Jacques H. Drèze

Born at Verviers, Belgium, August 5, 1929

Belgian

Married, 5 sons

Degrees

Licencié en Sciences Economiques, 1951

Licencié en Sciences Commerciales et Financières, 1951

Université de Liège (Summa cum Laude)

Ph.D. in Economics, 1958, Columbia University

CRB Graduate Fellow, 1952-1954

Columbia University, Harvard University, University of Chicago and University of Michigan

Teaching

Visiting Assistant Professor, Carnegie Institute of Technology

(Graduate School of Industrial Administration), 1957-1958

Chargé de cours, Université Catholique de Louvain

(Institut des Sciences Economiques), 1958-1962

Visiting Associate Professor, Northwestern University

(Department of Economics), 1962

Professeur ordinaire, Université Catholique de Louvain,

(Institut des Sciences Economiques), 1962-1989

Ford Foundation Professor, 1963-1964, Professor, 1964-1968 University of Chicago,

Graduate School of Business and Department of Economics

Titulaire de la Chaire Francqui Belge, Université Libre de Bruxelles 1970-1971

Titulaire de la Chaire Francqui Belge, Katholieke Universiteit Leuven, 1982-1983

Andrew D. White Professor at Large, Cornell University, 1971-1977

Member of the Program Committee, European Doctoral Program in Quantitative Economics, 1978-1989

Research

Research Fellow, Carnegie Institute of Technology, September-December 1954

Chargé de recherche, Centre d'Etudes de Recherche Opérationnelle, Université Libre de Bruxelles, 1958-1960

Research Associate

    Purdue University (Kranert School of Management), June-August 1957

    Northwestern University (The Technological Institute), June-August 1962

    Northwestern University (Econometrics Research Center), June-August 1963

    University of Wisconsin (Mathematics Research Center and Social Systems Research Institute), June-August 1964

    Massachusetts Institute of Technology (Sloan School of Management), July-August 1966

    Stanford University (Institute for Mathematical Studies in the Social Sciences), July 1979

Research Director, 1966-1971, President, 1971-1983, Center for Operations Research and Econometrics (CORE)

Member, 1984-1985, Chairman, 1986-1987, CEPS Macroeconomic Policy Group

Coordinator, European Unemployment Programme, 1985-1988

Activity within International Associations

Institute of Management Science

    Président du Comité organisateur, Congrès Mondial de Bruxelles, 1961

    Director, International Center for Management Science, Louvain, 1966-1971

Econometric Society

    Associate Editor, 1963-1964, Co-Editor, 1964-1969 of *Econometrica*

    President of the Programme Committee, European Congress of Zürich, 1964

    Fellow of the Econometric Society, 1964

    Vice-President, 1969, President of the Econometric Society, 1970

International Economic Association

    Co-Director, Workshop in Economic Theory, Bergen, 1971

    President, 1996-1999, Past President, 1999-2002

European Economic Association

    President, 1985-1986

Honours

    "Prix des Alumni", Fondation Universitaire, Brussels, 1964

    Honorary Member of the American Economic Association, 1976

Foreign Honorary Member, American Academy of Arts and Sciences, 1978

Foreign Member of the Royal Netherlands Academy of Arts and Sciences, 1980

Member, Academia Europaea, 1989

Corresponding Fellow of the British Academy, 1990

Foreign Associate, National Academy of Sciences, Washington, 1993

Prix Emile De Laveleye, Académie Royale des Sciences, des Lettres et des Beaux-Arts de Belgique,1993

Honorary Member of Asociacion Argentina di Economica Politica, 1998

Lauréat du Prix "Istituto Nazionale delle Assicurazioni" attribué par l'Academia dei Lincei, Rome, 1999.

Honorary Member of Latin American and Caribbean Economic Association, 1999

Membre correspondant, Académie Royale des Sciences, des Lettres et des Beaux-Arts de Belgique, 2000; hors cadre, 2004

Lauréat du Maastricht Award for European Economic Cooperation, 2005

Fellow, International Society for Bayesian Analysis (ISBA), 2013

Doctor Honoris Causa

University of Essex, July 1980

Université de Paris I-Sorbonne, November 1980

Université de Montréal, May 1982

Université de Liège, March 1983

Universiteit Antwerpen, May 1985

Norges Handelshoyskole, Bergen, September 1986

Universita degli Studi di Bologna, February 1988

Université de Genève, June 1988

Universität Basel, September 1988

University of Chicago, June 1991

Université d'Aix - Marseille, November 1992.

Université de Cergy-Pontoise, November 1999.

Libera Universita di Bolzano - Freie Universität Bolzen, September 2000.

European University Institute, Florence, September 2002.

Universidade Catolica Portuguesa, January 2003.

Universiteit Maastricht, January 2005.

Universitat Autonoma de Barcelona, March 2008.

Sciences Po, Paris, January 2014.

Doctoral Dissertations supervised by Jacques H. Drèze

1968 Tulkens, H., "Programming Analysis of the Postal Service: A Study in Public Enterprise Economics", Louvain (Co-promoteur avec L.H. Dupriez).
Professeur émérite, UCL.

1968 Gabszewicz, Jean, "Coeurs et allocations concurrentielles dans des économies d'échanges avec un continu de biens".
Professeur émérite, UCL.

1969 Juckler, F., "Modèles de gestion des stocks et coûts marginaux".
Professeur émérite, UCL.

1971 Morales, J., "Bayesian Full Information Structural Analysis with an Application to the Study of the Belgian Beef Market", Springer-Verlag, Berlin.
Professeur, Université Catholique de Bolivie, et Gouverneur, Banco Central de Bolivia. 1

1971 Bronsard, C., "Dualité microéconomique et théorie du Second Best".
Professeur, Université de Montréal.

1972 Marchand, M., "The Pricing of Random Demands with Application to Telephone Electricity and Priority Pricing".
Professeur émérite, UCL.[†]

1973 Mouchart, M., "Analyse bayésienne du modèle de régression avec résidus non-standard".
Professeur émérite, UCL. %

1973 Richard, J.-F., "Posterior and Predictive Densities for Simultaneous Equations Models with Application to the Belgian Beef Market", Springer-Verlag, Berlin.
Professeur, University of Pittsburgh, USA.

1975 Palm, F., "Times Series Analysis and Simultaneous Equation Models with Macroeconomic Applications" (Co-promoteur avec A. Zellner).
Professeur, Universiteit Maastricht, NL.

1976 Deschamps, Ph., "Second-Best Pricing with Variable Product Quality: A Quantitative Decision Rule and Existence Proof".
Professeur, Université de Fribourg, Suisse.

1979 de Carvalho, F.A., "Planning Public Consumption under Restricted Information, A Process-Oriented Contribution", Louvain-la-Neuve.
Professeur de Marketing, Rio de Janerio.

1980 Dehez, P., "Essai sur le rôle des balances monétaires dans la dynamique des équilibres à court terme avec rationnement" (Co-promoteur avec W. Hildenbrand).
Professeur, UCL.

1980 Sneessens, H., "Theory and Estimation ofMacroeconomic Rationing Models", Springer-Verlag, Berlin.
Professeur, UCL
Professeur, Facultés Universitaires de Lille, France.

1982 Dermine, J., "The Pricing Policies Intermediaries", Springer-Verlag, Berlin.
Professeur, INSEAD, Fontainebleau, France.

1984 Lambert, J.P., "Disequilibrium Macroeconomics Models: Theory and Estimation of Rationing Models Using Business Survey Data", Cambridge University Press, Cambridge.
Professeur, Recteur, Facultés Universitaires St-Louis, Bruxelles.

1985 Orsi, R., "La théorie économique et estimation d'un modèle macroéconomique avec rationnement et avec double marhé du travail" (Co-promoteur avec M. Mouchart).
Professeur, Université de Modena, Italy.

1986 Andersen, T., "Allocation under Differential Information: Flexible and Fixed Price".
Professeur, Université de Aarhus, Denmark.

1987 Modesto, L., "Price, Production and Inventories Adjustments: Microfoundations and Aggregate Bahaviour: An Empirical Study for the Belgian Manufacturing Sector".
Professeur, Université Catholique du Portugal, Lisbonne, Portugal.

1988 Gollier, C., "Intergenerational Risk-Sharing and Unemployment".
Professeur, Université des Sciences Sociales, Toulouse, France.

1989 Mulkay, B., "Investment and Business Surveys: A Study on a Panel Data of French Firms".
Professeur, Université Guyane-Martinique-Guadeloupe, France; détaché à l'INSEE, Toulouse.

PUBLICATIONS

BOOKS

1. *Allocation under Uncertainty: Equilibrium and Optimality* (Ed.), Macmillan, London, 1974.

