Advances in Computational Economics
Advances in Computational Economics

VOLUME 20

SERIES EDITORS

Hans Amman, *University of Amsterdam, The Netherlands*
Anna Nagurney, *University of Massachusetts at Amherst, USA*

EDITORIAL BOARD

Anantha K. Duraiappah, *European University Institute*
John Geweke, *University of Minnesota*
Manfred Gilli, *University of Geneva*
Kenneth L. Judd, *Stanford University*
David Kendrick, *University of Texas at Austin*
Daniel McFadden, *University of California at Berkeley*
Ellen McGrattan, *Duke University*
Reinhard Neck, *University of Klagenfurt*
Adrian R. Pagan, *Australian National University*
John Rust, *University of Wisconsin*
Berc Rustem, *University of London*
Hal R. Varian, *University of Michigan*

*The titles published in this series are listed at the end of the volume*
November 1, 2007, will be Andrew Hughes Hallett’s 60th birthday. To celebrate this occasion, some of his many friends and former students decided to collaborate on the project of a volume in his honour. The present Festschrift is the result of this decentralized but cooperative effort. In view of his research interests, the overall topic is quantitative economic policy. Indeed, Andrew Hughes Hallett has been a prolific and leading contributor to both the theory and applications of quantitative economic policy over more than 30 years. Most applications of the theory of quantitative economic policy involve econometric modelling and pertain to macroeconomics; hence it is no surprise that many contributions to this book can be categorized as applied econometrics and deal with problems of fiscal and monetary policy. The international and, in particular, European focus of Andrew’s personal and professional life is reflected in the fact that most of the chapters in this book make reference to the European integration process.

Producing a Festschrift for an esteemed colleague and friend is always a pleasure for the editors. In this case, we are especially lucky for having collaborated with a great number of authors who agreed to contribute to this book within a fairly short time span. We are grateful to all of them for their effective cooperation. Christina Kopetzky and Anita Wachter efficiently converted the manuscripts into camera-ready form. Helen Heaney provided competent language checks. Financial support was obtained from the Oesterreichische Nationalbank and from the Research Council of Klagenfurt University. We are grateful to all supporters of this book.

September 2007
Reinhard Neck
Christian Richter
Peter Mooslechner
Contents

List of Contributors ................................................................. xv

Quantitative Economic Policy – Theory and Applications:
Introduction and Overview .......................................................... 1

Reinhard Neck, Christian Richter and Peter Mooslechner
1 Andrew Hughes Hallett at sixty ............................................. 1
2 The theory of quantitative economic policy and its applications .... 2
3 The challenge of policy coordination in the EMU and beyond ...... 4
4 Overview of the contributions to the Festschrift ...................... 8
5 Concluding remarks ................................................................. 13
References .................................................................................. 13

Theory of Quantitative Economic Policy

Towards a New Theory of Economic Policy: Continuity and
Innovation ................................................................................... 15

Nicola Acocella and Giovanni Di Bartolomeo
1 Introduction .............................................................................. 15
2 The Tinbergen-Theil approach and the Lucas critique .............. 16
   2.1 The classical approach to the theory of economic policy ....... 16
   2.2 Critique of the classical theory of economic policy .......... 18
   2.3 Policy games and the neutrality proposition .................. 18
3 Towards a “new” theory .......................................................... 20
   3.1 Two fundamental propositions ......................................... 20
   3.2 Extensions ........................................................................ 22
4 Conclusions ............................................................................... 23
Appendix ...................................................................................... 24
   A.1 The static case .............................................................. 24
   A.2 The dynamic case .......................................................... 27
Acknowledgement ......................................................................... 30
References .................................................................................. 31
Contents

If the Representative Agent is Used, Should He Be Believed? Aggregation, Welfare and the Role of Microfoundations in Quantitative Economic Policy

John Lewis

1 Introduction ....................................................................................... 35
2 Unrealistic assumptions in economics ............................................... 37
3 Assumption creep .............................................................................. 41
4 The problem of appraisal .................................................................. 44
5 Conclusion ......................................................................................... 47
Disclaimer ............................................................................................. 48
References ............................................................................................ 48

Time Consistency, Subgame Perfectness, Solution Concepts and Information Patterns in Dynamic Models of Stabilization Policies

