have an impact. Population decline affects the level of support – financial, emotional and other kinds of support. Location decisions taken by firms include assessment of regional conditions and developments, which raises the question: what motivates people to start a business in a region faced with population decline? How do their motivations fit in the opportunity and necessity dimension?

Focusing on two rural case studies, we aim to determine the impact of the regional context on start-up behaviour. Rural regions in the Netherlands are always relatively close to an urban centre in geographical terms. Also, infrastructure is well covering the peripheral regions, providing them a fairly easy link to the urban centres. In England, we find more ‘traditional’ rural regions, more isolated and weaker links to urbanised areas. Comparing rural Northumberland to rural East Groningen, does the link to urban centres impact the decision making process? By comparing the two countries, similar in decline but different on the urban – rural relation, we assess to what extend this actually affects the start-up motivation.

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## **Using dynamic spatial panels to understand varying resilience across US MSAs**

Justin Doran<sup>1</sup> and Bernard Fingleton<sup>2</sup>

1. School of Economics, University College Cork
2. Department of Land Economy, University of Cambridge

The effects of shocks to economies can be studied at the national level and at the regional level. In this paper we examine the different impacts of shocks to US Metropolitan Statistical Areas (MSAs) using dynamic panel models to provide counterfactual output series taking account of spillovers across MSAs and using random effects to control for individual level heterogeneity. The predicted series are compared with actual series through the period following the economic shocks from 2007 onwards. We examine the differences in responses across MSAs, grouping MSAs according to how they reacted to the shocks in an attempt to explore why some are more or less resilient to shocks than others.

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## **An Analysis of the Choice of Transport Mode for Travel to Work and Shopping**

John Eakins

School of Economics, University College Cork

This research provides an analysis of the transport mode that households use for two separate travel purposes, work and shopping. The data set used is the 2009 National Travel Survey (NTS) which was compiled by the Central Statistics Office in conjunction with the Q4 Quarterly National Household Survey (QNHS). The main purpose of the NTS is to collect travel information for a randomly selected individual (aged 18 years and over) from each household in the QNHS sample on a particular reference day. Information on the number of number of journeys taken, the start and end points, the journey purpose, the distance travelled and time taken and mode of transport used are all recorded in the NTS. In addition, information relating to the availability and frequency of public transport use and private transport use as well as individual and household characteristics is also provided. Travelling to work and to shops represent the two most common journeys undertaken by individuals in the data set.

The methodology that is adopted is based on the estimation of discrete choice models such as the multinomial logit model and the conditional logit model. Similar analysis has previously been used by Commins and Nolan (2010) on Irish Census data. The multinomial logit model estimates the relationship that individual characteristics (age, gender, vehicle ownership) have on the choice of transport mode. The conditional logit model extends the analysis by including variables that describe the attributes of the different choices (such as distance or travel time), as well as variables that describe the attributes of the individuals. Preliminary analysis carried out from applying the multinomial logit model show the importance that vehicle ownership has on the choice of transport mode. Even when the individual has a bus, rail or dart/luas service available it is still likely that

they will choose to drive to work or to the shops. The preference for vehicle use over other forms of transport does diminish for urban dwellers but it still remains significant. In terms of individual characteristics, age and nationality appear as significant determinants of choice with the latter suggesting that EU nationals tend to use public transport for work and walking or cycling for shopping. Overall the results from the journey to work and the journey to shops models do not differ substantially.

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## **An Exploratory Space Data Analysis of Two-Digits Manufacturing in Vietnam.**

Roberto Ercole

University of Huddersfield

The aim of this paper is to investigate the spatial co-localization in Vietnam of two-digits manufacture industries in 2010. Thus, an exploratory cross-sectional analysis will be conducted using discrete-space models in order to unfold the idiosyncratic patterns of agglomeration, concentration and specialization within the country. The digit code refers to the Vietnam Standard Industrial Classification (VSIC) and 24 manufacturing industries will be included into the research. The secondary quantitative information will be collected through the General Statistic Office (GSO) of Vietnam with regard to the firms' output, number of employees and enterprises disaggregated by regions and provinces (where available).

The findings of the research show higher co-localization of labor-intensive industries such as manufacture of food, textiles, wearing apparel and leather. Furthermore, it is notable that 70% of firms' output and employment are concentrated in two core-regions: the Red River Delta and the South East. It is mainly due to the role-played by the two city-hubs: Hanoi and Ho Chi Minh. Furthermore, they promote the nearby provincial economies such as Quảng Ninh, Hải Phòng, Bình Dương and Đồng Nai. However, the presence of numerous industrial zones and governmental industrial policies encourage the business co-localization within the country.

For more than twenty years, Vietnam has seen a rapid economic growth and it is one of the most dynamic emerging countries in the South-East Asia. The Vietnamese's GDP constantly grew with an average of 7% between 2000 and 2012 (World Bank & Donor Working Group, December 06, 2011). Moreover, Vietnam is densely populated and it is characterized by abundant workforce, which favors the establishment of labor-intensive industries (UNIDO & MPI, 2012). The number of total enterprises in Vietnam grew more than 150% between 2005 and 2010, whereas the number of total employment only rose around 60% in the same period of time (General Statistics Office, 2012). This bias can be explainable by an exponential increase of SMEs' start-up and improvement on production efficiency. Furthermore, the inward FDI largely grew more than 200% between 2005 and 2010 (General Statistics Office, 2012). This increase is mainly due to the reduction of barriers to foreign direct investment, as Vietnam became a member of WTO in 2007. These favorable economic conditions inevitably impact on agglomeration, concentration and specialization patterns of business activities within the country. However, there is little academic attention on the Vietnamese economic geography

and in particular with reference to the economic aggregation patterns (Ishizuka, 2010).

In this paper, the Herfindahl-Hirschman index, the locational Gini coefficients, the location quotient, the geographic concentration and the Ellison & Glaeser index will be used in order to explore the agglomeration, concentration and specialization patterns within two-digits manufacturing in Vietnam.

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### **Economic impact of medical schools and teaching hospitals: implications for a region**

Oliver Fiala, Dennis Haeckl and Hans Wiesmeth  
Faculty of Business and Economics, TU Dresden

Scientific institutions have a significant impact on the development and growth of regions. These include economic and social impacts ranging from the offer of employments and trainee positions to the economy's supply with qualified labor force, the provision of information and transfer of knowledge and technology as well as cultural opportunities. The paper uses an incidence analysis and specifies the Keynesian multiplier analysis in order to provide a framework for discovering and quantifying several regional economic effects. It further discusses the case of one large German medical center examining its economic impact. The quantitative analysis shows the importance of such an institution for regional economic development. The paper concludes with a critical appraisal of the presented model, considering the fact that political decision-makers often use these evaluations when it comes to allocating funds.

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### **A shift-share-approach to measure regional competitiveness in east and west Germany**

Oliver Fiala, Dennis Haeckl and Danny Wende  
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The comparison of different municipalities and districts shows that the areas' economic development differs greatly due to various reasons. Considering the major demographic change and a substantial decline in population in rural areas, identifying factors of success in rural areas with positive development is particularly important for effective local politics.

This paper will try to determine different factors and their effects on regional development by means of a regression analytical shift-share-model. Therefore, we will firstly contrast a region's cyclical development effects, industry effects and agglomeration effects with its location effects.

In the second step, patterns of explanation accounting for the positive or negative location effects of the regions are to be found. These are supposed to provide

explanations why after controlling the industry's structure, the cyclical development or the region's size respectively, there is no favorable economic development in some municipalities while others achieve to be attractive for the population and the economy despite the underlying unfavorable conditions.

The shift-share-analysis was chosen as the method to esteem the dynamics of development quantitatively. The basic approach has evolved to be the prevailing method for regression analysis, in spite of several points of criticism. In order to address different problems of the method, in the following the shift-share-regression, a relatively new approach in regression economy, will be used.

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### **Forecasting spatial spillover effects of local housing submarkets**

Bernard Fingleton and Franz Fuerst  
University of Cambridge

This paper seeks to predict the impact of future housing supply on the affordability of residential space in the United Kingdom, using quantitative model-based simulation methods. Our spatially disaggregated analysis focuses on the greater South East region, approximately within 1.5 hours commuting time from central London. A dynamic spatial panel model is applied to account for observed temporal variations in property prices and housing affordability across districts. The dynamic structure of this model allows us to assess the scale and extent of knock-on effects of local supply shocks in one district on other districts in the region. These complex spatial effects have been largely ignored in local or regional housing market forecasting models to date. Applying this model, we are able to demonstrate that local house prices and affordability are not only determined by the underlying supply and demand conditions in the market in question but also depends crucially on conditions in neighbouring housing markets whose properties can be considered close substitutes within a larger regional housing market.

