

Cambridge University Press

0521842719 - Group Formation in Economics: Networks, Clubs, and Coalitions

Edited by Gabrielle Demange and Myrna Wooders

Frontmatter

[More information](#)

## GROUP FORMATION IN ECONOMICS

Diverse activities are conducted within and by organized groups of individuals, including political, economic, and social activities. How groups form and are organized to conduct these activities are subjects of intense game-theoretic research. Some of the topics investigated are trade networks, coauthorship networks, buyer–seller networks with differentiated products, and networks of information sharing. Other topics are social norms on punctuality, the adoption of new technologies, clubs and the provision of club goods and public goods, collusive alliances among corporations, international alliances, and trading agreements. This volume introduces the reader to recent literature on game-theoretic treatments of organized groups, with networks, clubs, and coalitions.

Gabrielle Demange is Director of Studies at the Ecole des Hautes Etudes en Sciences Sociales, Paris. She has been coeditor of the journal *Economic Theory* since 1998 and associate editor of *Review of Economic Design* since 1998 and of *Mathematical Social Sciences* and *Finance* since 2000. Professor Demange was elected as a Fellow of the Econometric Society in 1992 and is a Fellow of the Centre for Economic Policy Research, London. She has conducted research in the areas of social choice theory and cooperative game theory. Professor Demange's works on two-sided matching games and multi-item auction with David Gale were among the first in a now-large field. Much of her recent research concerns risk sharing in financial markets and the design of social security systems. Apart from research articles in eminent journals, Professor Demange has written three textbooks on finance and game theory.

Myrna Wooders is Professor of Economics at Vanderbilt University and the University of Warwick. Professor Wooders is founding editor of the *Economics Bulletin*, editor of the *Journal of Public Economic Theory*, and president of the Association for Public Economic Theory. Her research has been primarily in the areas of public economic theory and game theory – especially in the interface between the two. Her work, alone and with others, on multijurisdictional economies is well known and widely cited. Professor Wooders has published in leading journals in economics and game theory, including *Econometrica*, the *Journal of Economic Theory*, and *Proceedings of the National Academy of Sciences*. She has also edited a volume. Her awards include the prestigious Connaught Fellowship in the Social Sciences, a Humboldt Research Award for Foreign Scientists (Germany), and a research award from the Director General of Universities of Catalunya. Professor Wooders is a Fellow of the Econometric Society, an elected member of the Game Theory Society Council, and a Research Fellow of the German-based CESifo Research Network.

Cambridge University Press

0521842719 - Group Formation in Economics: Networks, Clubs, and Coalitions

Edited by Gabrielle Demange and Myrna Wooders

Frontmatter

[More information](#)

# Group Formation in Economics

## Networks, Clubs, and Coalitions

Edited by

GABRIELLE DEMANGE

*Ecole des Hautes Etudes en Sciences Sociales*

MYRNA WOODERS

*Vanderbilt University and University of Warwick*



**CAMBRIDGE**  
UNIVERSITY PRESS

Cambridge University Press  
 0521842719 - Group Formation in Economics: Networks, Clubs, and Coalitions  
 Edited by Gabrielle Demange and Myrna Wooders  
 Frontmatter  
[More information](#)

CAMBRIDGE UNIVERSITY PRESS  
 Cambridge, New York, Melbourne, Madrid, Cape Town, Singapore, São Paulo

Cambridge University Press  
 40 West 20th Street, New York, NY 10011-4211, USA

[www.cambridge.org](http://www.cambridge.org)  
 Information on this title: [www.cambridge.org/9780521842716](http://www.cambridge.org/9780521842716)

© Cambridge University Press 2005

This book is in copyright. Subject to statutory exception  
 and to the provisions of relevant collective licensing agreements,  
 no reproduction of any part may take place without  
 the written permission of Cambridge University Press.

First published 2005

Printed in the United States of America

*A catalog record for this book is available from the British Library.*

*Library of Congress Cataloging in Publication Data*

Group formation in economics : networks, clubs, and coalitions / edited by Gabrielle  
 Demange, Myrna Wooders.

p. cm.

Includes bibliographical references and index.

ISBN 0-521-84271-9

1. Social networks – Economic aspects.    2. Social groups – Economic aspects.
3. Game theory.    I. Demange, Gabrielle.    II. Wooders, Myrna Holtz

HM741.G76    2005

302.4 – dc22    2004045929

ISBN-13    978-0-521-84271-6 hardback

ISBN-10    0-521-84271-9 hardback

Cambridge University Press has no responsibility for  
 the persistence or accuracy of URLs for external or  
 third-party Internet Web sites referred to in this book  
 and does not guarantee that any content on such  
 Web sites is, or will remain, accurate or appropriate.