Engelbert J. Dockner and Reinhard Neck

1 Introduction ....................................................................................... 51
2 The analytical framework .................................................................. 52
   2.1 A dynamic model of decentralized stabilization policies ........... 52
   2.2 Solution concepts and properties of equilibrium solutions ....... 57
3 Open-loop equilibrium solutions ....................................................... 65
   3.1 The open-loop Nash equilibrium solution .................................. 65
   3.2 The open-loop Stackelberg equilibrium solution ....................... 66
   3.3 (Open-loop) Pareto solutions .................................................... 69
4 Feedback equilibrium solutions ......................................................... 72
   4.1 The feedback Nash equilibrium solution .................................... 72
   4.2 The feedback Stackelberg equilibrium solution ......................... 75
   4.3 Some remarks on the “Cohen-Michel solution” ......................... 76
5 A numerical example ......................................................................... 78
6 Concluding remark ............................................................................ 82
Appendix .............................................................................................. 83
   A.1 Proof of Theorem 1.................................................................... 83
   A.2 Proof of Theorem 2.................................................................... 87
   A.3 Proof of Theorem 3.................................................................... 92
   A.4 Proof of Theorem 5.................................................................... 94
   A.5 Proof of Theorem 6.................................................................... 96
   A.6 Proof of Theorem 7.................................................................... 97
Acknowledgement .................................................................................. 99
References ............................................................................................ 99
Models of Endogenous Coalition Formation Between Fiscal and Monetary Authorities in the Presence of a Monetary Union .......... 103
Tomasz Michalak, Jacob Engwerda, Joseph Plasman, Bas van Aarle and Giovanni Di Bartolomeo
1 Introduction ..................................................................................... 103
2 Basic definitions and notation ......................................................... 105
  2.1 Per-membership partition function ........................................... 107
  2.2 Externalities from coalition formation...................................... 108
3 Simultaneous games – MU setting .................................................. 109
  3.1 Open-membership game........................................................... 109
  3.2 Restricted open-membership game........................................... 111
  3.3 Exclusive-membership game for an MU.................................. 112
  3.4 Relations between the OMG(MU), the ROMG(MU) and the EMG(MU)....................................................................................... 114
4 Sequential negotiation game............................................................ 114
5 Social optimum and indices............................................................. 117
6 Aspects of policy coordination in EMU .......................................... 119
7 The basic economic framework....................................................... 122
8 Numerical solutions of the model.................................................... 123
  8.1 Symmetric baseline model........................................................ 124
  8.2 Structural asymmetric setting ................................................... 131
9 Concluding remarks......................................................................... 133
References .......................................................................................... 135

Fiscal Policy

Fiscal Federalism, Risk Sharing and the Persistence of Shocks ....... 137
Scott Davis
1 Introduction ..................................................................................... 137
2 The model ........................................................................................ 140
  2.1 Preferences ............................................................................... 141
  2.2 Production technology .............................................................. 141
  2.3 Resource constraints ................................................................... 142
  2.4 Shock process ............................................................................ 144
3 The results........................................................................................ 145
  3.1 Consumption volatility arising from output volatility.............. 145
  3.2 Pass through of output fluctuations to fluctuations in consumption ......................................................................................... 148
4 Summary and conclusions ............................................................... 150
Appendix ............................................................................................ 151
Debating Fiscal Federalism in EMU: Plus ça change………………157
Maria Demertzis

1 Introduction .................................................................157
2 Using the fiscal instrument ..............................................158
   2.1 Stylised facts on the role of debt ................................158
   2.2 Monetary and fiscal interdependencies ....................158
3 Describing fiscal federalism ............................................160
   3.1 Fiscal federalism in the US.......................................161
   3.2 How appropriate is the US as a yardstick of comparison for
       EMU? ........................................................................168
4 Lessons for Europe ........................................................170
   4.1 The role of fiscal policy in EMU ...............................170
   4.2 Is a “balanced-budget” rule feasible for Europe? ........173
   4.3 Does a single currency require fiscal federalism? ........173
   4.4 Fiscal federalism and EMU .......................................175
4 Conclusions ..................................................................179

A Common Election Day for Euro-Zone Member States? ..........185
Fritz Breuss

1 Introduction .................................................................185
2 Empirical implications of models of politico-economic cycles.....186
   2.1 The theoretical models ..........................................187
   2.2 Empirical results....................................................192
3 The costs and benefits of a common election day in EMU .... 198
   3.1 A Politico-economic model for the Euro-zone ..........198
   3.2 Simulation results ..................................................200
4 Conclusions ..................................................................205

Automatic Stabilisers and Budget Rules ..............................209
Torben M. Andersen and Svend E. Hougaard Jensen

1 Introduction .................................................................209
2 The “consensus view” on fiscal policy design .....................210
3 Persistence in business cycle fluctuations .........................211
4 Diversification of temporary and persistent shocks ........................... 213
5 No fiscal rules without discretion ....................................................... 217
6 Conclusion and further perspectives ................................................... 219
References .......................................................................................... 220

Monetary Policy

Domestic and International Determinants of the Bank of England’s Liquidity Ratios during the Classical Gold Standard, 1876–1913:
An Econometric Analysis ................................................................. 221
Giuseppe Tullio and Jürgen Wolters
1 Introduction ..................................................................................... 221
2 The model ........................................................................................ 223
3 Description of the data used for estimation ..................................... 225
4 The determinants of changes in the Bank of England’s liquidity ratios .......................................................... 228
5 Summary of main results and conclusions ...................................... 237
Acknowledgement ............................................................................. 239
References .......................................................................................... 239

On the Transmission Mechanism of Monetary Policy ....................... 241
Christian Richter
1 Introduction ..................................................................................... 241
2 A technical introduction to time-frequency analysis ....................... 242
3 Empirical results .............................................................................. 246
  3.1 Germany ................................................................................... 246
  3.2 United States ............................................................................. 249
  3.3 The UK ..................................................................................... 251
  3.4 France ....................................................................................... 253
4 Conclusion....................................................................................... 256
Acknowledgement .............................................................................. 256
Appendix 1: Short-time Fourier transform ......................................... 256
References .......................................................................................... 257