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Plenary 2: Smart Specialisation and Regional Policy Lecture and Panel

### **Regional Innovation Policy in the Knowledge Age: The Need for Smart Specialisation**

Dominique Foray, Federal University of Lausanne, Switzerland

Professor Dominique Foray, widely regarded as the father of the smart specialisation concept, is a world-leading expert on the economics of knowledge and the application of this field to understanding industrial and commercial activities. Professor Foray will discuss the major elements of the smart specialisation concept and also its application to EU regional policy. Professor Foray will also link the conceptual approaches to applied policy-relevant issues, building on his own experience as an advisor to the European Commission, the OECD and also a range of different French regions.

The lecture by Professor Foray will be followed by an interactive panel discussion with the audience including both academics and policy-makers from the UK and Ireland.

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### **When innovation does not pay-off: A tale of competitiveness in seven European regions**

Thanos Fragkandreas

Centre for Innovation Management Research (CIRM), Department of Management, Birkbeck, University of London

In the last few decades, innovation has been widely recognised to be the engine of wealth and prosperity as it intensifies competition and increases productivity, which both in turn lead to significant economic benefits such as higher income per capita and increased employment. However, recent empirical studies indicate the existence of an innovation-regional growth paradox, that of innovation seem not to have paid off for some of the most innovative regions in Europe. These regions, despite being highly innovative, grow at a slower pace than their national counterparts, as well as presenting poor economic outcomes such as low income per capita and high unemployment rates. The primary aim of this paper is to develop an explanation that could account for the contrast in observation. In particular, this paper develops a theoretical framework based on the burgeoning literature of regional competitiveness, and tests its explanatory power in the context of seven regions (e.g. Berlin, Braunschweig, Dresden, East-Middle Sweden, North Finland, South Sweden and West Sweden) that demonstrate the innovation-growth paradox. One the main conclusions of this paper is that an evolutionary conceptualisation of regional competitiveness casts significant light on the observation that innovation does not pay-off for some of the most innovative regions in Europe.

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### **Shrinking Cities and the Migration of the College Educated**

Rachel Franklin

Brown University

Both anecdotal and empirical evidence strongly suggest that urban areas are desirable destinations for university graduates. In the United States, and in many other developed countries, the pace of urban growth varies widely, however, with many cities and urban areas experiencing population decline or shrinkage over the past several decades. One potential indicator of smart decline could be renewed or continued attraction of these locations for the college educated. Using micro-level data from the American Community Survey (ACS), this paper explores the extent to which declining areas – those experiencing shrinking populations – are also associated with an exodus of the college educated. Two main questions are addressed. First, are there exceptions to the expected association between decline

and net out-migration of the college educated and if so, are there generalizations that can be made about these sorts of locations? Second, and alternatively, what can be said about growing places that fail to attract these individuals?

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### **Spatially unbalanced growth in the British economy**

Ben Gardiner<sup>1</sup>, Ron Martin<sup>1</sup>, Pete Tyler<sup>2</sup> and Peter Sunley<sup>3</sup>

1. Geography Dept, Cambridge University
2. Land Economy Dept, Cambridge University
3. Geography Dept, Southampton University

The financial crisis and consequential recession that brought the UK's long economic boom of 1992–2008 to a dramatic end have generated considerable debate about the need to 'rebalance' the economy, both sectorally and spatially. In this article, we examine the scale and nature of imbalance in the British economy. We first examine the stylized facts of spatial economic imbalance, especially in relation to the recurring debate over the existence and persistence of a 'North–South Divide' in the nation's economic landscape. We then review some theoretical accounts of unbalanced regional growth and the role they give to sectoral structure and competitiveness. Next, dynamic multi-factor partitioning methods are used to determine the relative contribution that sectoral composition has made to Britain's North–South growth gap. In the light of our findings, we argue that the Coalition Government's policies to redress that imbalance are unlikely to have any profound impact.

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### **Policy competition for highly skilled workers**

Michiel Gerritse

VU University Amsterdam

Over the past decades, consumption amenities, like museums, concert houses, architecture, natural amenities and cultural frills have drawn highly skilled workers to cities. Skilled cities grow faster economically, and recent evidence suggests that growth via skill can be steered by local amenities. It is no surprise, therefore, that many local governments list attracting highly skilled workers as a policy objective, and thus motivate expenditure on amenities. The "Bilbao effect", for instance, suggests that a cultural upgrading can be the centerpiece of a city's economic revitalization. A trickle-down argument could justify the government's bias to the highly skilled: low-skilled workers may not enjoy the amenities, but benefit indirectly from the increased local presence of highly skilled workers. However, workers of different skills are attracted from other cities, and a full evaluation of governments' high-skill enticing policies requires a spatial equilibrium perspective. This paper investigates what happens when policymakers provide amenities in the hope of attracting high-skilled workers.

We study a two-city framework in which governments choose the level of public amenities (and the taxes that finance them). Although preferences are symmetric, workers of higher skill generally have higher incomes, and therefore prefer higher

levels of public amenity provision. If cities are symmetric, highly skilled workers improve local welfare more than workers of low skill do, and therefore governments encourage high-skilled immigration by setting (too) high public expenditure. A common reduction of the public budget on amenities raises overall welfare, though at the cost of the highly-skilled. This result is akin to the tax competition literature (when viewing highly skilled workers as mobile capital), but it occurs even if low-skilled workers are free to leave the city if they dislike local policies.

However, if the preferences for policy are relatively strong, cities with a specialization in one skill emerge. In that case, policies can be tailored to the locally abundant skill group. The benefits of homogeneity in policy preference are fully internalized by the local government, but there are external costs to specialization (attracting high-skilled workers to a high-skilled city implies that the low-skilled city becomes more low-skilled, and possibly less productive). Therefore, specialized cities will tailor their policies too much to the locally abundant skill, and as a result, specialized cities become too specialized.

These results for specialized and symmetric cities also hold with different plausible production externalities between workers of different skills added to the model. Finally, extending the model to a continuum of skills and cities, trade between cities is shown to alleviate policy inefficiencies in specialized cities, but inefficiencies in mixed-skill cities persist and cities specialize faster than is optimal.

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## **Tax competition with commuting workers and agglomeration**

Michiel Gerritse

VU University Amsterdam

We model a policy competition game in a two-region economy that exhibits commuting possibilities and endogenous agglomeration forces. Governments use land taxes to finance services to citizens and public inputs for firms. The inputs can attract commuters by increasing local worker's productivity. Since the commuting flow is inefficiently small, the support for firms is too low instead of too high, and there is no race to the bottom. Residential mobility leads to a second-best welfare level by internalizing the interregional effects of tax and expenditure policies. However, this second-best policy still does not address commuting externalities and the non-transferability of tax revenues. Hence, a voting-with-the-feet mechanism is present but imperfect. A housing subsidy by the central government can correct part of the residential overconcentration or employment underconcentration, but its design crucially depends on the housing supply elasticity.

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## **Working while in a university: Does it mean greater attachment to the regional labour market?**

Mika Haapanen and Hannu Karhunen

School of Business and Economics, Jyväskylä University

This paper is motivated by the observation that the longer the student stays in the region, the attachments to home, friends, and area of residence increase over time as social networks develop and local human capital accumulates. Besides passing of time, potentially an important factor in the attachment of students into the regional labour market is their work experience accumulated during the studies. However, the link between working while studying and migration after graduation has remained largely unstudied. Our hypothesis is that working experience increases the attachment to the local labour market, hence reduce migration. Understanding this link is critical, because many politicians are calling for policies that would cut down the hours students spend on working in order to shorten the graduation times. A possible drawback of such policy changes would be that they could lessen attachment to the local labour markets and thus increase migration after graduation (and potentially regional disparities).

Our econometric analysis investigates the attachment of university graduates on the regional labour markets in Finland. We use large longitudinal data from Statistics Finland that allow us to follow the graduates from 1987 until 2006. In the analysis, matching methods are utilised to form comparison groups for three types of work experiences: working full time, working part time, and not working during the studies. Migration rates are then studied over a maximum of 14-year period after graduation from a university. The analysis allows us to provide evidence on the extent to which attachment to the regional labour market is increased by the local work experience while controlling for unobserved factors related to the duration of current residence spell (e.g. social networks).

