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The Oxonian-Italian School of Economics, 1950 to About 1990

2.1 Who's Who

As Carlo Casarosa (2004) points out, the stream of Italian economists going to Oxford, broadly from 1950 to 1980 and beyond, was not as extensive as was the case for Cambridge. The details of recipients of the Stringher and Mortara awards and grants from the Bank of Italy between 1950 and 1975 confirm this; even so, an important number of young scholars went to Oxbridge with other grants or by other means. Other grants, such as those of the British Council, the Leverhulme Trust, British or Italian foundations including those of the University of Oxford and its colleges, the Florey European fellowships of The Queen's College and so on, did encourage Italian-speaking economists to spend two or more years in Oxford. The ratio is, however, one:three; during the period 1950–75, 12 scholars went to Oxford with a Stringher or Mortara grant, while 34 went to Cambridge. By taking into account the period 1931–85, Simona Ferrulli (2012, 40) maintains that the Bank of Italy allocated 48 grants to economists who went to Cambridge, 16 to Oxford and 24 to the London School of Economics (LSE). Why so few to Oxford? There are several reasons for this trend. First, at least until the late 1960s, Oxford

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ranked only two major economists (Roy Harrod and John Hicks), while Cambridge was the 'bastion' of the direct heirs of John M. Keynes (Joan Robinson, Nicky Kaldor, Richard Kahn, Maurice Dobb and Piero Sraffa). Additionally, Richard Stone, James Meade, David Champernowne and Richard Goodwin were also important Cambridge scholars. Second, until the early 1970s Oxford had dispersed its economists in the colleges, where they were occupied mainly with undergraduate teaching in the course on Politics, Philosophy and Economics (PPE). The exceptions were Nuffield College, Linacre, St Antony's and the secretive All Souls. Cambridge, since the construction of the sub-Faculty headquarters in Sidgwick Avenue in 1960–61 and the subsequent addition of the Department of Applied Economics, has attracted most (but not all) economists. Finally, graduate and Ph.D. teaching began in Cambridge a few years before James Mirrlees, with renewed vigour, set up the new B.Phil. (later the M.Phil.), B.Litt. and D.Phil. programmes in Oxford in 1969–70.

By retaining the names of the grant recipients quoted above and those put forward by Carlo Casarosa (2004, 550–53) and by Vera and Stefano Zamagni (2002), and yet others discovered in the *Oxford University Calendar* and *Gazette*, we may identify a number of (but not all!) scholars according to their Italian alma mater:

1. *From the Catholic University of Milan*: Carlo Beretta, Vittorio Conti (1968), Angiola Contini (1972–04), Carlo Dell'Aringa, Piero Ferri, Giacomo Vaciago (1965 and 1992), Vera Negri-Zamagni (1970–73), and Stefano Zamagni (1970–73);
2. *From the Universities of Rome*: Lucio Izzo (1955), Romano Pantanali (1958), Paolo Miurin (1963), Rainer S. Masera (1966); Stefano Mieli (1973), Leonardo Becchetti, Pierluigi Ciocca (1967–69, supervisor R.C.O. Matthews); Lorenzo Infantino, Alberto Lupoi, Luciano Milone, Paolo Piacentini, Michele Morciano, Vincenzo Patrizi, Carlo Pietrobelli, Francesca Sanna-Randaccio, Eutimio Tiliacos, Gian Cesare Romagnoli (Trinity College);
3. *From the University of Milan and Bocconi University*: Giampaolo Arachi, Carlo Bertoletti, Carlo Mortara, Claudio Lupi;
4. *From the University of Ancona*: Pietro Alessandrini (1969) (Ancona and Urbino), Renato Balducci (ditto 1973), Riccardo Mazzoni, Mauro Marconi, Paolo Pettenati (1971–72);

5. *From the University of Turin*: Alessandro Vercelli (1973), Lia Fubini, Astrig Tasgian, Stefania Zotteri;
6. From the *University of Pisa*: Carlo Casarosa (1978–80), Alberto Chilosi (1975–06);
7. *From the University of Naples*: Antonio di Maio, Fausto Domenicantonio (1970–02), Antonio M. Nucifora;
8. *From the University of Bologna*: Roberto Scazzieri (1975–80), Vincenzo De Nicolò, Flavio Delbono, Giulio Ecchia, Gianluca Fiorentini, Luca Lambertini, Paolo Onofri, Gianpaolo Rossini, Bruno Salituro, Carlo Scarpa, Alessandro Zanello (1975–77);
9. *From the University of Parma*: Mario Biagioli (1977), Augusto Schianchi (1974–07), Roberto Violi, Marco Ziliotti, Luciana Rocca (1973–76);
10. *From the University of Siena*: Renzo Azelio Castelnuovo (1962–63); Daniele Castelnuovo (1973); Massimo Di Matteo (1974–76, Hartford College);
11. *From other universities*: Florio Gradi (1951; Florence), Davide Croff (1972; Venice); Vinicio Guidi (1977; Florence); Luigi Spaventa (Perugia 1968–69); Giuseppe Mazzarino (1971–2010; LSE and Milan); Daniele Giovanni Zizzo (Palermo, 1988), Michele Bernasconi (Pavia 1992);
12. *From Canton Ticino, Switzerland*: Mauro Baranzini (Fribourg and Zürich, at Queen's 1971–85), Roberto F. Cippà (Fribourg, Queen's 1977–82).

As we have noted, we are well aware that this is only a partial list.

2.2 Luigi L. Pasinetti: The Frontrunner at Oxford. Studentship and Research Fellowship at Nuffield College, 1959–60 and 1960–61

Luigi Pasinetti graduated from the Catholic University of Milan in February 1955. At the end of the academic year 1958–59, he had behind him three academic years abroad: two in Cambridge, at Gonville and Caius, and one at Harvard. At that point, having studied for the required

nine terms in order to submit his Ph.D. at Cambridge, he did consider returning to his home country. Siro Lombardini, his mentor at the Catholic University of Milan, had put Luigi's name up for a lectureship in economics (*economia politica*). However, the Chairman of the Faculty, Francesco Vito, did not take up the proposal, maintaining that Pasinetti should teach econometrics, or mathematics for economists, or something in this area.[1]

> Without an official appointment, or another concrete alternative, I remained quite hesitant. It was at that moment that Robin Marris, who in those years was a sort of deputy director of the research seminar in Cambridge, momentarily replacing Piero Sraffa, told me that the Nuffield College in Oxford had advertised a limited number of 'studentships'. […] I applied, giving Nicholas Kaldor and (probably) Robin Marris as referees, and was awarded one. (Pasinetti, interview with Baranzini, August 2000)

So, in September 1959 Luigi Pasinetti moved from Cambridge to Oxford. During his stay at Nuffield (September 1959–August 1961), Pasinetti published a paper entitled 'A Mathematical Formulation of the Ricardian System' in *The Review of Economic Studies*, which appeared in February 1960. In 1960, he also published 'Cyclical Fluctuations and Economic Growth' in the *Oxford Economic Papers*; the Italian version of which was first published in the same year in *L'Industria*. In 1961, this was followed by 'Cyclical Fluctuations and Economic Growth: A Reply to Mr. Neisser' in the *Oxford Economic Papers*. Additionally, a long paper, written jointly with Luigi Spaventa, appeared in the 1960 September–October issue of the *Rivista di Politica Economica*. Most of these contributions were mainly written, if not fully completed, in Oxford. During his stay at Harvard in 1957–58, under the supervision of Wassily Leontief, Pasinetti had drafted an essay entitled 'On Concept and Measures of Changes in Productivity', published in the

[1] Francesco Vito's position was, of course, ill-founded; however, in the long term, for Pasinetti it turned out to be a lucky escape. In this way, he stayed on for nearly two decades in Oxbridge. He was hence able to influence the Cambridge School of Economics much more than would have been possible in Milan.

1959 August issue of *The Review of Economics and Statistics*. It was the first controversy that he would engender, since it led Robert M. Solow, at the Massachusetts Institute of Technology, to write a long 'Comment' (in the same issue) that attempted to rebuke Pasinetti's arguments. Pasinetti's paper expressed a deep dissatisfaction with the way in which technical progress was handled by the marginalist school in general, and by Robert Solow in particular. Pasinetti, who in this context asserts the prominence of technical progress over capital accumulation, had noted that: 'the whole neo-classical movement and the increasing modern application of mathematics, which have contributed so much to improving the tools of economic analysis and to conferring rigor and definiteness on economic thought, have preferred to leave technical progress aside' (Pasinetti 1959, 270). Pasinetti would return on this issue 15 years later:

> Technical progress has been a much harder phenomenon to incorporate into economic analysis. This is paradoxical. In a period in history which has witnessed the most surprising and unprecedented advances in technology and their application to production, the established economic theory has proceeded for more than a century [now nearly a century and a half] on the amazingly myopic assumptions of no change in technical knowledge. So pervasive has been the influence of the law of diminishing returns on the whole way of economic thinking! Even today this 'law' is still haunting economic theorists in all sorts of devious ways. When faced with an increase in production per man, […] any economic theorist subservient to tradition will be unable to begin doing anything unless he proceeds first to break down the change into two different types of changes: changes due to a variation of the proportions of 'factors', *at diminishing returns*; and changes due to a 'shift' of the (otherwise assumed to be rigidly fixed in shape) technical functions. (Pasinetti 1974, 91–92)

> [In] my own discussion with Solow […] I have pointed out that, according to Solow's own findings, the aggregate capital-output ratio in the U.S. economy was lower in 1949 that in 1909. It could therefore be argued that, during that period, the overall capital intensity of the U.S. production

