

Dipartimento di Metodi e modelli per l'economia, il territorio e la finanza (Memotef)

Quinta Giornata della ricerca (28 febbraio 2013)

Abstracts

Economia società e ambiente (discussant Alberto Zuliani)

Maria Caterina Bramati (con Giorgio Alleva e Flaminia Musella)

Modeling environmental contrasts of resource uses in urban coastal areas

The aim of this work is to study the links between urban development in all its components, both related to environment and human activities, and the occurrence of various types of contrasts between residents, institutions and developers. The case studies analysed relate to conflicts in various urban coastal areas of some European and Asian countries. A conceptual framework is formulated and taken to data by a quantitative approach. The econometric model here proposed aims not only to describe the connections between conflicts and urban development, but also to forecast future contrasts according to various scenarios of environmental and demographic changes.

Maria Rita Sebastiani

Measuring the society's development in the Italian regions

Recently, an international debate has arisen about the most appropriate methods for measuring the society's development. Indeed, there is a widespread opinion that this measure should not be only based on economic variables (such as the GDP), but also on social and environmental indicators. In Italy, Cnel and Istat have constituted a research project for measuring the so-called benessere equo e sostenibile (fair and sustainable welfare). They have defined 12 dimensions of the well-being (dimensioni del benessere) and, for each of them, they have proposed some indicators (134 variables).

Here we propose a statistical method for measuring the geographical variability of the society's development in the Italian regions, following the approach of the Cnel-Istat's project. Firstly, we select the variables whose data are released with geographical details. Then, we apply some appropriate statistical methods to remove the redundant information and to determine the degree of development of each region. Finally, we apply a suitable index for measuring the geographical variability.

Simone Bonamici

Alcune riflessioni geoeconomiche sull'interdipendenza delle regioni italiane nel settore dell'energia elettrica

Scopo del contributo è quello di studiare i livelli di interdipendenza delle regioni italiane nel settore dell'energia elettrica. Tali considerazioni saranno effettuate alla luce delle nuove linee della Strategia energetica nazionale, che pone come uno dei suoi pilastri il rilancio del settore energetico sia in termini trasversali all'intero sistema economico, sia quale settore specifico di rilancio dell'economia nazionale. In questa prospettiva, alla luce del ruolo che rivestono le regioni del Mezzogiorno italiano, quali esportatrici nel settore elettrico alla scala nazionale, emerge un significativo potenziale di sviluppo per le stesse regioni, perseguibile attuando una politica di potenziamento infrastrutturale e di accrescimento dell'interrelazioni con i paesi produttori di fonti

primarie dell'area del Mediterraneo e del Medioriente. La riqualificazione ed il potenziamento degli impianti di generazione elettrica alla scala regionale, potrebbe innescare un processo di diffusione di vantaggi competitivi alla scala nazionale, agendo sul differenziale dei costi dell'energia elettrica tra l'Italia ed il resto dei paesi europei.

Mauro Rota (con L. Spinesi¹)

At the Onset of the Original Capital Accumulation

The original capital accumulation is associated to an early rise in per capita GDP which is crucial for the transition from the Malthusian regime to self-sustained growth. The paper explains the previous transition looking at the major transformations occurred in the manufacturing production: disintegration of Guilds, emergence of proto-industry, and the industrious revolution. These changes are driven by the behavior of the merchant-entrepreneur who exploited both the lower wages paid in the countryside and the increase in the supply of labor in order to boost the profit rate thereby to accumulate capitals.

Our model provides evidence that British economy escaped the Malthusian trap even before the Classical Industrial Revolution. Moreover, for the first time we derive a possible mechanisms underlying the transition from the post-Malthusian regime to the sustained growth model providing an endogenous explanation of a rise in income per capita caused by the behavior of the merchants-entrepreneurs.

