2002/1 Two remarks on the inner core.
Geoffroy DE CLIPPEL and Enrico MINELLI.

For the case of smooth concave exchange economies, we provide a characterization of the inner core as the set of feasible allocations such that no coalition can improve on it, even if coalitions are allowed to use some random plans. For the case of compactly generated games, we discuss Myerson's definition of the inner core, and we characterize it using lexicographic utility weight systems.
JEL Classification: C71, D50

2002/2 A polyhedral study of the cardinality constrained knapsack problem
Ismael R. DE FARIAS and Georges L. NEMHAUSER

A cardinality constrained knapsack problem is a continuous knapsack problem in which no more than a specified number of nonnegative variables are allowed to be positive. This structure occurs, for example, in areas such as finance, location, and scheduling. Traditionally, cardinality constraints are modeled by introducing auxiliary 0-1 variables and additional constraints that relate the continuous and the 0-1 variables. We use an alternative approach, in which we keep in the model only the continuous variables, and we enforce the cardinality constraint through a specialized branching scheme and the use of strong inequalities valid for the convex hull of the feasible set in the space of the continuous variables. To derive the valid inequalities, we extend the concepts of cover and cover inequality, commonly used in 0-1 programming, to this class of problems, and we show how cover inequalities can be lifted to derive facet-defining inequalities. We present three families of non-trivial facet-defining inequalities that are lifted cover inequalities. Finally, we report computational results that demonstrate the effectiveness of lifted cover inequalities and the superiority of the approach of not introducing auxiliary 0-1 variables over the traditional MIP approach for this class of problems.
Keywords: mixed-integer programming, knapsack problem, cardinality constrained programming, branch-and-cut.

2002/3 Redistribution with capital mobility and unions' wage setting
Manuel LEITE-MONTEIRO, Maurice MARCHAND and Pierre PESTIEAU

Most models of tax competition assume full employment. Yet, actually one often observes that fiscal competition, particularly when it is aimed at attracting investment, is motivated by the concern of fighting unemployment and enhancing job creation. The present paper considers a multicountry model with capital mobility and unemployment. Fiscal policy has two opposing objectives: financing unemployment insurance and increasing employment. In each country there is a majority vote on this policy. The purpose of the paper is to analyse how opening borders to capital flows modifies the median voter's choice of the employment subsidy. Assuming that capital and labour are complements, economic integration is shown to rise the employment subsidy with fixed wages. This agrees with intuition as a larger employment subsidy attracts more capital. However, when wages are set by labour unions economic integration can change the median voter's choice in either direction.

2002/4 Risk and intermediation in a dual financial market model
Gaetano BLOISE and Pietro REICHLIN

This paper investigates the relation between risk and the degree of financial intermediation in a model with moral hazard. Entrepreneurs can simultaneously get credit from two type of competing institutions: "financial intermediaries" and "local lenders". The former are competitive firms issuing deposits and having a comparative advantage in diversifying credit risks. The latter are individuals with a comparative advantage in credit arrangements with a "nearby" entrepreneur. Because of intermediation costs, local lenders are willing to diversify their portfolio by offering some direct lending to nearby entrepreneurs. We show that, in some cases, a fall in intermediation costs, by induding local lenders to choose a safer portfolio, reduces entrepreneurs' effort and increases the probability of default. In these cases a taxation policy may be welfare-improving.
JEL Classification: A10, D80, G10, O17
Keywords: financial intermediation, moral hazard.

2002/5 Loss reduction and implicit deductibles in medical insurance
Jacques H. DRÈZE

This note presents a modest extension of the very useful "theorem of the deductible" (Arrow, *American Economic Review*, 1963). The extension concerns *ex post* moral hazard in medical insurance. Under full insurance above a deductible, the marginal cost of treatment to the insured is zero, resulting in over-consumption. Co-insurance is the standard approach to mitigate that problem. Assuming that resources and consumption preferences are independent of health (to separate medical insurance from disability insurance), the optimal co-insurance contract results in the same indemnities as a contract with 100% coverage above a variable deductible, related positively to the elasticity of medical expenditures with respect to the coverage rate.
Keywords: health insurance, deductibles, moral hazard.

2002/6 On cooperation in Musgravian models of externalities within a federation
Henry TULKENS

"Musgravian" externalities, formulated and illustrated by Musgrave in a 1966 paper on "social goods" are seen in this paper as one form of the interactions that occur between the components of a federation. The original formal apparatus is first exposed briefly. In that context, it is then considered whether and how alternative forms of federal structures are likely to achieve efficiency. Following suggestions from the literature, three such forms are dealt with: "planned", "cooperative" and "majority rule" federalisms. Next, the relevance of non cooperative equilibria is examined, in the light of an interpretation of them as "fall back" positions when disagreement occurs among members of a federation. Finally, the question is evoked of what economics and public finance may have to say on the limits to institutional decentralization, *i.e.* on the choice between federal, confederal and secessional structures. The paper concludes with a reminder of Musgrave's view on this issue.

2002/7 Ordering, equity and non-expected utility theory
Ernesto SAVAGLIO

According to Chateauneuf (1996), we compare some inequality criteria. We investigate their properties and characteristics. Then, following the approach that links different levels of deprivation with alternative values of social welfare, we look for a functional that evaluates the well-being of individuals with respect to their relative position in the distribution. After having criticized the approach to evaluate the social welfare using the expected utility theory or the rank dependent one respectively under a descriptive and normative point of view, we introduce an additive subjective utility functional in order to search the behavioral foundations of an equity concerned decision-maker.
JEL Classification: D31, D63, I31
Keywords: inequality, orderings, social welfare, non-expected utility.

2002/8 On unions and dominants of polytopes
Egon BALAS, Alexander BOCKMAYR, Nicolai PISARUK and Laurence WOLSEY

A well-known result on unions of polyhedra in the same space gives an extended formulation whose projection is the convex hull of the union. Here in contrast we study the unions of polytopes in different spaces, giving a complete description of the convex hull without additional variables. When the underlying polytopes are monotone, the facets are described explicitly, generalizing results of Hong and Hooker on cardinality rules, and an efficient separation algorithm is proposed. These results are based on an explicit representation of the dominant of a polytope, and an algorithm for the separation problem for the dominant. For non-monotone polytopes, both the dominant and the union are characterized. We also give results on the unions of polymatroids both on disjoint ground sets and on the same ground set generalizing results of Conforti and Laurent.
Keywords: unions of polytopes, cardinality constraints, separation, convex hulls, dominant, matroids, polymatroids.

2002/9 The relation of time indexed formulations of single machine scheduling problems to the node packing problem
Hamish WATERER, Ellis L. JOHNSON and Martin W.P. SAVELSBERGH

The relation of time indexed formulations of nonpreemptive single machine scheduling problems to the node packing problem is formally established and then used to provide simple and intuitive alternate proofs of validity and maximality for previously known results on the facial structure of the scheduling problem. Previous work on the facial structure has focused on describing the convex hull of the set of feasible partial schedules, i.e. schedules in which not all jobs have to be started. The equivalence between the characteristic vectors of this set and those of the set of feasible node packings in a graph whose structure is determined by the parameters of the scheduling problem is established. The main contribution of this paper is to show that the facet inducing inequalities for the convex hull of the set of feasible partial schedules that have integral coefficients and right hand side 1 or 2 are the maximal clique inequalities and the maximally and sequentially lifted 5-hole inequalities of the convex hull of the set of feasible node packings in this graph respectively.
Keywords: scheduling, node packing, polyhedral methods, facet defining graphs, lifted valid inequalities, facet inducing inequalities.

