2012/1 Rethinking regulatory capture
Per J. AGRELL and Axel GAUTIER

Conventional capture models rely on the idea that regulator is induced to lenient behavior by the regulated firm through offers of monetary transfers, the bribery model, or future employment, the revolving doors model. To avoid socially costly capture, the political principal should then either implement collusion-proof mechanisms through the delegation of welfare gains, or severely restrict the career paths of regulatory staff. The paradox of capture is that neither the two modes of capture, nor the remedy are commonly found in practice. This paper proposes to rethink capture based on the widespread use of industry-commissioned consultants, experts and lobbyists that produce information for regulatory and policy use. A small model (Agrell and Gautier, 2010) introduces a 'soft capture' concept based on a self-enforced collusion between the firm and regulator, linked to the role of the regulator as information-processing intermediate for the political principal. The firm puts processed but biased information at the free disposal of the regulator, 'no strings attached', who can then either use the submitted information or produce a more accurate information by a costly process. Under a set of mild conditions, the equilibrium involves soft capture and the regulator uses the submitted information, leading to some distortions in welfare. A case study of the Occupational Safety and Health Administration (OSHA) in USA serves to motivate and illustrate the model. As shown by the case, the soft capture model may have a stronger positive potential than the conventional models, also implying that policy advice based on it may be valuable.
JEL Classification: D72, L51
Keywords: regulation, capture, information.

2012/2 Subgradient methods for huge-scale optimization problems
Yu. NESTEROV

We consider a new class of huge-scale problems, the problems with sparse subgradients. The most important functions of this type are piece-wise linear. For optimization problems with uniform sparsity of corresponding linear operators, we suggest a very efficient implementation of subgradient iterations, which total cost depends logarithmically in the dimension. This technique is based on a recursive update of the results of matrix/vector products and the values of symmetric functions. It works well, for example, for matrices with few nonzero diagonals and for max-type functions.
We show that the updating technique can be efficiently coupled with the simplest subgradient methods, the unconstrained minimization method by B. Polyak, and the constrained minimization scheme by N. Shor. Similar results can be obtained for a new non- smooth random variant of a coordinate descent scheme. We present also the promising results of preliminary computational experiments.
Keywords: nonsmooth convex optimization, complexity bounds, subgradient methods, huge-scale problems.

2012/3 The value of multivariate model sophistication: an application to pricing Dow Jones Industrial Average options
Jeroen V.K. ROMBOUTS, Lars STENTOFT and Francisco VIOLANTE

We assess the predictive accuracy of a large number of multivariate volatility models in terms of pricing options on the Dow Jones Industrial Average. We measure the value of model sophistication in terms of dollar losses by considering a set 248 multivariate models that differ in their specification of the conditional variance, conditional correlation, and innovation distribution. All models belong to

the dynamic conditional correlation class which is particularly suited because it allows to consistently estimate the risk neutral dynamics with a manageable computational effort in relatively large scale problems. It turns out that the most important gain in pricing accuracy comes from increasing the sophistication in the marginal variance processes (i.e. nonlinearity, asymmetry and component structure). Enriching the model with more complex correlation models, and relaxing a Gaussian innovation for a Laplace innovation assumption improves the pricing in a smaller way. Apart from investigating directly the value of model sophistication in terms of dollar losses, we also use the model confidence set approach to statistically infer the set of models that delivers the best pricing performance.
JEL Classification: C10, C32, C51, C52, C53, G10
Keywords: option pricing, economic loss, forecasting, multivariate GARCH, model confidence set.

2012/4 Responsibility, freedom, and forgiveness in health care
Aitor CALO-BLANCO

This paper focuses on the optimal allocation between health and lifestyle choices when a society is concerned about both fairness and forgiveness. Based on the idea of fresh starts, we construct a social ordering that permits us to make welfare assessments when it is acceptable to compensate individuals who have mismanaged their initial endowment. Our social rule also allows for the inclusion of the fairness approach in the model, to deal with the well-known clash between the principle of compensation and the principle of reward. Based on ethical principles, we propose the application of a minimax criterion to the distance between the individual's final bundle and an ideal allocation.
JEL Classification: D63, H51, I18
Keywords: fairness, health care, lifestyle preferences, regret, fresh start.

2012/5 The public economics of increasing longevity
Pierre PESTIEAU and Grégory PONTHIERE

One of the greatest success stories in our societies is that people are living longer, life expectancy at birth being now above 80 years. Whereas the lengthening of life opens huge opportunities for individuals if extra years are spent in prosperity and good health, it is however often regarded as a source of problems for policy-makers. The goal of this paper is to examine the key policy challenges raised by increasing longevity. For that purpose, we first pay attention to the representation of individual preferences, and to the normative foundations of the economy, and, then, we consider the challenges raised for the design of the social security system, pension policies, preventive health policies, the provision of long term care, as well as for long-run economic growth.
JEL Classification: H21, H55, I12, I13, J10
Keywords: life expectancy, mortality, public policy.

2012/6 Are clean technology and environmental quality conflicting policy goals?
Thierry BRECHET and Guy MEUNIER

In this paper we analyze the effects of an environmental policy on the diffusion of a clean technology in an economy where firms compete on the output market. We show that the share of adopting firms is non-monotonic with the stringency of the environmental policy, and that the adoption of the clean technology may well

increase the pollution level. We also compare the effects of an emission tax and tradable pollution permits on welfare, technology adoption, and pollution level. We show that, depending on the stringency of the policy, either the tax or the permits can yield a higher degree of technology adoption and pollution. Actually, technology adoption and environmental quality may be conflicting in discriminating among the instruments.
JEL Classification: H23, Q55, Q58
Keywords: innovation, technology adoption, environmental regulation.

2012/7 A new axiomatic approach to the evaluation of population health
Jens L. HOUGAARD, Juan D. MORENO-TERNERO and Lars P. ØSTERDAL

We explore in this paper the implications of ethical and operational principles for the evaluation of population health. We formalize those principles as axioms for social preferences over distributions of health for a given population. We single out several focal population health evaluation functions, which represent social preferences, as a result of combinations of those axioms. Our results provide rationale for popular theories in health economics (such as the unweighted aggregation of QALYs or HYEs, and generalizations of the two, aimed to capture concerns for distributive justice) without resorting to controversial assumptions over individual preferences.
JEL Classification: D63, I10
Keywords: population health, QALYs, HYEs, axioms.