From the EMS to EMU: Has There Been Any Change in the Behaviour of Exchange Rate Correlation? ........................................... 261
Xiao-Ming Li
1 Introduction ..................................................................................... 261
2 Econometric methodology ............................................................... 264
3 Empirical results .............................................................................. 266
4 Conclusion....................................................................................... 271
5.1 Evaluation of optimal policy rules ............................................. 322
5.2 Simple policy rules for improved labor market performance ... 328
6 Conclusions .................................................................................. 332
References ....................................................................................... 334

Uncertainties Surrounding Natural Rate Estimates in the G7 ....... 337
R Dr Cross, J Darby and J Ireland
1 Introduction ................................................................................... 337
2 Uncertainties regarding natural rates ............................................. 339
3 Methodology .................................................................................. 341
4 Estimated confidence intervals for the G7 .................................. 342
  4.1 Benchmark specifications ..................................................... 344
  4.2 Specification search and our preferred specifications .......... 348
  4.3 Discussion .............................................................................. 349
5 Conclusion .................................................................................... 353
Appendix ........................................................................................ 354
Acknowledgement ........................................................................... 361
References ....................................................................................... 361

Index .................................................................................................. 365
List of Contributors

Bas van Aarle  
Faculty of Economics and Business Administration,  
University of Maastricht  
Tongersestraat 53, P.O. Box 616, 6200 MD Maastricht  
The Netherlands  
b.vanaarle@algec.unimaas.nl

Nicola Acocella  
Department of Public Economics, University of Rome La Sapienza  
Via Castro Laurenziano, 9, 00161 Roma  
Italy  
nicola.acocella@uniroma1.it

Torben M. Andersen  
Aarhus School of Business, University of Aarhus  
Prismet, Silkeborgvej 2, 8000 Aarhus C  
Denmark  
tandersen@econ.au.dk

Giovanni Di Bartolomeo  
Department of Communication, University of Teramo  
Campus di Coste Sant’Agostino, Teramo  
Italy  
giovanni.dibartolomeo@uniroma1.it

Fritz Breuss  
Europainstitut  
Vienna University of Economics and Business Administration  
Althanstraße 39-45, 1090 Vienna  
Austria  
fritz.breuss@wu-wien.ac.at
Rod Cross  
Fraser of Allander Institute for Research on the Scottish Economy,  
University of Strathclyde  
100 Cathedral Street, Glasgow G4 0LN  
United Kingdom  
rod.cross@strath.ac.uk

Julia Darby  
Department of Economics, University of Strathclyde  
130 Rottenrow, Glasgow G4 0GE  
United Kingdom  
julia.darby@strath.ac.uk

Scott Davis  
Department of Economics, Vanderbilt University  
VU Station B #351819, Nashville, TN 37235-1819  
USA  
jonathan.s.davis@vanderbilt.edu

Maria Demertzis  
Economics and Research, De Nederlandsche Bank and  
University of Amsterdam  
Weisteinde 1, 1017 ZN, Amsterdam  
The Netherlands  
m.demertzis@dnb.nl

Engelbert Dockner  
Department of Finance, University of Vienna  
Brünnerstraße 72, 1210 Vienna  
Austria  
engelbert.dockner@univie.ac.at

Jacob Engwerda  
Department of Econometrics and CentER for Economic Research,  
Tilburg University  
P.O. Box 90153, 5000 LE TILBURG  
The Netherlands  
j.c.engwerda@uvt.nl

Jonathan Ireland  
Fraser of Allander Institute for Research on the Scottish Economy,  
University of Strathclyde  
100 Cathedral Street, Glasgow G4 0LN  
United Kingdom  
fraser@strath.ac.uk
Svend E. Hougaard Jensen
Centre for Economic and Business Research (CEBR), Copenhagen Business School (CBS)
Porcelaenshaven 24B, 2000 Frederiksberg
Denmark
shj.cebr@cbs.dk

John Lewis
Economics and Research Division, De Nederlandsche Bank
Postbus 98, 1000AB Amsterdam
The Netherlands
j.m.lewis@dnb.nl

Xiao-Ming Li
Department of Commerce, Massey University (Albany)
Private Bag 102 904, North Shore MSC, Auckland
New Zealand.
x.n.li@massey.ac.nz

Christopher Malikane
University of the Witwatersrand
1 Jan Smuts Avenue, Johannesburg 2050
South Africa
malikanec@sebs.wits.ac.za

Tomasz Michalak
Computer Science Department, University of Liverpool
Ashton Building, Ashton Street, Liverpool L69 3BX
United Kingdom
t.p.michalak@csc.liv.ac.uk

Peter Mooslechner
Oesterreichische Nationalbank
Otto-Wagner-Platz 3, 1090 Vienna
Austria
peter.mooslechner@oenb.co.at

Reinhard Neck
Department of Economics, Klagenfurt University
Universitätsstraße 65–67, 9020 Klagenfurt
Austria
reinhard.neck@uni-klu.ac.at
Ali Sina Önder  
Department of Economics, Vanderbilt University  
VU Station B #351819, 2301 Vanderbilt Place  
Nashville TN 37235-1819  
USA  
alisina.onder@Vanderbilt.Edu

Joseph Plasmans  
Department of Economics, University of Antwerp and  
Tilburg University  
Prinsstraat 13, B2000 Antwerp  
Belgium  
joseph.plasmans@ua.ac.be

Christian Richter  
Dept of Economics, Loughborough University  
Loughborough, LE11 3TU  
United Kingdom  
c.r.richter@lboro.ac.uk