2002/10 Axiomatizing the Harsanyi value, the symmetric egalitarian solution and the consistent Shapley value

Geoffroy DE CLIPPEL

The validity of Hart (1985)'s axiomatization of the Harsanyi value is shown to depend on the regularity conditions that are imposed on the games. Following this observation, we propose two related axiomatic characterizations, one of the symmetric egalitarian solution (cf. Kalai and Samet (1985)) and one of th consistent Shapley value (cf. Maschler and Owen (1992)). The three axiomatic results are studied, evaluated and compared in details.
JEL Classification: C71

2002/11 Agglomeration and market interaction
Masahisa FUJITA and Jacques-François THISSE

The most salient feature of the spatial economy is the presence of a large variety of economic agglomerations.Our purpose is to review some of the main explanations of this universal phenomenon, as they are proposed in urban economics and modern economic geography. We first show why the competitive framework can hardly be the foundation for the economics of agglomeration. We then briefly review the alternative modeling strategies. In the hope to make our paper accessible to a broad audience, we presents in detail the two models that have been used so far to study the spatial distribution of economic activities. Finally, several extensions of these models are discussed.

2002/12 Solving multi-item lot-sizing problems with an MIP solver using classification and reformulation
Laurence A. WOLSEY

Based on research on the polyhedral structure of lot-sizing models over the last twenty years, we claim that there is a nontrivial fraction of practical lot-sizing problems that can now be solved by nonspecialists just by taking an appropriate a priori reformulation of the problem, and then feeding the resulting formulation into a commercial mixed integer programming solver.

This claim uses the fact that many multi-item problems decompose naturally into a set of single-item problems with linking constraints, and that there is now a large body of knowledge about single-item problems. To put this knowledge to use, we propose a classification of lot-sizing problems (in large part single-item), and then indicate in a set of Tables what is known about a particular problem class, and how useful it might be. Specifically we indicate for each class i) whether a tight extended formulation is known, and its size, ii) whether one or more families of valid inequalities are known defining the convex hull of solutions, and the complexity of the corresponding separation algorithms, and iii) the complexity of the corresponding optimization algorithms (which would be useful if a column generation or Lagrangian relaxation approach was envisaged).

Three distinct multi-item lot-sizing instances are then presented to demonstrate the approach, and comparative computational results are presented. Finally we also use the classification to point out what appear to be some of the important open questions and challenges.
Keywords: Lot-sizing, Production Planning, Classification, Convex Hull, Extended Formulation, Mixed Integer Programming.

2002/13 The fragility of the fiscal theory of price determination
Gaetano BLOISE

The fiscal theory of price determination asserts that the price level is determined by the ratio of nominal public debt to the present value of real primary surpluses. To show its fragility, we describe a cash-in-advance economy with infinitely lived real productive assets. The fiscal theory does not hold since speculative bubbles partly restore the classical indeterminacy result. What seems arbitrary in the fiscal theory is to treat the initial nominal value of the aggregate portfolio as if it were given exogenously
JEL Classification: D50, E40, E50
Keywords: money, bubbles, indeterminacy, monetary policy, fiscal policy.

2002/14 Values for cooperative games with incomplete information: an eloquent example
Geoffroy DE CLIPPEL

Myerson (1984b)'s extension of the λ-transfer value to cooperative games with incomplete information focus among other things on the strength of the incentive constraints at the solution for determining the power of coalitions. We construct an intuitive three-player game where the player whose *only* contribution is to partly release the two other players from the incentive constraints they face when they cooperate, receives a zero payoff, according to Myerson's solution. On the contrary, the random order arrival procedure attributes a strictly positive payoff to him. Our example is thus an analog of the banker game of Owen (1972) that was designed for evaluating the λ-transfer value under complete information. Asymmetric information now takes up the role that was formerly attributed to the lack of transferability of utilities.
JEL Classification: C71

2002/15 Common and separate ownership of projects
Axel GAUTIER

This note points out the differences between conducting several projects within one big firm (common ownership) and conducting each project within an independent firm (separate ownership).
JEL Classification: D23, L22, G31, G32
Keywords: conglomerate, nature of the firm, markets vs hierarchies.

2002/16 The procedural value
Geoffroy DE CLIPPEL

We propose a single-valued solution that extends both the consistent Shapley value of Mashler and Owen (1989) and Raiffa's discrete bargaining solution to a large class of NTU games. Though not axiomatized, the solution is motivated *via* the Nash program. In this respect, we follow an approach that is similar to the one initiated by Hart and Mas-Colell (1996).
JEL Classification: C71

2002/17 Strategic choice of financing systems in regulated and interconnected industries
Anna BASSANINI and Jérôme POUYET

The growing importance of inter-network exchanges in infrastructure-based utilities influences regulatory choices and access pricing for downstream services using the infrastructures. We analyze this problem in a setting where the infrastructure managers of two bordering countries are in charge of pricing the access to their networks. The infrastructures are used by downstream firms to provide international services that link the two countries. Network costs can be financed either through a subsidy or solely through user charges.
We first characterize the strategic interaction between infrastructure managers and show that it is affected by the regulatory modes adopted in the two countries. Then, we determine the equilibrium non-cooperative choice of a financing system. As opposed to the perfect cooperation benchmark, in which subsidizing the infrastructures is socially desirable, the commitment to strict budget-balance in both countries becomes socially preferable since this alleviates the externalities generated by non-coordination between access pricing decisions.
JEL Classification: L51
Keywords: Ramsey pricing, interconnected networks, financing system.

2002/18 Transfers in a polarized country: bridging the gap between efficiency and stability
Ori HAIMANKO, Michel LE BRETON and Shlomo WEBER

We consider a political economy model of country whose citizens have heterogeneous preferences for a national policy and some regions may contemplate a threat of secession. The country is efficient if its break-up into smaller countries leads to aggregate utility loss. We show that in an efficient country whose citizens' preferences exhibit a high degree of polarization, a threat of secession cannot be eliminated without inter-regional transfers. We also demonstrate that, if majority voting is used to determine the redistribution schemes within the country, then a high degree of polarization yields the full compensation scheme as the unique political equilibrium.
JEL Classification: H20, D70, D73
Keywords: tranfers, polarization, secession, efficiency, stability, political equilibrium.

2002/19 Side payments and international cooperation in a regionalised integrated assessment model for climate change
Marc GERMAIN, Philippe TULKENS, Henry TULKENS and Jean-Pascal VAN YPERSELE

Human induced climate change is a global concern but climate impacts and possibilities for greenhouse gases (GHG) emissions reductions exhibit strong regional contracts. This paper presents a modified version of the economic-climatic RICE model that computes regional temperature changes and discusses the impact of this regionalisation with respect to simulations using the global temperature trend only.
Financial transfers between countries are a possible mechanism to sustain a binding emission reduction international treaty. With respect to other contributions, this study reevaluates the possible gains from a voluntary worldwide coalitionally stable agreement on GHG emissions reductions in the context of a more refined division (in 13 regions) of the world.
The improved geographical representation highlights some contrasted interests to cooperate between countries otherwise aggregated in the "Rest of the World". The regional temperature change representation allows for more emission reductions in all scenarios as greater regional damages appear. In terms of transfers and welfare, the overall picture remains similar to previous results published with this model but greater contrasts appear between the regions considered.