> processes, very far from increasing (as Solow's 'moving along the production function' would suggest), has in fact decreased. (Pasinetti 1974, 92n)

It is interesting to note how Nicholas Kaldor described the reaction of Robert Solow and his MIT colleagues to Pasinetti's paper. In fact, he writes as follows to Pasinetti at Nuffield on 16 February 1960, from Berkeley:

> I much enjoyed also reading your controversy with Bob Solow. When I went to M.I.T. my first impression was that all these objections to their prevailing approach left them quite unaffected—it was like pouring water on a duck's back. However, my impression afterwards was that they are really more uneasy about the whole thing than they could care to admit. […] Yours, Nicholas Kaldor

Pasinetti's early work on Ricardo, 'A Mathematical Formulation of the Ricardian System', shows his mastery of the interconnections between value, distribution and growth. He had been at Oxford for a full term when this work was published in February 1960 in *The Review of Economic Studies*. As pointed out in Baranzini and Harcourt (1993, 7–8), the principal object of the paper was to show how an analytical model could capture the ingredients of Ricardo's system and (re)produce his results. The model contains the essence of Ricardo's theory of value—that it was principally embodied labour that, in practice, determined the natural exchange ratios of reproducible commodities. It also highlighted Ricardo's own stress on persistent and permanent or dominant factors at work in the economy, which expressed themselves in the forces which determined natural prices. Pasinetti relegated the short-term factors associated with supply and demand and the determination of market prices to a secondary position. No more so was this the case than in Ricardo's theory of the natural wage and changes in population *cum* labour force, with which was associated his theory of accumulation. Pasinetti's model of Ricardo's system treats the Malthusian principle of population (which Ricardo adopted) as though it works instantaneously, so that the wage is *always* at its natural level even though accumulation is occurring. (As with Ricardo, Pasinetti does *not* suppose the natural

wage to be a physiologically determined subsistence wage; habit and history also influence its size.) This simplification allows a much more clear-cut picture of the accumulation process and the approach to the stationary state.

We may anticipate that, in the late 1970s and early 1980s, a number of authors (Hicks, Hollander and Casarosa) suggested a model of the Ricardian theory of distribution and economic growth, which, contrary to the Sraffa-Pasinetti interpretation, gives emphasis to the forces of supply and demand for the determination of the wage rate. Pasinetti (1982) challenged this version. (We reconsider this aspect below.) While at Oxford, Pasinetti also published 'Cyclical Fluctuations and Economic Growth', which appeared in the *Oxford Economic Papers*. In fact, on 16 February 1960, from Berkeley, Nicholas Kaldor writes to Pasinetti at Nuffield College, Oxford, as follows:

> My dear Luigi,
>
> Many thanks for your letter and for sending me your paper on 'Cyclical Fluctuations and Economic Growth' which I really think is first-rate. I hope you won't mind if I have some copies made, and distribute it among a small discussion group here, so that we can discuss it. I can't pretend I have another go at it, and may to offer some points you make towards the end of your paper about the investment function are most important, and have so far been entirely ignored in macro-economic models. I should go, however, rather further in suggesting that the non-proportional nature of investment demand is not solely or even mainly due to the Engel curve, but to the fact that technical progress leads constantly to the invention of new products which did not figure in the consumers' preference function simply because they did not exist. […] Yours, Nicky Kaldor

On the same day, 16 February 1960, Kaldor wrote a letter of reference on behalf of Luigi Pasinetti to the Warden of Nuffield College. Among other things, Kaldor commented: 'The only thing that I can add to my reference about him sent to you last year is that he has recently sent me a paper on "Cyclical Fluctuations and Economic Growth" (which originally appeared in *L'Industria*, in Italian) which I regard as absolutely first-rate, and shows him to be far ahead of everybody working in this field […].'

On 29 February 1960, Pasinetti wrote a letter to Nicholas Kaldor with a few comments on his previous paper on cycles and growth. He writes at the end of the letter: 'To clarify the mathematics of the paper various graphical devices may be used. Prof. Hicks was insisting a few days ago on a particular graphical representation which he was suggesting. I prefer however the diagram which I reproduce here […]' L.P. (Luigi Pasinetti). This proves, then, that Pasinetti was in touch with John Hicks. On 15 March 1960, Pasinetti writes a four-page letter to Kaldor with various important comments on the mathematics of Kaldor's draft 'Capital Accumulation and Economic Growth'. The letter closes as follows:

> Just before closing I am glad to give you a good news. I have been elected a Research Fellow of Nuffield College. The news is not official as yet because the election has to be confirmed by the Governing Body, but I have no reason to suppose that it will not be. My best wishes and regards to all. Yours, Luigi Pasinetti.

In the spring of 1960, Pasinetti was appointed to an assistant lectureship in the Faculty of Economics and Politics at the University of Cambridge and lecturer and fellow of King's College, the appointment starting from1 October 1961. However, for the academic year 1960–61, he remained at Nuffield for a second year.

2.3 Italian Economists and John Hicks

2.3.1 Introduction

John Hicks (1904–89) was, without doubt, a leading economic theorist of the twentieth Century; together with Kenneth Arrow, he was awarded the Nobel Prize in 1972. His work was mainly on 'pure economic theory', in the fields of value, money, capital, growth and distribution. In 2004, the 'invisible college of former colleagues and pupils' gathered in Bologna for the meeting 'John Hicks: One Hundredth Anniversary Workshop'. Roberto Scazzieri, Amartya Sen and Stefano Zamagni, the editors of *Markets, Money and Capital. Hicksian Economics for the*

Twenty-First Century, edited the papers presented at this workshop. According to Scazzieri and Zamagni:

> Hicks's contributions often address contentious issues, and sometimes suggest unconventional and controversial points of view. In John Hicks, we see economic theorizing at its most fundamental, almost formative, stage. In his writings, economic theorizing strives, and succeeds in maintaining, a balance between the requirements of analysis and the explicit recognition of the relevance of history and institutions. In short, Hicks's contribution to economics belongs *both* to the so-called 'mainstream' and to its critique. (Scazzieri and Zamagni 2008, 1)

Pasinetti and Mariutti maintain that 'Hicks was, and remained, an independent thinker. He paid a high price for this independence, by being surrounded by an atmosphere of solitude both in Cambridge and in Oxford—the two places that housed him in the critical moments of his academic life. […] It is in fact not surprising that, unlike many of his colleagues, Hicks did not claim to belong to a specific school of thought; even less that, he should aim at founding one. This was in line with his introverted character, and even more so with his methodological stand. He has left us a remarkable example of scientific honesty in not hiding the "structural break" that took place in his way of doing economics.' (Pasinetti and Mariutti 2008, 69–70) In their thought-provoking essay 'Italian Economists and Linacre College', Vera and Stefano Zamagni maintain that Ursula and John Hicks were a powerful magnetic force, attracting young Italian scholars to Oxford—and, in particular, to Linacre College—from the second half of the 1960s to the early 1980s and beyond.

> The question naturally arises as to why so many Italian economists were drawn to Linacre,—what was the decisive factor? We believe we can say without fear of contradiction that it was the intellectual fascination, and their great love for Italy, of one of the best known scholarly husband and wife teams of the University of Oxford: John and Ursula Hicks. Ursula was fellow of Linacre College, while John was full professor, teaching in the then [and still now] impenetrable (especially for women!) All Souls College, but the pair was so close, and All Souls so withdrawn into its circle of male

> dons, that John too finished up by sharing his 'social life' and skills with the postgraduate students of Linacre College'. (Vera and Stefano Zamagni 2002)

We should say that Italian research students working for an Oxford higher degree (M.Phil., M.Litt. or D.Phil., together with with a very low number of undergraduates) were not confined to Linacre. Other colleges—such as Queen's, Lincoln, Nuffield, Pembroke, St Antony's, Hertford, Christ Church and many others—did enrol Italian speaking pupils. Nevertheless, let us quote again Vera and Stefano Zamagni:

> How did this link with Linacre unravel? Essentially through word of mouth. It began with a generation mainly connected to the Bank of Italy, when the Director of the *Servizio Studi* of the 1960s Francesco Masera, who knew the Hickses, had his son Rainer go to Linacre, while Pierluigi Ciocca, Alessandro Vercelli, Lionello Punzo and others came into contact with John Hicks through other Oxford Colleges. […] In a period of around fifteen years, a good forty-six Italian economists (including the undersigned) passed through Linacre, an extraordinary phenomenon, perhaps unique of its kind. (Vera[2] and Stefano Zamagni 2002)

Not surprisingly, the first centennial celebrations of the birth of John Hicks took place at the University of Bologna; a selection of the papers was edited by Roberto Scazzieri, Amartya Sen and Stefano Zamagni and published by Cambridge University Press. Eighteen out of twenty-eight contributors to that volume are, or have been, associated with Italian universities. This is a proof of the profound impact that Hicks had on more than one generation of Italian economists.

[2] In this chapter, we shall not deal with contributions in the area of economic history. However, it is worth pointing out that Vera Zamagni-Negri, now Professor of Economic History at the University of Bologna, was with her husband Stefano at Oxford between 1969 and 1973; she was awarded an Oxford D.Phil. few years later. She is one of the most authoritative scholars of Italian and European economic history, and has published and edited important works; *Economic History of Italy 1860–1900* was first published by Clarendon Press, Oxford, in 1993. The volume provides a scientific and painstaking reconstruction of Italy's path from a largely rural economy to a fully industrialized nation, with strong private and public sectors. It also offers, as she points out 'an extensive resource of quantitative data, based on original field work by the author and the many detailed but small scale studies existing in Italian'.