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## **How much does a single graduation cohort from further education colleges contribute to the Scottish economy?**

Kristinn Hermannsson, Patrizio Lecca and Kim Swales

Fraser of Allander Institute, Department of Economics, University of Strathclyde

Econometric approaches have been inconclusive in determining the macroeconomic contribution of increasing skills and doing so via growth accounting rests on restrictive assumptions. Instead a third approach is proposed. We follow growth accounting in using micro level data to aggregate labour of different skills into a unified stock expressed in efficiency units. Then a large scale numerical general equilibrium model is used to simulate endogenous adjustments that occur as the effective labour supply changes. The usefulness of this approach for applied education policy analysis is demonstrated by evaluating the macroeconomic impact of a single graduation cohort from further education colleges (FECs). Data from each of Scotland's FECs was collated to determine the number of graduates and their incremental increase across standardised skill levels. We find the macroeconomic impact to be significant. From a policy point of view this suggests a revival of interest in the conventional teaching role of education institutions might be overdue.

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### **Peak-load disaggregation of energy supply and demand**

Kristinn Hermannsson and Stuart McIntyre

Fraser of Allander Institution, Department of Economics, University of Strathclyde

Installed electricity generation capacity needs to be able to satisfy not only the average level of usage but also the maximum level of usage. Hence it's long been understood that if you can get users to switch electricity usage from peak to off-peak times (i.e. day to night, weekday to weekend), this can reduce the required generating capacity by reducing the difference between average and peak loads. New technology such as smart meters have revitalised interest in demand management and opened up viable possibilities for economic and environmental savings. This paper demonstrates how electricity supply, distribution and demand, can be disaggregated by peak-load in Input-Output tables. The tables are useful as economic accounts for attribution analysis, such as for output and greenhouse gas emissions. Moreover they can be further used for calibration of energy-economic simulation models.

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### **Consumption Expenditures in Economic Impact Studies: An Application to University Students**

Kristinn Hermannsson, Kim Swales and Peter McGregor

Fraser of Allander Institute, Department of Economics, University of Strathclyde

We raise the issue of how appropriately to attribute economic impact to consumption expenditures. Despite the salience of the topic for applied economics it has not received much explicit attention in recent literature. In Input-Output analysis consumption expenditures are either treated as wholly endogenous or wholly exogenous. For many applications, such as those focusing on the impacts of tourism, benefits systems or student expenditures, these binomial assumptions are not satisfactory. Therefore practical necessity has resulted in conventions ('rules of thumb') for dealing with such cases. We argue that consumption is neither wholly endogenous nor wholly exogenous but that the degree of this distinction is rather an empirical matter. To deal with this issue we set out a general model for the treatment of consumption expenditures. We illustrate its application through the case of university students in Scotland and determine the exogeneity of their expenditures drawing on survey evidence. Students are a particularly useful example as we can analyse the difference in impacts between individual student groups and how the impacts of students at particular institutions are influenced by the composition of the student body. Furthermore we take into account the binding budget constraint of public expenditures (as is the case for devolved regions in the UK) and examine how this affects the impact attributed to students' consumption expenditures.

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## **Spatial Networks for Sustainable Urban Development**

Paul Hildreth

SURF, Salford University

The paper's purpose was to explore how cities have pursued sustainable urban development through spatial networks. It involved a qualitative study of five English cities: Birmingham; Bristol; Leeds; Leicester and Newcastle. The study focussed on developments since around the June 1993 international Rio Summit. This coincided with an expansion of network activity, from the global to the local, to which local authorities and their partners have been important contributors.

Three broad periods of development are identified. First, 1990 to 2000 might be characterised as a period of relative experimentation, both globally and in a UK context. Second, 2000 to 2010 can be identified as period of the mainstreaming of multi-level governance networks by the then Labour government. Third, post-2010, a more complex picture is emerging under the Coalition government's form of localism. Without a clear national framework for sustainable development, local models for networks for sustainable urban development are becoming more diverse and the motivations behind them more complex. With exceptions, the city is the primary context for pursuing sustainable urban development, whilst the sub-region (or city-region) is the main focus for efforts to enhance the competitiveness of the local (and green) economy. A combination of abolition of performance regimes, central funding reductions and new incentives has encouraged local innovation, increased engagement with the private sector and an enhanced focus on delivery. However, austerity is putting progress at a local level at risk.

The contribution that local 'places' can make to sustainable development may be only partially understood in Whitehall. An appropriate understanding that progress locally is not just about policy initiatives is missing. Local momentum in sustainable development is critically developed through investment in the 'place' qualities of embedded knowledge, strong institutions, effective leadership and trusting network relationships; all of which may only be built up over time.

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## **The Economics Behind the Move to 'Localism' in England**

Paul Hildreth<sup>1</sup> and David Bailey<sup>2</sup>

1. SURF, Salford University
2. Coventry University

This paper explores the economic thinking behind the UK Coalition Government's new framework for achieving local growth and the creation of Local Enterprise Partnerships (LEPs) in England. It does so in the light of recent debates about 'space-neutral' and 'place-based' policy making. While the British government states its ambition to achieve greater spatial and industrial balance across England (and by implication the UK), we argue that so far at least, there is a mismatch between the 'rhetoric' and 'policies' of local growth and its limitations. These relate

to inconsistencies in the way that the different competing economic ideas in circulation within government have been adopted in practice. As a result, we will highlight six key disconnects and limitations of the economics behind the move in England to local growth. We then go on to argue that despite the universal geographical coverage of England by 39 LEAs, there is in policy terms a ‘missing space’. This is due to: 1. the lack of sufficient capacity, depth and capability at the local LEA level; 2. inappropriate geographies outside the larger city regions and 3. absence of effective multi-level governance joining up policy geographically and sectorally across ‘local’ to the ‘national’.

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### **Tourism Clustering, Policy and Performance: An Irish Perspective**

Kate Howey<sup>1</sup>, John Hobbs<sup>1</sup>, Michael Walsh<sup>1</sup> and Richard Moloney<sup>2</sup>

1. Department of Management and Marketing, Cork Institute of Technology
2. Centre for Policy Studies, University College Cork

Economists and tourism experts have long sought to understand why certain tourist destinations succeed on a national and international stage while others do not (Given the unanimity that clusters increase the competitiveness of a regional industry and given that tourism is a powerful instrument for regional development, one aspect is intrinsically linked with the other and must be therefore studied in tandem). Yet few studies have examined the relevance of clusters to the tourism industry. Considering that recent reports from Fáilte Ireland (2012) and the Irish Tourism Industry Confederation (2011) describe the sector as being of paramount importance to Ireland’s economic stability, development and future growth, it seems that policies surrounding tourism cluster development and competitiveness are worth examining.

For the purpose of this study, one successful tourist destination, the town of Kinsale in West Cork, is used as a case study. An analysis of the relationships and interdependencies between firms being the primary focus, through which a detailed evaluation of the development and growth of the perceived cluster of Kinsale is carried out. Hobbs’ (2010) ‘Four i Linkage Scale’ is applied to assess the Intensity, Importance, Involvement and Investment by participating tourism players in cluster linkages. It is intended by applying Hobbs (2010) methodology that an awareness and understanding of existing linkages, as well as recommendations for improvement, will be of commercial interest to individual firms in Kinsale. The outputs of the study may be directly applicable to other tourism destinations throughout Ireland, and may inform policy and tourism development bodies on a local, regional and national level in terms of cluster policy and competitive success.

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## **The effect of location on the determinants of innovation in Vietnamese businesses**

Declan Jordan

School of Economics, University College Cork

Using data from the Investment Climate Survey 2005 published by the World Bank, this paper estimates the effects of location on the determinants of business level product innovation in Vietnamese enterprises. The paper finds that businesses in the Red River Delta Region, which includes Hanoi, are significantly more likely to introduce new and upgraded products than businesses in other regions. It is common to find a strong capital city effect on innovation, though it is surprising, given its history as a strong commercial centre, that businesses located in the South-East (Ho Chi Minh City) Region are less likely to innovate than those in the Red River Delta Region. There are also significant differences across regions in the relative effects of drivers of innovation on the likelihood of product innovation.

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## **An Input-Output analysis of the impact of offshore wind energy expenditure on the UK economy**

Amangeldi Kenjegaliev

Strathclyde University

This paper investigates the impact of offshore wind energy on the UK economy. To do this we employ input-output table for the United Kingdom developed at Fraser of Allander Institute. Three phases in offshore wind sector is separated and analysed: preconstruction, construction and operation stages. We investigated the impact of each phase on the UK economy. The results show increase in GDP in all three stages: preconstruction, construction and operation stages. Additionally, costs in construction sector results in relatively high level of output both in case of type 1 and type 2 multipliers. There is also a rise in employment due to offshore wind energy development. According to the results the industry will have beneficial effect on the economy. The direct input of offshore wind outperforms those of the most industries.

