

contributions to economic  
analysis

W. DRIEHUIS, M.M.G. FASE, and H. DEN HARTOG  
Editors

# **Challenges for Macroeconomic Modelling**

# CHALLENGES FOR MACROECONOMIC MODELLING

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# **CHALLENGES FOR MACROECONOMIC MODELLING**

# CONTRIBUTIONS TO ECONOMIC ANALYSIS

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## Introduction to the series

This series consists of a number of hitherto unpublished studies, which are introduced by the editors in the belief that they represent fresh contributions to economic science.

The term 'economic analysis' as used in the title of the series has been adopted because it covers both the activities of the theoretical economist and the research worker.

Although the analytical methods used by the various contributors are not the same, they are nevertheless conditioned by the common origin of their studies, namely theoretical problems encountered in practical research. Since for this reason, business cycle research and national accounting, research work on behalf of economic policy, and problems of planning are the main sources of the subjects dealt with, they necessarily determine the manner of approach adopted by the authors. Their methods tend to be 'practical' in the sense of not being too far remote from application to actual economic conditions. In addition they are quantitative.

It is the hope of the editors that the publication of these studies will help to stimulate the exchange of scientific information and to reinforce international cooperation in the field of economics.

*The Editors*

## EDITORS' INTRODUCTION

W. Driehuis, M.M.G. Fase, H. den Hartog

In 1985 we realized that the year ahead was one of celebration. In October 1936 Jan Tinbergen presented the first econometric model ever made, which was of the Netherlands economy, to an audience of Dutch economists. The year 1986 was therefore the fiftieth anniversary of macroeconomic modelbuilding and there were many reasons to commemorate its birthday.

First of all there were reasons to look back. What was this first model all about? How has macroeconomic modelbuilding in the Netherlands and other countries developed since then and where does it stand now?

There were also reasons to look ahead. Since the monetarist-new classical revolution, macroeconomic modelbuilding has come under heavy fire. These schools in economics consider empirical macro-economic modelbuilding a fairly useless activity devoid of all intellectual challenge. The reasoning is based on assumptions about the way people absorb information about economic events and economic policy. Economic agents are supposed to behave rationally no matter what economic policy looks like, that is if they are not taken aback by it.

We recognize the importance of the rational expectations school for bringing back expectations, particularly in the forward looking variant, in macroeconomic modelling, but we remain sceptical about the rational expectations revolution and have doubts on its meaning for practical modelbuilding so far. We decided to organize an international conference with a theme which reflected some doubt and uncertainty about the future of macroeconomic modelbuilding. We asked all participants to contemplate the question: will macroeconomic modelbuilding remain an intellectual challenge for the future?

The conference was held in Amsterdam on October 21-23, 1987 and organised by the three institutions with which we are affiliated: the University of

Amsterdam, the Nederlandsche Bank and the Central Planning Bureau. We were lucky to have His Royal Highness Prince Claus of the Netherlands to hold the opening speech honouring Jan Tinbergen. He emphasized the human factor in Tinbergen's work and asked the audience to continue their activities in the field of macroeconomic modelbuilding in Tinbergen's spirit.

The audience, made up of about 330 economists from all over the world, was then able to listen to the presentation of seven papers written by eminent scholars in the field of (macro)economic theory and econometrics and fourteen discussants as well as a panel discussion on a research agenda. Distinguished policy advisers took part in the discussions and chaired the sessions.

Although with different emphases, all authors, some of the panellists and other participants were of the opinion that the world cannot do without macroeconomic models. However, despite their fifty years of existence and increasing degree of sophistication, the present models are still far from satisfactory, whether for forecasting purposes or for economic policy evaluation. Much work needs to be done to make further progress in these respects.

The main result of the conference was in fact that it provided a research agenda. The answer to the question contained in the theme of the conference is clearly: yes, macroeconomic modelbuilding remains an intellectual challenge.

From the conference papers and the reports of the discussions, which have been collected in this book, the reader may learn about the research agenda which the leading scholars in the field of macroeconomic modelbuilding have in mind. Without weighing the arguments it seems clear that at least ten items will be of importance for the future. These are: the modelling of international linkages, the functioning of the financial sector with special emphasis on asset-pricing behaviour, quantity rationing, stock-flow consistency, the improvement of the micro underpinning of macro models, the testing of a particular theory for different countries, the modelling of dynamics, both of a backward-looking and of a forward-looking type, improvement of the forecasting performance of models, the combined use of cross-section and time series data, the inclusion of micro-simula-



tion blocks in macro models and the modelling of the heterogeneity of labour. It is furthermore clear that a major insight can be obtained from general equilibrium models and models that enable an interactive optimisation procedure. There can be no doubt that appropriate and partly new econometric methods are required to fulfil the tasks before us. And last but not least, the job cannot be done without new and better statistical data.

The editors hope that the present volume will help to raise the standard of macroeconomic modelbuilding, both for analytical and forecasting purposes, in the spirit of Jan Tinbergen, the aim being to improve the quality of life.