2.3.2 Rainer Stefano Masera

One of the earliest Italian research students of John Hicks at Oxford was Rainer Stefano Masera, who was at Linacre College from 1967 to 1970. His D.Phil. thesis was published in 1972 by Clarendon Press with the title *The Term Structure of Interest Rates*: *An Expectations Model Tested on Post-War Italian Data*. In this work, Masera maintains that, in the presence of differentiated interest rates due to a different maturity of the debt, decisions relative to short-term interest rates may have different significances according to general macro-economic expectations (see also Costabile and Scazzieri 2012, 744). Masera's volume was reviewed in *The Economic Journal* by Nicholas H. Dimsdale (Keynes's nephew), then fellow of The Queen's College, Oxford, who argues that 'once we move away from models with a single rate of interest, we need a theory of the term structure which will explain the observed pattern of market rates. In this book Masera develops a theory of the term structure and then tests his model using Italian data.' Masera first provides an 'admirably clear survey' of the literature on term structure, and then embraces the 'expectational theory'. As Dimsdale points out, Masera 'is not impressed by the market segmentation theory and points out that, if long and short rates are determined in separate markets, the relevant supply and demand schedules should in principle be identifiable'. This was an important original contribution to the literature (including the works of John Hicks), since the followers of the market segmentation approach had not, at least until the early 1970s, provided empirical evidence to support their thesis. Dimsdale also argues that:

> Masera develops an alternative version of the expectation theory in which forward rates reflect market expectations of the future spot rate for a wide range of maturities for a short-time horizon. He is following a suggestion of Hicks in *Value and Capital* that the expectations theory can be expressed in terms of expectations about the future long rate. […] According to Masera forward rates are revised on the basis of forecasting errors for the whole range of maturities, which seems a more plausible approach. […] In the final version of the model, which is tested using monthly data, the results are improved by including the normal level of the rate of interest. (Dimsdale 1973, 570)

At the end of his review Dimsdale (1973, 571) concludes that Masera's work is a 'valuable contribution to a subject of continuing interest to monetary specialists'.

2.3.3 Stefano Zamagni

Stefano Zamagni's scientific contribution is certainly impressive and we cannot consider all venues here. As far as Hicks's programme is concerned, we refer to Zamagni (1973, 1983, 1984), Casarosa and Zamagni (1985) and also Scazzieri and Zamagni (2008). John Hicks, in his *Causality in Economics*, underlines the role of asymmetric relationships in the explanation of economic history; he calls attention to the fact that chains of events often have to be interpreted in terms of 'sequential causality'. *A* causes *B* on condition that *A* happens before *B*, and also on condition that there are sufficient reasons for maintaining that all intermediate events are causally related to one another so as to produce the final effect *B* during the given time interval (see Hicks 1979b, 87–88). However, Hicks does not mention the existence of a causal ordering on the recursive type. In fact, recursivity and sequentiality might appear to be quite independent of each other. The reason for this is that sequentiality is a property of the actual process by which *A* produces *B*, whereas recursivity may be considered as a logical property of theory independent of the actual process of causation. However, as Zamagni (1983) and Harré and Madden (1975) argue, the recursive ordering may be linked with the process of causation through time, if one accepts the realistic view that the causal structure of any given theory reflects the way in which causation takes place.[3] Another important contribution by Stefano Zamagni is connected with the dynamization of Hicks's analysis, and to the study of the 'traverse'; that is, the transition from one steady-state to another. His paper was published in the *Oxford Economic Papers* in 1984, and then reprinted in a volume edited by D. A. Collard, D. R. Helm, M. Fg. Scott and A. K. Sen. As pointed out in the introduction to *Markets, Money and Capital. Hicksian Economics for the Twenty-First Century*:

[3] This point has been expounded in Baranzini and Scazzieri (1986, 46–47).

> In short, there is a plurality of ways in which time can be conceptualized in economics, and each one answers peculiar cognitive questions. It follows that there will be a multitude of different methods, each one able 'to cast light upon some aspects of the phenomena' (Hicks 1965, v). This implies that *the* dynamic method does not exist. Indeed, there are two wide varieties of dynamics: 'expectational' and mechanical. In the former, expectations play a fundamental role in explaining the economic process—i.e. in dealing with the specific role of history in economic affairs. This is not so in mechanical dynamics models, where change consists only of 'locomotion'—that is, is an analogue of a simple change of place. It is within such a cognitive frame that one can understand the specific meaning of Hicks's traverse analysis. By drawing attention to deviations between the actual position of the economic system and its corresponding long-period (steady-state) position, the study of traverse provides a case for the *counterfactual* approach to sequential causality—the cause being a change in technology occurring at a certain point of time (the 'impulse'), the effect being the entire difference between the traverse path and the path the economy would have followed in the absence of such disturbance. (Scazzieri and Zamagni 2008, 8)

The contribution by Zamagni has extended the frontiers of Hicks's work; Hagemann (1990, 166n) maintains that Zamagni's 'intention is to show the richness and potentialities of the Hicksian traverse as a method for dynamic analysis', where, for dynamic analysis and due to a structural change, it is the intended passage from one steady state to another. In 1959, John Hicks had stated: 'I am very sceptical of the importance of […] "steady state" theory. The real world (perhaps fortunately) is not, and never is, in a steady state; it has adventures which are much more interesting' (Hicks 1959, iii, 8; quoted in Collard 1984, 6). The steady state may be defined as a state with a given composition of the capital stock 'appropriate to the new technology and compatible with the labour and savings flows' (Zamagni 1984, 135–36). The results obtained by Zamagni in this fixed-wage setting are quite interesting, and are compared with those sketched by a number of classical scholars. Nevertheless, even more interesting are his conclusions:

1. First, concerning convergence analysis, according to Zamagni (1984, 148) the problem of convergence to a new steady state is quasi-irrelevant. At best, he writes, it usually would take a long

time; but it could also happen that 'a myriad of phenomena of various kinds' would shake the very bases of the economy and make convergence difficult to study. 'Indeed, the rate at which technologies, endowments, and institutional constraints change is so rapid in modern times, relative to the rate at which an economy adjusts to any set of underlying institutional and structural factors, that any inherent convergence tendencies are of very secondary importance and interest. […] Here lies the basic difference between stability analysis and traverse analysis: since it is only in the late phase that any question of convergence to equilibrium can arise, traverse analysis is in any case capable of telling us about the short-run effects of a technical change, a task which cannot be accomplished by stability analysis' (Zamagni 1984, 148). This is also the lesson that we have personally learned from Joan Robinson—that outside the steady-state equilibrium anything can happen, and that the institutional, behavioural and technical setting comes to complicate the picture.

2. The second conclusion by Zamagni is even more stimulating. He argues that, in his model, capital markets adjust instantaneously to the new technical conditions, and entrepreneurs exhibit the same mode of behaviour as that adopted in the previous situation. He rightly argues that:

> This is clearly unsatisfactory. The innovative process has some rules of its own which cannot be described as simple and flexible adaptations to changes in market conditions. Why is it that capitalists should continue to choose the optimal technique only on the basis of profit rate maximization, without paying any attention to the volume of profits accruing to them over a certain time span? Why should capitalists maintain during the entire traverse the same consumption pattern as that of the reference path, when it is known that they will meet capital losses and gains? Finally, why is it that all capitalists will be able, instantaneously and simultaneously, to introduce the innovation which becomes available at T=0? […] It is a remarkable feature of Hicks's traverse theory that it provides a vantage point allowing us to put the historical dynamics of technical change into perspective. (Zamagni 1984, 149)

2.3.4 Mario Amendola

Another scholar of Hicks's works is Mario Amendola, who spent two years in Cambridge from 1962 to 1964. Amendola, jointly with Jean-Luc Gaffard of the French University of Nice, has dedicated most of his scientific research to the extension of the steady-state analysis of John Hicks to a dynamic path, often labelled, as said, as 'traverse analysis'. From the numerous contributions by Amendola and Gaffard we have chosen three as being representative of the way in which they extend John Hicks's research programme. This is what they write at the beginning of their volume *Out of Equilibrium* published by Clarendon Press in 1998: 'This book is essentially devoted to "continue with continuation—into the future", a task to which John Hicks called others at the end of the last paper he wrote before his death. We believe that the best way to do this is to build a comprehensive analytical approach for out-of-equilibrium economics. This has required a long-time, a massive effort, and much help from others.' (Amendola and Gaffard 1998, v) The two scholars refer to John Hicks's last paper 'The Unification of Macroeconomics' published in *The Economic Journal* in 1990. In their volume *Out of Equilibrium*, Amendola and Gaffard start by explaining that 'general equilibrium models' focus on interdependence among all variables; such an inter-dependence is 'instantaneously obtained' via an equilibrium system of prices which, after all, represents the only inter-dependence link. Hence in this framing a simultaneous (or contemporaneous) causality is established. Instead, Amendola and Gaffard focus their attention on *interdependence out-of-equilibrium*, which is represented by a 'feedback mechanism over time'. According to them:

> Different types of disequilibria follow from this and interact with each other sequentially. Different evolution paths of the economy may thus be associated with any kind of original shock. The model proposed is a heuristic tool that makes it possible to explore them. What we are after is not mimicking reality, though. Rather we want to be able to unveil sequential causality relations which represent the backbone of processes of economic change. Unlike in the equilibrium approach, these processes are not sketched out by the 'fundamentals' of the economy but are rather the

> outcome of what happens on the way; this may change according to the decisions taken and the policies followed sequentially. (Amendola and Gaffard 1998, 259)