2002/20 A new class of multivariate skew densities, with application to GARCH models
Luc BAUWENS and Sébastien LAURENT

We propose a practical and flexible solution to introduce skewness in multivariate symmetrical distributions. Applying this procedure to the multivariate Student density leads to a "multivariate skew-Student" density, for which each marginal has a different asymmetry coefficient. Similarly, when applied to the product of independent univariate Student densities, it provides a "multivariate skew density with independent Student components" for which each marginal has a different asymmetry coefficient and number of degrees of freedom. Combined with a multivariate GARCH model, this new family of distributions (that generalizes the work of Fernandez and Steel, 1998) is potentially useful for modelling stock returns, which are known to be conditionally heteroskedastic, fat-tailed, and often skew. In an application to the daily returns of the CAC40, NASDAQ, NIKKEI and the SMI, it is found that this density suits well the data and clearly outperforms its symmetric competitors.
JEL Classification: C13, C32, C52
Keywords: multivariate skew density, multivariate Student density, multivariate GARCH models.

2002/21 Money and indeterminacy over an infinite horizon
Gaetano BLOISE, Jacques H. DRZE and Heracles M. POLEMARCHAKIS

Money provides liquidity services through a cash-in-advance constraint. The exchange of commodities and assets extends over an infinite horizon under uncertainty and complete asset market. Monetary policy sets the path of rates of interest and accommodates the demand for balances. Competitive equilibria exist. But, for a fixed path of rates of interest, there is a non-trivial multiplicity of equilibrium paths of prices of commodities. Determinacy requires that, subject to no-arbitrage and in addition to rates of interest, the prices of state-contingent revenues be somehow determined.
JEL Classification: D50, E40, E50
Keywords: money, equilibrium, indeterminacy, monetary policy, fiscal policy.

2002/22 Public versus private education when differential fertility matters
David DE LA CROIX and Matthias DOEPKE

We assess the merits of different education systems in a framework that accounts for the joint decision problem of parents regarding fertility and education. Specifically, we compare the implications of a public and a private schooling regime for economic growth and inequality. We find that private schooling leads to higher growth when there is little inequality in human capital endowments across families. In contrast, when inequality is high, public education yields higher growth by reducing fertility differentials. In addition, public schooling leads to income convergence, while private schooling can result in ever increasing inequality. Our analysis highlights the importance of accounting for endogenous fertility differentials when analyzing educational policies.

2002/23 On the (intradaily) seasonality and dynamics of a financial point process: a semiparametric approach
David VEREDAS, Juan RODRIGUEZ-POO and Antoni ESPASA

A new method of estimating a component model for the analysis of financial durations is proposed. The components are long-run dynamics and seasonality. The latter is left unspecified and the former is assumed to fall within the class of a certain family of parametric functions. The proposed estimation procedure is based on a generalized profile likelihood approach and requires the assumption either of a likelihood function for the model errors or, at least, that the error density belongs to the class of exponential densities. Its main interest is twofold: first, consistent and asymptotically normal estimators for both the parameters of the long-run stochastic component and the nonparametric curve that approximates the deterministic seasonal component are provided. Hence, it is possible to derive correct inference for both parametric and nonparametric components. Second, the method is computationally very appealing since the resulting nonparametric estimator of the seasonal curve has an explicit form that turns out to be a transformation of the Nadaraya-Watson estimator. The method is applied to price and volume durations of a stock traded at the NYSE, and compared to estimation with splines and with adjustment methods. It is shown that the proposed method outperforms the other methods.
JEL Classification: C14, C41, G10
Keywords: Tick-by-tick, ACD model, seasonal analysis, nonparametric method.

2002/24 A diagnostic m-test for distributional specification of parametric conditional heteroscedasticity models for financial data
Bernard LEJEUNE

This paper proposes a convenient and generally applicable diagnostic m-test for checking the distributional specification of parametric conditional heteroscedasticity models for financial data such as the customary Student t GARCH model. The proposed test is based on the moments of the probability integral transform of the innovations of the assumed model. Monte-Carlo evidence indicates that our suggested test performs well both in terms of size and power.
JEL Classification: C12, C22, C52
Keywords: parametric conditional heteroscedasticity models, distributional specification test, m-testing.

2002/25 How to share when context matters: the Möbius value as a generalized solution for cooperative games
Antoine BILLOT and Jacques-François THISSE

All quasivalues rest on a set of three basic axioms (efficiency, null player, and additivity), which are augmented with positivity for random order values, and with positivity and partnership for weighted values. We introduce the concept of Möbius value associated with a sharing system and show that this value is characterized by the above three axioms. We then establish that (i) a Möbius value is a random order value if and only if the sharing system is stochastically rationalizable and (ii) a Möbius value is a weighted value if and only if the sharing system satisfies the Luce choice axiom.
JEL Classification: C71, D46, D63
Keywords: Shapley value, quasivalue, Möbius inverse.

2002/26 Attitudes toward advertising and price competition in the press industry
Jean J. GABSZEWICZ, Didier LAUSSEL and Nathalie SONNAC

We consider a situation of duopolistic competition in the press industry, involving two editors competing in both the newspapers' and advertising markets. The population of readers in this market is differentiated in terms of their attitudes toward advertising; some of them are assumed to be advertising-lovers, while the remaining ones are assumed to be advertising-averse. We analyse a two-period sequential game whose players are the editors each selling a magazine of different political content. The editors also sell some proportion of their newspaper's surface as advertising support for the products sold by the advertisers. In the first stage of the game, editors select the newsstand price of their magazine and, in the second stage, the advertising tariff they oppose to the advertisers. We identify the equilibrium of this sequential game and examine how it depends on the proportion of ad-lovers and ad-avoiders' readers and on the intensity of their attraction-repulsion feelings for advertising.

2002/27 Economic geography and the role of profits
Pierre M. PICARD, Jacques-François THISSE and Eric TOULEMONDE

In modern economies, the amount of profits distributed to shareholders is far from being negligible. We show that the way they are distributed among agents matters for the space-economy. For example, the existence of mobile rentiers is sufficient to make the symmetric configuration unstable for all transport cost values and to make partial agglomeration of firms stable. Obviously, to account for profits and for their distribution, the assumption of free entry must be abandoned. So doing, we ignore fixed costs and show that it is imperfect competition more than increasing returns that matters for the formation of agglomeration in economic geography.
JEL Classification: L13, R13
Keywords: economic geography, imperfect competition, product differentiation.

2002/28 Antitrust enforcement policy and markets interaction: targeted or concerted interventions
Jérôme POUYET and Vincent VEROUDEN

We study the design of antitrust intervention policy in presence of horizontally imperfectly differentiated industries. Firms in a given industry may decide to collude, but inter-industry collusion is assumed not to be possible. We find that the enforcement policy depends critically on the nature of the differentiation and of the competition between industries.

With substitutes, the intervention policy should be targeted when firms are Cournot competitors. Indeed, in this case, enforcing a competitive behavior from one industry has a positive spill-over on the incentive to collude in the other industry: the stronger the substitutability, the more targeted the intervention. However, with Bertrand competition and sufficiently homogenous products, even two collusive industries make almost no profits. In this case, we show that the intervention is concerted across industries and decreases with the substitutability between products.

By contrast, with complements, these probabilities must be equal across markets since enforcing a competitive behavior in one industry reinforces the other industry's incentive to collude. This result carries over to the situation of vertically linked industries where outputs are technological complements. For sufficiently large degrees of complementarity, the antitrust authority is forced to intervene with probability one in both markets. These results do no longer depend on the nature of the competition.
JEL Classification: L4
Keywords: antitrust intervention, product differentiation.