Edoardo Di Porto (con Vincent Merlin² e Sonia Paty³)

The Impact of Fiscal Revenues on Local Cooperation

Cooperation among local governments has been encouraged to enable the aggregation of resources and improved public sector efficiency. However, if cooperation through the joint delivery of local public services is likely to be welfare enhancing for the agglomeration, but will lead to losses for one of the parties, it is unlikely that the losing municipality will cooperate voluntarily. Using a unique panel dataset of 30,000 French municipalities for 1995-2003, we estimate the relationship between cooperation decision and fiscal revenues. We find evidence that a positive difference between the expected fiscal revenues of a cooperating locality and the actual revenues realized by an isolated locality significantly increases the probability of joining an inter-municipal community.

Econometric modeling of the determinants of cooperation can be complicated because fiscal revenues and cooperation decision in practice are simultaneous. To address this problem of simultaneity (or reciprocal causation) as well as other econometric issues related to the economic setting, we propose a new applied econometric strategy based on the seminal idea in Lee (1978) and developed by Brueckner and Follain (1988), which we augment to account for the panel structure of our data. We follow Papke-Wooldridge (2008) in developing a bivariate panel model with endogenous covariates and fixed effects. We provide a careful explanation of the econometric procedure used and address the standard errors issue.

Adriana Conti Puorger

Studio per una caratterizzazione del policentrismo tra prossimità fisica e attributi relazionali in alcune aree urbane italiane

Il lavoro attraverso l'uso di alcuni strumenti di statistica territoriale si propone di oggettivare, partendo dai dati di copertura del suolo, una misurazione sui diversi modelli della struttura

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dell'area metropolitana: monocentrica o policentrica. La prossimità è intesa, dunque, alla scala dei Sistemi Locali del Lavoro dei Grandi Comuni, come sono stati individuati dall'ISTAT nel censimento 2001. La prossimità, infatti, non risiede nella caratteristica della mera vicinanza, ma porta l'impronta della relazione tra due entità. Il dibattito circa la delimitazione di un'area metropolitana ha, infine, contribuito ad orientare la scelta delle realtà oggetto di analisi. L'area metropolitana, come è noto, non è un accadimento semplicemente insediativo: sono le funzioni strategiche e i flussi che surclassano la dimensione urbana e proiettano il sistema nel panorama globale le sue determinati. I sistemi locali dei grandi comuni sono realtà territoriali che inglobano quella parte di flussi definita dal pendolarismo, e la loro dimensione di popolazione suggerisce una divisione del lavoro e delle economie esterne di scala che presuppongono un orientamento di tipo metropolitano.

La presenza di salti o se si vuole di soluzioni di continuità sia fisici che nel sistema economico funzionale di tali entità permette di asserire che le "orme rimasero invisibili", intendendo che gli effetti esplicitati delle funzioni urbane sono proiettati a grandi distanze. Si ha dunque la necessità di trovare una misurazione di prossimità che indichi appartenenza o meglio integrazione di una porzione di un territorio con l'area metropolitana al di là della sola distanza lineare e della contiguità ma, contestualmente, non si può prescindere da una identificazione territoriale, anche se ci si volesse intrattenere con le "meta-città" (G. Martinotti, 2006). Nel lavoro si attribuisce la capacità di esprimere questa "integrazione per salti" ai sistemi locali del lavoro (SLL). Su tali areali, attraverso una misurazione degli usi del suolo contenuti nella banca dati di Urban Atlas (2006), si sono costruiti degli indicatori per poter qualificare la tipologia di modello insediativo funzionale delle aree metropolitane osservate. Uno dei limiti della banca dati Urban Atlas è di non permettere analisi diacroniche. Nel lavoro si è cercato di aggirare tale ostacolo integrando i risultati ottenuti con le informazioni desumibili dalla banca dati Corine Land Cover (CLC). E' attraverso una analisi diacronica che si cercano le traiettorie per esplicitare le prossimità alla scala intra-regionale. Il progetto CLC risale al 1990 (CLC90), mentre gli aggiornamenti successivi si riferiscono all'anno 2000 e 2006. Nel lavoro sono riportati i primi risultati ottenuti che saranno oggetto di successive indagini e qualificazioni in quanto parte di un più ampio progetto di ricerca.