Willi Semmler  
New School for Social Research  
65 Fifth Avenue, New York N.Y. 10003  
USA  
semmlerw@newschool.edu

Giuseppe Tullio  
Luiss University, Rome  
Via Tolmino 12, 00198 Roma  
Italy  
gt@giuseppetullio.com

Jürgen Wolters  
Freie Universität Berlin  
Boltzmannstrasse 20, 14195 Berlin  
Germany  
wolters@wiwiss.fu-berlin.de

Simon Wren-Lewis  
Economics Department and Merton College, Oxford University  
Manor Road Building, Manor Road, Oxford, OX1 3UQ  
United Kingdom  
simon@wren-lewis.wanadoo.co.uk
Quantitative Economic Policy – Theory and Applications: Introduction and Overview

Reinhard Neck, Christian Richter and Peter Mooslechner

1 Andrew Hughes Hallett at sixty

With this *Festschrift*, we would like to honour Andrew Hughes Hallett on the occasion of his 60th birthday. Andrew’s achievements in economics are outstanding and we will return to that again later. Moreover, he has been and still is an excellent supervisor for PhD students, whose work covers a broad range of economics. It is therefore difficult to categorize Andrew in terms of one particular field of economics. Maybe the common ground of anyone who has ever worked with Andrew is that theories always have to be tested empirically. This is why one of the areas this book emphasizes is hypothesis testing. As with Andrew’s work itself, this book covers a wide variety of topics.

Andrew can be characterized by his open mind and interest in any field of economics. This attitude distinguishes him from many other researchers in economics and makes working with him a real pleasure, not to mention productive, bearing in mind the many fruitful discussions we have had with him about different topics. As a result, Andrew has published a lot with different people and is among the top 2% of economists worldwide with respect to his publication and citation record according to RePEc. This *Festschrift* does not only include contributions from former PhD students but also from colleagues who have worked with Andrew in one way or another. This equally illustrates the variety of research Andrew is interested in.

Andrew started off his academic career at Warwick University where he graduated with a first class honours degree. Andrew then did his MSc at the London School of Economics and his PhD at Nuffield College, Oxford. His first position was a lectureship at Bristol University. From there, Andrew went on to the Erasmus University in the Netherlands and subse-
quently became David Dale Professor of Economics at Newcastle University before moving on to Strathclyde University where he was Jean Monnet Professor. In 2001 Andrew went to the US to become Professor at Vanderbilt University. Currently, he is Professor of Economics at George Mason University. Although Andrew was not born in Scotland, his Scottish roots must not be overlooked. He is still affiliated with St Andrews University and Edinburgh University and is a Fellow of the Royal Society of Edinburgh. Andrew is also a Council member of the Scottish Economic Society.

Andrew has published in outstanding economics journals such as the *American Economic Review*, the *Economic Journal* and the *European Economic Review*, but also in top mathematics journals such as *Mathematics of Computation* and *Linear Algebra and Applications*. He is author or co-author of more than 250 publications, including monographs, refereed and contributed papers in academic journals and books, editor of books, on the editorial board of several journals, and has served widely as a consultant, referee and evaluator within and outside academia. His research interests cover theoretical and applied econometrics, quantitative economic policy, policy coordination, the economics of Europe, including the European Economic and Monetary Union, macroeconomic theory and policy, and development economics, to name but a few.

# 2 The theory of quantitative economic policy and its applications

Quantitative economic analyses for policy purposes are about as old as econometrics, with predecessors going back to the early 1930s. To some extent, quantitative economic policy and econometrics were developed along with macroeconomics – the first estimated econometric model by Jan Tinbergen was published in the same year as Keynes’s *General Theory* – in spite of the well-known methodological disagreements between these two eminent economists. Advances in the development of econometric methods for testing economic hypotheses and estimating economic relations led to the creation and expansion of an “industry” of econometric models waiting to be used for forecasting and policy advice. Jan Tinbergen (1952, 1967) and Henri Theil (1958, 1964) supplied the theoretical framework for quantitative economic policy which lent itself easily to macroeconomic applications. Later on, both the availability of powerful computer facilities and the invention of mathematical tools of dynamic optimization created the impression that quantitative economic policy was
a “super tool”, capable of removing all major difficulties of macroeconomic policy design.

The experience of the oil-price shocks and resulting recessions, but also theoretical and empirical research starting in the late 1960s within the monetarist camp of macroeconomics led to a disillusionment with the new technology and a more sceptical view of the possibilities of “fine tuning” an economy. Nevertheless, econometric techniques and models continue to be used in the day-to-day business of forecasting and policy advice, and the numerous insights of New Classical and New Keynesian Macroeconomics, the Real Business Cycle theory and time-series based econometrics – to name but a few of the challenges to the traditional theory and practice of quantitative economic policy – are gradually being absorbed in the academic and practical literature on economic policy. While fixed-targets problems – originally proposed by Tinbergen – and optimization problems (flexible-targets problems, in the terminology of Theil) are to be regarded as more academic than practical exercises, policy simulations with econometric models have become standard tools for evaluating and designing macroeconomic stabilization policies. For instance, the simulations of productivity effects associated with the European Single Market contained in the Cecchini Report and the simulations of the advantages of a single currency for Europe following the Delors Report provided important arguments for the popularization of these steps towards European integration.