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## **A Study on Symbiosis strategy between Regeneration of Original Downtown using the Urban Decline Analysis and Development of Innovation City**

Yeong Kim and Seongmoon Kim

Gyeongsang National University, South Korea

Urban planning of South Korea until the 1980s has been centered the growth and development such as land development at the outside area of the city due to economic interests and development needs, build infrastructure in the metropolitan area through the growth of base, and planning of new towns around

Seoul by a burgeoning population. These urban planning, that dispersion of main function with population outflow, caused doughnut pattern due to urban sprawl. Also, housing supply and new town development in the metropolitan area-oriented were caused serious social problems that are decline of local small cities as well as increased the gap between local small city and metropolitan.

The initial solutions of doughnut pattern carried out the redevelopment and rehabilitation through large treasury investment. During the relatively short period, these solutions had produced a large effect. But it had improved only the physical environment and had limited. Recently, urban regeneration projects, that as one of the solutions for the decline of the city, is proposed by the central government. This project has changed to sustainable development participating local people included local merchants with improvement of the overall social elements as cultural, economic, and environmental.

Jinju city, which is the background of this study, rarely proceed the influx of the population and population outflow to other cities. But the population of the city center is being moved into the surrounding area due to moving of public institutions to the outskirts of a city, land development and large-scale residential development at the outside area. This city is a typical local small city that occurred doughnut pattern such as decrease a settled population, decrease of employment population as well as recession of the commercial and urban economic. Also it is uncertain the characteristics for urban growth and management plan about housing and regeneration of city center is lacking. In recent years, while Jinju city was designated as the place of business of the innovation city project, that the hub city for the balanced development of the country and reduced the gap between regional and metropolitan, local people look forward to development of the whole city including business recovery and growth of the city competitiveness.

However, the innovation city project as type of new town project through development of the surrounding area is difficult to regeneration of city center In case of local small cities, that population from two hundred thousands to three hundred thousand, regeneration of city center could mean regeneration of the entire city(Korea Institute of Construction & Transportation technology Evaluation and Planning, Korean Urban Renaissance Center's study of pre-project planning, 2006).

Consequently, this study proposes regeneration strategy of original downtown using the urban decline analysis and prevention measure of acceleration of the city center decline due to development of innovation city. Also, accomplishes balanced and sustained growth of the entire city through symbiosis strategy between original downtown and innovation city.

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## **Renewable Resources, Environmental Pollution, and International Migration**

Kenji Kondoh

School of Economics, Chukyo University

We develop a two-country model with two industries: the smokestack manufacturing industry, which generates pollution, and the transboundary renewable resource industry. With no trade, migration occurs from the foreign country, with lower manufacturing productivity, to the home country. If the gap in pollution abatement technology, which is superior in the home country, dominates the productivity gap, both countries gain from migration. Under a free trade equilibrium, we also show that if the marginal harvest of the resource industry is lower (higher) than marginal damage of manufacturing in the home (foreign) country, migration still causes positive effects on the stock of renewable resources, which should improve both countries' welfare.

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## **Regional patterns in entrepreneurship in the Netherlands and the crisis**

Sierdjan Koster

University of Groningen

Recent studies for Sweden and Germany (Andersson and Koster, 2012; Fritsch and Mueller, 2007) show that regional patterns in start-up rates are highly persistent over time. The persistence is partially explained by slowly changing regional features that affect entrepreneurship. Also, there is evidence of self-reinforcing processes that build-up an entrepreneurial culture. The observation of strong persistence frames the scope for policy measures aimed at increasing regional entrepreneurship. The effects of policy are likely indirect and will take a long time to materialize. Policies that are consistent over a long period are most likely to be effective.

This paper addresses the change in the regional patterns of start-up activity in the Netherlands. As such, it adds to existing evidence on persistence in regional entrepreneurship in different countries, thus allowing for comparison of the same phenomenon in different contexts. The Netherlands is an interesting case in this respect as data is available at low levels of aggregation (municipalities). Also, the density of the country sets it apart from Sweden and Germany that have a much clearer contrast between urban and rural areas. In theory, both the small level of aggregation and the dense network between places should allow for more heterogeneity over time, i.e. less persistent patterns.

In addition to providing additional evidence on persistence in start-up rates, the study also addresses the effect of the crisis on both the level of entrepreneurship and, more importantly, the regional differences in entrepreneurship. Are some regions more resilient in terms of entrepreneurship or does the crisis influence start-up rates across the board in a similar fashion.

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## **A Computable New Economic Geography General Equilibrium Model**

Patrizio Lecca, Peter McGregor and Kim Swales

Department of Economics, University of Strathclyde

Most of the Computable General Equilibrium (CGE) models used for regional policy analysis adopt perfect competitive market with homogeneous firms where trade are defined as in Armington (1969). In this paper we build a new economic geography large scale interregional applied general equilibrium model to analysis the impact of a devolved fiscal power to the Scottish Government. The model introduces imperfect competition in the Manufacturing and Services sectors. Furthermore we combine international product differentiation a la Armington with the love of variety approach by Krugman (1980) for intra-industry product differentiation. Contrary to the basic Krugman model we allow for changes in the number of varieties produced that directly impact the demand and supply-side. The model is also able to account for labour mobility between regions. We introduce forward looking migrants using as a default case a net migration function where migration decisions are positively related to the gap between wages and negatively related to the gap between unemployment rates. The net migration function approach determines total adjustment in the labour market abstracting for heterogeneous migrants. Therefore, we also make comparisons with the case where the migration function is specified as a stock adjustment equation able to provide the magnitude of the shift in labour supply and thus for incomplete migration adjustment.

The model is used to study empirically a number of typical shocks affecting a small open economy in a balanced-budget framework. The results obtained can be generalized to any small open economy. However it is particular appealing the case of Scotland. The Scottish economy represents one of the most interesting sub-nations within the EU given the existence of a lively on-going debate on greater fiscal autonomy and independence

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### **Can ageing Scotland afford independence?**

Katerina Lisenkova<sup>1</sup> and Marcel Merette<sup>2</sup>

1. National Institute of Economic and Social Research
2. University of Ottawa

In the light of the current Scottish independence debate a lot of attention is being paid to whether Scotland and the rest of the UK (RUK) will be better off after the separation. Demographic processes play an important role in determining future economic growth via their impact on labour market, saving behaviour and government spending. One of the arguments that has been raised during the debate is that Scotland is in a worse demographic situation than RUK and independence will make it harder for it to provide for its ageing population.

This paper attempts to disentangle different sides of this argument. It uses a dynamic multiregional Overlapping Generations Computable General Equilibrium (OLG-CGE) model for Scotland and RUK to evaluate different demographic and economic policy scenarios for Scotland and RUK with and without independence.

On the one hand, according to the principal scenario of the 2010-based population projection, the share of working age population in Scotland declines more rapidly than in RUK. This leads to reduction in labour force, slowing of economic growth and higher tax burden on the working population. On the other hand, independent Scotland will have power to choose policy to tackle its demographic challenges. One of such policies could be an increased level of immigration, which is not possible under current UK migration policy targets. The paper presents simulations under different demographic and policy scenarios, and estimates the level of migration needed to ensure that Scotland independence does not make the economy worse off.

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### **The performance of Iterative Proportional Fitting for spatial microsimulation: applying new tests to an old technique**

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The fundamentals of Iterative Proportional Fitting (IPF), otherwise known as 'matrix raking', 'biproportional fitting' or the 'RAS algorithm', have been established and refined since the first theoretical work by statisticians dating back to 1940. The technique has a history in Regional Science and related fields that dates back to the 1980s. Since then IPF has been used for generating small area microdata for a variety of applications, primarily for combining individual-level microdata with aggregate count data about administrative zones. In this context, the procedure works by creating a matrix that assigns each individual from a non-geographical survey a set of weights, one weight for each area under investigation. It is a mature, widely used and relatively straight-forward method. However, there have been few studies focussed on evaluating the performance of the IPF procedure under a variety of conditions. An additional research problem that has rarely been tackled is the tendency of researchers to 'start from scratch', and create their own implementation of IPF in a programming language of their choosing. Instead of starting from a blank slate each time, we argue that new systems of collaborative coding could benefit all researchers using IPF and lead to a reduction in implementation error.

This gap in the literature has important implications for researchers using IPF. Answers to many methodological questions must be guessed or assumed, and many researchers simply follow pre-existing conventions. Under what conditions can a 'perfect' match be expected, and how can one test whether these conditions exist in the input datasets? How many iterations should be used for any given application? What is the impact of initial weights on the final results? And what impact will integerisation have on accuracy? This paper tackles each of these questions in turn, using a systematic methodology and sample datasets that have been made freely available online. The use of the collaborative coding site Github makes it easy for other researchers to fork our test runs and test the method on their own datasets or against their own performance metrics.