The editors are indebted to the British Academy, the European Commission, and  
 the University of Warwick for support for a 2001 Warwick Euro Workshop and a  
 conference on Networks, where this volume was initiated. We also thank Domenico  
 Moro for technical assistance in preparation of the volume.

Contents

<i>List of Contributors</i>	<i>page ix</i>
Introduction	1
PART ONE NETWORK FORMATION, COMMUNICATION, AND LEARNING	
1 A Survey of Network Formation Models: Stability and Efficiency	11
<i>Matthew O. Jackson</i>	
1.1. Introduction	11
1.2. Defining Network Games	13
1.3. Some Examples	19
1.4. Modeling Network Formation	25
1.5. The Relationship between Stability and Efficiency	36
1.6. The Myerson Value and Alternative Allocation Rules	45
1.7. Concluding Discussion	49
2 Models of Network Formation in Cooperative Games	58
<i>Anne van den Nouweland</i>	
2.1. Introduction	58
2.2. Definitions	60
2.3. Network-Formation Game in Extensive Form	63
2.4. Network-Formation Game in Strategic Form	68
2.5. Comparison of the Network-Formation Models in Extensive and Strategic Forms	73
2.6. Network Formation with Costs for Establishing Links	73
2.7. Simultaneous Bargaining over Network Formation and Payoff Division	79
2.8. Related Literature	85
3 Farsighted Stability in Network Formation	89
<i>Frank H. Page, Jr., and Samir Kamat</i>	
3.1. Introduction	89

vi	<i>Contents</i>	
	3.2. Directed Networks	93
	3.3. Supernetworks	95
	3.4. Notions of Farsighted Stability in Network Formation	101
	3.5. Computational Examples: Strategic Information Sharing	109
4	Learning in Networks	122
	<i>Sanjeev Goyal</i>	
	4.1. Introduction	122
	4.2. Networks	125
	4.3. Nonstrategic Interaction	127
	4.4. Strategic Interaction	137
	4.5. Evolving Networks	149
	4.6. Optimal Links and Actions in Games	156
	4.7. Concluding Remarks	162
	PART TWO ON EQUILIBRIUM FORMATION OF GROUPS: A THEORETICAL ASSESSMENT	
5	Group Formation: The Interaction of Increasing Returns and Preferences Diversity	171
	<i>Gabrielle Demange</i>	
	5.1. Introduction	171
	5.2. Competition under Increasing Returns	173
	5.3. On Competition across Groups	186
	5.4. Public Decision Rules and Mobility	198
	5.5. Conclusion	205
6	Games and Economies with Near Exhaustion of Gains to Scale	209
	<i>Alexander Kovalenkov and Myrna Wooders</i>	
	6.1. Games with Many Players as Models of Large Economies	209
	6.2. Games with Side Payments	212
	6.3. Parameterized Collections of Games	215
	6.4. Pregames	216
	6.5. Nonemptiness of Approximate Cores of Games in Parameterized Collections	220
	6.6. Examples of Coalition Production Economies with Small or Large Optimal Firms	223
	6.7. Equal Treatment of Similar Individuals	224
	6.8. Games and Markets	226
	6.9. Examples of Local Public Goods Economies	230
	6.10. Attribute Games and Exchange Economies	233
	6.11. Some Relationships to the Literature	235
	6.12. Conclusions	239
7	Coalitions and Clubs: Tiebout Equilibrium in Large Economies	246
	<i>John Conley and Stefani Smith</i>	
	7.1. Introduction	246
	7.2. Agents and Crowding	248

Cambridge University Press  
 0521842719 - Group Formation in Economics: Networks, Clubs, and Coalitions  
 Edited by Gabrielle Demange and Myrna Wooders  
 Frontmatter  
[More information](#)