2012/8 Environmental maintenance in a dynamic model with heterogenous agents
Kirill BORISSOV, Thierry BRECHET and Stéphane LAMBRECHT

We assume a population of infinitely-lived households of the economy split into two groups : one with a high discount factor (the patient) and one with a low one (the impatient). The environmental quality is deteriorated by firm's polluting emissions. The governmental policy consists in proposing households to vote for a tax aimed at environmental maintenance. We study the voting equilibrium at steady states. The resulting equilibrium maintenance is the one of the median voter. We show that (i) an increase in total factor productivity may produce effects described by the Environmental Kuznets Curve, (ii) an increase in the patience of impatient households may foster environmental quality if the median voter is impatient and maintenance positive, (iii) a decrease in inequality among the patient households leads to an increase in environmental quality if the median voter is patient and maintenance is positive. We also show that, if the median income is lower than the mean, our model predict lower level of environmental quality than the representative agent model, and that increasing public debt decreases the level of environmental quality.
JEL Classification: D90, Q58, H23, D72
Keywords: intertemporal choice and growth, discounting, government environmental policy, externalities, environmental taxes, voting equilibrium.

2012/9 Competition among the big and the small
Ken-Ichi SHIMOMURA and Jacques-François THISSE

Many industries are made of a few big firms, which are able to manipulate the market outcome, and of a host of small businesses, each of which has a negligible impact on the market. We provide a general equilibrium framework that encapsulates both market structures. Due to the higher toughness of competition,

the entry of big firms leads them to sell more through a market expansion effect generated by the shrinking of the monopolistically competitive fringe. Furthermore, social welfare increases with the number of big firms because the pro-competitive effect associated with entry dominates the resulting decrease in product diversity.
JEL Classification: L13, L40
Keywords: oligopoly, monopolistic competition, product differentiation, welfare.

2012/10 Optimal lifecycle fertility in a Barro-Becker economy
Pierre PESTIEAU and Grégory PONTHIERE

Parenthood postponement is a key demographic trend of the last three decades. In order to rationalize that stylized fact, we extend the canonical model by Barro and Becker (1989) to include two - instead of one - reproduction periods. We examine how the cost structure of early and late children in terms of time and goods affects the optimal fertility timing. Then, focusing a stationary equilibrium with stationary population, we provide two alternative explanations for the observed postponement of births: (1) a fall of the direct cost of late children (thanks to medical advances); (2) a rise in hourly productivity, which increases the (relative) opportunity costs of early children in comparison to late children.
JEL Classification: D10, J13, O40
Keywords: fertility, birth timing, population, dynastic altruism, OLG model.

2012/11 Neural modelling of ranking data with an application to stated preference data
Catherine KRIER, Michel MOUCHART and Abderrahim OULHAJ

Although neural networks are commonly encountered to solve classification problems, ranking data present specificities which require adapting the model. Based on a latent utility function defined on the characteristics of the objects to be ranked, the approach suggested in this paper leads to a perceptron-based algorithm for a highly non linear model. Data on stated preferences obtained through a survey by face-to-face interviews, in the field of freight transport, are used to illustrate the method. Numerical difficulties are pinpointed and a Pocket type algorithm is shown to provide an efficient heuristic to minimize the discrete error criterion. A substantial merit of this approach is to provide a workable estimation of contextually interpretable parameters along with a statistical evaluation of the goodness of fit.
AMS Classification: 62P20
Keywords: neural network, perception, stated preferences, ranking data.

2012/12 Diffusion and contagion in networks with heterogeneous agents and homophily
Matthew O. JACKSON and Dunia LOPEZ-PINTADO

We study how a behavior (an idea, buying a product, having a disease, adopting a cultural fad or a technology) spreads among agents in an a social network that exhibits segregation or homophily (the tendency of agents to associate with others similar to themselves). Individuals are distinguished by their types (e.g., race, gender, age, wealth, religion, profession, etc.) which, together with biased interaction patterns, induce heterogeneous rates of adoption. We identify the conditions under which a behavior diffuses and becomes persistent in the population. These conditions relate to the level of homophily in a society, the underlying proclivities of various types for adoption or infection, as well as how each type interacts with its own type. In particular, we show that homophily can

facilitate diffusion from a small initial seed of adopters.
JEL Classification: D85, D83, C70, C73, L15, C45
Keywords: diffusion, homophily, segregation, social networks.

2012/13 Hawks and doves in segmented markets: A formal approach to competitive aggressiveness
Claude D'ASPREMONT, Rodolphe DOS SANTOS FERREIRA and Jacques THEPOT

Competitive aggressiveness is analyzed in a simple spatial competition model, where each one of two firms supplies two connected market segments, one captive the other contested. To begin with, firms are simply assumed to maximize profit subject to two constraints, one related to competitiveness, the other to market feasibility. The competitive aggressiveness of each firm, measured by the relative implicit price of the former constraint, is then endogenous and may be taken as a parameter to characterize the set of equilibria. A further step consists in supposing that competitive aggressiveness is controlled by each firm through its manager hiring decision, in a preliminary stage of a delegation game. When competition is exogenously intensified, through higher product substitutability or through larger relative size of the contested market segment, competitive aggressiveness is decreased at the subgame perfect equilibrium. This decrease partially compensates for the negative effect on profitability of more intense competition.
Keywords: competitive aggressiveness, competition, strategic behavior, delegation, segmented markets.

2012/14 Household behavior and individual autonomy: An extended Lindahl mechanism
Claude D'ASPREMONT and Rodolphe DOS SANTOS FERREIRA

We present a comprehensive model of household economic decision covering both fully cooperative and non-cooperative cases as well as semi- cooperative cases, varying with income distribution and a parameter vector θ representing degrees of individual autonomy with respect to the public goods. In this model, the concept of "household θ-equilibrium" is introduced through the reformulation of the Lindahl equilibrium for Nash-implementation and its extension to semi-cooperation. Existence is proved and some generic properties derived. An example is given to illustrate. Finally, a particular decomposition of the pseudo-Slutsky matrix is derived and the testability of the various models discussed.
JEL Classification: D10, C72, H41
Keywords: intra-household allocations, household financial management, degree of autonomy, Lindahl prices, local income pooling, separate spheres.

2012/15 Children's health opportunities and project evaluation: Mexico's *Oportunidades* program
Dirk VAN DE GAER, Joost VANDENBOSSCHE and José Luis FIGUEROA

We propose a methodology to evaluate social projects from an (equality of) opportunity perspective by looking at their effect on (parts of) the distribution of outcomes conditional on morally irrelevant characteristics, taken here to be parental education level and indigenous background. The methodology is applied to evaluate the effects on children's health outcomes of Mexico's Oportunidades program, one of the world's largest conditional cash transfer programs for poor households. The evidence shows that the gains in health opportunities for children

from indigenous background are substantial and situated in crucial parts of the distribution, while the gains for children from non-indigenous backgrounds are more limited.
JEL Classification: I18, I38, D63
Keywords: project evaluation, opportunities, Oportunidades program.