2002/29 Yardstick competition and political agency problems
Paul BELLEFLAMME and Jean HINDRIKS

This paper analyzes the role of yardstick competition for improving political decisions. We examine how performance comparisons across jurisdictions affect the agency problem resulting from uncertainty about politicians (adverse selection) and their policies (moral hazard). We study two forms of inefficiency: the provision of wasteful project and the failure to provide useful project .We find a general neutrality result: yardstick competition does not affect the likelihood of fully efficient equilibria for any correlation (with a discontinuity at perfect correlation). We also find that yardstick competition has no effect on the likelihood of inefficient equilibria in which politicians refrain from implementing valuable projects. However, performance comparisons makes it less likely to have an equilibrium where bad politicians in both jurisdictions use wasteful projects as inefficient transfer forms.
JEL Classification: D72, H20, H71
Keywords: electoral accountability, Yardstick competition.

2002/30 Early mortality declines at the dawn of modern growth
Raouf BOUCEKKINE, David DE LA CROIX and Omar LICANDRO

We explore the hypothesis that demographic changes started in the seventeenth and eighteenth centuries are at the root of the acceleration in growth rates at the dawn of the modern age. During this period, life tables for Geneva and Venice show a decline in adult mortality; French marriage registers show an important increase in literacy; historians measure an acceleration of economic growth. We develop an endogenous growth model with a realistic survival law in which rising longevity increases the individual incentive to invest in education and foster growth. We quantitatively estimate that the observed improvements in adult mortality account for 70% of the growth acceleration in the pre-industrial age.
JEL Classification: O41, I20, J10, N330
Keywords: human capital, longevity, literacy, growth, schooling.

2002/31 Capital tax competition among an arbitrary number of asymmetric countries
Susana PERALTA and Tanguy VAN YPERSELE

This paper addresses the issue of capital tax competition among an arbitrary number of countries. Countries are allowed to be asymmetric not only in their population endowment but also in their capital endowment per inhabitant. National governments tax capital and labor in order to finance a public good. Asymmetric capital taxation arises at equilibrium leading to a distortion on the international capital market. We provide conditions for the existence of a Nash Equilibrium. We fully characterize how equilibrium taxes and welfare levels depend upon countries' population and capital endowments.
JEL Classification: H23, H3, H73, F21
Keywords: capital mobility, tax competition, asymmetric regions, Nash equilibrium.

2002/32 Coordination of capital taxation among asymmetric countries
Susana PERALTA and Tanguy VAN YPERSELE

This paper tackles the issue of international fiscal coordination in a world of integrated markets sovereign national governments. Taxation of mobile capital and immobile labor in order to finance a public good generates inefficient fiscal competition.
Two fiscal reforms are considered: a minimum capital tax level and a tax range, i.e., a minimum plus a maximum capital tax level.
We show that the introduction of a lower bound to the capital tax level is never preferred to fiscal competition by all countries while there always exists a combination of both a lower and an upper bound which is unanimously accepted.
JEL Classification: F21, F23, H21, H23, H3, H77
Keywords: capital mobility, tax competition, tax coordination.

2002/33 Expert opinion and compensation: evidence from a musical competition
Victor A. GINSBURGH and Jan C. VAN OURS

Pianists who achieve high scores in the Queen Elizabeth musical competition are rewarded by subsequent success. This is not surprising in itself, but it is not immediately clear whether this is caused by the score or because those who have high scores are better pianists. Data on eleven consecutive competitions make it possible to distinguish between the two explanations, since an unexpected situation allows us to use an instrumental variable (the randomly assigned order in which musicians appear at the competition), uncorrelated with ability, but correlated with the results of the competition.
JEL Classification: L82, Z10
Keywords: competition and success, unobserved true quality, expert opinion.

2002/34 On the selection of one feedback Nash equilibrium in discounted linear-quadratic games
Pierre CARTIGNY and Philippe MICHEL

We study a selection method for a Nash feedback equilibrium of a one-dimensional linear-quadratic nonzero sum game over an infinite horizon: by introducing a change in the time variable, one obtains an associated game over a finite horizon $T > 0$ and with free terminal state. This associated game admits a unique solution which converges to a particular Nash feedback equilibrium of the original problem as the horizon T goes to infinity.
JEL Classification: C61, C72
Keywords: linear-quadratic games, nonzero sum differential games, Nash equilibria, infinite horizon.

2002/35 Stochastic rationality and Möbius inverse
Antoine BILLOT and Jacques-François THISSE

Discrete choice theory is very much dominated by the paradigm of the maximization of a random utility, thus implying that the probability of choosing an alternative in a given set is equal to the sum of the probabilities of all the rankings for which this alternative comes first. This property is called stochastic rationality. In turn, the choice probability system is said to be stochastically rationalizable if and only if the Block-Marschak polynomials are all nonnegative. In this paper, we show that the Block-Marschak polynomials can be defined as the probabilities that the decision maker has to delete each alternative from the choice set when the choice probability system is stochastically rationalizable.
JEL Classification: C71, D46, D63
Keywords: stochastic rationality, Möbius inverse, choice context.

2002/36 Optimal income taxation and the ability distribution: implications for migration equilibria
Jonathan HAMILTON and Pierre PESTIEAU

As recently argued by Diamond (1998), one of the key factors explaining the progressivity of an optimal non-linear income tax is the distribution of productivity among workers. Migration is one source of changes in the productivity distribution. How changes in the population's ability distribution affect optimal income tax schedules has received little attention. Changing the distribution generally changes both the objective function and the government budget constraint. We first consider the comparative statics of the fraction of highly-skilled workers with a Rawlsian welfare function (so that only the second effect is present) and a quasi-linear utility function. We perform the same analysis for a despotic social welfare function, and present some results for a utilitarian social welfare function.

We study the interaction between mobility and redistributive taxation. We consider mobility by either the skilled or unskilled population in both Rawlsian and majority voting frameworks where governments take the population as fixed. Our main result is that equal ability distributions across jurisdictions is a stable equilibrium when the unskilled are mobile, but only under certain conditions when the skilled are mobile.

2002/37 Macro surprises and short-term behaviour in bond futures
Eugène DURENARD and David VEREDAS

This paper analyses how the macro news affect the future price of the ten year Treasure bond future (TY), one of the most important US bonds. We consider different fundamentals and we analyze the effect of their forecasting errors conditionally on their sign and the momentum of the business cycle. To obtain a smooth effect of the news arrival we consider a Polynomial Distributed Lag (PDL) model. We conclude that i) fundamentals affect TY for some hours, ii) their effect depends on the sign of the forecast error and iii) it depends on the business cycle. Finally, the timeliness of the releases matters.
JEL Classification: C22, G14
Keywords: US bonds, PDL model, business cycle, macro announcements.

2002/38 The information content of implied volatility in agricultural commodity markets
Pierre GIOT

In this paper we compare the incremental information content of lagged implied volatility to GARCH models of conditional volatility for a collection of agricultural commodities traded on the New York Board of Trade. We also assess the relevance of the additional information provided by the implied volatility in a risk management framework. It is first shown that past squared returns only marginally improve the information content provided by the lagged implied volatility. Secondly, Value-at-Risk (VaR) models that rely exclusively on lagged implied volatility perform as well as VaR models where the conditional variance is modelled according to GARCH type processes. These results indicate that the implied volatility for options on future contracts in agricultural commodity markets has a high information content regarding conditional variance and VaR forecasts.
JEL Classification: C52, C53, G15, Q13
Keywords: implied volatility, GARCH, Value-at-Risk, futures, agricultural commodity markets.