   Proceedings from a *Workshop in Economic Theory* organised for the International Economic Association by J. Mirrlees, E. Malinvaud and myself. Covers the part of the program for which I was responsible, with an introduction plus two papers by myself and 12 papers by participants.

2. *Essays on Economic Decisions under Uncertainty*, Cambridge University Press, Cambridge, 1987.

   Twenty reprinted papers, organised under 7 headings: individual decision theory, markets and prices, consumer decisions, producer decisions, theory of the firm, human capital and labour contracts, public decisions.

3. *Labour Management, Contracts and Capital Markets, A General Equilibrium Approach*, Oxford, 1989.

   An extended version of the 1983 Yrjö Jahnsson Lectures, dealing with the pure theory of labour-managed, then stock-market economies; stock-market economics with labour contracts; labour management versus labour contracts under incomplete capital markets; and some macroeconomic aspects.

4. *Europe's Unemployment Problem* (Ed.), MIT Press, Cambridge (Mass.), 1990.
   (With C. Bean, J.P. Lambert, F. Mehta and H. Sneessens, Eds)

   Papers prepared under the *European Unemployment Program*, a 10-country research initiative supervised by Richard Layard and myself in 1986-88. The country papers adopted a common econometric framework inspired by my work on Belgium with Henri Sneesens (see article [71] below). Includes a 65-page synthesis by Charles Bean and myself.

5. *Underemployment Equilibria: Essays in Theory, Econometrics and Policy*, Cambridge University Press, Cambridge, 1991.

   Eighteen reprinted papers, organised under 8 headings: overview, equilibria with price rigidities, efficiency of constrained equilibria, public goods and the public sector, price adjustments, wage policies, econometrics, and policy.

6. *Money and Uncertainty: Inflation, Interest, Indexation*, Edizioni Dell' Elefante, Roma, 1992.

   An extended version of the 1992 Paolo Baffi Lecture at Banca d'Italia, dealing successively with a positive theory of positive inflation, with interest rates policies and with wage indexation.

7. *Pour l'emploi, la croissance et l'Europe*, De Boeck Université, 1995.

   Ten papers (some initially written in French, some translated from English) dealing successively with growth and employment, technical progress and low-skilled employment, European macroeconomic policies, work sharing, Europe's capital city and a status for regions within a Europe of nations. Most papers are based on lectures addressed to non-specialist audiences.

8. *Advances in Macroeconomics* (Ed.), Palgrave, London, 2001.

   Proceedings from the 1999 Twelfth World Congress of the International Economic Association, containing the lectures on macroeconomics for which I was responsible. Includes my presidential address and a critical synthesis of the lectures.

ARTICLES

1. "Monnaie scripturale et monnaie fiduciaire", *Revue de la Banque*, Bruxelles, 20, 9-10, 621-654, 1956.

   Invents the one-currency "Eurochèque". (What a shame that the idea was not patented!)

2. "Un plan d'échantillonnage pour la Belgique", *Bulletin de la Société Belge de Statistique*, 58-70, 1959.

   A different approach to cluster sampling for consumer surveys.

3. "Les probabilités 'subjectives' ont-elles une signification 'objective'?", *Economie Appliquée*, Paris, 1959.

   Non technical presentation of [8].

4. "Le paradoxe de l'information", *Economie Appliquée*, Paris, 13, 55-70, 1960.

   Information can have negative value, in multi-persons situations. Anticipates the often-cited paper by Hirshleifer in AER 1971.

5. "Analyse économétrique des émissions privées en Belgique", *Bulletin de l'Institut de Recherches Economiques et Sociales*, Louvain, 447-486, 1960.

   A classroom illustration of the identification problem.

6. "La gestion des stocks" in *Problèmes et Techniques de la Recherche Opérationnelle*, OBAP, Bruxelles, 21-30, 1960.

   Expository.

7. "Quelques réflexions sereines sur l'adaptation de l'industrie belge au Marché Commun", *Comptes Rendus de la Société d'Economie Politique de Belgique*, Bruxelles, 275, 3-37, 1960; translated as "The Standard Goods Hypothesis" in *The European Internal Market: Trade and Competition*, Eds. A. Jacquemin and A. Sapir, 13-32, Oxford University Press, Oxford,1989.

Product differentiation and economies of scale as a new source of comparative advantage - a pillar of the extensive theory of "intra-industry trade", and of some more recent developments following the paper by Krugman in AER 1970.

8. "Les fondements logiques de l'utilité cardinale et de la probabilité subjective", in *La Decision*, Colloques Internationaux du CNRS, Paris, 73-97, 1961.

Extension of individual decision theory to moral hazard and state-dependent preferences, based on my unpublished Ph.D. Thesis, revised and more systematically presented in [76].

9. "Les exportations intra-CEE en 1958 et la position belge", *Recherches Economiques de Louvain*, 27, 717-738, 1961.

Econometric support of [7].

10. "Analyse de la balance commerciale de l'UEBL en 1958", *Recherches Economiques de Louvain*, 27, 739-766, 1961.
(With J. Van Der Rest and J. Van Overbeke.)

Econometric support of [7].

11. "Sur quelques aspects de la précision d'estimations basées sur les enquêtes de budgets ménagers", *Etudes Statistiques et Econométriques*, Bruxelles, 3, 5-16, 1962.

Statistical inference when data are aggregated (initially, correction of an error in a paper published in the same journal).

12. "L'utilité sociale d'une vie humaine", *Revue Française de Recherche Opérationnelle*, 23, 93-118, 1962.

Introduces the "willingness to pay" approach to the demand for safety.

13. "Some Postwar Contributions of French Economists to Theory and Public Policy", *American Economic Review*, 54, 2, 1-64, 1964.

An extensive review (with some extensions) of the work of the French marginalist school (Allais, Boiteux, Massé,...), with additional sections on intertemporal allocation (Allais, Malinvaud,...) and French planning.

14. "Decision and Horizon Rules for Stochastic Planning Problems: A Linear Example", *Econometrica*, 34, 2, 307-330, 1966.
(With A. Charnes and M. Miller.)

> A minor contribution to operations research: truncation rules for stochastic dynamic programming, illustrated by a simple example (the warehousing model).

15. "Epargne et consommation en avenir aléatoire", *Cahiers du Séminaire d'Econométrie*, 9, 7-33, 1966.
(With F. Modigliani.)

> Preview of [28], with an integrated treatment of occupational choice and portfolio choice.

16. "Specification and Estimation of Cobb-Douglas Production Function Models", *Econometrica*, 34,784-795, 1966.
(With A. Zellner and J. Kmenta.)

> Application of Bayesian methods to production function estimation, with attention to the assumptions about producer information.

17. "Demand Fluctuations, Capacity Utilisation and Prices", *Operations Research Verfaheren*, 3, 119-141, 1967.
(With J. Jaskold Gabszewicz.)

> Preview of [42] for the special case of cubic cost functions.

18. "Entscheidungstheorie und 'Bayessche Statistik' ", *Jahrbüchern für Nationalökonomie und Statistik*, 182, 3, 216-223, 1968.

> Expository (translation of a lecture for the award ceremony of the "Prix des Alumni").

19. "The American Presence in Europe", *Selected Papers*, Graduate School of Business, The University of Chicago, 31, 1-16, 1969.

> Discursive (prepared for a meeting launching the Chicago-London-Louvain MBA Exchange Program).

20. "On Cores and Competitive Equilibria" in *La Décision*, Colloques Internationaux du CNRS, Paris, 171, 91-114, 1969.
(With S. Gepts and J. Jaskold Gabszewicz.)

> Derives implications for finite economies of the equivalence theorems (between the core and competitive allocations) proved for infinite numbers of agents by Debreu-Scarf and Aumann. Inspired [24, 26, 43].

21. "Market Allocation under Uncertainty", *European Economic Review*, 2, 2, 133-165, 1971.

> Interpretation of the Arrow-Debreu contingent markets model. First statement and demonstration of the martingale property of prices for contingent claims.

22. "A Note on Interdependence as a Specification Error", *Econometrica*, 39, 6, 1009-1013, 1971.
(With R.H. Strotz.)

> A recursive model with lagged endogenous variables converges continuously to an interdependent model when the lag goes to zero, contrary to an earlier claim of Strotz.

23. "A Tâtonnement Process for Public Goods", *Review of Economic Studies*, 38, 2, 133-150, 1971.
(With D. de la Vallée Poussin.)

> Introduces the well-known MDP process for public goods, demonstrates convergence and provides an early analysis of incentive compatibility.

24. "Syndicates of Traders in an Exchange Economy" in *Differential Games and Related Topics*, North-Holland, 1971.
(With J. Jaskold Gabszewicz.)