Progetti di valenza nazionale ed internazionale in ambito linguistico
(discussant Rita Salvi)

Panel presentation of PRIN 2008-2010 results and the publication "Space, time and the construction of identity: discursive indexicality in cultural, institutional and professional fields".

Rita Salvi

The contribution of the Rome English Research Unit in the PRIN 2008 project

Rita Salvi presents a short description of the most recent PRIN English language and linguistics project, and more specifically the contribution of the Sapienza Rome Research Unit, which has been a long-standing partner in national research projects (from 2003), together with the Universities of Bergamo, Modena and Reggio Emilia, Firenze, Siena, and the 'Orientale' of Naples. She will briefly outline the parameters of the research, the investigative links between language and discourse with social, communicative achievements in terms of identity construal and its concomitant aspects of face, image and reputation. The Rome Unit project was based on the

compilation of a set of original, specialized corpora in the fields of institutional, academic, financial and business discourse: academic lectures, company and university websites, multimedia corporate communications, EU financial reports, and argumentative computer-disseminated written texts, and these will be briefly over-viewed.

Janet Bowker

Approaches, methodologies and analytical tools used in the PRIN 2008 English Linguistics Research Group

Janet Bowker outlines the approaches, methodologies and analytical tools used in the PRIN Sapienza research group, these being different blends of quantitative and qualitative methods. She will demonstrate the validity and necessity of effective integration of computer-based electronic identification of linguistic, discursive features with their interpretation, through the application of a range of appropriate linguistic, socio-linguistic and pragmatic models and descriptive frameworks. A short example will be presented from her own contribution to the project, "Multimodal, virtual professional space: 'unboundedness' and 'grounding' in corporate webcasting events".

Chiara Prosperi Porta

Unity in Diversity: The shaping of identities in the annual reports of the ECB and EU member states' central banks

Chiara Prosperi Porta describes her own study in the PRIN project, which consists of an analysis of the Annual Reports of the National Banks of three European Member States, comparing them with those issued by the European Central Bank, from the verge of the financial shock, in 2008, and investigating their evolution through the ongoing recession up to 2011. The aspects of identity and reputation she considers are linked to patterns of institutional communication within the EU, which reflect, at the same time, the cultural diversity and inter-culture which is a distinctive mark of European identity. She explains how a linguistic analysis reveals how the common financial disaster affecting Europe are differently perceived and shaped, both at a national and a supranational level.

Judith Turnbull

Building, enhancing and defending reputation in a corporate website

Judith Turnbull examines how a multinational company, Unilever, an Anglo-Dutch corporation (which produces some of the world's leading consumer products in food and beverages, personal and home hygiene) uses medial spatial and temporal coordinates to build, enhance and defend its reputation in one of the most important channels of business communication available today, the corporate website. In November 2010 Unilever published its Sustainable Living Plan in which it outlined its mission dedicated towards sustainable growth. It was accompanied by a section of Frequently Asked Questions which tackled many of the controversial aspects of multinational business. These FAQs are the subject of this study as they provide an opportunity to see how Unilever positions itself in relation to its "publics" in the face of such challenging issues.

Ersilia Incelli

Managing reputation through the discursive reconstruction of identity: a phraseological approach.

This paper explores the discursive construction of space and identity in a case study regarding two opposing actors, that of the diamond industry and their opponents, namely NGOs. The general aim is to analyze the language used by the actors to spatially position themselves in a social

context which legitimizes their identities; the former, associated with a symbol of 'love and purity', the latter in the role of global 'watchdog'. The study takes a (critical) discourse analytical approach, which is socio-linguistic in nature, in that identity emerges through implicit and explicit interaction with the other. The work carefully analyzes the language used by a corporation which needs to repair a tarnished reputation, and persuade the public of good intentions; likewise, the linguistic strategies adopted by NGOs to publicly expose and dismantle the diamond industry are also investigated. A compiled corpus of approximately 500,000 words is divided into two sub-corpora, one consisting of mainly annual reports and press releases from diamond industry websites; the second consisting of critical reports, newsletters and press releases published on-line by NGOs, namely Global Witness.