One set of criticisms raised against the traditional Tinbergen-Theil theory of quantitative economic policy and its extensions using optimum control theory, which can be found in both the writings of New Classical and public choice authors, starts from the observation that this theory and its applications rest on the assumption of a single policy-maker exogenous to the economic system who has preferences coinciding with those of the public (or the society, whatever this may mean). Instead, virtually all actual economic policy problems are characterized by a multitude of actors in the political system, not to mention the great number of (possibly heterogeneous) agents in the private sector. These decision-makers may have different preferences, and these preferences may in particular be different from those of (the majority of) the citizens. For example, in a single country, there are typically governments, central banks, interest groups, different layers of the administration and others who are involved in economic policy decision-making. If we consider open economies, we have to take into account policy-makers in different countries who care primarily about their own countries’ objectives; moreover, there may be supranational institutions influencing economic policies. The European Economic and Monetary Union (EMU) is a case in point, with the supranational Euro-
pean Central Bank primarily concerned about inflation in Europe and the national governments primarily interested in stabilizing income and employment in their own countries. Andrew Hughes Hallett was one of the first authors to recognize the need to take strategic interactions between policymakers with different objectives into account, and it is no coincidence that he was also among the first to analyse macroeconomic policy problems arising from non-coordinated policy, in particular in a monetary union.

3 The challenge of policy coordination in the EMU and beyond

The establishment of the EMU marked the beginning of a new era. Policymakers are now confronted with new challenges as EMU accelerates economic integration and ties the economies of the European Union Member States closer together.

There is a general theoretical consensus on the rationale for economic policy coordination within the EU and EMU to take spill-over effects into account and to avoid free riding. Policy coordination can be seen as a mix of information exchange, discussions, policy dialogue, formal agreements and jointly determined actions between policy institutions. However, the literature on economic policy coordination seems far from being able to provide robust conclusions about how the necessary interaction of institutions and policies should be organized. This is why there is a case for putting renewed emphasis on the subject under the new framework set by EMU.

Andrew Hughes Hallett is one of the few researchers who not only put questions of (European) policy coordination quite early on his research agenda (Brandsma and Hughes Hallett, 1986; Hughes Hallett, 1987) but also intensified and broadened this research once it became clear that EMU had become a viable option. Although he was regularly teaching in parallel in the US, this research orientation made him one of the outstanding personalities in European economics to get in touch with on these issues. At the same time, his model-based, empirically oriented, pragmatic view of policy questions – always taking institutional features into account – made him an indispensable partner on all those subjects European policy institutions, including National Central Banks, are faced with. Andrew’s joint work with the Oesterreichische Nationalbank (Hughes Hallett and Mooslechner, 1999; Hughes Hallett, Mooslechner and Schürz, 2001) underlines the practical importance and the urgent need for this type of re-
search work. It definitely contributed a lot to a better understanding of the challenges that need to be addressed as well as the viable options to be followed.

The process of creating a monetary union in Europe triggered new theoretical and empirical research devoted to improved comprehension of the consequences of an integrated Europe. Economic policy coordination may be seen as a prerequisite for successfully combining the single monetary policy with economic policies left to be determined at the national level. At the EU level, a large number of coordination instruments – from "Broad Guidelines" to "Dialogues" – already exist, illustrating the widespread need for coordination instruments from a political perspective. Right from the beginning this underlined the fact that examining the institutional context in which cooperation takes place is one of the basic issues. Thus policy analysis – to some extent – has to focus more on feasibility than pure theoretical desirability.

As early as 1987 James Tobin pointed out that the reasons for policy coordination go far beyond narrow economic considerations: “Coordination of macroeconomic policies is certainly not easy; maybe it is impossible. But in its absence, I suspect nationalistic solutions will be sought – trade barriers, capital controls and dual exchange-rate systems. Wars among nations with these weapons are likely to be mutually destructive.”

Without a doubt, international economic policy coordination is not merely an economic issue; it is and also has to be treated as a political topic, particularly regarding its relevance for understanding the policy process and its conflicts.

Importantly, Currie, Holtham and Hughes Hallett (1989) distinguish different levels of cooperation which allow the available spectrum of policy cooperation to be structured:

1. In the simplest case, cooperation only consists of the exchange of information. Policy-makers may exchange information about policy targets and priorities, but they take their decisions autonomously.
2. Coordination in the form of crisis management is of an ad-hoc nature and is limited to reactions to episodes of particular difficulties.
3. Policy-makers may agree on targets such as the exchange rate or intermediate monetary targeting. A variable may be used as a kind of surrogate for coordination.
4. Partial coordination involves agreeing on policy assignments.
5. In the form of full coordination, policy-makers aim to bargain across all targets and policy instruments.

A prerequisite for success in policy coordination is an improved analytical understanding of macroeconomic interactions, together with the role insti-
tutions play in supporting desirable policies. The rules of the Stability and Growth Pact and their consequences, the interaction of monetary and fiscal policy, the institutional design of central banks as well as the monetary policy strategy are at the heart of the questions to be answered in this respect.

Andrew’s research agenda is a perfect example for illustrating what is necessary to further develop our understanding of what kind of coordination and which institutional setting of policy coordination can be expected to be more favourable than others.