The two authors maintain that one of the main goals of economic analysis is to suggest policy strategies. In the 'general equilibrium approach', these recommendations are built on the belief that economies are always in a state of equilibrium 'so that it is the world that adjusts to the model, not vice versa' (Amendola and Gaffard 1998, 259). Instead, they firmly believe that policy recommendations will be valid only if the dynamics mechanisms, which describe the 'genesis of economic phenomena', to use their terminology, are explained. This is exactly what their out-of-equilibrium analysis tries to describe. Its implications for policy strategies may differ from the traditional ones. In their previous volume—*The Innovative Choice. An Econometric Analysis of the Dynamics of Technology*, published in 1988—Amendola and Gaffard had already pointed out that the neo-Austrian theory put forward by John Hicks offers a representation of the production process that takes explicit account the phase of construction of new plant—and, hence, of the productive capacity—as the physical expression of the specificity of new techniques, and 'at the same time to consider the implications of technical intertemporal complementarity of a process thus defined' (Amendola and Gaffard 1988, ix). Ivano Cardinale and Roberto Scazzieri have recently explored the connections between Amendola's neo-Austrian treatment of the production process and a more detailed representation of production activity in terms of tasks and productive functions. Finally, in their paper 'Sequential Analysis and Out-of-equilibrium Paths', written for the meeting 'John Hicks: One Hundredth Anniversary Workshop' held in Bologna in 2004, Amendola and Gaffard consider the relationship between the monetary and technical features of production along sequential adjustment paths. They argue that the main issue in this framework is that of the harmonization of the construction and utilization phases along such an adjustment path. The two authors draw their paper to a close in the following way:

> When we move from the consideration of the behaviour of an economy during a given period to a process taking place over time, investment and consumption are more realistically interpreted as the construction and utilization of production that take place over a sequence of related periods, and hence their relation is considered to be one of inter-temporal complementarity rather than of substitution. John Hicks's conclusions concerning Smith and Keynes with reference to a single period of finite length are confirmed, but other, more illuminating, conclusions can also be reached. Specifically, that the reallocation of financial resources from unproductive consumption to investment (or vice versa) sooner or later brings about a distortion of productive capacity, resulting in a breakdown of the coordination of economic activity and a threat to the viability of the economy. Different kinds of external interventions—concerning financial resources, human resources, and final demand—are then required to interact dynamically in order to make the expansionary process associated with a structural modification viable. (Amendola and Gaffard 2008, 403–4)

There is no doubt that the works of Amendola and Gaffard, together with those of Stefano Zamagni, Roberto Scazzieri, Alberto Quadrio Curzio, Carlo Casarosa, Rainer Masera, Augusto Schianchi and Piero Ferri, as well as many other non-Italian scholars such as Amartya Sen, Christopher Bliss, Roberto Cippà, Harald Hagemann and so forth, have extended the frontiers of Hicks's work. One may also add that there may also be endogenous forces at work to ensure the viability of the expansionary process associated with a given structural change. It is a matter that is to be found in the background of long-term analysis—that of the endogenous formation and dispersion of socio-economic classes. This may influence not only the level of savings of the system, but also the composition of consumption mentioned by Amendola and Gaffard (2008). This issue is present in most of Hicks's works on economic growth—especially in *Capital and Growth*, as well as *Methods of Dynamic Economics*; however, the matter has not been explicitly taken up in the vast literature in this field. There exist a number of elements that are continuously at work in the determination of the progressive concentration or dispersion of wealth—which, in the long run, is the very basis of the strength of socio-economic classes. (On this, see Baranzini 1991a, 2008.)

2.3.5 Piero Ferri

Piero Ferri, who was at Linacre College from 1968 to 1971, wrote his D.Phil. thesis on 'Some Aspects of Unemployment in Italy: 1951–68' under the supervision of John Hicks. The aim of the thesis was that of reconsidering the peculiarity of the Italian labour market, in general, and the complex nature of its unemployment—in particular, within a process of growth. While different interpretations were taken into consideration, an alternative suggestion was offered. Piero Ferri set himself to overcome previous investigations of the Italian economy that had focused on the decisive role of wages in deepening the Italian dualism between regions and therefore hindering the overall process of growth (see, in particular, Vera Lutz 1962 and Hildebrand 1965). These analyses were mainly based on Hicks's *Theory of Wages* (1932), which he wrote before World War II and that he had revised in 1963. Piero Ferri maintains that Hicks was unsatisfied with this work and therefore encouraged Piero to search for alternative routes and interpretations. The period considered in Ferri's thesis was characterized by deep structural changes and by a new macroeconomic environment. After years of heavy unemployment, some northern Italian regions were very close to full employment. In this context, the strength of the unions seemed to have increased substantially. This was in line with the tenets of a then recently discovered Phillips curve. Within this perspective, recent facts seemed to support Lutz-Hildebrand thesis: the cost pressure (pushed by unions) seemed to reignite the old process of capital deepening and so hampering both the regional divide and the process of growth itself. As far as the first aspect was concerned (i.e. wage pressure), a different perspective consisted in considering the heterogeneity of the labour market. The distinction between a primary and a secondary market, a classification that became popular later on (see Hicks 1974), justified both the presence of full employment problems, epitomized by the Phillips curve, and the persistence of a quantity adjustment mechanism based on an abundant labour supply. This distinction implied a methodological suggestion based on the co-existence of price and quantity adjustment (see Hicks 1965). In fact, even if some sectors reached full employment and this situation strengthened both unions and wage dynamics, it remained true that Italy continued to enjoy an abundant labour supply. Lewis (1954)

and Kindleberger (1967) stressed the role of this aspect in the process of growth and it was considered a decisive factor of growth. In this sense, the working of the labour market could only be fully understood within a growth perspective, as is stressed in the Italian translation of the thesis (see Ferri 1971). As far as the capital substitution process is concerned, this process did not find much econometric support in the analysis carried out along the lines suggested by Salter (1961). To the contrary, the emphasis was more on the accumulation process that could explain the overall pattern of growth along with its structural problems. Hicks (1974) subsequently reconsidered some aspects of this dual labour market in his *Crises in Keynesian Economics*: a book that did not come as a surprise to his former D.Phil. student Piero Ferri. Piero Ferri was rector of the University of Bergamo from 1984 to 1999.

2.3.6 Annalisa Cristini

We should also mention Annalisa Cristini, a promising pupil of Piero Ferri. Now Professor and Dean at the University of Bergamo, while in Oxford Cristini earned her M.Phil. in 1987 and D.Phil. in 1990 with a thesis on 'OECD activity and commodity prices', an updated version of which was published in 1999 by Palgrave Macmillan with the title *Unemployment and Primary Commodity Prices*: *Theory and Evidence in a Global Perspective*. This volume, writes Cristini, discusses the links between primary commodity prices and the OECD rate of unemployment. A descriptive account of the main facts and a VAR analysis help define the essential features of the macroeconomic model, which constitutes the core of the essay. The model simultaneously determines the industrialized countries' economic activity, primary commodity prices, the world real interest rate and Less Developed Countries (LDC) external debt. It hence tries to assess both the impact of primary prices on the OECD economy as well as the feedback running from the primary commodity to the industrialized economies. Dynamic simulations of oil price shocks elucidate the propagation mechanism of the system and the specific contribution played by each factor in transmitting the shock. From 1988 to 1989, Cristini was research assistant to Prof. Nickell at Nuffield College; she has written extensively, though not exclusively, on labour economics.

2.3.7 Carlo Dell'Aringa

Another Italian research student that was in Oxford between 1967 and 1970 is Carlo Dell'Aringa, who was later to become full Professor of Labour Economics at the Catholic University of Milan before taking up various ministerial roles in Italy's government, as a specialist of labour economics and relations. Dell'Aringa earned his D.Phil. in Oxford in 1970 with a thesis written under the supervision of John Hicks on 'Employment, Wages, Prices, and Distribution of Income in the Italian Industry, 1953–1967'.

2.3.8 Augusto Schianchi

Another dedicated scholar of Hicksian economics is Augusto Schianchi (1946). A pupil of Luigi Frey and Stefano Zamagni, Schianchi graduated in economics in 1970 from the University of Parma and, from 1974 to 1977, he was an M.Phil. student at Linacre College where he was in receipt of a research scholarship. He was supervised by Robert Bacon, then a fellow of Lincoln College. After earning his Oxford higher degree, he went back to Parma in 1978 where he combined a prominent academic career with various scientific and high-ranking executive duties: from 1984 to 1987 he was the economic adviser to the Italian Treasury Minister Giovanni Goria. Since 2004, he has been a full Professor at Parma. He has worked and published with Robert Bacon, Flavio Delbono, Andrea Mantovi and various other economists. His fields of research include econometric models, financial theory and applications, industrial economics and the theory of demand. Schianchi, during his stay in Oxford, became involved in Hicksian economics. Recently, he has written two papers (jointly with Andrea Mantovi). The first 'A gamer-theoretic traverse analysis: Price competition and strategic investment' is a strategic model of transitional dynamics, in which the traverse path is driven by the properties of the competitive setting. Specific 'master integrals' allow for the study of the neo-Austrian effects occurring along the traverse path, and thereby reduce the problem to the form of the elementary problem of optimal investment timing; structural change is then addressed along the lines of modern strategic investment problems.

The second paper has the title 'A neo-Austrian perspective on the value of growth prospects'. Here, the valuation framework inherent to the neo-Austrian theory of capital set forth by Hicks (1973) is discussed in terms of a fundamental formula which disentangles the profitability associated with the prospect scale of operation from the internal rate of return of the production process. The formula is employed to tailor a perspective on the value of investment prospects, meant to complement the insights embodied by Tobin's *q metric*.