The study applies both qualitative and quantitative analyses, but particularly makes use of corpus linguistic methods which illuminate the linguistic patterns across the specialized genres and offer additional perspectives on the understanding of discourse construction. The work is to some extent corpus-driven and phraseological-driven in its observation of how recurrent sequences (multi-word or phraseological units) have pragmatic and/or discourse functions within contextual spaces, and reflect how speakers select different patterns serving different communities and institutional purposes, and according to different ideational positions and identities. Illustrative examples include stance bundles, e.g. we believe that; phrase frames (or congrams) such as, role/in/our and should/industry/the; and lexical collocations e.g. fuel conflict which reflect semantic preference and negative semantic prosody making the discourse highly evaluative.

Corpora mono (FR) e bilingue (FR/IT) e ricerche linguistiche

Marie-Pierre Escoubas-Benveniste (con Oreste Floquet e Sergio Bolasco)

Contribution empirique à l'étude du gérondif et du participe présent en français parlé et écrit

The purpose of our contribution is to study the distribution and use of present participle (i.e. *sortant*) and french "gérondifs" (i.e. *en sortant*) in spoken and written French, which is a question that has not yet been discussed in the literature, as far as we know. By oral French we mean spontaneous oral productions by native speakers including informal and unguided conversations as well as guided oral interactions; by written French, the formal written language used in contemporary newspapers. Empirical data analysis shows evidence that frequency of use and meaning effects of both forms considerably vary according to the type of corpus: both verbal modes are rare in oral speech, they are concentrated on very few verbs and grammaticalized forms. More over their distribution over spoken and written language show a reverse tendency, "gérondifs" being more frequently used than present participles in spoken French whereas present participles are more numerous than gérondifs in written French. This fact could explain why "gérondif" forms may take over some values usually attributed to present participles in written French. The data used for the linguistic analysis – verbal forms and their concordances extracted from corpora of oral and written French– are the results of a semi-automatic computer assisted analysis via TaLTaC2, performed on non lemmatized corpora following a procedure of graphical forms extraction through local grammar based queries, categorization, lexicalization of the verbal forms and retrieval of the concordances.

Oreste Floquet⁴

Verso un corpus bilingue italo-francese per lo studio del linguaggio della finanza. Presentazione del progetto FARI 2011

Oggetto della presente proposta di ricerca interdisciplinare riguardante la linguistica, la semiotica, l'economia e la statistica è l'analisi qualitativa e quantitativa del discorso finanziario (a partire dai due più importanti quotidiani del settore Il sole 24 ore e Les Echos) in un'ottica contrastiva italo-francese. Attraverso un'analisi grammaticale e semiotica condotta attraverso le risorse offerte dal software di trattamento statistico di dati testuali, TaLTaC2, si intendono :

- (a) mettere in evidenza le caratteristiche grammaticali e testuali del discorso finanziario francese e italiano facendone emergere i punti di convergenza e di divergenza;
- (b) analizzare il diverso livello emotivo dei testi;
- (c) studiare la funzione semiotica del livello diagrammatico in relazione a quello puramente verbale;
- (d) testare concretamente la possibilità di una correlazione tra struttura contenutistica del testo finanziario e andamento dei titoli in borsa.

<p><i>Metodi e modelli per le applicazioni economiche e finanziarie</i> (discussant Rita D'Ecclesia)</p>

Mauro Bernardi (con Fabio Parlapiano⁵ e Lea Petrella)

Markov-Switching dynamic CAPM

The market risk exposure of firms may change over time according to business cycle phases. Economic conditions may have different impact on the stock market when anticipated by financial downturns. We aim to investigate the time varying path of market risk exposure for different sectors using Markov-switching CAPM. Our focus is to identify firm specific attributes that contribute to explain the sensitivity of stock returns at different phases of the business cycle, in particular, during recessions.