The results confirm IPF's status as robust and widely applicable method for combining areal and individual-level data. We have also been able to generate simple rules of thumb, and transferable tests of performance, that should be of use to researchers using IPF in the future.

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**Establishment productivity, agglomerations and the occupational structure of the regional workforce: does tradability make a difference? Some evidence from German establishment data.**

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Institute for Employment Research - Regional Research Network

A wide range of studies shows that there are positive agglomeration effects on establishment productivity. We want to explore this issue a bit further and add to existing stock of knowledge by investigating whether the occupational structure of the regions, especially the regional density of occupational groups, is having an additional impact on establishment productivity or not and whether tradability makes a difference or not. We apply a production function approach to a German large scale Establishment Panel covering around 16,000 establishments each year. We augment this data with information about the economic characteristics of the regions and the regional occupational structure.

In a first step we estimate within a production function framework the productivity impact of general agglomeration measures like establishment density, population density and employment density. We find substantial agglomeration effects for the whole sample. The results for a subsample of establishments producing tradeable products and a subsample for those establishments producing non-tradeable products indicate that agglomerations impact establishment productivity differently in these two sectors.

In a second step we enter the regional workforce structure into our estimation function. From administrative data of the federal employment service we get detailed information on the occupational status of all employees in Germany. We use a common classification developed by Blossfeld (1987). This classification is basically built on three task classifications (manual, services and administration) and four skill levels. This gives twelve occupational groups. We derive the employment density for each of these groups for each industry for every region. The results indicate that service occupations impact both sectors – tradeable and non-tradeable – and higher density of high skill service employees is increasing productivity. In contrast, the density of manual employees is only important for the tradable sector and the employees with medium skills are primarily increasing productivity.

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## **The impact of regional diversity and entrepreneurial activity on Innovative Human Capital: evidence from Ireland**

Helen McGuirk and Helena Lenihan  
University of Limerick

Innovation is a key driver of national, regional and firm growth. Human capital is an essential part of innovation. There is no standard measure of human capital though formal education is commonly used as a proxy. The ability to identify the competitive advantage of employees' transferable and innovative characteristics is of importance to firms and policymakers. This research adopts a new Innovative Human Capital (IHC) concept to capture the competitive advantage for firm-level innovation and hence growth (jobs, sales and productivity). To overcome the limitations of human capital measurements used previously, the IHC concept encapsulates four elements: education; training; job satisfaction and willingness to accept change. The development and sustainability of IHC depends on firms' internal and external environments. This research explores the regional factors that are causally connected to the IHC concept. Regional entrepreneurship and regional workforce diversity are two external aspects addressed in this research. Exploration of factors that support IHC lead to the following two hypotheses: H1: The more diverse a region, the higher its innovative human capital, and H2: The more entrepreneurial a region, the higher its innovative human capital. The analysis uses data from the Irish Census of Population Sample of Anonymised Records (COPSAR) and Global Entrepreneurship Monitor (GEM) National Report. The Blau Index is used to measure the level of diversity in the local labour market and includes the educational attainment, nationality, and age of the workforce. Regional entrepreneurship measures the rate of entrepreneurial activity in NUTS III regions of Ireland, including activity of new firm entrepreneurs and early stage firms. Both hypotheses are estimated using IHC as the dependent variable and regional diversity and regional entrepreneurship as the independent variables. The estimation also controls for firm-specific and other variables which may influence IHC.

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## **Personal indebtedness, community characteristics and theft crime**

Stuart McIntyre  
University of Strathclyde

Becker (1968) and Stigler (1970) provide the germinal works for an economic analysis of crime, and their approach has been utilised to consider the response of crime rates to a range of economic, criminal and socioeconomic factors. Until recently however this did not extend to a consideration of the role of personal indebtedness in explaining the observed pattern of crime. This paper builds on a recent publication in the literature (McIntyre & Lacombe 2012), and using the Becker (1968) and Stigler (1970) framework, extends to a fuller consideration of the relationship between personal indebtedness and theft crimes. The increase in personal debt in the past decade has been significant, which combined with the recent global recession, has led to a spike in personal insolvencies. This paper uses data available at the neighbourhood level for London, UK on county court judgments (CCJ's) granted against residents in that neighbourhood, this is our measure of personal indebtedness, and examines the relationship between a range

of community (neighbourhood) characteristics (economic, socio-economic, etc), including the number of CCJ's granted against residents, and the observed pattern of theft crimes using spatial econometric methods.

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## **Spatial determinants of small-scale renewable energy in the United Kingdom**

Stuart McIntyre and Grant Allan

Fraser of Allander Institute, Department of Economics, University of Strathclyde

A large increase in small-scale, including domestic, renewable electricity generation devices has been observed across the UK in recent years, spurred by UK Government policy. The Feed-in-Tariff (FITs) is the main means by which the UK Government is hoping to boost the uptake of such systems. This requires energy suppliers to compensate owners of such systems for the electricity they generate and use, and for any unused electricity exported to the grid. FITs are available for a range of technologies, but are “spatially blind”, in that subsidy rates are constant across regions. A levelisation process occurs through which the additional costs of FITs are shared across all energy suppliers in relation to their market share. An unequal spatial distribution of FITs capacity therefore would lead to transfers between regions of the UK.

This paper looks at the impact of a range of economic, socioeconomic and energy factors on the uptake of domestic renewable electricity devices in the UK using spatial econometric methods. We adopt the UK Parliamentary Constituency as our core ‘spatial unit’, but we also test for the presence of region specific effects (to control for factors such as the presence of different planning systems in Scotland, England, and Wales-feed-in tariffs are not available in Northern Ireland). In carrying out our analysis we are particularly interested in whether there is spatial dependence in the uptake of domestic renewable electricity generation devices, and if so what this tells us about the impact of community characteristics on the uptake of such devices. We estimate three standard spatial econometric models, the SAR, SEM and SDM models using Bayesian methods and carry out posterior model comparison to select the best fit model.

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## **Activity rates among Equality Groups in Northern Ireland during the crisis**

Ronald McQuaid, Robert Raeside, Jesus Canduela, Helen Graham and Valerie Egdell

Employment Research Institute, Edinburgh Napier University

This paper considers the effects of the crisis on the employment, unemployment and inactivity rates of the main Equality groups (including gender, age, religion, ethnicity) in Northern Ireland. It also considers some of the likely causes and policies that aim to influence these rates.

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## **Entrepreneurship and local inventive activity: Testing the knowledge filter across Chilean comunas**

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1. University of Groningen
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3. University of Saskatchewan

Recent endogenous growth models stress the importance of the entrepreneurial function as a link between scientific knowledge and economically valuable innovation. This paper provides empirical testing of the “knowledge filter” hypothesis, with a panel dataset of invention patents applications in Chilean municipalities. The empirical strategy rests on the estimation of a matching function between local levels of research effort and entrepreneurial activity, a novel approach in regional innovation studies. The base specification is further extended to encompass other three leading hypothesis of regional innovation patterns: the knowledge production function, creative destruction and agglomeration externalities. The econometric set-up takes into account the endogeneity of entrepreneurship to innovation levels. Results provide strong support to the knowledge filter, but also to the importance of R+D inputs as factors related to higher levels of local inventive activity. Results are indicative of inter-municipal knowledge spillovers of university research. We also verify local creative destruction and evidence on urbanization economies, favouring Jacobs over Marshall externalities. Results suggest that local innovation is a complex and multidimensional process highly influenced by structural features of regional economies. Two policy implications emerge from these results. In first place, investment in innovation infrastructure has the potential of harnessing innovation in lagging areas of the country. Second, there is room for synergies between innovation and entrepreneurship support policies within regional development initiatives.

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## **An assessment of the Economic Value of Food Tourism to the Irish Economy**

Richard Moloney, Marie Ryan and Martin Kenneally  
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Tourism is a hedonic product. It is made up of many characteristics which can vary both quantity and importance. One of the crucial characteristics in the Irish tourism product is food and food services. Expenditure on food and beverages by tourists and the value of such expenditure is an important component in the development and expansion the overall Irish tourism product. It is an important issue which interacts with other issues such as diversification, cultural integration and the creation of closer relationships between the tourist consumer and product provider. Strong correlation has been found between increased levels of food expenditure and the retention and development of regional identity (Mak, et al,

2012). This is a result of an increased awareness in the social and in the cultural benefits of indigenous food production and of local consumption. It allows tourists to experience traditional heritage, skills and lifestyle.