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- the Ministry of Economic Affairs
- the Nederlandsche Bank
- the Central Planning Bureau
- the Amsterdamse Universiteits Vereniging
- the Social and Economic Council
- the Universiteitsvereniging Rotterdam

Without the help of these institutions, the conference would not have been held.

Furthermore we owe a great deal to the Nederlandsche Bank which provided an enormous amount of organizational and secretarial assistance. We are also thankful to Alexander van Voorst Vader of the Nederlandsche Bank and his 'Golden Girls' Marianne Jonker, Marja Kooijman, Astrid Rijff and Martine de Wilde, and Hans Haan assisted by Gerrie van der Geest and Kathy Schuitemaker of the Central Planning Bureau for their competent help. Last but not least our special thanks are for Marianne Brouwer of the Nederlandsche Bank, for her excellent secretarial and logistic efforts to plan the conference at its initial stage and to edit this volume. Without so much help by so many persons there would have been no conference and no book!

## CHALLENGES FOR MACROECONOMIC MODELLING

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## THE HUMAN DIMENSION OF ECONOMIC MODELS

His Royal Highness Prince Claus of the Netherlands

Opening speech held at the conference on Macroeconomic Modelling:  
Still an Intellectual Challenge? in Amsterdam on 21 October 1987.

When on last Monday night - the 19th of October 1987 - at around 10.30 pm local time at The Hague - after the closing hour of the New York Stock Exchange - it became apparent to me that we were not passing through a technical adjustment process but were witnessing a real fully fledged crash whose consequences for the US and indeed the world economy - at least to me - seem difficult to predict as of today - I felt very much in doubt as to the relevance of what I had prepared as a short introduction for this morning. Nobody would listen anyway; all the eminent economists supposed to be gathering here in Amsterdam - if they would show up at all - would be very absent-minded, trying to figure out how the events in Tokyo, New York, London and Amsterdam - to name just a few financial centers - should be assessed and made plausible in terms of economic theory. Well, I decided not to panic and went to Amsterdam in a 'wait and see' mood. I am happy to find that my eminent audience has not panicked either. So I propose to call it Business As Usual - for today. Mañana is another day.

Although I myself am no modelbuilder, I was very pleased and indeed honoured at being invited to open this international conference on macroeconomic modelling. The organizers have given the conference a theme in the form of a question: Does macroeconomic modelling still constitute an intellectual challenge? My inclination is to answer this question in the affirmative. I for one have always regarded my attempts to fathom the potential of macroeconomic models to lay bare economic relationships as a challenge. Although I realize that it would be improper to try to steer this conference in a certain direction, I would like to say that I hope that the debates in which you will take part over the next few days will also yield an affirmative answer to this question.

Models are abstractions of reality, they help us to come to a greater

understanding of reality and thus to be able to exert an influence. The comprehensive and technical nature of models sometimes makes us forget that their ultimate goal is to provide people with a better life, today - in this short introduction - I would like to go into this human dimension of economic models and the special significance which they may consequently have for developing countries. It is notably in attempting to improve the fate of people in the developing countries that we have found a major source of inspiration in the work of professor Jan Tinbergen, which centres on man and his plight. After all, the aim of this conference is to draw the attention of the academic world once again to the trailblazing work done by Tinbergen in the 1930s. It was in 1936, more than fifty years ago, that he published the world's first empirical macroeconomic model. The model described the Netherlands economy and served to ascertain which policy instruments could be employed to influence cyclical conditions. All this took place against the background of the 1930s, when so many became redundant through no fault of their own, at the depth of the cyclical trough. This unexpected economic depression, which confronted policy makers with entirely new problems, formed an intellectual challenge for Tinbergen's social conscience.

Partly as a result of his study of physics, Tinbergen was aware of the great advantages of a quantitative macroeconomic approach. After all, a model permits comparison of alternative solutions, and gives a concrete form to differences of opinion on economic policy. Models bring consistency to our thinking about economic problems. They show us how various economic factors interact and present us with options from which to choose. In brief, models are a means of communication between people and a way to arrive at a well-founded judgement. No more and no less. A model is not a crystal ball. It cannot predict events which are not contained in its vocabulary. Such as political and social cultural upheavals. Revolutions, coups d'état, and spiritual reorientations are not parameters on which economic models can be based.

Yet, as I pointed out, Tinbergen was led by his intense personal involvement in social issues in choosing which problems to analyse by means of a model. In his view, a problem is never abstract, it is always part of reality. Initially he turned his attention to the unemployment of the 1930s, with its disastrous impact on the self-confidence and self-respect of

those affected. Later he concentrated on income distribution models, out of the conviction that the economic development of all human beings is inconceivable without an equitable income distribution.

Tinbergen was especially interested in developments beyond the influence of the individual. He set himself the task of analysing these very developments and indicating how they might be influenced. In doing so, he became increasingly preoccupied with the national and international dimensions and particularly the position of the poor countries.