Arsen Palestini (con Luca Lambertini⁶)

On the Feedback Solutions of Differential Oligopoly Games with Hyperbolic Demand Curve and Capacity Accumulation

We characterise the subgame perfect equilibrium of a differential market game with hyperbolic inverse demand where firms are quantity-setters and accumulate capacity over time à la Ramsey. The related Hamilton-Jacobi-Bellman are solved in closed form both on infinite and on finite horizon setups and the optimal strategies are determined. Then, we analyse the feasibility of horizontal mergers in both static and dynamic settings, and find appropriate conditions for profitability of mergers in both circumstances. Static profitability may imply dynamic profitability. It appears that such a demand structure makes mergers more likely to occur than they would on the basis of the standard linear inverse demand.

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Gabriele Stabile (con Francesca Aurelio, Maria B. Chiarolla, Giorgio Ferrari⁷)

Optimal procurement strategies for a storable commodity

This paper develops a model for the procurement of a traded commodity, i.e. for the problem of a wholesale that procures a single storable commodity and earns revenues by selling to retailers at a prescribed future time T .

To meet the random demand at time T , the wholesale may purchase the commodity on the spot market (which provides the immediate delivery of the good) at any time during the period. Then, he might pay the cost of maintaining the inventory up to the terminal time T . The wholesale aims to maximize the expected profit over all admissible procurement strategies. The spot price is assumed to be an exogenous stochastic process.

Our work falls into the literature related to inventory management strategies, and in particular into recent research field focusing on supply purchases from the spot market in the presence of price and demand uncertainty ([1],[2],[3]). Notice, however, that we do not make any Markovian assumption on the spot price process.

From a mathematical point of view the procurement policy is a nondecreasing stochastic process, not necessary absolute continuous with respect to the Lebesgue measure. Hence, this formulation naturally leads to a singular stochastic control problem with finite horizon.

References:

- [1] Guo, X., Kaminsky, P., Tomecek, P. and Yuen, M. (2011), *Optimal spot market inventory strategies in the presence of cost and price risk*, Mathematical Methods of Operation Research 73, 109-137.
- [2] Nascimento, J.M., Powell, W.B. (2009), *An optimal approximate dynamic programming algorithm for the lagged asset acquisition problem*, Mathematics of Operation Research 34, 210-237.
- [3] Seifert, R.W., Thonemann, U.W. and Hausman, W.H. (2004), *Optimal procurement strategies for online spot markets*, European Journal of Operational Research 152, 781-799.

Maria Giuseppina Bruno, Antonio Grande

A new algorithm for inverting the cumulative distribution function in financial applications

In financial applications involving Montecarlo and QuasiMontecarlo simulations, one of the most common problem is sampling from a given cumulative distribution. In this paper, among the different approaches, we refer to the Inverse Transform method. We propose in particular a new algorithm performing the inversion and we apply it to evaluate and hedge financial derivatives under different assumptions for the underlying assets dynamics.

Silvia Poletti

Semiparametric Bayesian small area estimation based on Dirichlet process priors

The great majority of models for small area estimation are based on mixed effects regression models. Whereas inference on the fixed effects is shown to be robust to deviations from normality, estimation of the random effects is crucial for predicting small area quantities, and the effect on model estimates of parametric assumptions on random effects is shown to be important [8, 4, 7, 6]. Missing covariates can lead to multimodal distributions of random effects; the distribution may also be skewed. Any parametric assumption is difficult to check as it applies to nonobservable quantities.

This contribution examines a Bayesian semi-parametric version of the Fay Herriot model in which the default normality assumption for random effects is replaced by a nonparametric specification,

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namely using a Dirichlet process [5, 1]. The assumption of known sampling variances of the direct estimators, representing an additional major limitation of the Fay-Herriot model, is also considered. In practice, smoothed estimators of such variances, usually by means of generalized variance function approach [3] are used, and then these are treated as known. Following e.g. [9], uncertainty on variances is also introduced in the model, so as to reflect the fact that they are actually estimated from survey data. As in [2] shrinkage is obtained by assuming a common distribution generating the variance parameters.