> Defines two concepts of stability for collusive agreements among identical agents; the first is incompatible with a non-competitive core allocation, the second not.

25. "Discount Rates for Public Investments in Closed and Open Economies", *Economica*, 38, 152, 395-412, 1971; reprinted in *Cost-Benefit Analysis*, A.C. Harberger and G.P. Jenkins Eds, Edward, 2002, and in *Discounting and Environmental Policy*, J. Scheraga, Ed., Ashgate, 2002.
(With A. Sandmo.)

> Second-best analysis of the choice of a discount rate for public investment (previously confined to partial analysis). The social discount rate should be a weighted average of rates of return on specific investments, with weights reflecting marginal shares.

26. "Cores and Prices in an Exchange Economy with an Atomless Sector", *Econometrica* 40, 6, 1090-1108, 1972.
(With J. Jaskold Gabszewicz, D. Schmeidler and K. Vind.)

> For an exchange economy with both an atomless sector and atoms, the paper gives alternative sufficient conditions for a core allocation to have a competitive restriction to the atomless sector.

27. "Econometrics and Decision Theory", *Econometrica*, 40, 1, 1-17, 1972.

> Presidential address to the Econometric Society; summarises my own work on Bayesian Econometrics (see also [61]) and expounds complementarities between economic theory, decision theory, econometrics and mathematical programming.

28. "Consumption Decisions under Uncertainty", *Journal of Economic Theory*, 5, 3, 308-335, 1972.
(With F. Modigliani.)

> Started in 1954 (!), was still on the frontier in 1972 (!) and is still somewhat of a classic. Basic clarifications (time preferences versus risk preferences, temporal versus timeless uncertainty) and compendium of results on savings and portfolio choices under uncertainty.

29. "A Note on the Transactions Demand for Money", *European Economic Review*, 3, 83-90, 1972. (With A. Sandmo, under the Pseudonym of Dr. Saschba Telphlluch.)

   A would-be witty, early explanation of why the income-elasticity of the transaction demand for money may be unity rather than one-half, because transaction costs and income are both proportional to hourly earnings.

30. "A Tâtonnement Process for Investment under Uncertainty in Private Ownership Economies" in *Mathematical Methods in Investment and Finance*, Eds. G.P. Szegö and K. Shell, North-Holland, 1972.

   An alternative presentation, using differentiability, of basic results more fully expounded in [33].

31. "Discount Rates and Public Investment: A Post-Scriptum", *Economica*, 41, 161, 52-61, 1974.

   Extension of [25] from two periods to many periods.

32. "Axiomatic Theories of Choice, Cardinal Utility and Subjective Probability: A Review" in *Allocation under Uncertainty: Equilibrium and Optimality*, Macmillan, chap. 1, 1974.

   A popular (in both meanings) exposition of individual decision theory in the Savage tradition, its limitations and its relevance for positive and normative economics.

33. "Investment under Private Ownership: Optimality, Equilibrium and Stability" in *Allocation under Uncertainty: Equilibrium and Optimality*, Macmillan, chap. 9, 1974.

   Develops the "incomplete markets" model of general equilibrium under uncertainty, with a single commodity per state, as an extension of the special model (fixed coefficients) introduced in the seminal paper by Diamond in AER 1967; proves basic results (most notably non-convexity, but also existence of stockholders equilibria, their inefficiency, and stability of stock market valuation of investments.)

34. "Bayesian Theory of Identification in Simultaneous Equations Models" in *Studies in Bayesian Econometrics and Statistics*, Eds. S.E. Fienberg and A. Zellner, North-Holland, 1974.

   Based on an unpublished manuscript of 1962. Introduces the Bayesian concept of identification and applies it to SEM; together with [39, 41, 44], forms the core of the material summarised in [61] and outlined in [27].

35. "A Finite Algorithm for Homogeneous Portfolio Programming" in *Mathematical Programs for Activity Analysis*, Ed. P. Van Moeseke, North-Holland, 181-211, 1974. (With P. Van Moeseke.)

   A mathematical programming paper, combining elements of homogeneous and quadratic programming to solve a problem posed by Van Moeseke.

36. "Existence of an Exchange Equilibrium under Price rigidities", *International Economic Review*, 16, 2, 301-320, 1975.

> Introduces an equilibrium concept for market economies operating under price rigidities (the so-called Drèze equilibrium) and a now widely used method of proving existence. Covers both real and nominal rigidities defined by upper and/or lower bounds on individual prices. The paper was motivated by the second-best merits of price rigidities when markets are incomplete - see [101].

37. "Cooperative Games with Coalition Structures", *International Journal of Game Theory*, 3, 4, 217-237, 1975.
(With R. Aumann.)

> A foray into game theory, collecting properties of an array of cooperative solution concepts, when a coalition structure is given *a priori*.

38. "Pricing, Spending and Gambling Rules for Non-Profit Organisations" in *Public and Urban Economics*, Essays in Honor of William S. Vickrey, Ed. R.E. Grieson, Lexington Books, 59-89, 1976.
(With M. Marchand.)

> Second-best theory applied to non-profit organisations, including Ramsey-Boiteux pricing, criteria for capital accumulation or consumption and guidelines for risk-taking.

39. "Bayesian Limited Information Analysis of the Simultaneous Equations Model", *Econometrica* 44, 5, 1045-1075, 1976.

> The fundamental paper on Bayesian methods for SEM, including the use of ratio-form poly-t densities.

40. "Some Theory of Labour Management and Participation", *Econometrica*, 44, 6, 1125-1139, 1976.

> Walras lecture to the 1975 World Congress of the Econometric Society. Preview of book [3]. Includes the first general equilibrium analysis of labour-management. Under labour mobility across firms, labour management equilibria replicate competitive equilibria.

41. "Bayesian Full Information Analysis of Simultaneous Equations", *Journal of the American Statistical Association* 71, 345, 919-923, 1976.
(With J.-A. Morales.)

> Extension of [39] from limited to full information: a broader class of prior densities and a more informative analysis, at greater computational cost.

42. "Demand Fluctuations, Capacity Utilisation and Costs", *American Economic Review*, 66, 5, 731-742, 1976.
    (With E. Sheshinski.)

    The basic model of industry equilibrium under uncertain demand. Free entry guided by expected profits leads to minimum expected costs and expected prices. Greater uncertainty calls for higher capacity.

43. "Disadvantageous Monopolies and Disadvantageous Endowment", *Journal of Economic Theory*, 16, 1, 116-121, 1977.
    (With J. Jaskold Gabszewicz and A. Postlewaite.)

    In economies with one atom and an atomless sector, the atom may loose if departing from the competitive allocation, or if accepting an endowment gift from the atomless sector.

44. "Bayesian Regression Analysis Using Poly-t Densities", *Journal of Econometrics*, 6, 329-354, 1977; and in *New Developments in the Applications of Bayesian Methods*, Eds A. Aykaç and C. Brumat, North-Holland, 153-184, 1977.

    A systematic discussion of poly-t densities with a compendium of applications in Bayesian regression models, several of which are covered in [61].

45. "Stability Theorems with Economic Applications", *Econometrica*, 45, 2, 273-294, 1977.
    (With P. Champsaur and C. Henry.)

    An outgrowth of [23]; presents a general approach to stability analysis for processes (in both continuous and discrete time) with discontinuities.

46. "Choice of Product Quality: Equilibrium and Efficiency, *Econometrica*, 46, 3, 493-513, 1978.
    (With K.P. Hagen.)

    An outgrowth of [33], establishes the formal analogy between investment decisions under incomplete markets and choices of products; covers also the characteristics approach of Lancaster. Compares competitive and monopolistic equilibria, both of which are generically sub-optimal.

47. "On the Stability of Dynamic Processes in Economic Theory", *Econometrica*, 47, 3, 733-737, 1979.
    (With C. d'Aspremont.)

    Applies the notion of stability in the sense of Lyapunov to the processes considered in [45].

48. "Human Capital and Risk-Bearing", *The Geneva Papers on Risk and Insurance*, 12, 5-22, 1979; version française: "Capital humain et répartition des risques", *The Geneva Papers on Risk and Insurance*, 12, 3-20, 1979.

    The second annual Lecture of the Geneva Association; a broad non-technical discussion of labour contracts and of the risk-sharing foundations of social security.

49. "Salaires, emploi et durée du travail", *Recherches Economiques de Louvain*, 45, 1, 17-34, 109-132, 1979.

> Building on results in [56], provides an early analysis of work sharing with an influential application to Belgium.

50. "La prise de décision en situation d'incertitude", *L'Actualité Economique*, 2, 129-150, 1979.