- Fiscal policy and the Stability and Growth Pact: monetary and fiscal policies may be chosen and operated independently, but they nevertheless jointly determine the outcomes for each economy. In European integration, fiscal policy remains the only nationally held instrument of macroeconomic policy to compensate for any local shocks or asymmetric transmission mechanisms. However, under the Stability and Growth Pact, fiscal policy in the Euro Area is to be engineered towards a medium-term balance or surplus, with a 3% deficit ceiling imposed. In this case, coordination between fiscal and monetary policies becomes more important.

- Policy interaction: from a policy perspective, the concern is that non-coordination might lead to sub-optimal results. For example, a tightening of monetary policy to fight inflation in one country might lead to an appreciation of the currency and to inflationary pressures in other countries whose currencies are depreciating. If all countries tightened monetary policy under worldwide inflationary pressures, the result might be an overtightening of monetary policy worldwide. The choice of monetary rules and the fiscal restrictions inherent in EMU do interact and affect the policy outcome. A mismatch between fiscal and monetary policy is characterized by high fiscal deficits and a tight monetary policy. This combination would result in a tendency toward appreciation of the exchange rate and an unbalanced policy mix. The other negative alternative would be an easing of monetary policy combined with loose budgetary policies. The policy mix might be supportive of growth in the short run but would be damaging in the long run. The distinction between types of fiscal-monetary policy regimes – coordination, capitulation or full independence – is an essential issue in understanding real world policy needs. If the policy mix is not able to adjust, it will trigger policy conflicts which imply that the policy objectives have not been achieved and it will not be possible to satisfy the targets of the economy as a whole.
• Central Bank design: the problem of monetary policy delegation can be analysed in a game-theoretic framework between the government and the central bank. The choice of the institutional design of the central bank as well as the implementation of monetary and fiscal policies have to be addressed at the same time and the optimal policy outcome is to be found along a continuum of combinations of structural features like independence and conservatism. Adding both distributional and stabilization objectives of the government once again clearly points out the importance of policy coordination for achieving superior policy results.

• Heterogeneity within an integration area: can heterogeneity among EU member states threaten the stability of EMU? Asymmetries in the transmission of monetary and fiscal policies coupled with differences in national preferences for price stability, output growth and income distribution might create tensions within EMU and put policies under pressure. The costs of membership in EMU can be significant for countries whose transmissions, structure or preferences deviate substantially from those underlying the common monetary policy. These challenges are very much related to the question of incentives to enlarge EMU. Countries will only want to join the union if they can expect large enough benefits to compensate for a given loss in economic independence. At the same time, existing members will want new entrants to be characterized by a high degree of market flexibility. This obvious incentive mismatch may complicate the enlargement process and delay necessary policy measures and reforms on both sides.

• Last but not least, it should also be stressed that Andrew has always been interested in EU enlargement to Central and Eastern Europe and many questions related to it. His research topics in this respect range from price and output level convergence of New Member States to rather specific ones like the monetary integration options in the new CIS countries (“Ex-Soviet Union”).

The coordination of economic policies is happening at different institutional levels and to different degrees within the EU and EMU. Such coordination will be strengthened in the future. However, views on adequate policies still differ enormously. Therefore, the EMU regime might be interpreted as something like a surrogate for far-reaching forms of policy coordination. More ambitious forms of coordination aiming at explicit coordination so as to optimize the policy mix in EMU are confronted, in any case, with coordination constraints imposed by the existing regime as well as by political restrictions.

The coordination literature has concentrated on game-theoretic dilemmas of collective actions and on uncertainty. In reality, there are multiple
obstacles to successful coordination, such as differences in policy objectives between policy-makers, the lack of a coherent common understanding of how the macroeconomy works and how it should work, heterogeneous national institutions, and contingent political and social factors. If there are differences in fundamental matters such as the role of the state or in the degree of necessary liberalization, the institutionalization of coordination will become extremely difficult. In reality, coordination will be complicated by many political, bureaucratic and legal constraints on jurisdictional divisions within governments. Looking back in monetary history, one may even conclude that coordination has only been successful in cases where it was systematically institutionalized and where the political consensus was broad.

4 Overview of the contributions to the Festschrift

This book is in three parts. The first part deals with problems of the theory of quantitative economic policy. Nicola Acocella and Giovanni Di Bartolomeo start off with a contribution on the theory of economic policy. Their paper outlines the evolution of the theory of economic policy from the classical contributions of Ragnar Frisch, Bent Hansen, Jan Tinbergen and Henri Theil to situations of strategic interaction. Andrew Hughes Hallett has taken an active and relevant part in this evolution, having contributed to both the development and recent rediscovery of the classical theory of quantitative economic policy, with relevant applications for model building. They show that this theory can shed light on some issues discussed in the more recent literature, such as the Lucas critique and the policy (in-)effectiveness proposition of the new classical macroeconomics.