2012/16 Health, fairness and taxation
Giacomo VALLETTA

We consider a model where agents differ in their preferences about consumption labor and health, in their (health-dependent) earning ability, and in their health disposition. We study the joint taxation of income and health expenditure, under incentive-compatibility constraints, on the basis of efficiency and fairness principles. The fairness principles we consider propose, on one side, to reduce inequalities deriving from factors that do not depend on individuals' responsibility. On the other side, redistribution should be precluded at least when all agents in the economy have equal physical characteristics. We construct, on the basis of such principles, a particular social welfare function. Then we give the explicit formula for the comparison of tax policies: we prove that a tax reform should always benefit agents with the worst earning ability and the worst health disposition first. Finally, at the bottom of the income distribution the optimal tax scheme should exhibit non-uniform tax rates over health expenditure and non-positive average marginal tax rates over income.
JEL Classification: D63, H20
Keywords: income tax, health subsidies, endogenous skills, policy evaluation, optimal tax, fairness.

2012/17 Long term care insurance and family norms
Chiara CANTA and Pierre PESTIEAU

Long term care (LTC) is mainly provided by the family and subsidiarily by the market and the government. To understand the role of these three institutions it is important to understand the motives and the working of family solidarity. In this paper we focus on the case when LTC is provided by children to their dependent parents out of some norm that has been inculcated to them during their childhood by some exemplary behavior of their parents towards their own parents. In the first part, we look at the interaction between the family and the market in providing for LTC. The key parameters are the probability of dependence, the probability of having a norm-abiding child and the loading factor. In the second part, we introduce the government which has a double mission: correct for a prevailing externality and redistribute resources across heterogeneous households.
JEL Classification: D91, H23, I13
Keywords: norm transmission, long term care, health insurance, optimal taxation.

2012/18 From polygyny to serial monogamy: a unified theory of marriage institutions
David DE LA CROIX and Fabio MARIANI

Consider an economy populated by males and females, both rich and poor. The society has to choose one of the following marriage institutions: polygyny, strict monogamy, and serial monogamy (divorce and remarriage). After having identified the conditions under which each of these equilibria exists, we show that a rise in the share of rich males can explain a change of regime from polygyny to monogamy. The introduction of serial monogamy follows from a further rise in

either the proportion of rich males, or an increase in the proportion of rich females. Strict monogamy is a prerequisite to serial monogamy, as it promotes the upward social mobility of females more than polygyny. We also show that polygyny is compatible with democracy.
JEL Classification: J12, O17, Z13
Keywords: marriage, polygyny, monogamy, divorce, human capital, political economy.

2012/19 Are compact cities environmentally friendly?
Carl GAIGNE, Stéphane RIOU and Jacques-François THISSE

There is a wide consensus among international institutions and national governments in favor of compact (i.e. densely populated) cities as a way to improve the ecological performance of the transport system. Indeed, when both the intercity and intra-urban distributions of activities are given, a higher population density makes cities more environmentally friendly because the average commuting length is reduced. However, when we account for the possible relocation of activities within and between cities in response to a higher population density, the latter may cease to hold. Indeed, an increasing-density policy affects prices, wages and land rents, which in turn incentivizes firms and households to change place. This reshapes the urban system in a way that may generate a higher level of pollution. Thus, although an increase in compactness is environmentally desirable when locations are given, compactness may not environmentally- friendly when one accounts for the general equilibrium effects generated by such a policy.
JEL Classification: D61, F12, Q54, Q58, R12
Keywords: greenhouse gas, commuting costs, transport costs, cities.

2012/20 The asymmetric commodity inventory effect on the optimal hedge ratio
Jean-François CARPANTIER and Besik SAMKHARADZE

Hedging strategies for commodity prices largely rely on dynamic models to compute optimal hedge ratios. This paper illustrates the importance of considering the commodity inventory effect (effect by which the commodity price volatility increases more after a positive shock than after a negative shock of the same magnitude) in modelling the variance-covariance dynamics. We show by in-sample and out-of-sample forecasts that a commodity price index portfolio optimized by an asymmetric BEKK-GARCH model outperforms the symmetric BEKK, static (OLS) or naïve models. Robustness checks on a set of commodities and by an alternative mean-variance optimization framework confirm the relevance of taking into account the inventory effect in commodity hedging strategies.
JEL Classification: G13, C32, Q02
Keywords: BEKK, commodity, asymmetries, hedging, inventory effect.

2012/21 Asymmetric information and overeducation
Concetta MENDOLICCHIO, Dimitri PAOLINI and Tito PIETRA

We consider an economy where production may use labor of two different skill levels. Workers are heterogeneous and, by investing in education, self-select into one of the two skills. Ex-ante, when firms choose their investments in physical capital, they do not know the level of human capital prevailing in the labor market they will be active in. We prove existence and constrained inefficiency of competitive equilibria, which are always characterized by overeducation. An increase in total expected surplus can be obtained by shrinking, at the margin, the

set of workers investing in high skill. This can be implemented by imposing taxes on the cost of investing in high skill or by imposing a progressive labor earning tax.

2012/22 Stochastic signaling: Information substitutes and complements
Tom TRUYTS

I develop a model of stochastic costly signaling in the presence of exogenous imperfect information, and study whether equilibrium signaling decreases ('information substitutes') or increases ('information complements') if the accuracy of exogenous information increases. A stochastic pure costly signaling model is shown to have a unique sequential equilibrium in which at least one type (and possibly all) engages in costly signaling. In the presence of exogenous information, a unique threshold level of prior beliefs generically exists which separates the cases of information complements and substitutes. More accurate exogenous information can induce a less informative signaling equilibrium, and can result in a lower expected accuracy of the uninformed party's equilibrium beliefs. An application to signaling in net- works, in which a social network is the source of exogenous in- formation, qualifies the relation between network characteristics (size, density, centrality, component size) and equilibrium signaling.
JEL Classification: C72, D82
Keywords: monotonic costly signaling, stochastic signaling, noisy signaling, networks, advertising, job market signaling, conspicuous consumption.

2012/23 How to share joint liability: a cooperative game approach
Pierre DEHEZ and Samuel FEREY

Sharing a damage that has been caused jointly by several tortfeasors is analyzed from a normative point of view. We show how a damage can be apportioned on two distinct basis, causation and degree of misconduct. Our analysis uses the concept of *potential damage* on the basis of which we define a transferable utility game. Its core defines acceptable judgments as allocations of the total damage against which no group of tortfeasors can object. We show that weighted Shapley values define acceptable judgments and, vice versa, acceptable judgments reveal weights. Our paper illustrates how the cooperative approach may bring useful insights into legal questions. In particular, the Shapley value appears of special interest being founded on axioms that are in line with fundamental principles of tort law.
JEL Classification: K13, C71, D63
Keywords: tort law, core, Shapley value.

2012/24 Inequity in the face of death
Pilar GARCIA-GOMEZ, Erik SCHOKKAERT, Tom VAN OURTI and Teresa BAGO D'UVA

We apply the theory of inequality in opportunity to measure inequity in mortality. Our empirical work is based on a rich dataset for the Netherlands (1998-2007), linking information about mortality, health events and lifestyles. We show that distinguishing between different channels via which mortality is affected is necessary to test the sensitivity of the results with respect to different normative positions. Moreover, our model allows for a comparison of the inequity in simulated counterfactual situations, including an evaluation of policy measures. We explicitly make a distinction between inequity in mortality risks and inequity in mortality outcomes. The treatment of this difference - “luck” - has a crucial

influence on the results.
JEL Classification: D63, I12, I14
Keywords: equity, equality of opportunities, mortality, lifestyle.