> An expository paper, linking labour contracts and financial markets - a theme taken up in [91]; translation not proofread and full of inaccuracies.

51. "Demand Estimation, Risk Aversion and Sticky Prices", *Economics Letters*, 4, 1, 1-6, 1979.

> A risk-averse firm with imperfect information about demand elasticity behaves as if it faced a kinky demand curve; this leads to (real) price stickiness.

52. "Public Goods with Exclusion", *Journal of Public Economics*, 13, 1, 5-24, 1980.

> Applies the theory of equilibrium with quantity rationing to public goods with exclusion, thereby providing the first theoretical analysis of such goods in a general-equilibrium framework.

53. "Hedonic Coalitions: Optimality and Stability", *Econometrica*, 48, 4, 987-1003, 1980.
    (With J. Greenberg.)

> Considers cooperative games with a coalition structure [37] where players' utilities depend upon the imputation and upon the coalition to which they belong. Pareto efficiency may then require transfers among coalitions. Stability of the coalition structure may require default penalties.

54. "Réduction progressive des heures et partage du travail" in *Les Conditions de l'Initiative Economique*, 4ème Congrès des Economistes de Langue Française, 3ème Commission, 2-4; 57-83, 1980.

> An outgrowth of [56] and [49], providing the theoretical framework for interpreting the results of a survey conducted among Belgian firms.

55. "Optimality Properties of Rationing Schemes", *Journal of Economic Theory*, 23, 2, 131-149, 1980.
    (With H. Müller.)

> Second-best welfare analysis of alternative rationing schemes, establishing the superiority of coupons equilibria and discussing their information content for desirable price changes. Also led to [75].

56. "The Trade-off Between Real Wages and Employment in an Open Economy (Belgium)", *European Economic Review*, 15, 1-40, 1981.
(With F. Modigliani.)

> An analysis of the short- and long-run wage elasticity of employment, with an original Bayesian-classical econometric evaluation for Belgium, the introduction of the union-wage model and a discussion of work sharing.

57. "Inferring Risk Tolerance from Deductibles in Insurance Contracts", *The Geneva Papers on Risk and Insurance*, 20, 48-52, 1981.

> A new approach to measuring risk-aversion, with striking conclusions about plausible numerical ranges.

58. "La Belgique dans la crise et la contrainte de balance des paiements", *Recherches Economiques de Louvain*, 47, 55-78, 1981.
(With J. Dermine.)

> Advocates devaluation of the Belgian frank (prevailing opinion notwithstanding) and provides a surprisingly accurate forecast of the effects of the 1982 devaluation.

59. "State-Dependent Utility, the Demand for Insurance and the Value of Safety" in *The Value of Life and Safety*, Proceedings of a Conference held by The Geneva Association, Ed. M.W. Jones-Lee, North-Holland, 41-65, 1982; and in *Premium Calculation in Insurance*, Eds. F. de Vylder et al., D. Reidel, 77-107, 1984.
(With P. Dehez)

> An outgrowth of [12], adds the public goods dimension to the demand for safety based on a value of life reflecting willingness-to-pay and relates the analysis to insurance behavior; rests on the theory of decision with state-dependent utility in [8, 76].

60. "Decision Criteria for Business Firms" in *Current Developments in the Interface: Economics, Econometrics, Mathematics*, Eds. M. Hazewinkel and A.H.G. Rinnooy Kan, D. Reidel, North-Holland, 27-51, 1982.

> An outgrowth of [33], but also of [21]; a synthesis of approaches and results on risk attitudes of firms in stock-market economies; develops the CAPM as a special case of complete markets.

61. "Bayesian Analysis of Simultaneous Equations Models" in *Handbook of Econometrics*, Eds. Z. Griliches and M. Intriligator, North-Holland, Chap. 9, 517-598, 1983.
(With J.-F. Richard.)

> A survey paper providing an integrated exposition of the approach and of results in [34, 39, 41, 44], with some extensions.

62. "On Industry Equilibrium under Uncertainty", *Journal of Economic Theory*, 33, 1, 88-97, 1984.
(With E. Sheshinski.)

   A follow-up to [42] investigating dynamics.

63. "On Supply-Constrained Equilibria", *Journal of Economic Theory*, 33, 1, 172-182, 1984.
(With P. Dehez.)

   An outgrowth of [36] and intervening work by Vander Laan; extends [36] to production
   and proves existence of supply-constrained equilibria (i.e., equilibria with constraints on
   supply but not on demand), at arbitrary relative prices under a flexible price level. Used
   contructively in [113].

64. "Second-Best Analysis with Markets in Disequilibrium: Public Sector Pricing in a Keynesian
   Regime", *European Economic Review*, 29, 263-301, 1985; also reprinted in *The Performance in
   Public Enterprise: Concepts and Measurement*, Eds. M. Marchand, P. Pestieau and H. Tulkens,
   North-Holland, 45-79, 1984.

   Extends the Ramsey-Boiteux second-best analysis to the case of price rigidities and quan-
   tity rationing in the private sector; includes my first encounter of the Keynesian multiplier
   in a general equilibrium model.

65. "Rigidité des prix, rationnement de l'offre et inflation", *Cahiers du Séminaire d'Econométrie*, 26,
   13-23, 1984.
   (With P. Dehez.)

   A companion paper to [63], less technical and application oriented.

66. "Labour Management and General Equilibrium" in *Advances in the Economic Analysis of Partic-
   ipatory and Labour-Managed Firms*, JAI Press Inc., 1, 3-20, 1985; version française: "Autogestion
   et équilibre général", *Revue Européenne des Sciences Sociales*, 22, 66, 208-229, 1984.

   A non-technical version of [40].

67. "(Uncertainty and) The Firm in General Equilibrium Theory", *Economic Journal*, 95 (Supplement:
   Conference Papers), 1-20, 1985.

   An outgrowth of [33], extending the decision structure of firms from stockholders' meet-
   ings to boards of directors; production plans are chosen by endogenously appointed
   managers-directors, under unanimity rule with side-payments and subject to majority
   approval by stockholders; probably the most realistic decision structure in the general
   equilibrium literature; preview of chapter 2 in book [3], which supplies the proofs.

68. "Econometrics in the General Economics Curriculum: Teachers in a Quandary?", *Tijdschrift voor
   Economie en Management*, 30, 3, 97-102, 1985.

   A discussion of classical versus Bayesian econometrics from the view point of pedagogical
   efficiency, offered to my colleague and friend John van Waterschoot on his retirement.

69. "Employment and Growth in Europe: A Two-Handed Approach", *CEPS Paper* 21, Bruxelles 1985. (With O. Blanchard, R. Dornbusch, H. Giersch, R. Layard and M. Monti.)

   A report of the CEPS-DGII Macroeconomic Policy Group, largely written by Blanchard and Dornbusch, stressing the complementarity of supply and demand.

70. "Moral Expectation with Moral Hazard" in *Contributions to Mathematical Economics* in Honor of Gérard Debreu, Eds. W. Hildenbrand and A. Mas-Colell, North-Holland, 187-204, 1986; version française: "Espérance morale avec risque moral", *L'Actualité Economique*.

   Excerpts from [76], limited to moral hazard (with state-independent preferences).

71. "A Discussion of Belgian Unemployment, Combining Traditional Concepts and Disequilibrium Econometrics", *Economica*, 53, 89-119, 1986.
    (With H. Sneessens.)

   A macro-econometric model allowing for an evolving mixture of Keynesian, classical and inflationary regimes; formed the basis for the 10-countries study presented in book [4].

72. "What, If Anything, Have We Learned from the Rise of Unemployment in Belgium, 1974-1983?", *Cahiers Economiques de Bruxelles*, 110/111, 21-26, 1986.
    (With H. Sneesens.)

   A companion presentation of [71].

73. "Work Sharing: Some Theory and Recent European Experience", *Economic Policy*, 1, 3, 561-619, 1986.

   A comprehensive paper discussing the theoretical rationale for work sharing, then documenting and analysing the historical experience of several European countries, in the late seventies - early eighties.

74. "Reducing Unemployment in Europe: The Role of Capital Formation", *CEPS Paper* 28, Bruxelles, 1986.
    (With F. Modigliani, M. Monti, H. Giersch and R. Layard.)

   Another CEPS-DGII report, largely written by Modigliani and Monti, focussed on investment.

75. "Values of Markets with Satiation or Fixed Prices", *Econometrica*, 54, 6, 1271-1318, 1987.
    (With R. Aumann.)

   A game theoretic analysis of economies with fixed prices, showing the convergence of the Shapley value to uniform coupons equilibria; an alternative interpretation covers economies with satiated preferences; an outgrowth of [36, 55], with a technical *tour de force* by Aumann.