2.3.9 Roberto Cippà and Vinicio Guidi

Yet another line of research in the vast field of Hicksian economics attracted a good deal of interest in the 1980s and 1990s. This related to the micro-foundations of macro-economics, which was taken up by Christopher Bliss and Roberto Cippà.[4,5] More precisely, in the belief that

[4] Roberto Cippà (1953) holds a *licence en sciences économiques* and a doctorate of the University of Fribourg, Switzerland. In September 1977, (with the support of a Swiss Science Foundation fellowship), he was admitted as a graduate student to The Queen's College, Oxford, where he wrote a D.Phil. under the supervision of Christopher Bliss. After finishing his Oxford D.Phil. in economics, he joined the Swiss National Bank and became Executive Director of the IMF (2000–06). He has now returned to Zurich, where he is Director of External Relations of the Swiss National Bank.

[5] This research line reflects another important outcome of Anglo-Italian scientific cross-fertilization. At The Queen's College, Oxford, between Michaelmas Term 1976 and Trinity Term 1983, the first author of this volume organized an economic theory and econometrics seminar. The participants were scholars who were, or had been, associated with the University of Oxford. The topics of the seminar covered a wide spectrum, ranging from classical, marginalist and Keynesian economics to the problems of general equilibrium and quantitative methods. Roberto Cippà (Queen's), Roberto Scazzieri (Linacre) and the first author of this essay (Queen's) were the convenors of the scientific meetings. The institution at which the seminars took place was no casual choice. Since 1969, The Queen's College had sponsored the Florey European Studentship Scheme, originally planned by Lord Howard Florey, provost of the college and Nobel laureate for the therapeutic discovery of penicillin. Lord Florey's aim was twofold: to invigorate the College and Oxford by bringing to them the best research graduates from continental European universities, and to strengthen the ties of international cooperation in most fields of academic research. Between 1976 and 1983, The Queen's College became a place of meeting and discussion for a number of British and continental research students, also including academic visitors, and led to the publication of the volume *Advances in Economic Theory*, published by Basil Blackwell, Oxford, and edited by the first author of this volume. Contributors were Roberto Scazzieri, Christopher J. Bliss, Roberto F. Cippà, Carlo Casarosa, Alvaro Cencini, Bernard Schmitt, Megnad Desai, Roy McCloughry, Nicholas Dimsdale, Mario Biagioli, Luigi Pasinetti, Mauro Baranzini, Heinrich Bortis, Pietro Balestra, Giuseppe Mazzarino and Augusto Schianchi. From the mid-1980s to the end of the 1990s, The Queen's College seminar moved to the Continent. Courtesy of the the Swiss Science Foundation of Berne and a number of Italian universities, an annual International Workshop on the 'Wealth of Nations in Economic

the distinction between macroeconomics and microeconomics is highly artificial, most of the literature (at least until the 1980s) was concerned with the construction of models that incorporate Keynesian features inside a general equilibrium framework. For this task, the extreme assumptions of the Walrasian models make them an inadequate tool. In fact, the complete information that characterizes general equilibrium analysis is obviously in contrast with the idea, underlying Keynes's theory, that economic units have imperfect knowledge of their future environment. This explains the revival of temporary equilibrium analysis, first enunciated by Lindahl (1939) in his *Studies in the Theory of Money and Capital* and then developed by John Hicks (1939) in his *Value and Capital*. Temporary equilibrium models may be conceived either in postulating price flexibility or, as developed by the French school, following the fixed-price method and assuming that adjustments are made by quantity rationing. Neither approach is complete, nor pretends to give an exhaustive explanation of the real world. Bliss and Cippà (1982) put forward a competitive temporary equilibrium model that enquires into the consequences of economic agents having different and inconsistent price expectations. In their words:

> This paper is concerned with the temporary equilibrium approach to economic theory, with some of the possibilities of extending that approach and with some of the problems that the approach gives rise to. 'Temporary equilibrium' is a term coined by Hicks (1939), but it could be extended to cover a number of models that are not as complete and formal as his Walrasian type of model but which nevertheless are situated in the short run. We here include most attempts to give a formal expression in terms of a closed model to Keynes's theory. […] Since Hicks first introduced it, the temporary equilibrium approach has proved to be enormously fruitful.

Theory' was held. Roberto Scazzieri (Padua and Bologna), Ferdinando Meacci (Padua), Pierluigi Porta (State University of Milan), Heinrich Bortis (Fribourg) and the first author of this essay (Verona and, subsequently, Lugano, Switzerland) organized these workshops, which were held alternately in Switzerland and Italy. A number of Oxbridge economists, or economists with Oxbridge connections joined these intensive meetings; to mention a few, Izumi Hishiyama, Francis Seton, Michael A. Landesmann, Richard Arena, Florian Fleck, Mark Perlman, Prue Kerr, Bernard Schmitt, Alvaro Cencini, Harald Hagemann, Mario Amendola, Heinrich Bortis, Gianni Vaggi. Nicholas Georgescu-Roegen joined a special meeting in Engelberg, Switzerland, in March 1990.

> […]. The present paper represents an extension of the approach along new lines. (Bliss and Cippà 1982, 45–46)

Bliss and Cippà conclude that the capital market in an uncertain world ought to be seen as imposing quantity constraints on agents' actions, even if all prices are flexible and all markets are perfectly efficient. This particular 'rationing scheme' allows Bliss and Cippà to deal with the problem of the consistency of future plans and to define a new notion of temporary equilibrium with rationing: the *consistent temporary equilibrium,* that is, a situation in which all existing markets 'clear', and where every virtual demand equals the corresponding supply. Bliss and Cippà conclude that:

> One way of introducing changes in consumers' tastes is to consider the model inside a stochastic context, where preferences and agents' endowments are defined as random variables depending on the state of the economic environment. Since the occurrence of a particular state is determined according to the probability law, subjectively defined, it is logical to conceive that the expected prices differ from $\mathbf{p_1}$ [a set of reference prices which reflect the market opinion about what the future will be], and that at the same time they are seen by the agents as future equilibrium prices. When eventually the economy moves to the next period, the values of the new equilibrium price vector will depend on which specific expectations have been fulfilled. These considerations stimulate us to generalize the analysis and focus our attention on the conditions for which an equilibrium at one date gives rise to an environment compatible with an equilibrium at the next date. The analysis becomes sequential and more difficult. Pre-existing contracts and spot markets at every date are no longer compatible with the above simple formalization of the model, but at the same time strengthen the reasons for which the method proposed can be justified, reducing considerably the 'quasi-perfect' information about future plans that the market can perceive in the simple two-period model. (Bliss and Cippà 1982, 65)

Along similar lines in the same volume, we find a contribution by Roberto Cippà and Vinicio Guidi (1982)[6]. They start with a discussion of

[6] *Vinicio Guidi* (1948) earned a degree in economics in Florence in 1973. Between 1975 and 1978, following a year in the army, he carried out research in his alma mater under the supervision of

the general equilibrium model, in which they critically analyse the main assumptions that limit the possibility of studying important economic realities. From this point of view, they consider the extensions of the original model of Arrow and Debreu; in particular, they concentrate on the temporary equilibrium models with quantity rationing as developed by Drèze and Benassy.

2.3.10 Carlo Casarosa

A line of inquiry taken up by Hicks was that of 'capital and dynamics', with contributions in the field of economic growth, income distribution and capital accumulation, in which 'repercussions of economic change' cannot be confined to the single period (Hicks's 'week'). In this frame, another important link between the Oxford school in general, and John Hicks in particular, with the Italian school of economics of the second half of the twentieth Century is represented by the early scientific contributions of Carlo Casarosa. Between 1976 and 1978, Casarosa was an academic visitor in Oxford on sabbatical leave from the University of Pisa, and he worked in close contact with John and Lady Ursula. This link concerns the so-called 'New View' of Ricardo's theory of growth and distribution, and the role of price rigidities and of money wages in Keynes's work. From the late 1970s onwards, Hicks and Hollander (1977) and Casarosa (1978a, 1982a), quite independently, came to the same conclusion on a fundamental point of Ricardian theory. These works referred to an analysis by Samuelson (1959). The Hicks-Hollander-Casarosa 'New View', contrary to the traditional (i.e. Sraffa-Pasinetti) interpretation, gives emphasis to the forces of supply and demand for the determination of the (Ricardian) wage rate. Within the framework of the Hicks-Hollander-Casarosa model, different aspects are discussed, and the notion of a dynamic equilibrium path is used to describe the movements of the system over time. The main feature of such a dynamic path is that the wage rate is, in general, above its natural level and coincides with it only in the stationary state. Casarosa argues that the 'New View'

Piero Tami. During the academic year 1978–79, he undertook research work in Oxford under the supervision of Amartya Sen. Since 2001, he has been a full professor of economics in Florence.

allows for an elucidation of all Ricardo's propositions concerning the tendencies of the wage rate and of the rate of profits during the process of growth. More precisely, Casarosa shows that, although the Ricardian economy cannot move along a steady growth path because of decreasing returns, the notion of dynamic equilibrium turns out to be quite useful for restricting the possible trajectories that the economic system might follow during the process of growth. Moreover, if the marginal product of labour decreases slowly enough, the actual path of the economic system is likely to remain in close proximity to the dynamic equilibrium path most of the time, so that one should be able to describe the notion of the system as if it followed the dynamic equilibrium path. As the author points out, the role played by the dynamic equilibrium path in this case is exactly the same as that played by the natural equilibrium path in Pasinetti's model.