Both tourism and the food and beverages sectors are strong and vibrant sectors in Ireland. They are the most important indigenous drivers of the Irish economy and are playing a vital role in Ireland's economic recovery. The sectors are central in creating jobs and increasing export earnings which, in turn, are fuelling the economic rebirth of the country. This paper provides an economic assessment of the food and drink spend by visitors to Ireland. The study reports estimates of the overall value of this aspect of the tourism sector to the economy. It compares the results with those of some of our main competitors within this niche market. Results are provided in terms of income and employment.

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### **Determinants and distribution of individual unemployment risk across the Greek regions during the crisis**

Vassilis Monastiriotis

London School of Economics

As is well documented, unemployment in Greece has increased immensely during the last three years, reaching over 26% by the end of 2012. Despite this, substantial differences in unemployment rates exist among the Greek regions, reflecting differences not only in the vibrancy of the local labour markets (i.e., differences in demand) but also in the composition of the characteristics of the local labour forces (i.e., differences in labour supply). In this paper we look closely at the spatial differentiation of the determinants of unemployment risk in Greece before and during the economic crisis. We follow the work of Blackaby et al (1999 - Manchester School vol.67) and Lopez-Baso and Motellon (2011 - IREA paper no25) and apply an unemployment-risk decomposition analysis using individual-level micro-data derived from the Greek Labour Force Survey. We decompose unemployment risk into an 'endowment' and a 'price' component (i.e., decomposing unemployment into one part that is due to personal characteristics and another that is due to the risk assigned to each of these characteristics) and revisit the regional unemployment differentials that persist after controlling for the observed differences in the composition of the workforce across space. We apply this decomposition for the 13 macro-regions of the country as well as for a number of more aggregate groupings (metropolitan vs non-metropolitan, Athens vs the rest, north-south, urban-rural regions, etc) for periods before and during the crisis. Comparison of the derived differences helps us identify variations across space not only in the sources of unemployment but – more importantly – in the ways in which the crisis has led to differentiated demand- and supply-side pressures in the regional labour markets of the country.

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## **Informality and the city: integrating the informal economy into urban search-matching models**

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According to existent empirical evidence, low-income informal workers reside predominantly in peripheral areas, while higher-income formal workers live closer to employment centers. So far, research on the informal economy has largely ignored its spatial dimension, while urban theoretical models have not yet considered the theoretical foundations of this type of spatial mismatch and its consequences on welfare and efficiency. This paper aims to bridge this gap by building a model that integrates the urban informal economy into existing urban search-matching models. This model is used to analyze two research questions: first, what is the relationship between city structure and labour market outcomes in cities with a sizable informal economy? Second, what is the impact of mobility policies on the welfare of formal and informal workers and the unemployed? We develop an urban search-matching model where workers are distributed on a lineal city with a unique Central Business District. Workers willing to take formal jobs must first incur in “formalization” costs which include loss of independence and registration costs. Heterogeneity is introduced by assuming that individuals differ in their willingness or financial capacity to cover these costs. Individuals can be either employed in the more productive formal economy, self-employed in the less productive informal economy or unemployed searching for formal jobs. Endogenous labour market variables in this model include formalization rates, the size of the informal economy and unemployment levels. Exogenous city structure variables include city size and commuting costs, while land prices and the spatial distribution of formal and informal workers and the unemployed are determined endogenously. The model is used to analyze the relationship between city structure and labour market outcomes, and the welfare implications for formal and informal workers and the unemployed of mobility policies, such as mobility subsidies and investments in transport infrastructure.

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## **Regional Research Driven Clusters in the European Maritime Sector**

Eoin Moynihan, John Hobbs and Michael P. Walsh  
Cork Institute of Technology

The EC (2012a) in their ‘Marine and Maritime Agenda’ state that the global maritime market is on a strong growth trajectory. An FP7 funded EC project REMCAP (Resource Efficient Maritime CAPacity) brings together six ‘Regional Research Driven Clusters’ aiming to add significant value to this existing cluster infrastructure, through supporting long-term development and sustainability through: (1) facilitating interaction and knowledge exchange between RRDCs; (2) raising the effectiveness of RRDCs by sharing approaches to innovation and (3) using RRDC activities to stimulate involvement of industry.

Historically, Ireland has underutilised its maritime resources. However, having been identified (Department of Marine, 2012) as a key sector for economic growth, Irish Government policy more recently has supported the formation of a maritime cluster, the ‘Irish Maritime and Energy Resource Cluster’ (IMERC).

The objective of this paper is twofold. Firstly, the paper compares and contrasts the literature pertaining to Porter's (1998) 'Industry Cluster' and 'Regional Research Driven Clusters' (EC, 2012b) to identify the significant theoretical differences. Secondly, the paper outlines the work to date on documenting the development of IMERC and subsequently benchmarking it against REMCAP's European partners, to promote the development of the Maritime sector. The methodology used draws heavily from the work of Hobbs' (2010).

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### **The Effects of Agglomeration Economies on Firm Productivity in Ireland: Evidence from the Census of Industrial Production 2009**

Lisa Noonan and Eoin O'Leary

School of Economics, University College Cork

There are notable differentials between labour productivity of local units operating in Ireland. These differentials are evident across regions, industries and between indigenous and foreign owned local units. This paper examines how internal economies of scale and external localization economies and urbanization economies affect labour productivity of local units. Based on secondary microdata from the Census of Local Units in the Census of Industrial Production (CIP) 2009, the paper, firstly, examines the effects of each of the three types of agglomeration economies on labour productivity of local units at NUTS 3 and county levels. In order to eliminate biases associated with transfer pricing in Ireland different measures of labour productivity are used in the analysis. Through the use of interaction terms, the paper then examines the relative importance of the different types of agglomeration economies for indigenous and foreign owned local units at NUTS 3 and county levels. Agglomeration economies are found to have differing effects on labour productivity for indigenous and foreign owned local units. Implications for policymakers are also discussed. This is a significant contribution to the Irish policy debate as O'Leary (2007) claims that Irish policymakers have focused on localization economies as the only source of agglomeration economies.

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### **Why Irish Policymakers Don't Do Bottom-up Regional Development**

Eoin O'Leary

School of Economics, University College Cork

This paper considers the Irish policymaking mind-set that has evolved over the past 4 decades and explores how it will manage with the new EU Cohesion policy, referred to as smart specialization. It begins by profiling smart specialization and its link to place-based policy. Instead of every region inventing general purpose technologies, smart specialization envisages that the majority of regions are to instead concentrate on the development of applications. As such this involves a move away from 'top-down' 'one-size-fits all' policies only suitable to leader

regions, to bottom-up policy development lead by entrepreneurial discovery that complements leader regions through the development of effective feedback loops, but also involves more sustainable and diverse growth in follower regions (Foray et al, 2009). These developments, which have been shaped by the perceived ICT sourced productivity gap with the USA, are linked to the emerging EU regional policy paradigm which is results-based, requiring multi-level governance, governance innovation and new concepts of partnership (McCann and Ortega-Argilés, 2011). The paper then considers the challenges posed to the Irish policy mind set by the new paradigm. It argues that Irish regional policy has clearly been old paradigm, being top-down and focused on re-distribution (O’Leary, 2003). It places this mind-set in the context of Irish national policy, which has been error prone, and goes on to show that Ireland’s dominant economic development strategy, which has been the attraction of foreign direct investment through taxation incentives, has been successfully centralized. It suggests that initiatives associated with this strategy such as the targeting of high-tech sectors, science-push innovation and networking with universities ignore the majority of Irish businesses, many of whom might benefit from a genuine bottom-up regional development strategy. However, it concludes that such a policy will not be put in place owing to nervousness by policymakers at the centre about the emergence of ‘dual development policies and inertia among local policymakers who seem to be content with the dominant centralized economic development strategy.

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## **The Density Function and Regional Boundaries**

John B. Parr<sup>1</sup> and Darryl Holden<sup>2</sup>

1. University of Glasgow
2. University of Strathclyde

Segmentation of the economic space of a nation into discrete units represents a cornerstone of regional economic analysis. It is generally accepted that the results of many, if not most, investigations are sensitive to the regionalization scheme employed. Yet there tends to be an uncritical acceptance of the validity of the regions used in official statistics, whether published or unpublished. This is because the assembly of statistical data is recognized as a costly and time-consuming process, so that the independent generation of an alternative set of regional data for a particular analysis is therefore likely to be out of the question. However, because of a myriad of factors, ranging from historical decisions to lobbying and other politically-motivated pressure, there can be no assurance that official regions represent a meaningful set of functional economic units. It is against this general background that the possibility of utilising the concept of the density function at the regional scale is explored.