76. "Decision Theory with Moral Hazard and State-Dependent Preferences", chap. 2 in *Essays in Economic Decisions under Uncertainty*, Cambridge University Press, Cambridge, 1987.

> Chapter 2 of book [2]. Anticipated by [8], but technically more advanced; provides a general treatment of decision theory with moral hazard and state-dependent preferences, as an extension of subjectively expected utility theory, with extensive comments. Expected utility maximisation applies to the choices of probabilities (strategies) in games of "strength and skill". Subjective probabilities and state-dependent utilities are fully identified if and only if all events have strategy-dependent probabilities. The only treatment to date based on preferences revealed by choices.

77. "Underemployment Equilibria: From Theory to Econometrics and Policy", *European Economic Review*, 31, 9-34, 1987.

> Presidential Address to the European Economic Association. A public lecture and introductory chapter to book [5]; concise presentation of the theory of equilibria under price rigidities and quantity rationing in [36, 63], possibly due to increasing returns [82]; the econometrics of quantity rationing models ([71] and book [4]); and two-handed employment policies [79].

78. "Eurosclerosis: A Disease of the Economies, or the Economists?", Comment on "Slow Growth in Europe: Conceptual Issues" in *Barriers to European Growth*, Eds. R.Z. Lawrence and C.L. Schultze, Washington D.C, pp. 79-83, 1987.

> A non-technical appraisal of barriers to recovery in Europe.

79. "The Two-Handed Growth Strategy for Europe: Autonomy through Flexible Cooperation", *CEPS Paper* 34, Bruxelles, 1987; and *Recherches Economiques de Louvain*, 54, 1, 5-52, 1988.
    (With C. Wyplosz, C. Bean, F. Giavazzi and H. Giersch.)

> Another CEPS-DGII report, largely written with Charles Wyplosz; extends the two-handed approach of supply and demand policies to cooperative implementation through differentiated national policies.

80. "Macroeconomic Policy in Europe: Autonomy through Cooperation", *European Economic Review*, 32, 353-362, 1988; version française: "Une stratégie ambidextre pour l'Europe: l'autonomie par la coopération" in *Gestion de l'Economie et de l'Entreprise. L'Approche Quantitative*, 13-26, CORE, De Boeck Université, Bruxelles, 1988.
    (With C. Wyplosz.)

> A concise synthesis of [79].

81. "L'arbitrage entre équité et efficacité en matière d'emploi et de salaires", 8ème Congrès des Economistes de Langue française, Commission 6, Chap IV, 121-146, 1988; reprinted in *Recherches économiques de Louvain*, 55, 1, 1-31 1989; also reprinted in Book [5].

   Some degree of wage-rigidities is second-best efficient when the deadweight loss of taxes used to finance income transfers is high, or when incomplete markets prevent risk sharing; see also [101].

82. "Competitive Equilibria with Quantity-taking Producers and Increasing Returns to Scale", *Journal of Mathematical Economics*, 17, 209-230, 1988.
   (With P. Dehez.)

   Extension of the Arrow-Debreu model to non-convex technologies; competitive behaviour is captured by pricing rules specifying, for given quantities, minimal prices compatible with voluntary trading; existence is proved.

83. "Distributive Production Sets and Equilibria with Increasing Returns", *Journal of Mathematical Economics*, 17, 231-248, 1988.
   (With P. Dehez.)

   A complement and companion to [82]. Under non-decreasing returns overall (output distributive production sets), the existence result of [82] holds under the natural assumptions of voluntary trading and zero profit (free entry).

84. "L'autogestion et la théorie économique: efficacité, financement et emploi", in G. Quaden, Ed., *L'Entreprise Coopérative, Tradition et Renouveau* , *Annales de la Chaire de Coopération*, pp. 55-70, Labor, Bruxelles, 1988; translated as "Self-Management and Economic Theory: Efficiency, Funding, and Employment", Chap. 15 in *Market Socialism*, P.K. and J. Roemer, Eds., Oxford University Press, 1993.

   An outgrowth of [40] and book [3], with attention to funding and employment policies of labour-managed firms.

85. "Generic Inefficiency of Stock-Market Equilibrium when Markets are Incomplete", *Journal of Mathematical Economics*, 1990.
   (With J. Geanakoplos, M. Magill and M. Quinzii.)

   An outgrowth of [33]; in stock-market economies with production decisions geared to shareholder preferences, equilibria are generically inefficient; changes of production plans, inducing changes in state-contingent relative prices, can be Pareto improving.

86. "Méthodes quantititives et décisions économiques", Chap. 5 in *Modélisation et Décisions Economiques*, Proceedings of the Symposium for the XXth Anniversary of CORE, Ed. H. Tulkens, Louvain-la-Neuve, 1990.

   An expository survey of research at CORE, bringing out the complementarities of economic theory, operations research, econometrics and game theory.

87. "A Proposal for 'COperative Relief of Debt in Africa' (CORDA)", in *Evolution of the International and Regional Monetary System*, Eds. A. Lamfalussy, A. Steinherr and D. Weiserbs, Macmillan, London, 1989; version française: "Coopération pour le réglement des dettes des pays d'Afrique, des Caraïbes et du Pacifique (CORDA), *Cahiers de la Faculté des Sciences Economiques et Sociales*, Namur, 1988.
(With A. Kervyn de Lettenhove, J.-P. Platteau and P. Reding.)

> Written at the request of "Justice and Peace", a proposal for market purchase of African debt by the European Union, redefinition of debt obligations on the basis of ability to pay and use of proceeds to fund a Marshall plan for Africa; received some official attention, but was perhaps too ambitious for practical implementation.

88. "Maurice Allais and the French Marginalist School", *Scandinavian Journal of Economics*, 1989.

> Presentation of Maurice Allais for the Nobel Award; draws heavily on [13].

89. "Schuld en Cooperatie in de Mundiale Ekonomie", in *Leuvense Ekonomische Standpunten,* 49, 1989.

> A lecture based on [87].

90. "Tales of Testing Bayesians" in *Contributions to Econometric Theory*, Eds. R.AL. Carter, J. Dutta and A. Ullah, 1990.
(With M. Mouchart.)

> Classical test statistics can be relevant to Bayesian decisions; three examples.

91. "The Role of Securities and Labour Contracts in the Optimal Allocation of Risk-Bearing", in H. Loubergé, Ed., *Risk, Information and Insurance. Essays in the Memory of Kark H. Borch*, Kluwer Academic Publishers, Boston., 1989; reprinted as chap. 11 in *Underemployment Equilibria: Essays in theory, Econometrics and Policy*, 1991.

> An extension of the CAPM to labour contracts; efficiency calls for wages indexed in part on the CPI and in part on nominal national income, with individually chosen weights.

92. "Stability of a Keynesian Adjustment Process" in W. Barnett, B. Cornet, C. d'Aspremont, J. Jaskold Gabszevicz and A. Mas-Colell, Eds, *Equilibrium Theory and Applications*, Chap. 9, Cambridge University Press, Cambridge, 1991.

> A natural adjustment process for a constant returns economy, with quantities moving faster than prices and downward price rigidity, leading in a bounded number of steps to a supply-constrained equilibrium, as defined in [63].Includes both a tâtonnement and a non-tâtonnement specification.

93. "European Unemployment: Lessons from a Multi-Country Econometric Study", *Scandinavian Journal of Economics*, 92 (2), 135-165, 1990; translated as "Le chômage en Europe: conclusions d'une analyse économétrique multinationale", *L'actualité Economique, Revue d'Analyse Economique*, 68, 359-389, 1992.
(With C. Bean.)

    Preview of [94].

94. "Europe's Unemployment Problem: Introduction and Synthesis", in J.H. Drèze, C. Bean, J.P. Lambert, F. Mehta and H. Sneessens, Eds, *Europe's Unemployment Problem*, Chap. 1, MIT Press, Cambridge (Mass),1990.
(With C. Bean).

    Introductory chapter to book [4] which collects ten econometric studies of employment in OECD countries, based on the disequilibrium approach of [71]; presentation of the model and summary of results, with discussion.

95. "Can Varying Social Insurance Contributions Improve Labour Market Efficiency?"in *Alternative to Capitalism: The Economics of Partnership*, A.B. Atkinson, Ed., Macmillan, London, 1993.

    An outgrowth of [81] and [91]; implementing efficient labour contracts through cyclical variations of social security contributions; includes a discussion of social security contributions collected as a profit share *à la* Weitzman.

96. "From the 'Value of Life' to the Economics and Ethics of Population:The Path is Purely Methodological", *Recherches Economiques de Louvain*, 58, 2, 1992.