In response to this 'new formulation', Pasinetti (1982) replies by challenging some of the propositions put forward in separate papers by Samuelson, Hicks-Hollander and Casarosa. More precisely, for Pasinetti the interpretation of the Ricardian system followed by Casarosa simply belongs to a stream of economic thought (which goes back to Marshall) that tries to incorporate the basic proposition of Ricardo into the analytical framework based on the working of supply and demand. Thus, following Pasinetti, a formalization of Ricardo's analysis that emphasizes his hints at the forces of supply and demand is not new at all, since the pre-Sraffa economic literature includes several attempts that had been written with the purpose of reconciling Ricardo with marginal economic theory. Pasinetti adds:

> By concentrating all emphasis on the Ricardian notion of *market* wage rate, Casarosa's approach is open to the danger of neglecting—or reducing to irrelevance—the much more fundamental notion of a *natural* wage rate. This is in fact the trap into which—it seems to me—Hicks and Hollander (1977) have fallen. In their analysis, the 'natural' wage rate plays no role. To begin with, they confuse it with the 'subsistence' wage; and second, they relegate the latter to play the external role of a boundary 'floor'. All their attention is concentrated on the *market* wage rate. (Pasinetti 1982, 241)

2.3.11 Andrea Maneschi

Andrea Maneschi enrolled at University College, Oxford, in the Michaelmas Term of 1955; he stayed until 1959 and later became a distinguished economist in the USA. He does not fully take sides with Pasinetti on this issue. Immediately after high school, Maneschi left his native Milan for Oxford, where he took a B.A. in Engineering Science in 1958, followed by a Diploma in Economics in 1959. He then went on to Johns Hopkins University in Baltimore where, in 1964, he obtained a Ph.D. in Political Economy. From 1965 to 1967, he was assistant professor of economics at Yale; he subsequently moved to the Vanderbilt University, where he was initially Associate Professor, later on becoming full Professor of Economics, and is now Emeritus Professor. He has written extensively on Ricardo, on Kaldor, and, in general, on the theory of international trade and the history of economic thought. He has also written papers on the post-Keynesian theory of profit determination and income distribution. In 1993, he reconsidered the Hicks-Hollander-Casarosa versus Pasinetti controversy. With respect to the papers of Hicks and Hollander (1977) and Casarosa (1978a, 1982a), papers he writes:

> In both their [Hicks-Hollander's and Casarosa's] models there is a clear tendency for the economy ultimately to attain the stationary state, in which the market wage is reduced to the level of the natural wage. Although Pasinetti's formalization of the Ricardian system does distinguish between market and natural wage rates, Caravale and Tosato (1980) correctly point out that his analysis is not a fully dynamic one in the sense that much of it is in fact conducted—as he himself states—*as if* the wage rate were as its natural level, which would then make it impossible for capital accumulation to lead to a rise in population. (Maneschi 1993, 126)

2.3.12 On Carlo Casarosa Again

On another line of research, Casarosa (1978b, 1981, 1982b, 1984) maintains that the conventional presentation of Keynes's aggregate analysis requires rethinking, due to its considering the aggregate expected demand

as a function that reflects the entrepreneurs' expectations about aggregate expenditure. Casarosa's aim is to show that this view has no micro-economic foundations in an atomistic framework, and that Keynes's aggregate expected demand and supply analysis is simply an extension of the analysis of the firm to the whole economy. Hence, according to Casarosa and contrary to Patinkin's view, Keynes's statement—according to which at every point of effective demand entrepreneurs' expectations of profits are maximized—is correct. Casarosa summarizes his arguments as follows:

1. The Keynesian short-run theory of the firm is a reformulation, in terms of aggregate supply and expected demand functions for the firm, of the Marshallian theory of the competitive firms.
2. The theory of effective demand extends the analysis under (1.) to the systems as whole.
3. Keynes's claim that at the point of effective demand 'the entrepreneurs' expectation of profit will be maximized' is correct; however, profit expectations are realized only when the economic system is in short-run equilibrium.
4. The point of effective demand (or 'daily' equilibrium) of the economic system is attracted towards the short-run equilibrium position, which is determined by the aggregate supply and expenditure functions.
5. The aggregate expected demand function for the economy as a whole is *not* the producers' guess of the expenditure function; the two functions are distinct even when the entrepreneurs' expectations are right. (Casarosa 1982b, 77–78)

Casarosa finally maintains that the mix-up between the 'expected demand function' and the 'expenditure function' has probably been caused by the formulation that we find in *General Theory*, where John Maynard Keynes uses the same wording 'aggregate demand function' for both concepts. 'But, whatever Keynes's responsibility, the notion that the expected demand function is the producers' estimate of the expenditure function is clearly a theoretical aberration which has strangely survived' (Casarosa 1982b, 77). There are points of agreement and disagreement between John Hicks's programme and Casarosa's research programme. A point of

agreement concerns the interpretation of the Keynesian hypothesis of the relative downwards rigidity of money wages. Ever since *Value and Capital* (1939), Hicks had maintained that an economic system with flexible prices and money wages (i.e. quite sensitive to disequilibria between supply and demand) is highly unstable; hence the rigidities, especially of money wages, maintained by Keynes have a stabilizing role in the economic system. Since his early works, written in the mid-1960s, Casarosa has always stressed the role of downwards rigid money wages in the presence of unemployment in order to return to full employment. In any case, this rigidity does provide flexibility to the economic system, even if full employment is not reached. Full employment may also be reached by means of an increase in aggregate demand for goods and services. In a letter to the present author, Casarosa however admits that his position differs from that of John Hicks on one specific point. More precisely, he maintains that Sir John had always assumed, in order to understand Keynes's work, that markets of goods and services are of the fixed-price type, and not flex-price. However, according to Casarosa, in order to explain the fundamental mechanisms of Keynesian economics, it is sufficient to assume downwards rigidity *only* for money wages. According to him, 'I am convinced that a relevant feature of the General Theory is the consistence of its fundamental outcomes with a high degree of freedom of entrepreneurs' behaviour (in the case of perfect and imperfect competition, mark-up strategies, and so on)' (Casarosa, in a letter to the first author of this volume in May 2013).

Finally, among the pupils of John Hicks we should mention Giacomo Vaciago and Alessandro Vercelli.

2.3.13 Giacomo Vaciago

Giacomo Vaciago graduated at the Catholic University of Milan in 1964 and enrolled at Linacre College, Oxford, in 1965. In 1968 he was awarded an M.Phil. in economics with a thesis written under the supervision of John Hicks. He came back to Christ Church College in 1992–93 having being elected to a Fowler Hamilton visiting fellowship

(Peter Oppenheimer and Michael Bacharach were the two economics 'students'—i.e. fellows—of the College at that time). During that stay, he delivered the first Fowler Hamilton Lecture on 'Public vs private debt' which was published in *Moneta e Credito* in September 1993.Vaciago was first full Professor of Economics at Ancona before being called back to his alma mater, the Catholic University of Milan. He has held various senior ministerial posts in Rome. His early research and publications were in the field of long-run growth and productivity (Verdoorn-Kaldor's Law) which led, inter alia, to the publication in the *Oxford Economic Papers* in July 1975 of the paper 'Increasing Returns and Growth in Advanced Economies: A Re-Evaluation'. His main field of research, however, remains that of monetary theory and policy.

2.3.14 Alessandro Vercelli

Alessandro Vercelli graduated in political science in 1969 at the University of Turin and, for the years 1969–72, was a research fellow of the Einaudi Foundation. In 1972–73, he was a junior research fellow at St Antony's College, Oxford. His 1991 volume *Methodological Foundations of Macroeconomics*: *Keynes and Lucas*, in which he carries out an investigation of the methodological and epistemological foundations of modern macroeconomic theory, with specific reference to the approach of J. M. Keynes and R. Lucas, is an outcome of his research activity. In the last two decades, he has extended his interest to the topics of the environment, sustainability and inequality. With Partha Dasgupta and Karl-Göran Mäler, he has edited a volume entitled *The Economics of Transnational Commons* that stresses the relevance of shared natural resources, and of the links between poverty and environmental degradation. More recently, in 2008 and jointly with Simone Borghesi, he published a volume with Palgrave Macmillan entitled *Global Sustainability*: *Social and Environmental Conditions*, wherein they explain the extent to which the recent process of globalization may be considered consistent with sustainable development.

2.4 Building on the 'Exchange' and 'Production' Paradigm: Alberto Quadrio Curzio and Roberto Scazzieri

Along the lines of thought sketched by John Hicks and Luigi Pasinetti, we also find the contributions by Alberto Quadrio Curzio and Roberto Scazzieri. In fact, Hicks (1976, 1986) did consider the characteristics of research lines in economic theory, maintaining that each line involved a selective concentration of attention. This seems for him to be the distinctive characteristics of any given research line in economic theory, rather than the consideration of a particular 'ideal' model. He suggested that it is no longer possible to see the development of economic theory as a linear evolutionary process from the mercantilists to contemporary economics; rather, a number of alternative 'paradigms' characterize the past and present situations of our science. Quite independently, and almost simultaneously, both Hicks (1976) and Pasinetti (1963, 1965a, b), who had left Oxford just few terms earlier, seemed to agree on a fundamental distinction between the theories centred on the analysis of the production phenomena and the theories centred on the analysis of exchange. Hicks, in order to emphasize the distinction, labels 'political economy' as the first group of theories, and 'catallactics' as the second.

Hicks's and Pasinetti's viewpoints complement each other. Hicks stresses how changes in economists' concentration of attention may also be independent of changes in the basic ingredients of economic life. See, for instance, his explanation of the 'triumph of catallactics' which runs in terms of the intellectual superiority of the exchange over the production research line at the time when this change took place in the 1870s (Hicks 1976, 214–15). Pasinetti, on the other hand, highlights the influence of external events on the internal dynamics of economic theory.