2012/25 A stochastic independence approach for different measures of concentration and specialization
Christian HAERO and Michel MOUCHART

From data in the form of a two-way contingency table “Regions × Sectors”, the concepts of specialization and concentration, built from the analysis of conditional distributions or profiles, is based on discrepancies among distributions: between profiles and a uniform distribution for absolute concepts; between profiles and the corresponding marginal distribution for the relative concepts; or between the joint distribution and the product of the marginal distributions for the global concept. This paper provides an extensive numerical analysis of measures derived from this approach and from other approaches used in the literature and shows that while the different measures under consideration display rather similar numerical behaviours, differences of ranking call for a particular care when interpreting the numerical results.
Keywords: absolute, relative and global specialization, industrial concentration, polarization, localization, stochastic independence, contingency tables.

2012/26 Empirical approaches to inequality of opportunity: principles, measures, and evidence
Xavier RAMOS and Dirk VAN DE GAER

We put together the different conceptual issues involved in measuring inequality of opportunity, discuss how these concepts have been translated into computable measures, and point out the problems and choices researchers face when implementing these measures. Our analysis identifies and suggests several new possibilities to measure inequality of opportunity. The approaches are illustrated with a selective survey of the empirical literature on income inequality of opportunity.
JEL ClassificationD3, D63
Keywords: equality of opportunity, measurement, compensation, responsibility, effort, circumstances.

2012/27 Arrow's theorem of the deductible: moral hazard and stop-loss in health insurance
Jacques H. DRÈZE and Erik SCHOKKAERT

We show that the logic of Arrow's theorem of the deductible, i.e. that it is optimal to focus insurance coverage on the states with largest expenditures, remains at work in a model with ex post moral hazard. The optimal insurance contract takes the form of a system of "implicit deductibles", i.e. it results in the same indemnities as a contract with full insurance above a variable deductible positively related to the elasticity of medical expenditures with respect to the insurance rate. In a model with an explicit stop-loss arrangement, i.e. with a predefined ceiling on the annual expenses of the insured, this stop-loss takes the form of a deductible, i.e. there is no reimbursement for expenses below the stop-loss amount. One motivation to have some insurance below the deductible arises if regular health care expenditures in a situation of standard health have a negative effect on the probability of getting into a state with large medical expenses.
JEL Classification: I13
Keywords: optimal health insurance, deductible stop-loss, moral hazard.

2012/28 Computationally efficient inference procedures for vast dimensional realized covariance models
Luc BAUWENS and Giuseppe STORTI

This paper illustrates some computationally efficient estimation procedures for the estimation of vast dimensional realized covariance models. In particular, we derive a Composite Maximum Likelihood (CML) estimator for the parameters of a Conditionally Autoregressive Wishart (CAW) model incorporating scalar system matrices and covariance targeting. The finite sample statistical properties of this estimator are investigated by means of a Monte Carlo simulation study in which the data generating process is assumed to be given by a scalar CAW model. The performance of the CML estimator is satisfactory in all the settings considered although a relevant finding of our study is that the efficiency of the CML estimator is critically dependent on the implementation settings chosen by modeller and, more specifically, on the dimension of the marginal log-likelihoods used to build the composite likelihood functions.
JEL Classification: C32, C58
Keywords: realized covariance, CAW model, BEKK model, composite likelihood, covariance targeting, Wishart distribution.

2012/29 Incomplete-markets economies: The seminal work of Diamond, Drèze and Radner
Pierre DEHEZ

The present note highlights the seminal contributions of Diamond, Drèze and Radner towards the integration of financial markets into general equilibrium modeling.
JEL Classification: D52, D53
Keywords: incomplete markets, financial markets, general equilibrium.

2012/30 The economics of long-term care: a survey
Helmuth CREMER, Pierre PESTIEAU and Grégory PONTHIÈRE

This paper surveys recent theoretical economic research on long term care (LTC). LTC differs from health care: it is about nursing; it is mostly provided by unpaid caregivers (mainly spouses and children), whereas both the market and the State play a modest role. The future of LTC appears to be gloomy: sustained population ageing and recent societal trends (*e.g.,* children's mobility, changes in family values) generate a mounting demand on the State and on the market to provide alternatives to the family. In this paper, we review these causes, and the extent to which we can expect them to fade away in the future. We then turn to the design of a sustainable public LTC scheme integrating both the market and the family.
JEL Classification: I11, I12, I18, J14
Keywords: long term care, social insurance, dependence, family solidarity.

2012/31 Relaxations for two-level multi-item lot-sizing problem
Mathieu VAN VYVE, Laurence A. WOLSEY and Hande YAMAN

We consider several variants of the two-level lot-sizing problem with one item at the upper level facing dependent demand, and multiple items or clients at the lower level, facing independent demands. We first show that under a natural cost assumption, it is sufficient to optimize over a stock-dominant relaxation. We further study the polyhedral structure of a strong relaxation of this problem

involving only initial inventory variables and setup variables. We consider several variants: uncapacitated at both levels with or without start-up costs, uncapacitated at the upper level and constant capacity at the lower level, constant capacity at both levels. We finally demonstrate how the strong formulations described improve our ability to solve instances with up to several dozens of periods and a few hundred products.
MSC Classification: 68Q25, 90C11, 90C27, 90C35, 90B05, 90B06
Keywords: mixed-integer programming, lot-sizing, extended formulation, multi-level, multi-item.

2012/32 Equilibria in an overlapping generations model with transfer policies and exogenous growth
Jean-François MERTENS and Anna RUBINCHIK

For an overlapping generations economy with varying life-cycle productivity, non-stationary endowments, continuous time starting at $-\infty$ (hence allowing for full anticipation), constant-returns-to-scale production and CES utility we fully characterise equilibria where output is higher than investment, which is strictly positive. Net assets (aggregate savings minus the value of the capital stock) are constant in any equilibrium, and, for balanced growth equilibria (BGE, defined for an economy with stationary endowments), net assets are non-zero only in the golden rule equilibrium, in accord with [13]. The number of BGE is finite. Their parity, however, depends on the life-cycle productivity, in particular, on the relation between the intertemporal elasticity of substitution, the minimal working age and the minimal tax age.
JEL Classification: D50, E20
MSC classification: 91B62, 91B50
Keywords: infinite economies, overlapping generations, exogenous growth.