Viability of the approach and the effect of introducing a flexible specification of the random effects are investigated through an application.

[1] Antoniak, C.E.: Mixtures of Dirichlet processes with applications to Bayesian nonparametric problems. *Ann. Stat.* 2, 1152–1174 (1974).

[2] Dass, S.C., Maiti, T., Ren, H., Sinha, S.: Confidence interval estimation of small area parameters shrinking both means and variances. *Survey Methodology* (2012). To appear.

[3] Dick, P.: Modelling net undercoverage in the 1991 Canadian Census. *Survey Methodology* 21, 45–54 (1995).

[4] Fabrizi, E., Trivisano, C.: Robust linear mixed models for Small Area Estimation. *Journal of Statistical Planning and Inference* 140, 433–443 (2010).

[5] Ferguson, T.S.: A Bayesian analysis of some nonparametric problems. *Ann. Stat.* 1(2), 209–230 (1973).

[6] Ghidney, W., Lesaffre, E., Eilers, P.: Smooth random effects distribution in a linear mixed model. *Biometrics* 60(4), 945–953 (2004).

[7] Jara, A., Quintana, F., Martín, E.S.: Linear mixed models with skew-elliptical distributions: A Bayesian approach. *Computational Statistics & Data Analysis* 52(11), 5033 – 5045 (2008).

[8] Ohlssen, D.I., Sharples, L.D., Spiegelhalter, D.J.: Flexible random-effects models using Bayesian semi-parametric models: Applications to institutional comparisons. *Statistic in Medicine* 26, 2088–2112 (2007).

[9] You, Y., Chapman, B.: Small area estimation using area level models and estimated sampling variances. *Survey Methodology* 32, 97–103 (2006).

Maria Rita Scarpitti

La stabilità finanziaria dell'impresa assicurativa: Solvency II

The financial stability of the insurance company: Solvency II. This is the minimum solvency margin of an insurance company for which the criteria currently in force have their origin from studies carried out in the 60s. The European Commission intends to review all the rules relating to the prudential supervision of insurance companies. Solvency II Directive, published in the GU dell'UE on 17/12/2009, has a threepillar structure.

Modelli statistici per l'analisi di dati complessi

(discussant Brunero Liseo)

Maria Felice Arezzo (con F. Divino)

Lavoro nero: un approccio attraverso un modello bayesiano per dati di sola presenza

Uno degli argomenti attualmente al centro del dibattito economico e politico del nostro Paese è quello sulla lotta all'evasione scale in tutte le sue forme. Un particolare aspetto dell'evasione, è l'impiego del lavoro nero: in tal caso, infatti, il datore di lavoro evade per intero i contributi

obbligatorie per il lavoro dipendente. Si comprende l'importanza di uno studio finalizzato ad incrementare l'efficacia e l'efficienza dell'attività svolta dagli ispettori del lavoro. L'assunto di fondo è che sia migliorabile la capacità degli ispettori di comprendere quali imprese ispezionare, perché più propense all'irregolarità, basandosi sull'utilizzo di strumenti di data intelligence ovvero di un complesso di attività che vanno dalla integrazione di archivi di dati di fonte differente alla estrazione di informazione rilevante effettuata attraverso metodi e modelli statistici avanzati. L'idea di fondo su cui si basa il presente lavoro è che si possa stimare la probabilità della presenza di lavoro sommerso attraverso lo studio della relazione tra l'esito delle attività ispettive e una molteplicità di caratteristiche delle imprese, della loro attività produttiva e del territorio nel quale si trovano ad operare.