Alberto Quadrio Curzio and Roberto Scazzieri[7] were the first to study the implications of such a proposal and its application to the documentation of a particular period in the history of economic analysis

[7] In particular, we may mention the five-volumes work *Protagonisti del pensiero economico*, edited by Quadrio Curzio and Scazzieri (1978–83); see Baranzini (1979), Baranzini and Scazzieri (1986) and Quadrio Curzio (1993a, b).

and economic history. This is seen especially in their introduction to the four volumes on the leading economists since David Ricardo (1977–82, 1983). In fact, they attempted a thoughtful and original reconstruction[8] of the history of economic theory in which the relative strength or weakness of the exchange and production research lines depends on a special interplay of 'internal' or 'external' history. Changes in the organization of economic life are considered influential, particularly when they determine a change in the relative importance of two distinct aspects of productive activity: (1) the production of commodities by means of commodities; and (2) the transformation of primary resources into final consumption goods. In this interpretation, economists tend to be more interested either in (1) or in (2), depending on whether their description of the productive system is framed in terms of inter-industry relationships, or in terms of vertically integrated sectors, respectively. The structural dynamics of the economic system may thus influence the evolution of economic thought. As noted, Alberto Quadrio Curzio and his then pupil Roberto Scazzieri were the first to make an in depth study of the implications of the dichotomy production/exchange in economic analysis, and its fruitful application for the history of economic analysis. The volume *Foundations of Economics* published in 1986, which contains the contributions of renowned scholars, has been the inspiration of numerous works that have subsequently taken up this issue.

In the same volume, Pasinetti (1986) argues that the exchange-production duality may be traced back to a deeper dichotomy in the theories of value. In fact, many precious insights are to be gained from the pre-theoretical stages of the discussions on value, where diverging principles become acceptable when considered within a normative framework. Pasinetti identifies in the works of A. Smith and W. S. Jevons the reference points for discussing two alternative paradigms. Smith presents the *pure-preference model* (or pure-exchange model), which looks at all economic problems as if they were problems of the optimal allocation of resources, and where prices are determined by individuals' preferences and resource endowment. Jevons is a proponent of a *pure-labour economy model*, where production and exchange are inherently linked by labour

[8] Quadrio Curzio and Scazzieri's seminal work was also well-received in France: see Lutfalla (1983).

specialization and where prices emerge from the necessity of an extensive division of labour. In particular, Pasinetti stresses the relevance for each paradigm of developing its basic structure ('first skeleton') by concentrating on one single principle. This basic structure may be unfolded, in spite of successive generalizations of each paradigm, by identifying what is essential and cannot be omitted from the theory under consideration. Examination of the distinct ways in which prices are determined and of the way in which the two lines of research are successful in integrating exchange and production leads Pasinetti to maintain that alternative visions of economic life may be associated with different goals of analysis. This ought to ensure a degree of autonomy for alternative frames of analysis (see Baranzini and Scazzieri 1986, 77).

2.5 Italian Economists on Roy Harrod

If we were to consider, at least partially, Richard M. Goodwin to be an Italian economist, then we should mention that Roy Harrod supervised him for one year while he was a Rhodes Scholar at St John's College, Oxford (1934–37). Harrod's tutoring naturally had a lasting influence on him. It seems that Harrod even passed to Goodwin for reading the proofs of *The General Theory*, sent to Harrod by Keynes.

Daniele Besomi is a Swiss-Italian economist who has dedicated several years of research to the interpretation of Harrod's works and to the editing of his unpublished interwars essays and correspondence. After earning a first degree at the University of Pavia, Besomi spent one year in Cambridge, where he gained an M.Phil. in economics in 1987. Then, supported by a variety of research grants, he spent various periods of time researching in Cambridge, Oxford and at Chiba University, Japan, where most of Harrod's papers are now. In 1997, Besomi received the Joseph Dorfman Best Dissertation Prize from the History of Economic Society; this was for his Ph.D. dissertation on *The Making of Harrod's Dynamics*, submitted at the University of Loughborough. A book bearing the same title was awarded a prize for the 'best book in the history of economic thought' by the European Society for the History of Economic Thought. Harald Hagemann endorsed Besomi's *The Collected Interwar*

Papers and Correspondence of Roy Harrod—a monumental edited work in three volumes comprising almost 1700 pages and published in 2003—as follows:

> Roy Harrod (1900–1978) was an eminent economist who made seminal contributions to several fields, most notably to business cycle theory and modern growth theory in the 1930s and 1940s. He also was official biographer of Keynes and served Churchill as a statistical adviser at the beginning of World War II. Daniele Besomi (born 1960) is the author of *The Making of Harrod's Dynamics* (1999) and an impressive number of journal articles which have illuminated Harrod's work from various perspectives. For this scholarly work Besomi received the highest honours from the two leading international associations for the history of economic thought. This three-volume collection of Harrod's interwar correspondence and papers, edited by Besomi, is fascinating reading. It is a presentation of a rich set of correspondence between Harrod and other leading economists of his time and a collection of formerly relatively inaccessible essays and press items which are a gold-mine for every scholar interested in the genesis of modern growth economics or Harrod's role as a public intellectual. (Harald Hagemann, University of Hohenheim, Germany; endorsement of Besomi's edited work)

Nevertheless, Besomi's contribution has gone well beyond the editing of Harrod's works. In *The Making of Harrod's Dynamics*, Besomi has inquired into the origin and early development of Roy Harrod's notion of economic dynamics. It examines how Harrod gathered the analytical, methodological and epistemic components of his theory, and how these are logically connected. It shows that the organizing concept is the instability principle, by stating that in order to provide an endogenous explanation of movement a destabilizing factor must be *ex-ante* introduced. In this way, it represents an epistemic premise rather than an outcome of Harrod's trade cycle theory. Besomi also considers the relationship of Harrod's dynamics with the 'orthodox theory' and with the alternative approaches to dynamics—in particular, the 'time-lag theories of the cycle'. The point of 'divergence' was the instability principle, which Harrod saw as a rejection of the traditional assumption of the stability of equilibrium.[9]

[9] These points have been pointed out to us in a letter by Daniele Besomi himself.

Among other Italian scholars that have researched Harrod's works are Bruno Miconi (1967), Maurizio Pugno (1992), Massimo Di Matteo (2010) and Bruno Soro (2012). Pierpaolo Varri, who also was at Cambridge in the early 1970s, has written an introduction to Harrod's *Dinamica economica* published by Il Mulino in 1990, and has also written a paper on 'Harrod's Dynamic Economics and Joan Robinson's Generalization of the General Theory' (1996). In 1979, Alfredo Medio in 1979 published a volume on *Harrod e il problema della dinamica economica*. Finally, we should not forget Gianni Vaggi on this topic. We are aware that numerous other Italian scholars have written on Harrod, but we wanted to confine ourselves to former Oxbridge scholars. As far as Besomi recalls, the only conference on Roy Harrod was convened in Genoa in 1996 (for the 60th anniversary of the publication of his *Trade Cycle*). *Economic Dynamics*, *Trade and Growth*: *Essays on Harrodian Themes* (1988) presents the papers given at that conference, which were edited by G. Rampa, L. Stella and A. Thirlwall.

2.6 Italian Graduate Students at Nuffield College (1970–95)

2.6.1 Imperfect Competition and General Equilibrium Models

In 1969, James Mirrlees arrived at Nuffield College from Cambridge with a chair that later would be called the Edgeworth Chair of Economics. Together with Nicholas H. Stern, John S. Flemming (1940–2003), Christopher Bliss and several other economists, Mirrlees would soon strengthen the teaching (and research) in economics at Oxford. In particular, he set up a new B.Phil. degree (later to be an M.Phil.) that ran for six terms (two years), with a number of qualified teachers. In 1977, due to Mirrlees, Amartya Sen arrived—first, as Professor of Economics at Nuffield, before being appointed to the Drummond Professorship of Political Economy at All Souls College, following the resignation of Joseph Stiglitz who returned to the USA. Professor Sen's arrival from the

LSE was announced during a 'historical' sub-Faculty meeting at St Cross Building. In the late 1970s, 1980s and early 1990s, a number of new distinguished fellows, readers and professors were appointed, either at Nuffield or in other Oxford colleges. While the old 'guard' had, in general, concentrated its attention on macro-economic variables, on classical and Keynesian models, and the history economic analysis, the younger generation of Oxford economists were, in general, always more involved in micro-economic topics, in the general equilibrium (micro-founded) models and in applied economics. Professor John Vickers, now Warden of All Souls, formerly Drummond Professor of Political Economy 1991–2008, is probably the best example; competition and regulation are his main research interests. This general trend also affected Cambridge and most other English speaking universities. Casarosa (2004, 551–3) maintains that this tendency had connections with the disillusionment of the scientific community with the politically saturated Marxist and Sraffian theories that in Cambridge and elsewhere, but not in Oxford, had dominated the academia of economics. However, we are not sure that this is the correct interpretation. In any case, we must admit that the scientific output of the second generation of Italian young economists who arrived in Oxford to work especially (but not exclusively) in the field of micro-economics after 1985 is impressive, to say the least. Several of them came from Bologna and were, inter alia, direct or indirect pupils of Stefano Zamagni. Others came from Rome, Siena, Parma and the Catholic University of Milan. Most of them then returned to distinguished academic careers in Italy or elsewhere; in particular, in Bologna. We cannot mention them all; we shall mention some of those who, in due course, took Oxford higher degrees. The list is certainly much longer. We will consider them according to seniority and then consider a couple of representative works published in learned journals.