2012/33 Pareto optimality of the golden rule equilibrium in an overlapping generations model with production and transfers
Jean-François MERTENS and Anna RUBINCHIK

The main result is that the golden rule equilibrium (GRE) is Pareto optimal (in the classical sense) in an overlapping generations (OG) model with constant-returns-to-scale production, transfers, arbitrary life-time productivity and CES instantaneous felicity. In addition, we extend Cass and Yaari's [10] equivalence between efficiency (aggregate consumption dominance) and the present value dominance (with evaluation made using a candidate equilibrium price path).
JEL Classification: D50, E20
MSC classification: 91B62, 91B50
Keywords: infinite economies, overlapping generations, exogenous growth, golden rule equilibrium.

2012/34 Income distribution and vertical comparative advantage. Theory and evidence.
Hélène LATZER and Florian MAYNERIS

In this paper, we provide a general model discussing the impact of non-homothetic preferences on the vertical comparative advantage of countries, i.e. the existence of demand-based determinants of the quality content of production and exports. We show that while average income positively impacts the quality mix of a country's exports, the impact of inequality depends on the shape of the curve describing the evolution of the income share devoted to high-quality varieties. Along levels of

income where this curve is increasing and convex, inequality increases aggregate demand for high quality varieties, more and more rapidly along income. Our empirical results on the quality content of bilateral export flows within the enlarged EU confirm our theoretical predictions. We show that a country's income distribution has a significant impact on the quality of its exports. Moreover, the impact of inequality on the quality of exports is all the more positive that the exporter is rich. Our estimations are robust to instrumentation and inclusion of controls for supply-side determinants. In a quantification exercise, we show that the positive effect of inequality can be substantial and is magnified when coupled with an increase in average income. This suggests that a growing middle class is decisive for internal demand to drive quality upgrading of production and exports of a country.
JEL Classification: F12, L15, O15
Keywords: product quality, income distribution, trade, economies of scale, home market effect.

2012/35 Preferential trade agreements harm third countries
Pascal MOSSAY and Takatoshi TABUCHI

In this paper, we study market liberalization in an imperfectly competitive environment in the presence of price effects. For this purpose, we build a three-country model of international trade under monopolistic competition with endogenous prices and wages. The neighboring effect translates how the size effect propagates across countries. When some country increases in size, its relative wage increases, as well as that in a small and near country, while that in a large and distant country falls. We also show that a preferential trade agreement increases the relative wage, the welfare, and the terms-of-trade in the partner countries, where the integration effect dominates, while it lowers those in the third country.
JEL Classification: F12, F15, R13
Keywords: monopolistic competition, market size effect, preferential trade agreement.

2012/36 The compensation problem with fresh starts
Aitor CALO-BLANCO

Forgiveness is an ethical ideal that advocates that a fresh start should be conferred on those individuals who regret their past choices. Grounded on such a principle, Fleurbaey (2005) proposes the use of the equivalent endowment as the proper measure of the welfare loss experienced by those who have mismanaged their initial resources. In this paper we provide the forgiveness framework with an ethical foundation that allows us to formally deal with the compensation problem. We obtain that different solutions to the ideal of forgiveness can arise according to the distributional requirements that society wants to satisfy.
JEL Classification: D63, I31
Keywords: forgiveness, fairness, responsibility.

2012/37 Commodities volatility and the theory of storage
Jean-François CARPANTIER and Arnaud DUFAYS

One implication of the theory of storage states that commodity price volatility should increase when inventories are low. We document this volatility feature by estimating asymmetric volatility models for 16 commodity return series, on the period 1994-2011 and show how to account for this feature in Value-at-Risk forecasting. Our contribution is threefold: (i) This study is the first to investigate systematically the volatility implication of the theory of storage for a large panel of commodity types (agriculturals, metals, precious metals and tree crops); (ii) Since

inventories are hard to measure and define, especially for high frequency data, we use in the volatility model positive return shocks as a new original proxy for inventories; (iii) We finally develop an original asymmetric version of the spline GARCH model and find that the inventory effect remains robust if we allow the unconditional variance to vary over time.
Keywords: asymmetries, commodities, inventory spline GARCH, VaR.

2012/38 Unfair inequalities in France: A regional comparison
Jean-François CARPANTIER and Christelle SAPATA

This paper proposes a regional comparison of ex-post inequality of opportunity in France by measuring, within each region, the inequality between individuals exerting the same effort. According to the concept of equality of opportunity, inequalities due to factors for which the individual is not responsible are unfair and should be removed but inequalities due to factors for which the individual can be held responsible (effort) are fair and should be preserved. Therefore, our analysis defends a responsibility-sensitive egalitarianism whose aim is to show whether (1) regions reward equally effort, (2) inequality of opportunity is equally distributed among regions and (3) it is correlated with income inequality. In this paper, we use a direct measure of effort to measure ex-post inequality of opportunity across regions in France. To this end, we define a fair income that fulfills ex-post equality of opportunity requirements. Unfairness is measured by an unfair Gini based on the distance between the actual income and the fair income. Our findings reveal that regions display differences in the magnitude of ex- post inequality of opportunity and this is due to differences in reward schemes and differences in the impact of the non responsibility factors of income. As a consequence, this papers motivates decentralized policies to solve the problem of unequal opportunities in France. Finally, the positive correlation between income inequality and inequality of opportunity confirms previous results given in the literature.
Keywords: inequality of opportunity, fairness, regional inequalities.

2012/39 Total tourist arrival forecast: aggregation vs. disaggregation
Shui-Ki WAN, Shin-Huei WANG and Chi-Keung WOO

Total tourist arrivals are the sum of disaggregate subcomponent arrivals by country of origin. We use seven time-series models to assess whether the aggregate approach that directly forecasts the total tourist arrivals outperforms the disaggregate approach that produces the total arrival forecast as an unweighted sum of its subcomponent forecasts. Based on Hong Kong's monthly tourist arrival data, we find (a) the seasonal autoregressive integrated moving average model outperforms the other non-seasonal and seasonal models under the aggregate approach, and (b) forecast performance can be improved by the disaggregate approach.
JEL Classification: C01, C18
Keywords: tourism demand, aggregate and disaggregate approaches, forecast combination, seasonal ARIMA, Holt-Winters.

2012/40 The clean development mechanism in a global carbon market
Thierry BRECHET, Yann MENIERE and Pierre M. PICARD

This paper discusses the role of the Clean Development Mechanism (CDM) on the market for carbon quotas and countries' commitments to reduce their carbon emission levels. We show that the CDM contributes to an efficient funding of clean technology investments in least developed countries. However, the CDM is not

neutral on the global level of carbon emissions as it entices countries to raise their emission caps. The CDM may also make inappropriate the inclusion of any country that takes no emission abatement commitment. It can even make inefficient a country's decision to commit to an emission target.
JEL Classification: Q5, F64, R11
Keywords: clean development mechanism, climate policy, strategic interactions.