	<i>Contents</i>	vii
7.3. A Local Public Goods Economy		254
7.4. Optimality and Decentralization		256
7.5. Existence		258
7.6. Noncooperative Solutions		259
7.7. Other Results and Future Research		260
8 Secession-Proof Cost Allocations and Stable Group Structures in Models of Horizontal Differentiation		266
<i>Michel Le Breton and Shlomo Weber</i>		
8.1. Introduction		266
8.2. The Model		268
8.3. Cooperative Framework		269
8.4. Unrestricted Cost-Allocation Correspondence		271
8.5. Restricted Cost-Allocation Correspondence		276
PART THREE GROUPS, CLUBS, ALLIANCES IN POLITICAL AND ECONOMIC ENVIRONMENTS		
9 Political Parties and Coalition Formation		289
<i>Amrita Dhillon</i>		
9.1. Introduction		289
9.2. Preelectoral Coalitions		290
9.3. Postelection Coalitions		298
9.4. Conclusions		302
10 Power in the Design of Constitutional Rules		312
<i>Mika Widgrén</i>		
10.1. Introduction		312
10.2. Measuring Power		313
10.3. Applying Power Indices to the EU		319
10.4. Power in EU Procedures		322
10.5. Concluding Remarks		331
11 Group and Network Formation in Industrial Organization: A Survey		335
<i>Francis Bloch</i>		
11.1. Introduction		335
11.2. Group and Network Stability		336
11.3. Cartels and Collusive Networks		338
11.4. Alliances and Networks of Collaboration		345
11.5. Trade Networks		348
12 Institution Design for Managing Global Commons: Lessons from Coalition Theory		354
<i>Carlo Carraro</i>		
12.1. Introduction		354
12.2. Accession Rules and Equilibrium Environmental Coalitions		357
12.3. Endogenous Minimum Participation Rules in International Environmental Agreements		360

viii	<i>Contents</i>	
	12.4. Endogenous Issue Linkage in International Negotiations	366
	12.5. Regional versus Global Environmental Treaties	370
	12.6. Conclusions	377
13	Inequality and Growth Clubs	381
	<i>Fernando Jaramillo, Hubert Kempf, and Fabien Moizeau</i>	
	13.1. Introduction	381
	13.2. Stratification and Growth: Evidence	384
	13.3. Stratification and Growth: Theoretical Approaches	388
	13.4. Inequality, Stratification, and Growth	398
	13.5. Club Formation Dynamics and Growth	412
	13.6. Conclusion	418
14	Informal Insurance, Enforcement Constraints, and Group Formation	430
	<i>Garance Genicot and Debraj Ray</i>	
	14.1. Introduction	430
	14.2. Group Formation under Equal Sharing	433
	14.3. Stationary Transfers	435
	14.4. General Results: Asymmetric Treatment and History Dependence	440
	14.5. Some Final Remarks	443
15	Spontaneous Market Emergence and Social Networks	447
	<i>Marcel Fafchamps</i>	
	15.1. Introduction	447
	15.2. A Model of Relational Contracting	449
	15.3. Stigmatization and Collective Punishment	460
	15.4. Networks and Markets	463
	15.5. Conclusion	466
	<i>Index</i>	471

Cambridge University Press

0521842719 - Group Formation in Economics: Networks, Clubs, and Coalitions

Edited by Gabrielle Demange and Myrna Wooders

Frontmatter

[More information](#)

---

## Contributors

*Francis Bloch* GREQAM, Centre de la Vieille Charité, 2 rue de la Charité, 13002  
Marseille, France  
e-mail: [bloch@ehess.cnrs-mrs.fr](mailto:bloch@ehess.cnrs-mrs.fr)  
<http://www.vcharite.univ-mrs.fr/PP/bloch/introduction.htm>

*Carlo Carraro* Dipartimento di Scienze Economiche, Università di Venezia, San  
Giobbe 873, 30121 Venezia, Italy  
e-mail: [ccarraro@univ.it](mailto:ccarraro@univ.it)  
<http://www.dse.univ.it/professori/Carraro/Carraro.html>

*John Conley* Department of Economics, Vanderbilt University, 414 Calhoun Hall,  
Nashville, TN 37235, USA  
e-mail: [j.p.conley@vanderbilt.edu](mailto:j.p.conley@vanderbilt.edu)  
<http://people.vanderbilt.edu/~j.p.conley/>

*Gabrielle Demange* EHESS, 48 Boulevard Jourdan, 75014 Paris, France  
e-mail: [demange@java.ens.fr](mailto:demange@java.ens.fr)  
<http://www.delta.ens.fr/demange/>

*Amrita Dhillon* University of Warwick, Department of Economics, Coventry, CV4  
7AL, UK  
e-mail: [A.Dhillon@warwick.ac.uk](mailto:A.Dhillon@warwick.ac.uk)  
<http://www2.warwick.ac.uk/fac/soc/economics/staff/faculty/dhillon/>

*Marcel Fafchamps* University of Oxford, Department of Economics, Manor Road,  
Oxford OX1 3UQ, UK  
e-mail: [Marcel.Fafchamps@economics.ox.ac.uk](mailto:Marcel.Fafchamps@economics.ox.ac.uk)

*Garance Genicot* Department of Economics, Georgetown University, 559 ICC,  
37th & O Streets NW, Washington, DC 20057, USA  
e-mail: [gg58@georgetown.edu](mailto:gg58@georgetown.edu)  
<http://www.georgetown.edu/faculty/gg58>



