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Luigi L. Pasinetti
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Structural change and economic growth

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A theoretical essay on the dynamics of the wealth of nations

LUIGI L. PASINETTI

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

Cambridge University Press
The Edinburgh Building, Cambridge CB2 8RU, UK

Published in the United States of America by Cambridge University Press, New York

www.cambridge.org
Information on this title: www.cambridge.org/9780521274104

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First published 1981
First paperback edition 1983
Reprinted 1985, 1988
Re-issued in this digitally printed version 2009

A catalogue record for this publication is available from the British Library

ISBN 978-0-521-23607-2 hardback
ISBN 978-0-521-27410-4 paperback

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Preface

The work which is here presented is a theoretical investigation into the long-term evolution of industrial economic systems. A combination of three factors – one factual and two theoretical – originally prompted this investigation. The factual element was provided by the extremely uneven development – from sector to sector, from region to region – of the environment in which I lived (post-war Europe) at the time I began my training in economics. The two theoretical factors are represented by the two types of theories – specifically the macro-dynamic models of economic growth and input–output analysis – that were offered to me when, as a research student, I came in contact with the economists of the University of Cambridge, England (1956–57 and 1958–59) and of Harvard University in the United States (1957–58).

Both the macro-dynamic growth models and input–output analysis impressed me at the time; but they left me profoundly dissatisfied when I tried to use them in order to understand what is going on in economic systems with a very high degree of dynamism, i.e. of technical progress. And I began to think that an attempt might be made to develop a theoretical scheme which, while retaining the analytical character of input–output analysis, could also deal with uneven increases in productivity, in the way the macro-dynamic models had begun to do, but only for the very simplified case of a one-commodity world. It was from this determination to look for new tools of analysis that the present work has come into being.

The basic model took shape rather rapidly, while I was at Cambridge and at Harvard, and was the subject of discussions with my supervisors. But as I engaged myself in the task of drawing all the implications it contained, I got involved into more and more fundamental problems of economic theory. Slowly, the work became a theoretical essay on the dynamics of industrial systems. It was complete enough as to be submitted (with the title 'A Multi-sector Model of Economic Growth')

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as a successful Ph.D. dissertation at the University of Cambridge by the summer 1962. And a year later (October 1963), the analytical part of the dissertation (five out of nine chapters) was presented at a Study Week of the Pontifical Academy of Sciences.[1] At that time, I almost reached the point of publishing the dissertation as it was, but I was held back by two problems, which account for the long time that has elapsed since.

First of all, the publication of Sraffa's book called for some reflections. The basic theoretical scheme underlying the present work was conceived and formulated before the publication, and quite independently, of Sraffa's *Production of Commodities by Means of Commodities*. Sraffa's book brought theoretical attention back to the process of production considered as a circular process. This is precisely what, on purpose, I had completely eliminated from my analysis, by adopting not only a vertically integrated conception of the production process but also sharp simplifications as to the employment of labour and capital goods in each single sector. My approach had the great advantage of leading to dynamic analysis straightaway, without that fixity of coefficients which had constrained all inter-industry analysis into a static strait-jacket. Yet it was reasonable to ask oneself whether, with my simplifications, I had eliminated something too important to be left out of consideration. Of course I did see quite soon the direction in which the relation with Sraffa's analysis could be found (see chapter VI of my Ph.D. dissertation, reproduced here with some changes). Yet, it was not until my article in *Metroeconomica*[2] that I worked out in detail all the analytical inter-connections. This was an important step for me, as it confirmed that I could stick to my original simplifications, with all their great advantages for dynamic analysis, without any loss of generality.

The second problem that arose was by far more intricate and tricky. It is a distinctive feature of the present theoretical scheme to begin by carrying out the whole analysis at a level of investigation which the Classical economists called 'natural', that is to say, at a level of investigation which is so fundamental as to be independent of the institutional set-up of society. This feature could be kept quite easily with reference to prices and physical quantities. The difficulties, which looked unsurmountable at the beginning, arose with reference to the

1 Published in 1965 as 'A New Theoretical Approach to the Problems of Economic Growth', *Pontificiae Academiae Scientiarum Scripta Varia*, No. 28, Vatican City 1965, pp. 571–696. (Republished in *The Econometric Approach to Development Planning*, North Holland Publ. Co., Amsterdam 1965).

2 'The Notion of Vertical Integration in Economic Analysis', *Metroeconomica*, vol. 25, 1973, pp. 1–29; reprinted in *Essays on the Theory of Joint Production*, Macmillan, London 1980.