    Outgrowth of [12] and [59]; the value of life concept relevant to the problems of safety is not relevant to problems of population, but the methodologies suitable for the two problems are related.

97. "La capitale de l'Europe, le marché et les pouvoirs publics locaux: murmures d'analyse et d'anticipation économiques",*Comptes Rendus de la Société Royale d'Economie Politique de Belgique*, 470, 3-5, 1992.

    A public lecture on urban economics, with emphasis on taxation of land rents to finance infrastructure and on improving mobility through road pricing.

98. "Temps de travail: Leçons européennes et perspectives belges", *La Revue Nouvelle*, 46-59, 1993.

    A non-technical update and summary of the empirical findings of [73].

99. "Europe's Unemployment Problem", Fundacion BBV Lecture, Madrid, 1993; reprinted in *European Review*, 2, (1), 73-82, 1994.

    A non-technical version of [94].

100. "1 Market + 1 (tight) Money = 2 Rules of Fiscal Discipline: Europe's Fiscal Stance Deserves Another Look", in *European Economic Integration: A Challenge in a Changing World*, M. Dewatripont and V. Ginsburgh, Eds., North-Holland, Amsterdam, 1994.

> An early warning against the deflationary impact of simultaneous budget consolidations; advocacy of cooperative fiscal policies in Europe; includes a survey of econometric simulations and an appendix on fiscal policies under quantity rationing and uncertainty. Debt-financed fiscal stimulation is appropriate provided demand outgrows supply over the period between the stimulation and the retirement of the debt.

101. "Risk Sharing on the Labour Market and Second-Best Wage Rigidities", *European Economic Review* 37, 1457-1482, 1993.
(With C. Gollier.)

> A systematic presentation of the case for limiting wage flexibility, both upwards and downwards, and for some degree of wage discrimination by hiring date, to achieve more efficient risk sharing when markets are incomplete.

102. "Regions of Europe: A Feasible Status, to Be Discussed", *Economic Policy,* 266-307, 1993.

> Regions could belong directly to the Europe of nations, without being part of a national state; merits and implementation are discussed; a principle of "distributive neutrality" leads to define transfers for seceding regions that prevent endless secessions.

103. "Growth and Employment: The Scope for a European Initiative", *European Economy, Reports and Studies*, 1, 75-106, 1994; traduction française: "Croissance et emploi: l'ambition d'une initiative européenne", *Revue de l'OFCE*, 49, 247-288, 1994.
(With Edmond Malinvaud, Paul De Grauwe, Louis Gevers, Alexander Italianer, Olivier Lefebvre, Maurice Marchand, Henri Sneessens, Alfred Steinherr, Paul Champsaur, Jean-Michel Charpin, Jean-Paul Fitoussi, Guy Laroque.)

> A collective position paper, advocating a cooperative growth initiative in Europe combining lower interest rates, elimination of labour taxes on low wages, public investment programs, a leaner but strengthened welfare state, wage moderation, taxation of interests and of CO_2 at European level. Still pertinent...

104. "Growth and Employment: The Scope of a European Initiative", *European Economic Review* 38, 1994.
(With Edmond Malinvaud.)

> A concise synthesis of [103].

105. "Technical Development, Competition from Low-Wage Economies and Low-Skilled Unemployment", *Swedish Economic Policy Review*, 185-214, 1994; translated in French as "Progrès technique, mondialisation et travail peu qualifié", chap. 3 in *Scenario pour l'emploi*, M. Didier, Ed., Economica, 1995.
(With Henri Sneessens.)

> The market position of unskilled workers has deteriorated due to biased technical progress, competition from low wage economies and relative stagnation of manufacturing employment. Lower labour costs, at unchanged incomes, are needed and discussed.

106. "Forty Years of Public Economics: A Personal Perspective", *The Journal of Economic Perspectives*, 9, 2, 111-130, 1994.

> An overview of developments in public economics; outgrowth of editing a volume of selected papers by William Vickrey, and based on a lecture presenting that volume at an AEA meeting.

107. "Report of the IEA Committee on a New School of Economics and Economic Development (SEED) in the Third World", *Journal of Public Economics*, 55, 1-18, 1994.
(With K. Arrow, A.B. Atkinson, K. Basu, S. Honkapohja, A. Krueger, J.-A. Morales, and N. Stern.)

> A committee report prepared for the International Economic Association, assessing the desirability and feasibility of organising a new School of Economics as a centre of excellence in a third-world country.

108. "L'emploi en Europe", *Recherches Economiques de Louvain*, 2, 159-180, 1995.

> A public lecture and opening chapter of book [7], summarising my views on the causes of and remedies for European unemloymant as of late 1994. Presented in Toulouse as the second annual lecture of IDEI.

109. "Small Banks are Beautiful. Can it last?", in *Economic Development and financial Intermediation: Small Firms, Local Banks and Cooperative Credit* , IRCEL, Roma, 1996.

> Drawing on fifty years of loose association with a small country bank, reviews the merits of smallness, the evidence on scale economies and the survival conditions for small banks.

110. "Sur la spécificité économique des soins de santé", *Economie et Prévision*, Economie et Prévision, 129-130, 1997.

> An invited editorial, presenting in non-technical terms the case for a health system combining universal compulsory insurance, deductibles and partial coinsurance, and supply controls, to overcome the problems of adverse selection, moral hazard and agency/asymmetric information in health care.

111. "Research and Development in Public Economics; William Vickrey's Inventive Quest of Efficiency", *Scandinavian Journal of Economics*, 99, 2, 179-198, 1997.

> Presentation of William Vickrey's work for the Nobel Committee.

112. "Temps choisi et partage du travail", *Société royale d'Economie politique de Belgique*, 497, 4-37, 1997; reprinted in *The Right to Work: Towards Full Employment,* M. Archer and E. Malinvaud, Eds, Pontifical Academy of Social Sciences, Vatican City 1998, 307-338.

> Updating of [73] and advocacy of a 4-days week.

113. "Walras-Keynes Equilibria, Coordination and Macroeconomics", *European Economic Review*, 41, 1737-62, 1997.

> In decentralised market economies, supply-constrained equilibria (as already studied in [63]) may persist as coordination failures, sustained but not caused by price rigidities. This feature may be arbitrarily severe, even at prices compatible with competitive equilibrium. The model includes both goods with flexible prices and goods with fixed prices.

114. "Investment Stimulation, with the Example of Housing", *BEI Papers,* Volume 3, 1, 99-114, 1998; revised, *Recherches économiques de Louvain*, 66, 1, 33-53, 2000.
(With A. Durré and H. Sneessens.)

> Following upon a suggestion formulated in [103], and drawing upon data for Wallonia, this paper spells out a program of investment in public housing seen as an instrument of demand stimulation in Europe.

115. "William S. Vickrey 1914-1996: A Biographical Memoir", 75, *National Academy of Sciences*, (1998)

> Biographical memoir outlining Vickery's career, contributions and research style.

116. "Money and Monetary Policy in General Equilibrium", Chap. 4 in A.P. Kirman and L.A. Gérard-Varet, Eds, *Economics Beyond the Millennium*, Clarendon, Oxford, 1998.
(With H. Polemarchakis.)

> Introducing money and transactions demand in general equilibrium models; existence, indeterminacy and suboptimality results; the basis for part 2 of book [6].

117. "Public Economics, Public Projects and their Funding", *Asian Development Review*, 15, 1-17, 1999.

> A lecture on the contribution of public economics to the analysis of public projects and of their funding. The case for funding public projects on world capital markets is presented and applied to the denomination of LDC debt.

118. "On the Dynamics of Supply-Constrained Equilibria" in P.J.J. Herings, G. van der Laan and A.J.J. Talman, Eds, *Theory of Markets*, North-Holland, Amsterdam, 1999.

> A dynamic extension of [113]. The paper defines a simple tâtonnement process of adjustments in prices and quantities, where excess demand results in nominal price increases and excess supply results in quantity rationing of supply at unchanged prices. Under standard assumptions, the process converges to a supply-constrained equilibrium. Includes a stylised application to monetary (interest rate) policy.

119. "Jobs and Economic Security in the 21st Century" in H. Löffer and E.W. Streissler, Eds, *Soziapolitik und Ökologieprobeme der Zukunft*, 65-96, Österreichische Akademie der Wissenschaften, Wien, 1999.

> At the invitation of the Austrian Academy of Sciences on the occasion of its 150th anniversary, this lecture takes a long run *ex ante* view of social protection and concludes on the role of (macro-) securities for promoting mutual insurance among the nations of Europe.