In 1945 Tinbergen published his 'International Economic Cooperation', which deals with the interaction between the policies of individual countries, a theme which has lost none of its poignancy today. He is opposed to barriers in international trade, especially those directed against what we so conveniently call the developing countries. A major theme of this work is worth repeating here: 'It is especially the fear of competition by countries with a low standard of living that must be considered as unfounded'. His message is: no protectionism, neither through tariffs nor otherwise, but the necessity to open up our markets to Third World products, a view which he was to reiterate on numerous occasions. The issue is topical because the developing countries are again expected to make enormous adjustment efforts, while the industrialized world is increasingly calling for protectionist measures. In the effort to find an answer to the question what effect this will have on the world economy as a whole, an important role could be played by modelbuilders, especially when it comes to calculating the price which the South and the North will have to pay for protectionism.

Models are, of course, directed at policy makers, and hence often stress the role of governments in the economic process. However, the past two decades have taught us to be more modest as regards our ability to control the economic process - despite the wide range of models available to us. We have come to realize that the role played by governments is subject to limits and that much depends on the freedom with which people can pursue their economic activities. This also applies to the developing countries. Even though they, too, cannot dispense with government, I am convinced that economic growth in the developing countries would benefit from a full-grown private sector. Examples of this abound.

It is gratifying to observe that, owing to force of circumstances, but also under the influence of modelling, a large number of developing countries are effecting essential reforms in order to secure their own niche in world trade. As long as there continue to be major differences in income internationally, development aid cannot be dispensed with. The question remains, however, whether transfers of capital are the most effective form of development aid in any case. Much depends on how aid is used. It may lead to additional investment, but it can also give rise to a reduction in domestic savings and increased consumption, without contributing much to economic resilience. When aid to poor countries is given in the form of loans, it is accompanied by debt-servicing obligations which only exacerbate the already vast debt problem.

There is a growing awareness of the importance of private capital flows to developing countries which do not lead to greater indebtedness. In the past, external direct investment was often subject to criticism: it was felt to infringe on national sovereignty without contributing materially to the process of autonomous development. At present more attention is paid, both in many developing countries and in industrialized countries, to the positive aspects of direct investment, notably when it is tailored to the country's specific circumstances. It is therefore essential that the investment climate in the developing countries be improved gradually through, for example, adjustment of their social and economic legislation. In my view, modelling can help to pinpoint possible destinations for investment in the developing countries and to indicate those sectors where it would be most effective.

It might also be useful to make an econometric study of another aspect of the debt problem, namely capital flight. Greater insight into the circumstances generating the export of capital - for instance its connection with exchange rate policies and interest rate policies - might pave the way for efforts aimed at curbing such an outflow.

For their income, most developing countries are still highly dependent on the export of raw materials and the prevailing level of commodity prices. The World Bank has calculated that in 1985 commodity prices in real terms were, on average, and crude oil excluded, on the level recorded in the 1930s. These alarming figures illustrate the problems confronting the

developing countries. Although the extremely low prices are partly attributable to cyclical conditions, a role is presumably also played by structural factors such as the sharply reduced use made of certain raw materials.

What would the consequences of a permanently low price level be for the world economy in general, and the developing countries in particular? And how will it affect the debt crisis? These are questions which cannot be left unanswered. Here, too, use can be made of simulations of the world economy contained in models designed specifically for that purpose. The same approach could be applied to the serious problems which will emerge in the developing countries as a result of new technological developments, with regard to, for example, the information sciences and the biosciences, and as a consequence of the application of new materials. A phenomenon known as substitution.

Another new development is the increasing number of mergers of large enterprises within the triangle USA - Europe - Japan - aimed at enabling them to cater mainly to the entire industrialized world. This trend is underlain by three considerations: the soaring costs of research and development, the struggle to achieve a lead position, because so many enterprises have the disposal of virtually the same technology, and the rapidity with which new technological developments are spreading. As a result, the developing countries are very hard put to it to maintain, let alone advance, their market position. Already we see how, on occasion, production processes, which were once transferred to developing countries because of their low labour costs, are being terminated only to be performed more cheaply by robots in the industrialized world. A development which could be characterized as a struggle between capital and labour.

If the developing countries want to be able to meet these new challenges, or threats if you will, they themselves shall also have to make an effort to enhance their economic resilience. One way of achieving that goal is greater economic cooperation among the countries of the Third World. Closer South-South cooperation would provide a stimulus to mutual trade and reduce vulnerability to external disturbances. Here, too, further study is required to determine the best possible form for such cooperation. In short, more work for modelbuilders.



Ladies and Gentlemen,

We are faced with vast economic problems requiring intelligent solutions: wide-spread poverty, mass unemployment and intolerable differences in individual opportunities for self-development and prosperity. In our attempts to resolve these problems we sorely need economists and their models. In this respect, too, I would like to make an example of Professor Tinbergen, whose work is characterized by vision, clarity and modesty. And most important of all: whose work continues to centre on man.

Ladies and Gentlemen,

We would not find it easy to explain to a poor farmer or a factory worker in the Third World that his lot can be improved with the aid of a macro-economic model. Yet, given the political will, I believe this is possible, as I have just tried to suggest. It is against this background that I also suggest an optimistic 'yes' to the question which forms the theme of your conference. And it is with this 'yes' that I declare this conference open.