The density function defines the decrease in population density with the distance from a central point. The concept, introduced by Colin Clark in 1951, has proven valuable in understanding the nature of urban spatial structure. However, the density-function approach has been employed less commonly at the regional level. The intention of the presentation is two-fold: first, to consider the concept of the density function of a region as a way of summarising its spatial structure; and second to explore the application of the density function in the determination of the regional boundary. Initially, the boundary is examined in terms of a point, and

then, more conventionally, as a line. The results are briefly compared with other approach to regional boundaries. Unlike most applications of the density function at the regional scale, no a priori definition of the regional boundary is assumed. To the contrary: the regional boundary is shown to result from a particular application of the density function.

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### **New Firm Formation and Capital Constrains in UK Localities: Impact of Homeownership**

Maria Plotnikova and Andrew Henley  
Aberystwyth University

New firm formation as a vehicle for job creation and economic growth has been advocated by economic development agencies and examined by researchers (Johnson, 2004, 1983; Robson, 1998, 1996). The new firm formation rate in Britain has tended to be pro-cyclical, with spatial variations widening as the macro-economy booms and decreasing when the economy contracts. Outside of London more rural and sparsely populated areas have a higher rate of new firm formation, while industrial urban areas perform worse in this regard.

This paper is trying to answer the question what are the likely factors explaining variation in new firm formation rates across the UK. In particular it re-examines the issue of the effect of housing wealth on new firm formation, i.e. whether housing capital helps potential entrepreneurs to overcome capital constraints. We use ONS business demography data to measure firm registrations and de-registrations in UK unitary authorities and land registry data to create a measure of housing wealth. The period of analysis, 2004-2011, allows capture of the effect of financial crisis on business start-ups, and hence indirectly its effects on regional inequality in the UK via the firm formation channel. We also examine the issue of whether housing wealth helps existing firms stay in business by decreasing the firm de-registration rate, an issue of importance in the aftermath of the financial crisis when banks severely curtailed their lending.

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Plenary 1: Annual Spatial Economic Analysis Lecture

### **Residential Segregation and the Statistics of Space, Economy and Society**

Gwilym Price  
University of Glasgow

This lecture considers how spatial economic analysis can advance our understanding of residential segregation, both in terms of measurement and definition, and in terms of estimating its causes and consequences. Residential segregation is situated at the intersection of space, economy and society, and it is at this intersection, it is argued, where many of the most interesting and important contemporary questions of social science are located. It is here, also, where rich

veins of research inquiry remain unexplored. This lecture teases out some of the core conceptual themes and questions using illustrations from a major new ESRC research centre, structuring the discussion around seven rhetorical statements regarding the role of spatial economy in understanding residential segregation: (1) Space is Important; (2) Space is Random; (3) Space is Symmetric; (4) Space has Wormholes; (5) Space is Dynamic; (6) Space is Endogenous; (7) Space is a Pedagogue.

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## **Hierarchy and Substructures in the Global Airports Network**

Aisling Reynolds-Feighan<sup>1</sup> and Amaya Vega<sup>2</sup>

1. University College Dublin
2. National University of Ireland, Galway

We examine three nested airports networks (i.e. sets of airports receiving jet services at different spatial scales): Ireland/UK, European and Global. We examine a variety of graph theory approaches to identify nodes with important positions in the networks, and groups of nodes that show enhanced patterns of cohesion or interlinkage. The nature of connections within each level of analysis are assessed in terms of the strength and importance of connections, and, the vulnerability of overall accessibility levels to reductions or withdrawals of particular air services. The Official Airline Guide (OAG) air traffic databases, listing daily global airline schedules from 1996 to 2012, are used to define the airports networks and track their change over time.

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## **The analysis of devolved tax policies and a more detailed treatment of the labour market within the Scottish Government CGE model**

Andrew Ross and Tobias Emonts-Holley

Fraser of Allander Institute, Department of Economics, University of Strathclyde

This research will expand the Computable General Equilibrium (CGE) modelling capacity that has been built up over the past two decades in the Economics Department of the University of Strathclyde and, more recently, within the Scottish Government. The primary focus is to augment the existing CGE model of the Scottish economy to allow for analysis of devolved tax policies and a more detailed treatment of human capital formation. The research summary aims to provide an overview of the research proposal and an outline of the work in progress. This covers the description of the main research objectives i.e. the disaggregation of the Social Accounting Matrix for Scotland to incorporate more detailed accounts for the Scottish Government, households and skills; a review of the econometric work on transfer payments, wage determination, activity rates and migration behaviour; endogenising human capital formation within the model; and simulation with the disaggregated model of tax policies and labour market disturbances.

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## **Dynamic Modeling for Concensus Generation on Regional Climate Change Impacts and Adaptation Options: The Case of Germany's Northwest Metropolitan Region**

Matthias Ruth Andrew Blohm, Rebecca Gasper, Onur Ozgun, Nana Karlstetter, Jakob Wachsmuth, Marina Beermann, Tobias Eickemeier, Stefan Gößling-Reisemann, and Marion Akamp

In this paper we present results from a major, five-year research project in support of sustained planning and development processes that promote regional resilience in the Northwest Metropolitan Region of Germany. The results are based on a spatio-temporal dynamic simulation tool whose purpose is three-fold: exploration of a wide range of what-if scenarios in preparation of investment and policy making; recursive (adaptive) planning where the results of past actions are assessed within an ever-changing socioeconomic, technological and environmental context to guide future action; and engagement of stakeholder communities to identify climate-robust adaptation strategies for the region, focusing on synergies and conflicts between the energy and food production sectors.

There are two formal elements to the modeling process that we will highlight. One of these lies in the process by which modules are updated through time on the basis of influences from other modules, whose behavior in turn may feed back to affect the sources of the original stimulus for change. A second dynamic element lies in the influences on system dynamics that may come from policy and investment decisions chosen as exogenous inputs and assumptions by members of stakeholder communities in the region. In combination, the two aspects of the dynamic modeling process provide a platform on which to explore system change and assess an understanding of that change and its ramifications. We will present results that highlight (a) existing and potential new conflicts between land use for biomass and food production, (b) adaptation options that improve performance in one sector but add to the conflict, and (c) existence of robust strategies that make “good sense” for the region and across sectors. In our presentation, we will showcase a select set of these results and how they have been “ground-truthed” with stakeholders in the region.

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## **The Influence of Scientific Research Funding, National Innovation Policies and Institution-Level Supports on Academic Patenting in the Republic of Ireland**

Martin Ryan and James Cunningham  
National University of Ireland, Galway

Over the last fifteen years the Republic of Ireland has made rapid and substantial progress in developing a research-based innovation system. This paper investigates the influence that scientific research funding, national innovation policies and institution-level supports have had on academic patenting in Ireland, using data from the European Patent Office (EPO) Worldwide Patent Statistical Database - over the last couple of decades.

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## **The Inter-Regional and Intra-Regional Labour Mobility of Finnish High-Technology Workers**

Jaakko Simonen<sup>1</sup>, Pauli Svento<sup>1</sup> and Philip McCann<sup>2</sup>

1. University of Oulu
2. University of Groningen

In this paper we attempt to throw some light on how inter-regional and intra-regional labour mobility are related to regional amenities and industrial agglomeration within the Finnish high technology sectors. In order to do this we employ microdata on the local, regional and national labour employment-movements of 150,000 individual workers within the Finnish high technology sectors. Analyzing these data using a range of binary, multinomial and ordinal logit models in a variety of settings allows us to identify the different roles which the structure of the high technology sector, regional economic and amenity variables play in the labour mobility of these workers. Our findings show that structure of the high technology sector as well as regional economic and amenity variables do have a clear influence on the migration decisions of the high technology workers, although their roles vary in different contexts.

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## **Increasing Returns to Scale in Manufacturing Industry: A Case Study of Thailand**

Nat Tharnpanich  
Cambridge University

As a fast-growing newly industrialised economy, Thailand has a lot to offer to the literature on regional growth and productivity. This paper investigates the spatial distribution of manufacturing industry and income in Thailand and finds that both have become more spatially concentrated over time despite the endless effort by the government to redistribute the wealth. To account for the growing spatial inequality, the paper goes on to estimate Verdoorn's law using Thailand's manufacturing data at provincial and district levels. The Verdoorn law is found to hold for the manufacturing industry both at the aggregate and sector levels as well

as at the provincial and district levels. This suggests that increasing returns to scale are prevalent. However, the district-level estimation generally yields better results and gives the Verdoorn coefficient that is closer in value to the traditional value of approximately 0.5 in the literature. This suggests that the estimation at district level is more appropriate and a district in Thailand is, on average, likely to be more comparable in size to Functional Economic Area suggested by McCombie and Roberts (2007) as the most appropriate spatial level at which the static and dynamic Verdoorn law should be estimated. Based on this, it is recommended that future research test the static-dynamic Verdoorn law paradox using the same data set. It is hoped that the paradox will be solved by the use of the district-level data.