120. "The formulation of Uncertainty: Prices and States", Chap. 3 in G. Chichilnisky, Ed., *Markets, Information, and Uncertainty, Essays in Economic Theory in Honor of K.J. Arrow,* Cambridge University Press Cambridge, UK, 1999.

> Returning to the theme of [21], a comparison of temporary equilibrium and incomplete markets models and a discussion of whether prices should appear in the definition of states. Concludes instead that prices wil in general affect preference orderings.

121. "Moral Hazard and Conditional Preferences", *Journal of Mathematical Economics*, 31, 159-181, 1999.
(With A. Rustichini.)

> Conditional expected Utility theories, based on hypothetical preferences among outcomes conditional on states, are reconciled with decision theory under moral hazard [76]. The hypothetical preferences conditional on arbitrary events are well defined when and only when either states are fully exogenous or states are under full control of the agent.

122. "Intertemporal General Equilibrium and Monetary Policy", Chap. 2 in A. Leijonhufvud, Ed., *Monetary Theory as a Basis for Monetary Policy*, Macmillan, London, 1999.
(With H.M. Polemarchakis.)

> The monetary general equilibrium model of [116] is used to define a comprehensive monetary policy, to show that control of nominal interest rates controls at equilibrium expected inflation but not inflation variability, and to illustrate sources of monetary non-neutrality.

123. "State-Dependent Utility and Decision Theory", in S. Barbera, P. Hammond and C. Seidl, Eds, *Handbook of Utility Theory,* 2, Kluwer, Dordrecht 2004.
(With A. Rustichini)

> Survey article on a topic of long-standing interest [8, 70] as well as current research [121].

124. "On the Macroeconomics of Uncertainty and Incomplete Markets", *Recherches Economiques de Louvain*, 67 (1), 5-30, 2001; reprinted as Chap. 3 in J.H. Drèze, Ed., *Advances in Macroeconomics*, Macmillan, London, 1999; French translation: "Sur la macroéconomie de l'incertitude et des marchés incomplets", *Revue de l'OFCE,* 72, 7-37, 2000.

> Presidential Address to the International Economic Association, summarising semi-formally recent theoretical work on wage rigidities [101], coordination failures [113] and the dynamics of supply-constrained equilibria [ll8]. Policy conclusions relate to investment ([103], [114]), cyclically adjusted labour taxes [95] and macrosecurities [119].

125. "Economic and Social Security in the Twenty-First Century, With attention to Europe", *Scandinavian Journal of Economics*, 102(3), 327-348, 2000.

> A partly heuristic attempt at exploring long-run policies aimed at a second-best compromise between *ex ante* risk-sharing efficiency and *ex post* productive efficiency. Wage subsidies for low-skilled workers financed by taxes on high wages are advocated, together with improved risk sharing between capital and labour, between generations and between the countries belonging to EMU.

126. Globalizzazione e titolarizzazione dell'assunzione di rischio, *Assicurazioni*, LXV, 3, 251-64, 2000.

> A non-technical lecture at the Award ceremony of the INA Prize. Discusses the case for globalisation of risk sharing, the limits of existing arrangements, including securitisation, the scope for private-public partnerships, and potential improvements to international or inter-generational risk sharing.

127. "Monetary Equilibria", Chap. 5 in G. Debreu, W. Neuefeind and W. Trockel, Eds, *Economics Essays A Festschrift for Werner Hildenbrand*, Springer Berlin Heidelberg New York, 2001. (With H.M. Polemarchakis.)

> A definitive presentation of the model used in [116] and [122], with minimal assumptions and with proofs.

128. "Advances and Challenges in Macroeconomics" in J.H Drèze (Ed.), *Advances in Macroeconomics*, Palgrave, London, 2001.

> synthesis of 16 lectures on advances in macroeconomics presented to the Twelfth World Congress of the International Economic Association.

129. "PAIR, une Proposition pour la relance de l'aide au développement et pour une solution globale au problème de la dette des pays les plus pauvres", in J. Delcourt and P. de Woot de Trixhe, Eds, *Défis de la Globalisation: Babel ou Pentecôte?*, Presses universitiaires de Louvain, Louvain-la-Neuve, 2001.
(With L. Berlage, D. Cassimon and P. Reding.)

> A proposal for funding a long-term (15 years) program of poverty alleviation, while resolving the debt problem of the poorest countries - at a cost amounting to .1 of 1% of the GDP of the richest countries. Special attention is paid to a fair treatment of both debtors and creditors, and to international sharing of country risks.

130. "Continua of Underemployment Equilibria Reflecting Coordination Failures, Also at Walrasian Prices", *Journal of Mathematical Economics* 36, 169-200, 2001.
(With A. Citanna, H. Crès, P.J.J. Herings and A. Villanacci.)

> A generalisation of [113], establishing the existence of a connected continuum of equilibria in an economy with some fixed and some flexible prices, encompassing equilibria with arbitrarily severe supply-side rationing of the fixed-price commodities and equilibria with no rationing of at least one fixed-price commodity.

131. "La globalisation des risques, principes et application à l'Union monétaire, à la dette du Tiers-Monde et aux pensions", *Forum Financier*, 2-3, 192-201, 2002.

> Another non-mathematical lecture in the vein of [126], with specific applications.

132. "Economic and Social security: the Role of the EU", 15th Tinbergen Lecture, *De Economist,* 150, 1-18, 2002.

> Under incomplete markets, risk-sharing efficiency calls for limited flexibility of labour incomes [101]. Wage subsidies are a more efficient instrument than minimum wages cum unemployment benfits. But labour migration within a federation leads to inefficiently low wage subsidies in individual states, unless the migration externality is offset by matching grants from the federation.

133. "Indeterminateness of Equilibria and Macroeconomics", Chapter 2 in C.H Hommes, R.Ramer and C.A. Withagen, Eds, *Equilibrium Markets and Dynamics*, Springer Berlin Heidelberg New York, 2002.

> A non-technical discussion of indeterminateness of equilibrium in a model integrating money [127], price rigidities [130] and a tâtonnement process of nominal price formation [118]. Fixed nominal prices limit the indeterminateness of inflation rates, but introduce real indeterminateness, corresponding to the initial conditions of the tâtonnement process.

134. "Imperfect Competition à la Negishi, also with Fixed Costs", *Journal of Mathematical Economics*, 39, 219-37, 2003.
(With P. Dehez and T. Suzuki)

> Existence of equilibrium under imperfect competition à la Negishi (i.e. with downward-sloping perceived demand curves) and under non-convex technologies, allowing for fixed costs. Technically, the existence proof rests on pricing rules.

135. "Prospective Aid and Indebteness Relief: A Proposal", *World Dvelopment*, 31-10, 1635-54, 2003.
(With L. Berlage, D. Cassimon and P. Reding).

> An English version of [129], somewhat streamlined.

136. "Monetary Equilibria over an Infinite Horizon", *Economic Theory*, 25, 51-74, 2005. (With G. Bloise and H. Polemarchakis.)

An extension of [127] to an infinite horizon (with infinitely lived households or dynasties) and to a government levying taxes, collecting seignorage, issuing non-negative transfers and servicing a nominal debt. Attention is restricted to pure exchange and to a cash-in-advance transactions technology. The existence and indeterminacy results of the finite-horizon model hold with unchanged qualitative properties. The initial level of the public debt places a lower bound on the overall price level, which highlights some limitations of the "fiscal theory of the price level".

137. "From Uncertainty to Macroeconomics and Back", an intervieew conducted by O. Licandro and P. Dehez, *Macroeconomic Dynamics*, 9, 429-61, 2005.

A wide-ranging discussion of the interviewee's career and main contributions, also to institution building for economic research in Europe.

138. 'Rawlsian pricing of access to public facilities: a unidimensional illustration" *Journal of Economic Theory*, 136, 759-66, 2007. (With M. Le Breton and S. Weber.)

Public facilities have to be located on the line, at a fixed cost independent of location, to serve citizens who face a private access cost proportional to distance. The citizens are uniformly distributed over the real line. The fixed cost is shared among the users, facility by facility. An allocation is defined by the number and location of facilities, and by the cost-sharing rules of all facilities. An allocation is secession-proof (alternatively stated, is a core-allocation) if and only if no coalition of citizens could achieve a Pareto-superior outcome by seceding. It is shown that an allocation is secession proof if and only if it is Rawlsian, that is such that the total cost (private access plus share of fixed cost) is the same for all citizens.

139. "Secession-proofness in large heterogeneous societies", *Economie Publique*, 17, 197-220, 2005. (With M. Le Breton and S. Weber.)