Un passo preliminare per l'effettuazione dello studio è rappresentato pertanto dall'implementazione di una base di dati che derivi dall'abbinamento delle informazioni sull'esito dei controlli e di una serie di caratteristiche delle imprese che consentano di determinare indicatori del rischio di lavoro sommerso. Da un punto di vista metodologico, il problema principale è il fatto che le imprese ispezionate non sono un campione casuale della popolazione di imprese italiane. Al contrario, si tratta di un insieme fortemente selezionato. Le inferenze condotte su tale insieme sono, pertanto, non immediatamente estensibili alla popolazione. I dati di sola presenza (presence-only data) si riferiscono a situazioni applicative in cui, come nel caso in esame, una variabile binaria può essere osservata solo rispetto ad alcuni valori di presenza. In tutti questi casi il problema si può affrontare se sono disponibili informazioni correlate alla variabile binaria di interesse sotto forma di covariate esplicative. In questa comunicazione presentiamo un nuovo approccio Bayesiano al problema dei dati di sola presenza. In particolare proponiamo un modello che partendo dai soli dati osservabili - le presenze - utilizzando un disegno campionario di tipo caso-controllo modificato consente di stimare congiuntamente l'effetto delle covariate esplicative alla prevalenza incognita della stessa variabile binaria.

Serena Arima

Item selection via Bayesian Item Response Models

The number of items included in a questionnaire is usually large, leading to a time consuming and expensive administration, and possibly inaccurate response. The main goal of this paper is to define a model-based procedure for reducing the number of items in a questionnaire so that its reduced version has the same characteristics in terms of latent trait evaluation of the complete one. We propose a mixed ordered logit model, known in the psychometrics literature as polytomous item response model: the responses to the different items are modelled as function of the individual latent trait (e.g. the cleverness) and as function of items characteristics, such as their difficulty and their discriminant power. We model the difficulty and the discriminant parameters jointly using a mixture of k bivariate Normal distributions. The items are clustered according to the mixture: items belonging to the same mixture component can be considered equivalent and some of them can be selected in the reduced version of the questionnaire without losing information. The model is estimated using a fully Bayesian approach and the choice of the number of mixture components is justified according to information criteria. The item selection procedure is compared with the one proposed in the recent paper Bartolucci et al. (2012) and applied to a questionnaire for the quality of life in dysarthric speakers.

Annalisa Cerquetti

A full bayesian nonparametric approach to capture-recapture experiments with heterogeneity

We investigate the possibility to adapt the Bayesian nonparametric approach to species sampling problems for a full Bayesian nonparametric treatment of the problem to estimate the size of a closed population. We rely on the analogy between surveys of species occurrence and capture-recapture studies of closed animal populations.

By interpreting components of a closed population as different species, their probabilities to be captured at the first trapping occasion as the unknown relative abundances of different species, and the number of recaptures of the first k captured individuals as the observed frequencies of the first k different species, all the results for species richness BNP estimation under Gibbs priors may translate in results for BNP population size estimation.

Overcoming typical limitations of standard capture-recapture methodologies, this approach naturally allows to account for heterogeneity among individuals and to incorporate the effect of the previous history of captures by updating the probability to detect a single already captured individual at each step in the sampling process.

Flaminia Musella

A proposal to learn a Bayesian network from ordinal data

Bayesian networks are graphical models that represent the joint distribution of a set of variables using directed acyclic graphs. The graph can be manually built by domain experts according to their knowledge. However, when the dependence structure is unknown (or partially known) the network has to be estimated from data by using suitable learning algorithms. We deal with a constraint based method to perform Bayesian networks structural learning in the presence of ordinal variables. We propose an alternative version of the PC algorithm, which is one of the most known procedures, with the aim to infer the network by accounting for additional information inherent to ordinal data. The proposal is based on a nonparametric test, appropriate for ordinal variables. A comparative study will show that, in some situations, our proposal is a more efficient solution than the PC algorithm.