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### **Studying micro and macro effects of regional economic developments in the energy sector in the Western Isles of Scotland**

Eveline van Leeuwen<sup>1</sup>, Graham Clarke<sup>2</sup>, Grant Allan<sup>3</sup>, Peter McGregor<sup>3</sup>, Dmitris Ballas<sup>4</sup> and Kim Swales<sup>3</sup>

1. Free University Amsterdam
2. University of Leeds
3. University of Strathclyde
4. University of Sheffield

There is much interest in the energy sector of Scotland as it attempts to be self-sufficient by the year 2030. Hence, there is currently a great deal of investment in the sector throughout Scotland. The aim of this paper is to explore the regional and local implications of some of these investments, concentrating on the Western Isles.

To achieve this, we first employ a regional input-output model, which examines the broad impacts of job gains in the region. This includes a discussion of the multiplier effects.

We also build a spatial microsimulation model, which reproduces the known household attributes, especially those related to employment. By constructing a journey to work model, we are able to link those households to key-employers and employment centers. Thus it is possible to disaggregate the effects of job growth from the region, i.e. the outputs of the input-output model, back to the localities, through this employment household link. The paper concludes by illustrating the power of the methodology through a presentation of key-outputs, at different spatial scales.

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## **Please, stand on the right: are Dutch recent graduates stepping off the escalator faster?**

Viktor Venhorst and Jouke van Dijk

Faculty of Spatial Sciences, University of Groningen

Attracting and retaining the higher educated, both fresh out of university as well as at advanced stages of their careers, is a key focus of local policymakers. A recent study on university-to-work migration for the Netherlands has demonstrated that, during the first years after a given cohort's graduation, Dutch college and university towns are capable of retaining significant proportions of the graduates that have completed a degree program at the local higher education institution. Furthermore, especially those cities that are located in the central parts of the country attract graduates to their labour markets that have completed a program elsewhere.

However, this positive short-term net-retention does not imply success on the longer term. Whereas on the short term after graduation, many alumni appear to be focused on the (labour market) opportunities that are available in cities, on the medium to longer term other factors, such as family formation processes, start to play a role. This in turn leads to further migration to better align the demands on the residential location that stem from the various domains in the life course.

Larger cities, such as Amsterdam, have noted what appears to be a growing number of highly skilled households leaving the city to live in nearby smaller scale communities. At the same time, a recent study for the Netherlands suggested that working couples are evaluating the city climate more favourably.

In this paper, we use data from the Dutch population registry and the Dutch Higher Education register to study the migration patterns of a number of cohorts of higher education graduates. Tracking these individuals up to 10 years after leaving their higher education institution, we aim to shed light on the tempo and quantum of migration into, and out of, the larger cities in the Netherlands. We relate these migration flows to the performance of migrants and stayers on the (local) labour market, the presence of a partner and their socio-economic characteristics, and the presence of children in the household. Are younger cohorts indeed moving out of larger cities in greater numbers? Or are they post- or even speeding up the move out of the larger cities, compared to their forbearers? Or, thirdly, have Dutch larger cities become less successful over time in attracting recent graduates to begin with? Using this cohort approach, we attempt to identify and disentangle the changes in these different migration patterns. In doing so, we aim to contribute to the understanding of the evolving escalator function that cities have in the Dutch economic system.

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## **Can the U.S. Achieve Energy Independence and Should That be The Goal of Public Policy?**

Bernard Weinstein

Cox School of Business, Southern Methodist University, Dallas

Every American president since Richard Nixon has chanted the mantra of energy independence, and today this appears to be an achievable goal. Domestic oil production reached its highest level since 1991 last year while natural gas output set a record for the fifth consecutive year. By the end of the decade, according to a recent forecast by the International Energy Agency, America may surpass Saudi Arabia to once again become the world's largest oil producer.

As a result of growing domestic production, oil imports have declined from 60 percent of U.S. consumption to about 40 percent over the past five years with less than one-fifth coming from outside the western hemisphere. But is the pursuit of "energy independence" good public policy?

This paper will challenge the assumption that energy independence will be beneficial to the American economy. Instead it will provide an alternative perspective that views North America's newfound energy abundance as an opportunity to create a more competitive international market for oil and gas that, in turn, can stimulate the global economy in ways that will benefit both producing and consuming countries.

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## **Sub-Regional Trends in British Inward FDI: A Spatial Analysis**

Colin Wren and Jonathan Jones

Newcastle University

A notable feature of the composition of foreign direct investment (FDI) over recent years is a structural shift towards the service sector (Riedl, 2010), with the fastest growth occurring in developed countries (UNCTAD, 2004). This is especially noticeable for Great Britain, which internationally is one of the most attractive locations for FDI, where services now account for about three-quarters of inward FDI. However, relatively little is known about the location of this service FDI, particularly at a sub-regional level. This paper analyses FDI location at the NUTS 2 level for Great Britain over 1996-2005, which covers the strong growth in service FDI. To our knowledge it is the first time it has been analysed at this level. The study makes use of FDI project data supplied by UK Trade and Investment, identifying the sub-regional location of about 5,400 investments at a NUTS 2 level. This is for new 'greenfield' FDI and major expansions to existing facilities.

Exploratory spatial analysis techniques are used to examine the location pattern of this investment, and transition matrices are used to analyse FDI convergence in location over time relative to the distribution of economic activity. Like manufacturing, service FDI tends to locate in northeast England, Scotland and Wales, but also in southeast England, and a similar pattern exists when FDI is considered in terms of its scale or relative to the economic size of regions. However, while there is significant positive spatial autocorrelation for manufacturing FDI, suggesting that it locates at a NUTS 1 level, service FDI locates in and around the major urban areas at a NUTS 2 level, reflecting market access. Over time we observe convergence in location. Service FDI is spreading out from

the urban areas, but in contrast to manufacturing FDI, which is shifting from North-to-South, reflecting the weakening of UK regional policy.

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### **Electricity Demand forecast: A case study of repowering option in Shetland Islands**

Cathy Xin Cui and Kim Swales

Fraser of Allander Institute, University of Strathclyde

Shetland Islands are not physically connected to the GB electricity system. The existing Lerwick Power Station (LPS) that supplies the isolated island network of Shetland requires to be replaced as a consequence of on-going environmental issues that are a result of the ageing nature of the plant and its associated infrastructure. The capacity required for the new fossil-fuel power plant would be influenced by the Energy Policy Trilemma; the implications of Viking windfarm, Northern Isles New Energy Solutions (NINES), and Sullom Voe Terminal (SVT); demographic and economic changes in Shetland Islands.

We use a single region input-output (IO) framework to serve a platform for forecasting the growth in the future electricity consumption in Shetland Islands with considering all the key influencing factors. We define three scenarios of future energy growth in Shetland Islands: altered composition of households; increase in gas and carbon prices; new demand from SVT.

Our economic analysis would provide the supporting information for both policy (Ofgem) and business (SSE) in their energy decision-making process.

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### **The Effect of Regional Knowledge Spillover on the GDP Growth of Chinese Regions.**

Zheng Xiao

University College Cork

Knowledge spillovers are an important mechanism underlying endogenous growth. This paper tests the hypothesis that knowledge spillovers have a positive effect on the GDP growth rate of Chinese regions. As knowledge is subject to spatial decay, the innovation of a region is enhanced when proximity to other regions encourages the formation of regional knowledge and information flows. Applying a Spatial Autoregressive Model and a Spatial Durbin Model to China's provinces, this paper finds that regional knowledge spillovers have a favourable effect on GDP, which indicate that proximate location to innovative neighbours can help to raise the GDP growth rate of a province. The data comes from "China Statistical Yearbook". Data on regional GDP, patents, employment, R&D expenditure and capital will be used. Data from 2001 to 2011 in 31 Provinces in mainland China will be used in the analysis. Regions which benefit from knowledge spillovers are expected to perform better than regions with limited access to knowledge spillovers. This analysis is particularly topical as, in the past

few years; the Chinese government has shifted to more domestic drivers of innovation through the introduction and implementation of science and technology policies. This in turn has encouraged the geographical spread of knowledge and patenting activities away from traditional innovation centres.