This paper considers the same problem as the previous one, but over a bounded interval of the real line. Generically in parameters (length of interval and costs), the set of secession-proof allocations satisfying the Rawlsian principle is empty. One can still define the Rawlsian allocations that are efficient, i.e. associated with an optimal set of facilities. Secession-proof allocations are close to these - and the "distance" of the latter frrom the former tends to zero as the length of the interval increases.

140. "Research and higher education in economics: can we deliver the Lisbon objectives?", *Journal of the European Economic Association*, 5, 271-304, 2007. (With F. Estevan.)

Can European economics become "the most dynamic and competitive in the world"? Using readily accessible data, the paper documents the following aspects: (i) today, the US outperform Europe by a factor of the order of 3, with no clear trend; the Lisbon goal is not

in sight; (ii) Europe is not homogeneous; the UK and the small countries in North-central Europe outperform significantly the Big 4 continental countries (France, Germany, Italy, Spain); we conclude that the Big 4 should accept English as the lingua franca of economics, and implement major institutional reforms; (iii) some 35 leading economics departments (a dozen from each of these three areas) account for 75of Europe's research output; (iv) the concentration of research in leading departments is substantial but not exclusive; it is comparable in Europe and the US, but leading US departments have incomparably more resources and benefit from access to an integrated labour market; (v) few PhD programs are of efficient size, especially in Europe, calling for further concentration; (vi) second-best funding of higher education calls for block grants to efficient programs; in Europe, these should be organised at EU level. We conclude with a modest proposal (15 million euros per year) consisting of block grants to leading departments and to young academic researchers. Our optimistic verdict is that substantial progress towards the Lisbon goal is in sight, but requires significant departures from current practices.

141. "Voluntary matching grants can forestall social dumping", *CESifo Economic Studies*, 53(4), 596-617, 2007.
(With Ch. Figuières and J. Hindriks.)

In an Economic Union where member states subsidise some workers, labour mobility entails a risk of "social dumping": the subsidies are lower in the Union than they would be under autarky. Also, with different subsidy levels reflecting state-specific social preferences, productive efficiency does not obtain at Union level. Both problems can be solved through "matching grants" whereby the Union shares the state subsidies. The paper describes an adjustment process for the matching rates, which converges to an efficient allocation and along which all districts gain monotonically, so that voluntary participation is beneficial.

142. "Production and financial policies under asymmetric information", *Economic Theory*, 35(2), 217-31, 2007.
(With E. Minelli and M. Tirelli.)

The paper extends the standard model of General Equilibrium with Incomplete Markets (GEI) to situations where (i) private investors have limited information on asset returns, and (ii) managers of firms have limited information on shareholder preferences. The extension consists in lumping individual assets into "sectorial funds", whose holders are not known to firm managers. The Modigliani-Miller theorem no longer holds. Equilibria exist, under standard assumptions. The paper discusses and illustrates the inefficiencies due to asymmetric information.

143. "Rational expectations in games", *American Economic Review*, 48(1), 72-86, 2008.
(With R. J. Aumann.)

The paper extends the notion of value, as defined by von Neumann for two-person zero-sum games, to arbitrary n-person game situations derived from a rational belief system for a game G and characterises the associated expectations in terms of the correlated equilibria of the doubled game 2G, in which each of player i's strategies appear twice.

144. "Kinky perceived demand curves and Keynes-Negishi equilibria", *International Journal of Economic Theory*, 4, 207-46, 2008.
(With P. J.-J. Herings.)

> The paper extends the Arrow-Debreu equilibrium theory to a monetary economy with imperfect competition on product and labour markets, where demand functions perceived by firms or labour unions have kinks. Monetary exchange is governed by cash-in-advance. The firms set prices so as to maximise profits. The unions set wages at levels which are Pareto-efficient from the viewpoint of union members. Equilibria are characterised, and shown to exist under standard assumptions.

145. "Sequentially complete markets remain incomplete", *Economics Letters*, 100, 445-47, 2008.
(With P.J.-J. Herings.)

> We reconsider the well-known result of Arrow (1953) that the set of equilibria of an economy with complete markets coincides with the one of an economy with sequentially complete markets. We show by means of two examples that this result is problematic when there exist multiple equilibrium continuations to the initial-period component of an intertemporal equilibrium. Some consequences are drawn.

146. "Assessing strategic risk", *American Economic Journal, Microeconomics*, 1, 1-18, 2009.
(With R.J. Aumann.)

> In recent decades, the concept of subjective probability has been increasingly applied to an adversary's choices in strategic games. A careful examination reveals that the standard construction of subjective probabilities does not apply in this context. We show how the difficulty may be overcome by means of a different construction, and provide an axiomatic foundation for it.

147. "'Almost' subsidy-free spatial pricing in a multi-dimensional setting", *Journal of Economic Theory*, 1(1), 1–16, 2009.
(With M. Le Breton, A. Savvateev ad S. Weber.)

> Consider a population of citizens uniformly spread over the entire plane, that faces a problem of locating public facilities to be used by its members. The cost of every facility is financed by its users, who also face an idiosyncratic private access cost to the facility. We assume that the facilities' cost is independent of location and access costs are linear with respect to the Euclidean distance. We show that an external intervention that covers 0.19 % of the facility cost is sufficient to guarantee *secession-proofness* or *no cross-subsidization*, where no group of individuals is charged more than its stand alone cost incurred if it had acted on its won. Moreover, we demonstrate that in this case the Rawlsian access pricing is the only secession-proof allocation.

148. "Translations: economic efficiency and linguistic justice", in A. Gosseries and Y. Vanderborght (eds.), *Arguing about Justice. Essays for Philippe Van Parijs*, Presses Universitaires de Louvain, Louvain-la-Neuve, 303-310, 2011.

> Explains how an economist relying on the theory of public goods would approach the task of selecting a small set of "relay languages" for translations, in a multilingual setting like the European Union; and relates that approach to the alternative norm of "cooperative justice".

149. "Nested identification of subjective probabilities", *SERIEs: Journal of the Spanish Economic Association*, 3(1–2), 259–271, 2012.

> Extends the theory of games against nature to situations where only the set of optimal elements from a given set of acts is known - thereby also defining the extent to which probabilities must be specified to solve a decision problem.

150. "The Bayesian approach to simultaneous equations estimation", in D. Qin (ed.), *The rise of Econometrics*, Routledge, Oxon, Vol. III, Chap. 41, 2012.

> A paper initially released as ONR-Research Memorandum 67, Northwestern University, 1962. The paper was never published before, but was influential for the development of Bayesian techniques in simultaneous equations econometric models, including entries 39 and 41 above.

151. "Arrow's theorem of the deductible: moral hazard and stop-loss in health insurance", *Journal of Risk and Uncertainty*, 47(2), 147–163, 2013.
(With E. Schokkaert.)

> Under ex post moral hazard, Arrow's theorem can be generalised to a system of "implicit deductibles" positively related to the elasticities of medical expenditures with respect to the insurance rate. Under ex ante moral hazard, some insurance below the deductible(s) is justified for expenditures that affect negatively the probability of serious diseases.

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1. *Conceptions de l'Université*, Fondation Industrie-Université and Institut Administration-Université, 1-175, Bruxelles, 1966; reprinted (with a Preface by Paul Ricoeur), Editions Universitaires, Paris, 1969.
   (with Jean Debelle.)

2. "Démocratie et enseignement aux Etats-Unis", *Revue Nouvelle* (Bruxelles), 357-367, 1955.

3. "L'école dans la société américaine", *Revue Nouvelle* (Bruxelles), 397-406, 1955.

4. "L'enseignement universitaire dans la Belgique de demain", *Revue Nouvelle* (Bruxelles), 633-637, 1963.

5. "L'université dans la société contemporaine", *Revue Nouvelle* (Bruxelles), 582-613, 1965.

6. "Les finalités de l'université" in *L'Université de demain*, Elsevier Savoir-Formation, Bruxelles, 1974.
   (with J. Ladrière and N. Rouche.)

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8. "Economics and Universities in Europe" Lecture given on the eve of the annual meeting of the European Economic Association, Bolzano, Universita Libera di Bolzano – Freie Universität Bolzen, 2000.

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4. "Salaires, emploi et financement de la sécurité sociale" in *Cahiers pour Demain*, pp.4-6, juillet 1987.

5. "Ethics, Efficiency and the Social Doctrine of the Church" in *Social and Ethical Aspects of Economics*, Pontifical Council for Justice and Peace, Vatican City, 39-49, 1992; reprinted in *Ni Ghetto Ni Tour d'Ivoire, L'Ethique Economique et Sociale Aujourd'hui*, P. Van Parijs, Ed., Academia, Louvain-la-Neuve, 103-110, 1993.

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7. "Identité européenne, identité chrétienne et vocation universitaire", *Louvain* 140, 24-26, 2003.