2012/41 Theoretical and experimental insights on firms' internationalization decisions under uncertainty
Nikolaos GEORGANTZIS, Rafael MONER-COLONQUES, Vicente ORTS and José J. SEMPERE-MONERRIS

We revisit and extend previous theoretical work on internationalization decisions by firms which are imperfectly informed on the state of the demand in the market into which they are planning to export or enter through foreign direct investment (FDI). The latter is a costly strategy mitigating the international firm's demand uncertainty, while the local firm is perfectly informed. We report results from an experimental test of the aforementioned framework which confirm dominant strategy play by local firms under both the good and bad states of the local demand. Also, the prediction that the magnitude of the FDI-specific cost determines whether foreign firms enter via FDI is confirmed in qualitative terms. However, in the case in which FDI is the dominant strategy under risk neutrality, less than full FDI adoption is obtained. We also find an unexpected interaction between the internationalization decision and the market strategy once entry has occurred, indicating the presence of relevant behavioral and strategic factors which are not anticipated by the theoretical model.
JEL Classification: F12, D81, C92
Keywords: mode of entry, risk and uncertainty, experiment.

2012/42 Peer group and distance: when widening university participation is better
Berardino CESI and Dimitri PAOLINI

We analyze the welfare effect of allowing a new university in a local area where another university is already operating. We use a two-city model in which individuals, whose education depends on the average peer ability (peer group effect), can sort across cities by facing a mobility cost. Com- paring monopoly with a two-university system we find that introducing the second university is always welfare improving. We obtain a symmetric Nash equilibrium for every mobility costs and asymmetric Nash equilibria only for sufficiently low mobility costs. In particular, in the symmetric scenario both universities have the same peer groups (lower than the peer group under monopoly) and the same number of students. The asymmetric scenario instead is such that the "top" ("bottom") university has a peer group higher (lower) than the monopolistic one. Moreover, we find that the symmetric scenario always induces the highest welfare. After checking for equilibrium refinements we find that asymmetric equilibria are never strong Nash whereas the symmetric equilibrium is strong Nash only for sufficiently high mobility costs.
JEL Classification: I21, I23
Keywords: peer group quality, mobility costs, universities.

2012/43 Infinite-state Markov-switching for dynamic volatility and correlation models
Arnaud DUFAYS

Dynamic volatility and correlation models with fixed parameters are restrictive for time series subject to breaks. GARCH and DCC models with changing parameters are specified using the sticky infinite hidden Markov-chain framework. Estimation by Bayesian inference determines the adequate number of regimes as well as the optimal specification (Markov-switching or change-point). The new estimation algorithm is studied in terms of mixing properties and computational time. Applications highlight the flexibility of the model.
JEL Classification: C11, C15, C22, C58
Keywords: Bayesian inference, Markov-switching, GARCH, DCC, infinite hidden Markov model, Dirichlet process.

2012/44 Management efficiency in football: an empirical analysis of two extreme cases
Miguel JARA, Dimitri PAOLINI and J.D. TENA

Analysis of managerial efficiency in sport economics typically focuses on evaluating coach decisions instead of assessing the organization as a whole. This paper studies the relative importance of variables related to power and managerial decisions by estimating stochastic production frontiers models for the Chilean and Italian football. We find the presence of technical inefficiencies in both cases. However, managerial decisions play a more significant role in the Italian league. This difference can be explained by a less open and balanced competition in the Chilean case, that could be due to a lower demand and/or financial constraints faced by small clubs in that country.
JEL Classification: J44, L83, M50
Keywords: stochastic production frontier, managerial efficiency, sport economics.

2012/45 United we stand? Coordinating capacity investment and allocation in joint ventures
Guillaume ROELS, Philippe CHEVALIER and Ying WEI

Among the recent innovative strategies for coping with product variety and market risk some firms have partnered to leverage economies of scale and risk pooling by sharing manufacturing capacity. In this paper we study how to structure such a joint venture to achieve full efficiency at low transaction costs. Specifically, we study whether capacity should be owned jointly or separately. Overall, we find that the two ownership structures have complementary strengths and weaknesses in term of their incentives for coordinating capacity allocation and investment. On the one hand, capacity allocation is simple to coordinate under joint ownership, but may entail high transaction costs under separate ownership when the joint venture consists of many firms with different profit margins. On the other hand, capacity investments remain simple to coordinate under separate ownership, but are efficient under joint ownership only in the presence of large economies of scale or asymmetric demands or asymmetric profit margins, and would otherwise entail high transaction costs. Our analysis thus characterizes the trade-off between economic benefits and transaction costs in the choice of capacity ownership structure.
Keywords: joint ventures, non-cooperative game theory, newsvendor model, economies of scale, capacity ownership.

2012/46 Bargaining and delay in trading networks
Mikel BEDAYO, Ana MAULEON and Vincent VANNETELBOSCH

We study a model in which heterogenous agents first form a trading network where link formation is costless. Then, a seller and a buyer are randomly selected among the agents to bargain through a chain of intermediaries. We determine both the trading path and the allocation of the surplus among the seller, the buyer and the intermediaries at equilibrium. We show that a trading network is pairwise stable if and only if it is a core periphery network where the core consists of all weak (or impatient) agents who are linked to each other and the periphery consists of all strong (or patient) agents who have a single link towards a weak agent. Once agents do not know the impatience of the other agents, each bilateral bargaining session may involve delay, but not perpetual disagreement, in equilibrium. When an agent chooses another agent on a path from the buyer to the seller to negotiate bilaterally a partial agreement, her choice now depends both on the type of this other agent and on how much time the succeeding agents on the path will need to reach their partial agreements. We provide sufficient conditions such that core periphery networks are pairwise stable in presence of private information.
JEL Classification: C70, D60, J50
Keywords: bargaining, trading networks, private information.

2012/47 State owned firms: private debt, cost revelation and welfare
Pierre M. PICARD and Ridwan D. RUSLI

In this paper we study the role of private debt financing in disciplining a state owned firm operating for a government that incurs a cost of public financing. We show that debt contracts allow the government to avoid socially costly subsidies by letting unprofitable state- owned firms default. Debt is never used when the firm and government share the same information about the firm. By contrast, when the state-owned firm has private information, the government has an incentive to use debt to reduce the firm's information rents. We identify the conditions under which a positive debt level benefits governments. They depend on the cost of public funds, the interbank funding rate, the share of foreign investors, the level and uncertainty of the firm's cost.
JEL Classification: L33, G32
Keywords: state-owned firms, privatization, debt, information asymmetry.

2012/48 Forecasting long memory processes subject to structural breaks
Shin-Huei WANG, Luc BAUWENS and Cheng HSIAO

We develop an easy-to-implement method for forecasting a stationary autoregressive fractionally integrated moving average (ARFIMA) process subject to structural breaks with unknown break dates. We show that an ARFIMA process subject to a mean shift and a change in the long memory parameter can be well approximated by an autoregressive (AR) model and suggest using an information criterion (AIC or Mallows' Cp) to choose the order of the approximate AR model. Our method avoids the issue of estimation inaccuracy of the long memory parameter and the issue of spurious breaks in finite sample. Insights from our theoretical analysis are confirmed by Monte Carlo experiments, through which we also find that our method provides a substantial improvement over existing prediction methods. An empirical application to the realized volatility of three exchange rates illustrates the usefulness of our forecasting procedure. The empirical success of the HAR-RV model is explained, from an econometric

perspective, by our theoretical and simulation results.
JEL Classification: C22, C53
Keywords: forecasting, long memory process, structural break.