Cambridge University Press

0521842719 - Group Formation in Economics: Networks, Clubs, and Coalitions

Edited by Gabrielle Demange and Myrna Wooders

Frontmatter

[More information](#)

x

*Contributors*

*Sanjeev Goyal* Department of Economics, University of Essex, Colchester CO4 3SQ, UK

e-mail: [sgoyal@essex.ac.uk](mailto:sgoyal@essex.ac.uk)

<http://privatewww.essex.ac.uk/~sgoyal/>

*Matthew O. Jackson* Division of the Humanities and Social Sciences, 228–77, California Institute of Technology, Pasadena, CA 91125, USA

e-mail: [jacksonm@hss.caltech.edu](mailto:jacksonm@hss.caltech.edu)

*Fernando Jaramillo* Universidad de los Andes, Facultad de Economía, Carrera 1 N° 18A-70, Bloque C Columbia

e-mail: [fjaramil@uniandes.edu.co](mailto:fjaramil@uniandes.edu.co)

*Samir Kamat* Potfolio Management Group, Wachovia Corporation, Atlanta, GA 30303, USA

e-mail: [Samir.kamat2@wachovia.copr](mailto:Samir.kamat2@wachovia.copr)

*Hubert Kempf* Université Paris-1 Panthéon-Sorbonne, EUREQua, Bureau 305, 106-112, Boulevard de l'Hôpital, 75013 Paris, France

e-mail: [kempf@univ-paris1.fr](mailto:kempf@univ-paris1.fr)

<http://eurequa.univ-paris1.fr/membres/kempf/francais/cvcomp.htm>

*Alexander Kovalenkov* University of North Carolina at Chapel Hill, Department of Economics, 107 Gardner Hall, CB# 3305, Chapel Hill, NC 27599, USA

e-mail: [akovalen@email.unc.edu](mailto:akovalen@email.unc.edu)

<http://www.unc.edu/depts/econ/directory/kovalenkov.html>

*Michel Le Breton* IDEI, Université de Toulouse I, 21 allée de Brienne, 31000 Toulouse, France

e-mail: [lebreton@cict.fr](mailto:lebreton@cict.fr)

<http://www.idei.asso.fr/French/FCv/CvChercheurs/FrameLebreton.htm>

*Fabien Moizeau* GREMAQ, Université de Toulouse I, Manufacture des tabacs, 21 allée de Brienne, 31000 Toulouse, France

e-mail: [moizeau@gremaq.univ-tlse1.fr](mailto:moizeau@gremaq.univ-tlse1.fr)

*Anne van den Nouweland* Department of Economics, University of Oregon, Eugene, OR, USA, and Fellow, Department of Economics, The University of Melbourne, Australia

e-mail: [annev@oregon.uoregon.edu](mailto:annev@oregon.uoregon.edu)

<http://darkwing.uoregon.edu/~annev/>

*Frank H. Page, Jr.* University of Alabama, Department of Finance, Tuscaloosa, AL 35487, USA

e-mail: [fpage@cba.ua.edu](mailto:fpage@cba.ua.edu)

<http://www.cba.ua.edu/personnel/FrankPage.html>

Cambridge University Press

0521842719 - Group Formation in Economics: Networks, Clubs, and Coalitions

Edited by Gabrielle Demange and Myrna Wooders

Frontmatter

[More information](#)

*Contributors*

xi

*Debraj Ray* Department of Economics, New York University, New York, NY 10012, USA

e-mail: [debraj.ray@nyu.edu](mailto:debraj.ray@nyu.edu)

<http://www.econ.nyu.edu/user/debraj/>

*Stefani Smith* Liberty Fund, Inc., 8335 Allison Pointe Trail, Suite 300, Indianapolis, IN 46250, USA

e-mail: [ssmith@libertyfund.org](mailto:ssmith@libertyfund.org)

*Shlomo Weber* Department of Economics, Southern Methodist University, Dallas, TX 75275, USA

e-mail: [sweber@mail.smu.edu](mailto:sweber@mail.smu.edu)

<http://faculty.smu.edu/sweber/>

*Mika Widgrén* Turku School of Economics, Department of Economics, Turku, Finland

e-mail: [Mika.Widgren@tukkk.fi](mailto:Mika.Widgren@tukkk.fi)

*Myrna Wooders* Department of Economics, Vanderbilt University, Nashville, TN 37235-1819, USA, and Department of Economics, University of Warwick, Coventry CV4 7AL, UK

e-mail: [myrna.wooders@vanderbilt.edu](mailto:myrna.wooders@vanderbilt.edu)

[www.myrnawooders.com](http://www.myrnawooders.com)