Andrea Tancredi (con Caterina Conigliani⁸ e Andrea Manca⁹)

Prediction of health related quality of life measures via multivariate ordered probit models

Generic health status measures such as the SF-12 are typically used in clinical studies to capture important information about an individual's health-related quality-of-life (HRQoL). Unfortunately, this measure cannot be used to estimate quality-adjusted life-years (QALYs) when a preference-based valuation of this instrument does not exist. In these circumstances to obtain a cost per QALYs gained figure, it is common for the analyst to use a 'mapping' algorithms to derive a specific preference-based HRQoL measure from the SF-12 scores. In the UK, the National Institute for Health and Clinical Excellence has identified in the EQ-5D the preferred preference-based HRQoL measure to be used as part of the technology assessments prepared for the Institute. Here we consider the problem of directly predicting EQ-5D responses rather than utility values (sometimes referred to as 'response mapping') from the SF-12, while recognising both the likely dependence between the five dimensions of the EQ-5D responses at the patient level, and the fact that the levels of each health dimension are naturally ordered. For this purpose we develop a multivariate ordered probit regression model and compare this with alternative models which have been proposed by others to analyse these data.

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Migrazioni e sviluppo regionale (discussant Alessandra De Rose)

Stefano Patri

The simple analytics of optimal growth with migration

This paper investigates the economic consequences of illegal migration in the Ramseytype dynamic optimizing context. In contrast to the conclusions of an article of Hazari and Sgro (2003), we show that with a Cobb-Douglas production function illegal migration unambiguously reduces the per-capita domestic consumption growth, whereas necessarily raises the long-run per-capita consumption of domestic residents when production is sufficiently reactive to capital changes. Our findings are consistent with several empirical studies and simulation analyses, suggesting that changes in technological adjustment in response to migrants inflows may take some years to translate into productivity, generating some crowding out effects. The gains for natives are likely to materialize in the long run when the specialization of natives adjusts, firms invest in capital and adopt appropriate technologies.

Raffaella Coletti

Bordering and crossbordering processes along the EU's external frontiers: the case of Italy-Tunisia

Presentazione dello stato di avanzamento del progetto europeo EUBORDERREGIONS, coordinato da Filippo Celata per l'Università La Sapienza. Presentazione di alcuni risultati dell'indagine sul quadro geopolitico dell'Unione Europea e il suo vicinato, e in particolare degli aspetti che costituiscono il quadro teorico e metodologico di riferimento per lo studio di caso (attualmente in corso) sulla frontiera tra Italia e Tunisia. Riflessioni preliminari sul caso studio, incentrato sulle relazioni transfrontaliere e le iniziative di cooperazione transfrontaliera finanziate dall'Unione Europea.

Elena Ambrosetti, Cristina Giudici, Angela Pappasuso¹⁰

The Return Intentions of North African Migrants in Italy

Migrants return intentions are directly linked to the integration in the receiving country but also to the migratory project that is behind the initial migration and to the presence (or absence) of family members in the country of origin (or destination). The latter may imply the so called "pendulum migration" (de Haas H., Fokkema T., 2010), i.e. migrants that spend a part of the year in their country of origin, even if they reside legally in Europe where they spend the rest of the year. The aim of this work is to shed light on return intentions of the North African migrants in Italy, exploring their evolution eventually linked to the Arab springs.

In order to answer to our research questions, we use a mix of qualitative and quantitative methods. We lead a quantitative multivariate analysis on return intention of North Africans migrants in Italy, based on the 2009 Survey on Income and Living Conditions (SILC). Qualitative analysis based on interviews to North Africans migrants in Italy will be used to better understand the "pendulum migration" phenomenon and the consequence of Arab springs on return intentions.

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Filippo Celata

Migration, firms (re)location and entrepreneurial mobility in Italy (l'intergazione degli archivi ASIA per l'analisi dei percorsi di localizzazione e di specializzazione dell'imprenditoria immigrata)

The paper presents an empirical investigation on the extent, the logic and the spatiality of migrant entrepreneurship in Italy. It addresses the case of both international and internal entrepreneurs' migration comparatively and provides an analysis of how their spatial concentration and specialization patterns evolve through time. By comparing these patterns with those due to new firms formation and old firms' survival and relocation, the aim is to appreciate the distinctive character of migrant entrepreneurship and the multiple dimensions of entrepreneurial mobility.