2012/49 Adaptive model-predictive climate policies in a multi-country setting
Thierry BRECHET, Carmen CAMACHO and Vladimir M. VELIOV

The purpose of this paper is to extend the use of integrated assessment models by defining rational policies based on predictive control and adaptive behavior. The paper begins with an review of the main IAMs and their use. Then the concept of Model Predictive Nash Equilibrium (MPNE) is introduced within a general model involving heterogeneous economic agents operating in (and interfering with) a common environment. This concept captures the fact that agents do not have a perfect foresight for several ingredients of the model, including that of the environment. A version of the canonical IAM (DICE) is developed as a benchmark case. The concept of MPNE is then enhanced with adaptive learning about the environmental dynamics and the damages caused by global warming. The approach is illustrated by some numerical experiments in a two-region setting for several scenarios.
JEL Classification: C61, Q54
Keywords: optimal control, global warming, predictive control, adaptive behavior, integrated assessment.

2012/50 Saddle functions and robust sets of equilibria
Vladyslav NORA and Hiroshi UNO

This paper introduces games with a saddle function. A saddle function is a real valued function on the set of action profiles such that, for one player, minimizing the function implies choosing her best-response, and, for the other players, maximizing it implies choosing their best-responses. We provide a new sufficient condition for robustness to incomplete information of sets of equilibria in a sense of Kajii and Morris (1997, Econometrica), Morris and Ui (2005, J. of Econ. Theory) for games with a saddle function. Our result unifies and generalizes sufficient conditions for zero-sum and best-response potential games.
JEL Classification: C72
Keywords: incomplete information, robust equilibrium, potential games, zero-sum games, team-maximin equilibrium.

2012/51 DINKs, DEWKs & Co. Marriage, fertility and childlessness in the United States
Thomas BAUDIN, David DE LA CROIX and Paula GOBBI

We develop a theory of marriage and fertility, distinguishing the choice to have children from the choice of the number of children. The deep parameters of the model are identified from the 1990 US Census. We measure voluntary and involuntary childlessness, and explain why (1) single women are more often childless than married women but, when mothers, their fertility are almost similar; (2) childlessness exhibits a U-shaped relationship with education for both single and married; (3) the relationship between marriage rates and education is hump-shaped. We show how family patterns have been shaped by the rise in education and wage inequality, and by the shrinking gender wage gap.
JEL Classification: J11, O11, O40
Keywords: fertility, childlessness, marriage, education, structural estimation.

2012/52 The longevity of famous people from Hammurabi to Einstein
David DE LA CROIX and Omar LICANDRO

We built a unique dataset of 300,000 famous people born between Hammurabi's epoch and 1879, Einstein's birth year. It includes, among other variables, the vital dates, occupations, and locations of celebrities from the Index *Bio-bibliographicus Notorum Hominum* (IBN), a very comprehensive biographical tool. Our main contribution is fourfold. First, we show, using for the first time a worldwide, long-running, consistent database, that there was no trend in mortality rates during the Malthusian era. Second, after correcting for selection and composition biases, we date the beginning of the steady improvements in longevity to the cohort born in 1640-9, clearly preceding the Industrial Revolution. Third, we find that this timing of improvements in longevity concerns most countries in Europe, as well as all types of skilled occupations. Finally, the reasons for this early increase in mean lifetime are related to age-dependent shifts in the survival law.
JEL Classification: J11, I12, N30, I20, J24
Keywords: longevity, notoriety, Malthus, Gompertz-Makeham, compensation effect of mortality.

2012/53 School staff autonomy and educational performance: within school type evidence
Marijn VERSCHELDE, Jean HINDRIKS, Glenn RAYP and Koen SCHOORS

This paper shows the effect of school staff autonomy on educational performance. The distinctive feature with existing literature is that we employ variation in autonomy within the same country and within the same school type to reduce the omitted variables problems. To fully capture the informational advantage of local actors, we define autonomy as the operational empowerment of the school's direction and teachers. The Flemish secondary school system in Belgium is analyzed as it displays unique within school type variation in school staff autonomy. This variation originates from autonomously operating school governing bodies that can group multiple schools and are free to delegate responsibilities to the school staff. Combining detailed school level and pupil level data from the PISA 2006 study with a semiparametric hierarchical model, we find strong positive effect of school staff autonomy on educational performance. The result is shown to be robust to problems of reverse causality and simultaneity. Quantile regression shows that both low and high-performers benefit from school staff autonomy.
JEL Classification: I28, H52
Keywords: educational performance, PISA, school autonomy, educational production function, semiparametric.

2012/54 Markets for tradable emission permits with fiscal competition
Thierry BRECHET and Susana PERALTA

We model a non-cooperative energy tax setting game amongst countries who join an international market in which firms trade emission permits. Countries can auction a share of their permit endowment and issue the remainder for free to a representative firm. Each country's regulator has a double mandate consisting of obtaining tax and auction revenue without increasing firm's costs too much. Energy may be subsidized or taxed depending on the relative weight of the two objectives. We show how equilibrium taxes depend on the proportion of permits which is auctioned, on the total amount of permits in the market, on the allocation of permits across countries and on the number of participating countries. We also

show how the creation of the market in a previously unregulated world changes energy taxation. Finally, we highlight that, despite the permit market being perfectly competitive, it does not achieve emission abatement in a cost-efficient way.
JEL Classification: Q48, Q52, H23, H73
Keywords: tradable permits, fiscal competition, EU-ETS, Kyoto protocol.

2012/55 Cooperation in R&D: patenting, licensing and contracting
Sudipto BHATTACHARYA, Claude D'ASPREMONT, Sergei GURIEV, Debapriya SEN and Yair TAUMAN

In this paper we review some of the literature on R&D collective arrangements using game theoretical concepts and considering various settings, involving either complete or incomplete contracts. Patent protection, licensing in various industry contexts as well as the role of various factors such as product differentiation, innovation magnitude and asymmetric information are considered. The relation of innovative activity to the intensity of competition is reconsidered and the benefit of various types of cooperative R&D-agreements in presence of externalities are reviewed. The last two sections are devoted to contracting issues.
JEL Classification: D21, D43, D45, L13, O32
Keywords: cost-reducing innovations, cooperative R&D-agreements, development efforts, incomplete contracting

2012/56 Functions and mechanisms in structural-modelling explanations
Guillaume WUNSCH, Michel MOUCHART and Federica RUSSO

One way the social scientists explain phenomena is by building structural models. These models are explanatory insofar as they manage to perform a recursive decomposition on an initial multivariate probability distribution, which can be interpreted as a mechanism. The social scientists should include the variables in the model on the basis of their function in the mechanism. This paper examines the notion of 'function' within structural modelling. We argue that 'functions' ought to be understood as the theoretical underpinnings of the causes, namely as the role that causes play in the functioning of the mechanism.
Keywords: causality, explanation, function, mechanism, recursive decomposition, structural modelling.