The next chapter by John Lewis discusses the role of aggregation, welfare and microeconomic foundations in the theory and practice of quantitative economic policy. He critically examines the contemporary practice of deriving welfare inferences from representative-agent models for the purpose of ranking different policy outcomes. The use of representative-agent models with demonstrably false assumptions is usually motivated by an appeal to the instrumentalist view that the falsity of assumptions need not matter as long as a model predicts well. The paper argues that, on the basis of the instrumentalists’ own logic, this defence is only valid when the goal of the model is prediction. However, such models, even if they predict well, cannot necessarily be used for welfare analysis. Lewis therefore calls for robustness checks to be applied to these models before they are utilized for policy applications.
Recent developments in the theory of quantitative economic policy abandon the assumption of a single homogeneous policy-maker and use game theory to model strategic interactions between policy-makers with different preferences. Engelbert Dockner and Reinhard Neck discuss the relations between time consistency and subgame perfectness for dynamic game models with more than one policy-maker. They consider a differential game model with two decision-makers, which can be interpreted for various situations of stabilization policies. Different solution concepts are defined and analytically derived for that model, and some of their properties, such as time consistency, subgame perfectness and efficiency, are discussed. The importance of the information pattern of the dynamic game under consideration is emphasized. In particular, Dockner and Neck derive the open-loop Nash and Stackelberg and the feedback Nash and Stackelberg equilibrium solutions and the set of Pareto-optimal solutions for their game. A numerical example is given to illustrate the analytically derived results.

The following chapter by Tomasz Michalak, Jacob Engwerda, Joseph Plasmans, Bas van Aarle and Giovanni Di Bartolomeo develops an endogenous coalition formation framework suitable for studying the design of international macroeconomic policy coordination between an arbitrary number of countries and monetary authorities in the presence of (possibly multiple) monetary unions. First, they redefine some equilibrium concepts available in the recent literature such as Open-Membership Game, Restricted Open-Membership Game, Exclusive Membership Game and Sequential Negotiation Game. Then they use these equilibria in a continuous-time model of several countries (or blocks of countries), which may form monetary unions and share common central banks. Finally, the coalition formation games are applied to a setting where three countries form a monetary union. Various shocks and asymmetries are considered in this setting.

The second part of this book investigates fiscal policy. It opens with a paper by Scott Davis on fiscal federalism, risk sharing and the persistence of shocks. It investigates the possible role of a federal tax and transfer scheme in the Euro Area. In particular, the author examines how various forms of market incompleteness can make a fiscal federation necessary in the Euro Area to counter the inevitable output volatility resulting from the formation of a monetary union. An interesting result is that the persistence of “shocks” driving business cycle fluctuations is an important determinate of the effectiveness of market-based risk sharing in this incomplete markets model. Not surprisingly, shock persistence is an important determinate of the effectiveness of fiscal-based risk sharing as well. Davis shows us that in certain circumstances, a federal system is an important channel for
international risk sharing in the face of a market failure, but that in other circumstances, even incomplete markets provide complete risk sharing and a federal tax and transfer system is superfluous.

Maria Demertzis also debates fiscal federalism. It is well known that the creation of a monetary union in Europe has specified a centralized role for the monetary instrument but has left the fiscal instrument within the nations’ jurisdiction. It still remains unclear how national fiscal policies interact with the common monetary policy and whether there may be increasing pressure to establish a centralized fiscal counterpart. Demertzis’ paper has two aims: first, to describe the US federal structure and the relative size of each level of government, and second, to use the US example as a yardstick of comparison for Europe. She reviews the existing literature on whether Europe can, or indeed should, mimic the US in terms of its fiscal architecture and concludes that the need for a federalist structure is not argued unambiguously in the literature. However, what is clear is that advancing towards a federalist structure requires not only economic adjustments but also a number of institutional changes that are politico-economic in nature.

The next chapter by Fritz Breuss tests the hypothesis that synchronizing elections might improve welfare, especially in the presence of a political budget cycle in the Euro Area. After identifying such a political budget cycle in the Euro Area, Breuss builds a politico-macroeconomic model and simulates the effects of adopting a common election day in the Euro Area member states. The results support most of the theoretical predictions: first, synchronizing the elections could enhance GDP growth and reduce unemployment, but leads to increased inflation and, in some countries, to a deterioration of the budget; higher inflation forces the ECB to introduce monetary restrictions. Second, if the synchronization happens asymmetrically – either in only the large or in only the small Euro Area countries – the result depends on the size of the spillovers. Third, a common election day is a further step towards the desired “European business cycle”, but at the cost of increasing its amplitude. Harmonizing elections is another method of policy coordination. Whether this leads to higher welfare is a matter of weighing the different macroeconomic outcomes and it also depends on the model applied.

Torben M. Andersen and Svend E. Hougaard Jensen offer a critical assessment of the consensus view on rule-based fiscal policy which stipulates that automatic stabilizers should be allowed to operate around a structural budget in balance or surplus. Specifically, they focus on three aspects: first, the consensus view seems to be based on an assumption that business cycles are transitory deviations from a trend. However, actual business cycles are typically characterized by substantial persistence. Sec-
ond, when actual business cycles involve both transitory and permanent components, an important issue arises concerning the appropriate diversification of such shocks. However, automatic stabilizers cannot distinguish between the two types of shocks. Third, it is argued that there is no such thing as a purely rule-based fiscal policy relying on automatic stabilizers, since the realization of shocks necessitates discretionary changes. Hence this analysis points toward the need for more flexibility of fiscal policy and again for coordination between fiscal and monetary policies.