2002/39 Commodity taxation with non linear pricing oligopoly
François BOLDRON

This paper studies commodity taxation when firms use two-part tariffs in model of competition à la Hotelling. Three kinds of taxes are considered: a specific tax, an *ad valorem* one on the subscription fee and an *ad valorem* one on the per usage fee. We first derive the equilibrium tariffs, market shares and profits. We show that the tax on the subscription fee is profit neutral (unlike the other two) but socially costly (like the other two) as it modifies the consumption choice of the consumers. In a context of costly public funds the *ad valorem* taxation on the variable fee dominates specific taxation. Moreover, the ranking between *ad valorem* taxation on the fixed fee and an *ad valorem* taxation on the variable fee depends on the relative magnitude of economic parameters, in particular the degree of differentation. Finally, we show that the government might prefer the use of two-part tariffs rather than the use of more general tariffs.
JEL Classification: H22, L13
Keywords: two-parts tariffs, commodity taxation.

2002/40 Can cultural education crowd out arts subsidization ?
Luc CHAMPARNAUD, Victor GINSBURGH and Philippe MICHEL

The debate about whether the arts should be supported or not is far from being recent, and most governments support the arts in one way or the other. The literature considers several arguments in favor of such interventions. Education may seem as an action which could, in the long run, lead to possible reductions of subsidies. Surveys show that those who have been exposed to the arts when young, participate more when adult. However, the "non-market" transmission from parents to children, generates an external effect, which has to be taken into account to reach first-best situations. We construct an overlapping generations model in which young consumers are exposed to both public education towards the arts and transmission of such a taste from their parents and show that the first-best can be reached only if there is both public cultural education and subsidization of arts consumption. Education can, therefore, not be considered as a substitute for subsidies to arts consumption though the situations that prevail in most European countries point to subsidizing education, while consumption, especially of the older generations, should be taxed rather than subsidized.
JEL Classification: Z1, H23, D9
Keywords: arts consumption, education, subsidization of arts consumption.

2002/41 The museum pass game and its value
Victor GINSBURGH and Israël ZANG

We discuss a subscription game in which service providers (e.g., museums) team up in offering a limited time subscription or access pass allowing unlimited usage of their services. In this game, a natural way to allocate the subscription income among the service providers is by using the Shapley value. We show that, for the particular game considered, the Shapley value takes a very intuitive and computationally simple form.

2002/42 Construction of facilities under asymmetric information: do constitutions matter ?
Martin BESFAMILLE and Jean-Marie LOZACHMEUR

A country consists of two non-overlapping regions, each ruled by a local authority. The federal government plans to construct a facility in one of the regions. If the facility is constructed, it generates a social value in the host region and has spillover effects in the rest of the country. The federal government does not observe the local value (which can be high or low) because it is in fact the local authority's private information. To deal with this informational gap, the federal government designs an incentive-compatible mechanism, specifying if the facility should be constructed and a scheme of interregional transfers. But the federal government is constitutionally constrained to respect a given measure of both regions' welfare. The type of local misbehaviour is shown to depend crucially upon this minimum utility the central government must at least implement.
JEL Classification: D82, H77
Keywords: fiscal federalism, constitutional constraints, facilities, intergovernmental transfers, asymmetric information.

2002/43 Why are some taxes "more equal than others" ?
Anna RUBINCHIK-PESSACH

Let a benevolent risk neutral "constitutional designer" to set an optimal cost-sharing rule for a legislature operating under majority rule. Then the designer will choose 'more equal taxe' for a country with more homogeneous tastes, which is in accord with a popular view. Higher quality projects provide an additional reason for this choice. Moreover, an exogenous requirement to use broader supermajority may also lead to more uniformity.
JEL Classification: H41, H21, H61, K34, D72
Keywords: public goods, cost sharing, constitutional design.

2002/44 Urbanization and growth
Luisito BERTINELLI and Duncan BLACK

In a simple urban economics framework, we aim at highlighting how the trade-off between optimal and equilibrium city size behaves when introducing dynamic human capital externalities beside the classical congestion externalities. Our purpose is to show that there are dynamic gains from oversized cities. To this end, we assume that productivity depends on human capital, which is solely accumulated in cities, such that urbanization is the engine of growth. In an empirical illustration, we highlight the link between urbanization and human capital accumulation, by focusing on cross-country panel data.
JEL Classification: O18, R11
Keywords: urbanization, human capital accumulation, economic development.

2002/45 Learning in elections and voter turnout
Stefano DEMICHELIS and Amrita DHILLON

Game theoretic models of voter turnout have recently fallen into disrepute because the crucial ingredient of the model, the probability of being pivotal for an individual voter, is infinitesimal in large elections. Moreover such models are plagued by the problem of multiple equilibria. We show that assuming voters to be boundedly rational instead of fully rational helps to ameliorate both these problems. Modelling the dynamics of voter learning in such a context leads to a unique equilibrium with a high probability, which increases with the number of voters. This inables the derivation of testable implications of the theory: increases in costs of voting affect turnout adversely but there may be persistence of turnout levels between elections even though costs and other parameters change. Increase in uncertainty increases turnout while increases in the size of the electorate decrease it, in line with intuitions.
JEL Classification: C72, D72
Keywords: voter participation, voter learning, asymptotically stable equilibrium, Markov chain, long run equilibria.

2002/46 Optimal age specific income taxation
Jean-Marie LOZACHMEUR

This paper studies optimal earnings taxation in a three period life cycle model where the taxes raised to finance an exogenous amount of public expenditure are allowed to be differentiated across ages. Agents choose their level of education when young and their age of retirement when old. We first look at the problem of optimal taxation when the young can borrow and then turn to the case where young face borrowing constraints. It is shown that, without borrowing constraints, a first best optimum can be decentralized by setting a zero tax rate in the third period and a first period tax lower than the second one. With the borrowing constraint, the government may not be able restore intertemporal efficiency in which case a zero tax rate when old may not be optimal.
JEL Classification: D91, H21
Keywords: life cycle, optimal income taxation.

2002/47 Coalitions, agreements and efficiency
Effrosyni DIAMANTOUDI and Licun XUE

If agents negotiate openly and form coalitions, can they reach efficient agreements? We address this issue within a class of coalition formation games with externalities where agents' preferences depend solely on the coalition structures they are associated with. We derive Ray and Vohra's (1997) notion of *equilibrium binding agreements* using von Neumann and Morgenstern abstract stable set and then extend it to allow for arbitrary coalitional deviations (as opposed to nested deviations assumed originally). We show that, while the new notion facilitates the attainment of efficient agreements, inefficient agreements can nevertheless arise.
JEL Classification: C71, C72
Keywords: coalition formation, externalities, efficiency, agreements.

2002/48 Balanced Bayesian mechanisms
Claude D'ASPREMONT, Jacques CREMER and Louis-André GERARD-VARET

We present a new condition on beliefs that guarantee the Bayesian implementability of all efficient social decision rules. We show that this condition is easy to verify and is both more interpretable and more general than the conditions that are found in the literature. We also study conditions guaranteeing the Bayesian implementability of all social decision rules with balanced budget mechanisms.

2002/49 Fiscal policy with agents differing in altruism and in ability
Philippe MICHEL and Pierre PESTIEAU

This paper presents an overlapping generations model of growth with individuals differing in productivity and altruism. Within such a model wealth is entirely held in the steady-state by the families with the highest degree of altruism. We then look at the macroeconomic and distributive effects of three fiscal policies: public debt, pay-as-you-to social security and estate taxation. Under plausible assumption we show that both public debt and social security are neutral *à la Ricardo* but increase inequality. We also show that estate taxation can be Pareto worsening even though it can foster income equality.