2012/57 Commodity taxation and regulatory competition
Simone MORICONI, Pierre M. PICARD and Skerdilajda ZANAJ

This paper studies competition in regulation and commodity taxation between trading countries. We present a general equilibrium model in which destination based consumption taxes finance public goods, while regulation of entry determines the number of firms in the markets. We find (i) no strategic interaction in commodity taxes; (ii) regulation leads to lower commodity tax rates if demand for public goods is more sensitive to income than demand for private goods and (iii) regulation policy is a strategically complement instrument if consumers do not over value product diversity. In the empirical part of the paper, we test our predictions using panel data for 21 OECD countries over the period 1990-2008.
JEL Classification: F0, H1, H7, H87, L5
Keywords: regulation, commodity tax, strategic interactions, fiscal federalism.

2012/58 Finding the stationary states of Markov chains by iterative methods
Yurii NESTEROV and Arkadi NEMIROVSKI

In this paper, we develop new methods for approximating dominant eigenvector of column-stochastic matrices. We analyze the Google matrix, and present an averaging scheme with linear rate of convergence in terms of 1-norm distance. For extending this convergence result onto general case, we assume existence of a positive row in the matrix. Our new numerical scheme, the Reduced Power Method (RPM), can be seen as a proper averaging of the power iterates of a reduced stochastic matrix. We analyze also the usual Power Method (PM) and obtain convenient conditions for its linear rate of convergence with respect to 1-norm.
Keywords: google problem, page rank, power method, stochastic matrices, global rate of convergence, gradient methods, strong convexity, general norms.

2012/59 Equity and efficiency in an overlapping generation model
Tanguy ISAAC and Paolo Giovanni PIACQUADIO

The paper addresses *inter*generational and *intra*generational equity in an overlapping generation economy. We aim at defining an egalitarian distribution of a constant stream of resources, when preferences are ordinal and non-comparable. We establish the impossibility of efficiently distributing resources while treating equally agents with same preferences that belong to possibly different generations. We thus propose an egalitarian criterion based on the equal-split guarantee: this requires all agents to find their assigned consumption bundle at least as desirable as the equal division of resources. Finally, we show how to construct a cardinalization of the preferences that enables well-being comparisons: this allows defining the family of critical-level utilitarian orderings that top-rank the egalitarian solution.
JEL Classification: D61, D63, D91
Keywords: intergenerational equity, intragenerational equity, overlapping generation model, no-envy, equal-split guarantee, allocation rules, utilitarian welfare function.

2012/60 Dynamic conditional correlation models for realized covariance matrices
Luc BAUWENS, Giuseppe STORTI and Francesco VIOLANTE

New dynamic models for realized covariance matrices are proposed. The expected value of the realized covariance matrix is specified in two steps: one for each realized variance, and one for the realized correlation matrix. The realized correlation model is a scalar dynamic conditional correlation model. Estimation can be done in two steps as well, and a QML interpretation is given to each step, by assuming a Wishart conditional distribution. The model is applicable to large matrices since estimation can be done by the composite likelihood method.
JEL Classification: C13, C32, C58
Keywords: realized covariance, dynamic conditional correlations, covariance targeting, Wishart distribution, composite likelihood.

2012/61 Equlibrium in secure strategies
Mikhail ISKAKOV and Alexey ISKAKOV

A new concept of equilibrium in secure strategies (EinSS) in non-cooperative games is presented. The EinSS coincides with the Nash-Cournot Equilibrium when Nash-Cournot Equilibrium exists and postulates the incentive of players to maximize their profit under the condition of security against actions of other

players. The new concept is illustrated by a number of matrix game examples and compared with other closely related theoretical models. We prove the existence of equilibrium in secure strategies in four classic games that fail to have Nash-Cournot equilibria. On an infinite line we obtain the solution in secure strategies of the classic Hotelling's price game (1929) with a restricted reservation price and linear transportation costs. New type of monopolistic solution in secure strategies is discovered in the Tullock Contest (1967, 1980) of two players. For the model of insurance market we prove that the contract pair found by Rothschild, Stiglitz and Wilson (1976) is always an equilibrium in secure strategies. We characterize all equilibria in secure prices in the Bertrand-Edgeworth duopoly model with capacity constraints.
JEL Classification: C72, D03, D43, D72, L12, L13
Keywords: equilibrium in secure strategies, Hotelling model, Tullock contest, insurance market, Bertrand-Edgeworth duopoly.

2012/62 Strategic bypass deterrence
Francis BLOCH and Axel GAUTIER

In liberalized network industries, entrants can either compete for service using the existing infrastructure (access) or deploy their own infrastructure capacity (bypass). In this paper, we demonstrate that, under the threat of bypass, the access price set by an unregulated and vertically integrated incumbent is compatible with productive efficiency. This means that the entrant bypasses the existing infrastructure only if it can produce the network input more efficiently. We show that the incumbent lowers the access price compared to the ex-post efficient level to strategically deter inefficient bypass by the entrant. Accordingly, from a productive efficiency point of view, there is no need to regulate access prices when the entrant has the option to bypass. Despite that, we show that restricting the possibilities of access might be profitable for consumers and welfare because competition is fiercer under bypass.
JEL Classification: L13, L51
Keywords: make-or-buy, access price, bypass.

2012/63 Sensitivity of policy simulation to benchmark scenarios in CGE models: illustration with carbon leakage
Olivier DURAND-LASSERVE, Axel PIERRU and Yves SMEERS

In a Computable General Equilibrium (CGE) setting, we show how the cost of a carbon policy for an open economy depends on the assumptions made about future exogenous structural changes. For dynamic CGE models, we propose an analytical framework derived from static CGE models and associate structural changes with the construction of a non-stationary dynamic Social Accounting Matrix (SAM). Such matrices are benchmark scenarios that embed the modelers view on how technologies and preferences should evolve. These benchmark scenarios must be replicable and relevant (by matching what the modeler regards as plausible). To combine these two properties and produce alternative benchmark scenarios, we use partial parameter adjustments and general equilibrium computation. We produce three alternative benchmark scenarios that differ in terms of energy efficiency gains and structural shift in GDP. For each benchmark scenario, we then simulate the GDP deviation induced by a shock on carbon price. We show the dependence of the simulated GDP losses and terms of trade response on the benchmark scenario considered.
JEL Classification: C68, F18, H21, Q52

Keywords: computable general equilibrium model, non-stationary benchmark scenario, carbon leakage.