The third part of this book covers monetary policy. It starts off with a chapter by Giuseppe Tullio and Jürgen Wolters on the domestic and international determinants of the Bank of England’s liquidity ratio (the ratio of gold and silver holdings to banknotes issued) from 1876 to 1913. A falling liquidity ratio would cause apprehension and would eventually lead to a discount rate increase. Studying the determinants of the liquidity ratio is therefore crucial to understanding monetary policy during this period. Using “not equally spaced chronologically ordered data” referring to each of the 221 discount rate changes, the authors show that the differential between the private discount rate in London and the Bank of England’s discount rate was the most significant determinant of the liquidity ratio. Foreign discount rates and the deviations of the Pound from the gold parity were also significant, supporting the view that the gold standard was a bipolar or multipolar system. They also find evidence of a more intensive use of “gold devices” on the part of the Bank of England from 1885 to 1892.

The next chapter by Christian Richter investigates the monetary transmission mechanism for the US, UK, Germany and France within a time-frequency analysis frame. In particular, Richter analyses the impact of the short-term interest rate on the growth rate of real GDP. He shows how to extract the components of the transmission mechanism so that they can vary in importance and cyclical characteristics over time. The paper finds that countries vary in the components and characteristics that make up their transmission mechanisms. That may not be a problem for the US or the UK, but it is a problem within the Euro Area. However, the author does find a significant change in the French transmission mechanism at the end of the sample which may indicate the start of a convergence process, but there are not enough data to confirm that.

The paper by Xiao-Ming Li investigates whether there has been any change in the behaviour of exchange rate correlations since the introduction of the euro. In particular, he examines exchange rate correlations between the euro (ECU) and other currencies against the US dollar across the EMS and EMU periods to compare the European Central Bank’s ability with that of the Bundesbank to achieve internal stability of the euro (ECU).
The results show that evidence of changes from negative-type towards positive-type asymmetry in dynamics is stronger for exchange rate correlations within the European region than outside the region. It is then suggested that the Euro Area monetary authorities’ ability to effectively intervene in foreign exchange markets in order to maintain price stability (i.e. the internal stability of the euro/ECU) has been improved to a certain degree since the introduction of the euro.

The following chapter by Ali Sina Önder discusses optimal monetary policy during the enlargement of a monetary union. His paper presents a nominal exchange-rate-based criterion both for the welfare of the accession country and for the currency union’s monetary policy target and assesses under which circumstances joining a monetary union increases welfare or not. A country with an appreciating currency will find it non-optimal to join the currency union, and in the case of accession, the currency union’s monetary authority will need to adjust its optimal target criterion for inflation to a higher level while the accession of a country with a depreciating currency will lower the optimal target for the currency union.

Simon Wren-Lewis examines what happens to the international financial system when the dollar falls. First, he investigates whether a significant reduction in the value of the dollar will occur even if large deficits continue, because more net exports are required to service a growing debt burden. Second, he suggests that any depreciation in the dollar is likely to be variable across different currencies, with a relatively modest depreciation against the euro and Sterling. Both effects are quantified using the FABEER model.

Christopher Malikane and Willi Semmler investigate the implications of adopting an inflation-targeting framework for monetary policy when the unemployment rate is high in a small open economy. For this purpose, they formulate a small open-economy macro-model with hysteresis in the labour market. They find that the optimal Taylor rule is robust to real exchange rate, aggregate demand and productivity shocks. However, in the context where the unemployment rate is high, the robustness to demand shocks is equivalent to trapping the economy at a high-unemployment-rate equilibrium. Malikane and Semmler then formulate alternative simple rules that retain the desirable properties of the optimal Taylor rule, but increase the power of demand-management policies to affect the unemployment rate. Contrary to many authors, they find that such rules call for an independent response of the central bank to real exchange rate fluctuations, and are significantly superior to the optimal Taylor rule.

In the last paper, Rod Cross, Julia Darby and Jonathan Ireland examine the uncertainty associated with estimated natural rates of unemployment. Point estimates of the natural rate are usually generated as ratios between
parameters in estimated regression equations. In such a framework, uncertainties about the estimated parameter values inevitably imply uncertainty about the natural rate of unemployment. However, regression packages do not routinely report standard errors for non-linear functions of parameters, hence standard errors for natural rate estimates are not usually reported and the extent of the uncertainty is not made explicit. Staiger, Stock and Watson have corrected this deficiency by estimating confidence intervals for natural rates in the US. The paper by Cross et al. extends this approach and applies it to each of the G7 countries. They find that while it is possible to obtain econometrically well specified equations, intervals generated for the estimated natural rates are significantly wider for countries outside the US and are large in relation to cyclical variations in unemployment. Whilst policy makers may be willing to look at, say, 75% rather than 95% confidence intervals, the results reveal that policy makers in European countries who wish to follow this route face far greater uncertainty than those in the US. These findings suggest that theoretical contributions to the literature on monetary policy design that take uncertainty about the natural rate into account are particularly pertinent.

5 Concluding remarks

With this book, former students and present colleagues of Andrew Hughes Hallett would like to congratulate him on his achievements, thank him for the inspiration he gave them, and encourage him to go on doing research which is both methodologically sound and practically relevant – policy analysis in the best sense of the word. We also hope to have contributed to the literature in fields which are dear to him – the quantitative analysis of economic policy problems. Such research should always be driven by the desire to improve not only our understanding of the economy but also the conditions of human beings, whose well-being must be the ultimate end of any political activity, including economic policy.

References


Theil H (1964) Optimal decision rules for government and industry. North Holland, Amsterdam