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determination of the rate(s) of profit and the rate(s) of interest. In my Ph.D. dissertation I had looked for a 'natural' rate of profit at the macro-economic level. In a subsequent article[3] I thought I had found a confirmation of the same concept in a truly Classical sense – i.e. in the sense of defining a behaviour, in terms of propensities to save, that led to natural positions. But it did not take long to realise that introducing behavioural (savings) relations did not fit consistently into a theoretical framework which was basically conceived independently of institutions.

I had to look more deeply and, in the end, I did find the new concepts I needed – not at the macro-economic, but at the sectoral, level, where, as I soon realised, there logically exists a whole series of 'natural' rates of profit. In parallel, from an investigation on inter-personal debt/credit relations, there emerged a 'natural' rate of interest, coming out of a whole series of own-rates of interest. In this way, the entire theoretical scheme was rendered logically consistent and remarkably complete.

There is a further, very neat, methodological consequence that followed, namely a sharp discrimination between those economic problems that have to be solved on the ground of logic alone – for which economic theory is entirely autonomous – and those economic problems that arise in connection with particular institutions, or with particular groups' or individuals' behaviour – for which economic theory is no longer autonomous and needs to be integrated with further hypotheses, which may well come from other social sciences. It is with the first type of problems that the present work is basically concerned. And yet, when institutional characteristics are introduced, they are explicitly pointed out. Therefore, one will indeed have to go on, from the present analysis, to more detailed investigations concerning particular institutional set-ups, if more specific conclusions are to be drawn, but with no danger of confusing the two levels of enquiry. For the first, more fundamental, stage of analysis a complete and self-contained theoretical scheme has at last clearly emerged.

As it is here finally presented, the work maintains the original structure of my Ph.D. dissertation. But the original nine chapters have been supplemented with two additional ones – on the natural rate of interest (inserted as chapter VIII) and on international economic relations (chapter XI), respectively. Some of the dissertation chapters have remained virtually unchanged (such as chapters II and III); others

3 'Rate of Profit and Income Distribution in relation to the Rate of Economic Growth', *Review of Economic Studies*, 1962, pp. 267–79, reprinted in *Growth and Income Distribution – Essays in Economic Theory*, Cambridge University Press, Cambridge 1974.

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have been almost entirely re-written (such as chapters VII and IX). All of them, including the new ones, have been maintained within the simple framework and the elementary logic of the original approach, which has proved remarkably flexible *vis-à-vis* the most intricate analytical problems of economic dynamics.

As is only too natural for a theoretical work which was carried on over many years – during a time in which I moved from Milan to Cambridge, England, to Cambridge, Mass., to Oxford, to Cambridge, England, again, and finally back to Milan – I have contracted huge debts of gratitude towards a large number of scholars. First and foremost, I must thank Richard Goodwin and Richard Kahn, who were, at different stages, my Cambridge supervisors over the years I was writing my Ph.D. dissertation. It was Richard Goodwin who skilfully directed my very first timid steps into research work. And later, when I began to write a great deal, Richard Kahn very patiently read, criticised and commented every single note I submitted to him. Through Kahn I came in contact with that unique mixture of radicalism, wisdom and social concern that was the distinct mark of Keynes' environment. Through Goodwin I was stimulated to open up my intellectual curiosity and interests towards tools of analysis that came from outside. At the same time, I also benefited from long discussions, and often from daily conversations, with Nicholas Kaldor, always bubbling with new ideas, Joan Robinson, always hard as a rock on her theoretical conceptions, and Piero Sraffa, the real master of all critics. It is from them that I learnt that passionate critical attitude which has been the *conditio sine qua non* for starting and pursuing an investigation of this type.

This unique group of scholars in that unique intellectual environment that was the Cambridge of the late 1950s and early 1960s provided an ideal background for the present work. Needless to say their ideas have been absolutely essential to me and I shall never find words to thank them adequately. Yet I must also add that they may not necessarily or entirely approve of the use I have made of their theories. In the following pages, their theories are taken for granted and an analysis is developed which goes on to explore a ground (that of structural change) which has so far remained almost untrodden. I must accept for this full responsibility.

At various times and on different points, in the early stages of the work, I received helpful criticisms and comments, for which I am most grateful, from Siro Lombardini in Milan; David Champernowne, Robin Marris, Amartya Sen, Richard Stone in Cambridge; James Duesenberry, Franco Modigliani, Carl Kaysen at Harvard; John Hicks, Ian

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Little in Oxford. At the very last stages, I also received useful criticisms and comments from Terenzio Cozzi and Alberto Quadrio-Curzio.

I need hardly add that responsibility for all views expressed is entirely mine.

L.L.P.

Milano, December 1979

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