2002/50 Implied volatility indices as leading indicators of stock index returns ?
Pierre GIOT

This paper shows that, when the VIX or VXN indices of implied volatility increase, the S&P100 and NASDAQ100 stock indices exhibit on average negative returns, hence the 'fear factor' associated with high levels of implied volatility in financial markets. However, attractive (from a mean-variance perspective) positive returns should then be expected on average in the immediate short-term. In this framework, very high levels of implied volatility can on a statistical basis be viewed as signalling an imminent increase in stock indices, at least on a short term basis. Our analysis also shows that average to moderately high levels of implied volatility lead to unfavorable (from a mean-variance perspective) returns. Thus traders willing to enter 'oversold' markets should wait until extremely high levels of implied volatility are witnessed, and their strategy should be strictly on a short-term basis.

2002/51 Economic growth with gifts in the family
Philippe MICHEL

There are two basic models of economic growth. In the overlapping-generations model, there is no private transfer decision of households. In the model with an infinite-lived representative consumer, there is a complete harmony of all generations who behave as a unique agent. We propose another approach with gifts in the family and a unique head of the family. It differs from the joy of giving model in two points: parents take into account wealth of the children and gifts are two-sided, from parents to children and from children to parents.

We first present standard results of the neoclassical growth theory and some recent developments. After that we study three different assumptions on the behavior of households: no gift, gifts in the family and one-sided gifts from parents to children.

2002/52 Can partial fiscal coordination be welfare worsening ? A model of tax competition
Maurice MARCHAND, Pierre PESTIEAU and Motohiro SATO

Most work on tax competition argues that mobile factors tend to be undertaxed except if there is coordination of tax policies. Full coordination is not however always feasible, and as a consequence some measures of partial coordination have been proposed such as minimal witholding taxes on interest income. We show that partial coordination can be in some instances welfare worsening and that then no coordination is to be preferred.
JEL Classification: H2, H87, H7
Keywords: tax competition, tax coordination, witholding tax.

2002/53 Coagglomeration and growth
Salvador BARRIOS, Luisito BERTINELLI and Eric STROBL

Using plant-level data for the Irish manufacturing sector over the period 1983-98, we study the coagglomeration of domestic plants and foreign multinationals in Ireland. To this end we make use of the index developed by Ellison and Glaeser (1997) and find coagglomeration to be important for a number of sectors. We further test for the impact of coagglomeration on domestic firms' employment growth using panel level data. Foreign presence as well as foreign employment density are found to be important determinants of employment growth over the period, especially for those sectors with a high degree of coagglomeration.
JEL Classification: F23, R3, Q40
Keywords: coagglomeration, regional growth, multinational companies, Ireland.

2002/54 How large is liquidity risk in an automated auction market ?
Pierre GIOT and Joachim GRAMMIG

We introduce a new empirical methodology that takes account of liquidity risk in a Value-at-Risk framework, and quantify liquidity risk premiums for portfolios and individual stocks traded on the automated auction market Xetra which operates at various European exchanges. When constructing liquidity risk measures we allow for the potential price impact incurred by the liquidation of a portfolio. We study the sensitivity of liquidity risk towards portfolio size and VaR time horizon, and interpret its diurnal variation in the light of market microstructure theory.

2002/55 Recursive utility and optimal growth with bounded or unbounded returns
Cuong LE VAN and Yiannis VAILAKIS

In this paper we propose a unifying approach to the study of recursive economic problems. Postulating an aggregator function as the fundamental expression of tastes, we explore conditions under which a utility function can be constructed. We also modify the usual dynamic programming arguments to include this class of models. We show that Bellman's equation still holds, so many results known for the additvely separable case can be generalized for this general description of preferences. Our approach is general, allowing for both bounded and unbounded (above/below) returns. Many recursive economic models, including the standard examples studied in the literature, are particular cases of our setting.
JEL Classification: C61, D90
Keywords: recursive utility, dynamic programming, Bellman equation, unbounded returns.

2002/56 Microeconomic models for long-memory in the volatility of financial time series
Alan KIRMAN and Gilles TEYSSIRE

We show that a class of microeconomic behavioral models with interacting agents, derived from Kirman (1991, 1993), can replicate the empirical long-memory properties of the two first conditional moments of financial time series. The essence of these models is that the forecasts and thus the desired trades of the individuals in the markets are influenced, directly, or indirectly by those of the other participants. These "field effects" generate "herding" behaviour which affects the structure of the asset price dynamics. The series of returns generated by these models display the same empirical properties as financial returns: returns are $I(0)$, the series of absolute and squared returns display strong dependence, while the series of absolute returns do not display a trend. Furthermore, this class of models is able to replicate the common long-memory properties in the volatility and co-volatility of financial time series, rvealed by Teyssière (1997, 1998a). These properties are investigated by using various model independent tests and estimators, i.e., semiparametric and nonparametric, introduced by Lo (1991), Kwiatkowski, Phillips, Schmidt and Shin (1992), Robinson (1995), Lobato and Robinson (1998), Giraitis, Kokoszka, Leipus and Teyssière (2000, 2001). The relative performance of these tests and estimators for long-memory in a non-standard data generating process is then assessed.
JEL Classification: C15, C22, D40
Keywords: long-memory, microeconomic models, field effects, semiparametric tests, conditional heteroskedasticity.

2002/57 On the ower of R/S-type tests under contiguous and semi long memory alternatives
Liudas GIRAITIS, Piotr KOKOSZKAS, Remigijus LEIPUS and Gilles TEYSSIRE

The paper deals with the power and robustness of the R/S type tests under "contiguous" alternatives. We briefly review the long memory models in levels and volatility, and describe the R/S-type tests used to test for the presence of long memory. The empirical power of the tests is investigated when replacing the fractional difference operator $(1-L)^d$ by the mixed operator $(1-rL)^d$ in the ARFIMA, LARCH and ARCH time series models. We also investigate the Gegenbauer process with a pole of the spectral density at frequency close to zero.
JEL Classification: C22, C12
Keywords: long-memory, Gegenbauer process, ARCH processes, linear ARCH, semi long memory, modified R/S statistic, KPSS statistic, V/S statistic.

2002/58 Growth or equality ? Losers and gainers from financial reform
Costas AZARIADIS and David DE LA CROIX

We explore the consequences of liberalized credit markets for growth and inequality in a lifecycle economy with physical and human capital accumulation, populated by households of different abilities, and calibrated to match the long-run economic performance of a panel of emerging countries. Relatively modest improvements in extending credit to the ablest households appear to have large economic consequences: upfront costs (slower initial growth, higher income inequality) followed by delayed benefits (faster long-run growth). Reform also lowers lifecycle utility for a substantial majority of currently active households. Premature liberalization in the least developed countries (low TFP or capital intensity) may redirect economic growth towards a poverty trap.
JEL Classification: O410, O160, J240, D310
Keywords: Liberalization, credit constraint, poverty trap, human capital, emerging economies.

2002/59 Wealth transfer taxation with both accidental and planned bequests
Philippe MICHEL and Pierre PESTIEAU

Actual bequests are an hybrid of canonical types and in particular of accidental bequest and paternalistic bequest related to some joy of giving. In this case the estate consists of two components: an amount intended by altruistic parents and an amount which results from the "premature" death of parents. Taxing those two types of bequests separately is known to have different implications. The purpose of this paper is to see the distributive incidence of estate taxation when those two components are indistinguishable.

2002/60 Bubbles and long-range dependence in asset prices volatilities
Alan KIRMAN and Gilles TEYSSIERE

A model for a financial asset is constructed with two types of agents. The agents differ in terms of their beliefs. The proportions of the two types change over time according to a stochastic process which models the interaction between the agents. Thus, unlike other models, agents do not persist in holding "wrong" beliefs. Bubble-like phenomena in the asset price occur. We consider several tests for detecting long range dependence and change-points in the conditional variance process. Although the model seems to generate long-memory properties of the volatility series, we show that this is due to the switching of regimes which are detected by the tests we propose.
JEL Classification: C52, C22, D40, G12
Keywords: interaction, bubbles, testing, long-memory, heteroskedasticity, change-point.

2002/61 International environmental agreements - The role of foresight
Effrosyni DIAMANTOUDI and Eftichios S. SARTZETAKI

We examine the formation of International Environmental Agreements (IEAs). We extend the existing literature by endogenizing the reaction of the IEA's members to a deviation by a member or a group of members. We assume that when a country contemplates exiting or joining an agreement, it takes into account the reactions of other countries ignited by its own actions. We identify conditions under which there always exists a unique set of farsighted stable IEAs. The new farsighted IEAs can be much larger than those some of the previous models supported but are not always Pareto efficient. We extend the analysis to allow for coordinated action, that is, groups of countries jointly exiting or entering the agreement and fully characterize the coalitionally farsighted stable IEAs.
JEL Classification: Q20, H41, C79
Keywords: international environmental agreements, public good provision, coalition formation, foresight.

2002/62 Network effects in the press and advertising industries
Jean J. GABSZEWICZ, Didier LAUSSEL and Nathalie SONNAC

Generally, economists interested in network effects analyse these effects when the consumption externality created by the demand for the good is produced inside the industry itself. But it can be conceived that network effects take place from one industry to another. This happens when the utility of a good produced in a given industry varies with the size of the demand for a product produced in another industry. A particularly significant example of this phenomenon is provided by the interaction between the media and advertising industries. To illustrate the consequences of these network effects, we consider an editor who is a monopolist both in the press and advertising markets. In both markets, he faces a continuum of customers. In the press industry, these customers (readers) vary according to their willingness to pay for the newspaper, but also with their attitudes toward advertising: some of them are advertising-lovers while the others are advertising-averse. On the advertising market, advertisers vary according to their willingness to pay for an ad in the newspaper, which also depends positively on its readership's size. We characterise the monopoly solution in terms of the monopolist's instruments: the price of the newspaper and the advertising rate.

2002/63 Two-person bargaining with verifiable information
Geoffroy DE CLIPPEL and Enrico MINELLI

We study Myerson's incomplete information bargaining solution under the assumption of verifiable types. For the case of an informed principal, in which one individual has all the bargaining power, we provide exact characterizations both from the non cooperative and from the cooperative perspective. We then show that the axiomatic characterization can be extended to the case in which both individuals have some bargaining power. Myerson's approach also suggests a new definition of the core that refines Wilson's coarse core. We argue that this refinement captures an important aspect of negotiation at the interim stage.
JEL Classification: C71
Keywords: bargaining, incomplete information, informed principal.

2002/64 Concentration in the press industry and the theory of the "circulation spiral"
Jean J. GABSZEWICZ, Didier LAUSSEL and Nathalie SONNAC

In this paper we model a situation of competition between two editors who are rivals in both the newpapers' and advertising industries.. To identify the consequences of this competition, we analyse a two-period sequential game whose players are the editors each selling a differentiated newspaper, like newspapers of different political content.We characterise the equilibria and explore how they depend on the number of ad-avoiders and ad-lovers, and on the intensity of readers' attraction or repulsion feelings for advertising. Our main finding is that equilibria are often observed in the sequential game, at which one of the editors prevents the entry of his rival and fully monopolises both the press and advertising markets.

2002/65 Change-point detection in GARCH models: asymptotic and bootstrap tests
Piotr KOKOSZKA and Gilles TEYSSIRE

Two classes of tests designed to detect changes in volatility are proposed. Procedures based on squared model residuals and on the likelihood ratio are considered. The tests are applicable to parametric nonlinear models like GARCH. Both asymptotic and bootstrap tests are investigated by means of a simulation study and applied to returns data. The tests based on the likelihood ratio are shown to be generally preferable. A wavelet based estimator of long memory is applied to returns data to shed light on the interplay of change points and long memory.
JEL Classification: C12, C22
Keywords: GARCH model, change-point, likelihood ratio, parametric bootstrap, squared residuals, size-power curves, wavelets.

2002/66 Asset trading with informed price makers
Salvatore MODICA

The present paper analyses existence and structure of revealing equilibria of a game which models the asset-trading interaction between a risk–neutral informed price–making agent and an uninformed one. The trade–off in the problem faced by the uninformed turns out to be between losing smaller amounts with higher probability and losing larger amounts with lower probability. This balance is governed by *downside* risk aversion (positive third derivative of vNM utility function). Asymmetric information and risk aversion notwithstanding, the downside–risk neutral uninformed (quadratic utility) always gets a fair price on the bet he enters in the revealing equilibrium, corresponding to the expected value of the asset conditional on full information. On the contrary, the downside–risk averse uninformed always pays more than the above expected value.

This conclusion is our counterpart of that reached by Glosten–Milgrom (1985) and Kyle (1985), who consider uninformed agents trading with uninformed price-making dealers: there the uninformed traders bear a negative externality exerted by the informed traders; here they enter unfair bets because of their own downside risk aversion. It is argued that the present model applies more closely to European stock markets.
JEL Classification: D82, G14

2002/67 Obsolescence and modernization in the growth process
Raouf BOUCEKKINE, Fernando DEL RIO and Omar LICANDRO

In this paper, an endogenous growth model is built up incorporating Schumpeterian growth and embodied technological progress. Under embodiment, long run growth is affected by the following effects: (i) *obsolescence costs* add to the user cost of capital, reducing the research effort; and (ii) the *modernization* of capital through investment raises the incentives to undertake R&D activities. Applied to the understanding of the growth enhancing role of both capital and R&D subsidies, we conclude that the positive effect of modernization generally more than compensate the negative effect of obsolescence.
JEL Classification: E22, E32, O40
Keywords: Shumpeterian growth, creative destruction, embodiment, obsolescence, modernization.

2002/68 Market incompleteness in regional electricity transmission. Part I: the forward market
Yves SMEERS

The paper analyses various proposals for the organization of regional electricity transmission in terms of the market incompleteness that they may implicitly assume. Elementary notions of variational inequalities constitute the analytical tool used throughout the paper. The discussion is conducted with reference to the flowgate debate in the US and European proposals for the organization of cross border electricity trade. This first part of the paper discusses market incompleteness in the forward (day ahead) market. The main results can be summarized as follows. An energy market without a market for transmission services is incomplete and hence inefficient. The nodal and flowgate models complete the market when one does not consider contingencies. One can define a notion of transmission capacity (called an extended flowgate) by aggregating line capacities using spot prices. This transmission capacity completes the market and reduces the number of necessary flowgates (possibly to one). But these extended flowgates have variable capacities. As in the case of the nodal model, extended flowgates can accommodate contingencies in the forward market.

2002/69 Generation capacity expansion in imperfectly competitive restructured electricity markets
Frederic H. MURPHY and Yves SMEERS

Investments in generation capacity in restructured electricity systems remain a relatively unexplored subject in the modeling community. We consider three models that differ by their underlying economic assumptions and the degree to which they depart from the old capacity expansion representations. The first model assumes a perfect, competitive equilibrium. It is computationally very similar to the old capacity expansion models even if its economic interpretation is different. The second model (open-loop Cournot game) extends the Cournot model that is sometimes used for modeling operations in restructured electricity systems to include investments in new generation capacities. This model can be interpreted as describing investments in an oligopolistic market where capacity is simultaneously built and sold on long-term contracts when there is no spot market (Power Purchase Agreements). The third model (closed-loop Cournot game) separates the investment and sales decision. It describes a situation where investments are decided in a first stage and sales occur in a second stage, both taking place in oligopolistic markets. The second stage is a spot market. This makes the problem a two-stage game and corresponds to investments in merchant plants where the first stage equilibrium problem is solved subject to equilibrium constraints. Because two-stage models are relatively unusual in discussions of electricity, we characterize the properties of this game and compare them with those of the open-loop game. We show that despite some important differences, the open and closed-loop games share many properties. One of the important results is that the solution of the closed-loop game, when it exists, falls between the solution of the open-loop game and the competitive equilibrium.
Keywords: Electric utilities, existence and characterization of equilibria, noncooperative games, programming, oligopolistic models.

2002/70 Endogenous qualifications and firms' agglomeration
Pierre M. PICARD and Eric TOULEMONDE

This paper analyzes firms' location when workers endogenously choose to qualify for professional skills but when they remain uncertain about the potential match between their personal abilities and/or affinities and the firms' specific production tasks. By qualifying in a region where firms agglomerate, workers benefit from higher prospects of good match. At the equilibrium, we show that firms may locate in a single cluster, symmetric clusters or even asymmetric clusters. Comparative statics with respect to product market demand and labor supply parameters are provided.
JEL Classification: J24, J41, R3
Keywords: qualifications, firms' location.

2002/71 Welfare improving barter in imperfect competition.
Barbara CRESTI

This paper offers a rationale for the development of the barter industry in industrialized economies. It argues that, in a context of imperfect competition, barter represents a profitable and efficient system of exchange. Thanks to barter, even if already at the optimum, a monopolist can still reduce the production costs and thus increase profits. Moreover, by adopting a barter strategy, he also improves social welfare, as he raises total output and decreases market price. Social welfare improvement is maximum when the monopolist fully satisfies his barter requirements, for which the presence of a well-organized barter market is crucial.
JEL Classification: D21, D61, L12
Keywords: Barter, Imperfect Competition, Social Welfare.

2002/72 On efficiency and sustainability in a collective decision-making problem with heterogeneous agents
Ori HAIMANKO, Michel LE BRETON and Shlomo WEBER

In this paper we examine a collective decision problem, where the set of heterogeneous individuals is partitioned into several groups, each choosing its own policy (e.g., location of a public project) from the given policy space. We first consider the notion of "efficient" partition that minimizes the total policy-related costs and aggregate personalized costs. We then examine "sustainable" partitions, in which the policy-related costs can be distributed in a way that no subgroup (belonging to the partition or not) has an incentive to break away from the rest and to set its own policy. Our main result is that, with a unidimensional policy space and single-peaked personalized costs, every efficient partition is sustainable. We further describe some important features of efficiency by characterizing the efficient distribution (and number) of policies chosen from the policy space when their cost is small. It turns out that efficiency is achieved when the distribution of policies follows the square root of the density of individuals' ideal choices.
JEL Classification: C71, D74, H41
Keywords: efficiency, sustainability, project-user configuration, partition, core.

2002/73 Economic integration and regional business cycles: evidence from the Iberian regions.
Salvador BARRIOS and Juan José DE LUCIO

This paper provides evidence of the positive impact of economic integration on EU regions' business cycles convergence by focusing on two neighbouring countries: Spain and Portugal. We show that while a rise in cross-country business cycle correlation has also been experienced by other European countries, it has been relatively more pronounced for Iberian regions. Econometric evidence suggests that the existence of an administrative border, the economic size of regions and their industrial structures can explain a substantial proportion of regional cycles.
JEL Classification: E32, F15, R110
Keywords: economic integration, business cycles, European regions, border effect, Spain, Portugal.

2002/74 Impact-adjusted citations as a measure of journal quality.
Rabah AMIR

We provide a simple theoretical foundation, based on the theory of Markov chains, for the objective empirical procedure for journal ranking devised by Liebowitz and Palmer. An elementary characterization is derived that substantially clarifies the meaning, scope and underlying intuition of the procedure, and allows a precise illustrative discussion of its strengths and weaknesses. Several suggestions are made to correct its shortcomings, which may prove useful in much-needed future rankings. The present analysis suggests that a suitably amended version of the LP procedure would emerge as a highly adequate measure for ranking journals.
JEL Classification: A10, B40, C40
Keywords: journal ranking, impact-adjusted citations, stationary Markov chains, invariant distribution.

2002/75 Finitely additive beliefs and universal type spaces.
Martin MEIER

In this paper we examine the existence of a universal (to be precise: terminal) type space when beliefs are described by finitely additive probability measures. We find that in the category of all type spaces that satisfy certain measurability conditions (κ-measurability, for some fixed regular cardinal κ), there is a universal type space (i.e. a terminal object, that is a type space to which every type space can be mapped in a unique beliefs-preserving way (the morphisms of our category, the so-called type morphisms)), while, by an probabilistic adaption of the elegant sober-drunk example of Heifetz and Samet (1998a), we show that if all subsets of the spaces are required to be measurable there is no universal type space.

2002/76 Wage bargaining and vertical differentiation.
Emanuele BACCHIEGA

This article intends to apply the Nash Bargaining solution to wage setting in a vertically differentiated oligopoly and to study its welfare effects. The market outcome crucially depends on the bargaining power attributed to the agents. I show that the resulting wage bargaining structure is likely to lead to another source of distortion that adds to the classical one derived by oligopoly pricing and quality choice.
JEL Classification: L11, J00
Keywords: vertical differentiation, workers' skills, wage bargaining, welfare.

2002/77 Market incompleteness in regional electricity transmission. Part II: the forward and real time markets.
Yves SMEERS

The paper extends our previous analysis of market incompleteness to the case where there exist both a forward and real time market. The discussion is conducted with reference to a two-stage framework commonly used in stochastic programming and finance, but also familiar to the power industry. The paper considers two market designs. The first organization asumes that physical transmission services are auctioned in the forward market. The second organization supposes a financial market of transmission services. We recover the known perfect hedging property of nodal pricing and show that the flowgate model does not share this property. A standard proposition in finance is that market completeness requires that the number of tradable instruments is equal to or exceed the number of risk factors. We show that none of the nodal or flowgate models satisfy this property. Other instruments, of the option type, should thus be introduced in these systems in order to better trade risk and complete the market.

2002/78 Imperfect competion à la Negishi, also with fixed costs.
Pierre DEHEZ, Jacques H. DRÈZE and Takashi SUZUKI

The paper studies equilibria for economies with imperfect competition and non-convex technologies. Following Negishi, firms maximise profits under downward-sloping perceived demand functions. Negishi's assumptions, in particular the assumption of a single monopolistic competitor in each market, are relaxed. Existence of equilibria is obtained, under otherwise standard assumptions, for productions sets defined in each firm by the union of a convex technology and a technology subject to fixed costs. In the light of a counterexample, it is assumed that fixed factors are distinct from variable factors. Technically, the proof rests on pricing rules.
JEL Classification: D43, D51, L13
Keywords: imperfect competition, fixed costs, general equilibrium, perceived demand, pricing rules.