2.6.2 Carlo Luigi Beretta

Carlo Luigi Beretta is now full Professor of Economics in the Faculty of Political Science of the Catholic University of Milan, where he has also been Chairman of the Faculty for several years, following the 21 years of

Quadrio Curzio's service in that role. Beretta earned a First degree in the same university. He then spent three years as a research student at Oxford, where, in 1977, he gained his D.Phil. with a thesis on 'Monopoly in General Equilibrium Theory'. After a number of years at the University of Bergamo and the University of Parma, he returned to the Catholic University. He has been widely published on game and decision theories, on general economic equilibrium and welfare theory with application to institutional settings, as well as on international trade theory with reference to factor movements.

2.6.3 Gianpaolo Rossini

Gianpaolo Rossini gained his First degree in political science (major economics) at the University of Bologna; from 1978 to 1980 he was a research student al Linacre College, Oxford, where he earned his M.Phil. degree in economics. Since 1997, he has been full Professor at the University of Bologna. Rossini has published widely on the mechanisms of price formation, on game theory, on the theory and policy of international trade, and on the role of uncertainty and risk, especially in entrepreneurial decisions. He has also published on practical questions of economic policies, on monetary policies, and on current account composition and the sustainability of external debt in various nations. Some of his research works have been co-written, in particular with Michele Moretto, Luca Lambertini, Andrea Mantovani and Paolo Zangheri.

2.6.4 Flavio Delbono

Flavio Delbono studied economics at the University of Parma, graduating in 1982. He then earned a Ph.D. in economics at Siena in 1986. In 1984, he enrolled at Linacre College, Oxford; this was made possible by a variety of grants, one of which was a British Council Scholarship. In December 1988, he earned his D.Phil. degree with a thesis on 'Technological Change and the Behaviour of Firms'. In his first terms at Oxford, Delbono studied under Professor Amartya Sen, who left Oxford

for Harvard in 1986. Delbono has published extensively in learned journals, inter alia, in the field of technological change, strategies of public enterprises in non-competitive markets, on the various forms of oligopolies and duopolies. Recently, he has taken up the issue of cooperative firms, as well as poverty and human development indices.

2.6.5 Vincenzo Denicolò

Vincenzo Denicolò is Professor of Economics at the University of Bologna and has, for some time, been a professor at the University of Leicester. As he points out in his personal page of the University of Bologna, 'his main research interest currently is the economics of innovation and intellectual property, but he works, more broadly, on industrial organization and competition policy and maintains an interest in social choice theory, in which he has also published extensively in the past. He has been visiting fellow at Clare Hall (Cambridge) and visiting professor at the European University Institute and the University of Paris II. He served as co-editor of the *International Journal of Industrial Organization* and as head of the Bologna Doctoral School in Economics and Statistics.' He has published extensively in respected economic journals, including the *Quarterly Journal of Economics*, the *Journal of Economic Theory* and the *RAND Journal of Economics*.

2.6.6 Gianni De Fraja

Gianni De Fraja is the William Tyler Professor of Economics in the University of Leicester. He attended the Scuola Superiore Sant'Anna in Pisa, where he graduated in 1982. He then took his Ph.D. at the University of Siena with a thesis on 'Game Theory'. Following this, he went to Linacre College, Oxford, where he earned his D.Phil. on oligopolistic competition. Since leaving Oxford, he has taken up academic positions in the universities of Leicester, Bristol and York. Between 1999 and 2005, he was managing editor of the *Bulletin of Economic Research*. His research interests are in the areas of public economics, the economics

of education, regulation, and game theory. He has published papers, among others, in the *Oxford Economic Papers*, *Review of Economic Studies*, *Economic Journal*, *Journal of Public Economics*, and *Journal of Political Economy.*

2.6.7 Luigi A. Franzoni

Luigi A. Franzoni is full Professor in the Faculty of Economics of Bologna. He received his D.Phil. from Nuffield College, Oxford, and has been published in leading journals on the economic theory of settlements, law enforcement, tax amnesties and intellectual property.[10] He is author of a well-received introduction to law and economics (*Introduzione all'economia del diritto*).

2.6.8 Carlo Scarpa

Carlo Scarpa is now a full Professor of Economics at the University of Brescia. After being awarded a laurea in economics at the University of Parma, he received a research doctorate in economics from the University of Bologna. He then enrolled as a research student at Oxford, where he obtained a Ph.D. in economics working at Nuffield College. He has specialized in industrial economics, and has carried out research and published widely on industrial economics, antitrust and regulation, as well as on energy, local public services and intellectual property rights.

2.6.9 Luca Lambertini

Luca Lambertini, before completing his Ph.D. at Bologna in 1994 with a thesis on 'Product Differentiation and Strategic Behaviour', enrolled at Linacre College, Oxford. There, he submitted a D.Phil. thesis under the supervision of Martin Slater on 'Strategic Interaction under Endogenous Product Differentiation'; the higher degree was officially awarded to

[10] This information is presented on his personal page at the University of Bologna.

him in May 1996. He is now full Professor of Political Economy at the University of Bologna, Faculty of Social Studies. His research interests cover the fields of game theory, imperfect competition, product differentiation with particular emphasis on vertical and spatial differentiation, labour-managed enterprises vs profit-seeking enterprises, and international trade and policies coordination. He has published widely in high-ranking journals.

2.6.10 Gian Cesare Romagnoli

Gian Cesare Romagnoli took a First degree in economics at La Sapienza, Rome, and then spent a long period of research at Trinity College, Oxford. He was later a Research Fellow at the Institute of Economics of the University of Pennsylvania. He is now Professor of *Politica Economica* in the Faculty of Political Science, Università Roma Tre, and was awarded the Ezio Vanoni Prize of the *Presidenza della Repubblica* for his contribution to public finance.

2.6.11 On Some Analytical Results

We now make reference to two works of the economists quoted above. They seem to us to represent the scope and method of the wider research programme carried forward in Oxford, or immediately afterwards, by the group of economists mentioned above. We may recall that numerous papers written by 'Oxford educated' Italian economists were published in the *Oxford Economic Papers*, which represents a distinctive feature. We start with Delbono and Denicolò's (1991) paper on 'Incentives to Innovate in a Cournot Oligopoly', which appeared in the *Quarterly Journal of Economics.* By retaining the basic framework of analysis of Lee and Wilde, Delbono and Denicolò show that '(a) an increase in the number of firms may result in a decrease in the equilibrium R&D effort of each firm and in the equilibrium total effort; (b) in equilibrium there may be under-investment with respect to a social optimum' (Delbono and Denicolò 1991, 952). In 1993, the two authors published the

paper 'Regulating Innovative Activity. The Role of a Public Firm' in the *International Journal of Industrial Organization*. The authors prove that, under general conditions, there is over-investment in R&D in a 'non-cooperative equilibrium due to duplication of effort'. Hence, a public firm may be instrumental as a regulator to shrink 'the market of R&D and the socially optimal level' (Delbono and Denicolò 1993, 46). The authors show that, in a mixed duopoly, each firm invests less in R&D than in a private duopoly and that 'although the expected time of innovation is postponed, social welfare is higher than in a private duopoly' (ibid., 35). This, hence, has wider implications in a mixed duopoly, as it is the case with many industries at the beginning of the twenty-first century due to a spate of privatizations. We report finally on Vincenzo Denicolò's (2002) paper 'Sequential Innovation and the Patent-Antitrust Conflict', published in the *Oxford Economic Papers*. In this paper, Denicolò focuses on the intrinsic strain between patent and antitrust rules. In order to do this, he dissects a two-stage patent race model, where competition among the patentees may lead to profit erosion. He concludes that collusion, in this framework, stimulates investment in second-generation innovation, which improves welfare if their social gains exceed private gains (or returns). 'However, it discourages investment in first-generation innovations. Thus, for the pooling of subsequent patents to be beneficial, the non-appropriable returns from the second innovation must be large and it must be costly to achieve by comparison with the first' (Denicolò 2002, 649).

The above fields of research lead us to mention here a Cambridge educated scholar who has worked since the early 1990s in the fields of taxation, micro-economics and, recently, finance.

2.6.12 Elettra Agliardi

Elettra Agliardi gained a First degree in economics at Bologna in 1986, an M.Phil. in economics at Cambridge in 1989, a Ph.D. in economics at the European University Institute in 1990 and, finally, a Ph.D. in economics at Cambridge in 1992. For the years 1990–92, she was a research officer in the Department of Applied Economics at Cambridge, and from

1990 to 1995 she was a college lecturer in economics and fellow (title A) of Churchill College. She is now full Professor of Economics of the University of Bologna. Since 2012, she has been on the editorial board of the journals *Finance* and *Economic Notes*. Agliardi's papers are often cited in the literature; in particular, her paper in the *Australian Economic Papers* (2001) on 'Taxation and Investment Decisions: A Real Options Approach'. According to her, the paper aims to analyse 'the impact of the tax system on the firm's incentives to invest and disinvest in an uncertain environment. This paper follows the real options approach, which allows us to investigate the value to a firm of waiting to invest and/or disinvest, when payoffs are stochastic and investments partially reversible. The implications for the magnitude and directions of the effects of tax policy are studied; also the case of tax policy uncertainty is examined.'

2.6.13 Models of Saving and Accumulation: The Flemming-Mirrlees (-Hicks-Kaldor-Pasinetti) Approach

As previously mentioned, in the early 1970s Oxford teaching and research were undergoing progressive and important reform in the field of economic theory. On the one hand, the influence of the 'old guard' was losing ground. John Hicks, the pupils of Roy Harrod, Walter Eltis and Maurice F. G. Scott, David Soskice, Andrew Glyn, Michael Bacharach, Francis Seton, Nicholas H. Dimsdale and many other distinguished scholars represented the 'old guard'. At the same time, the 'Nuffield school' was gaining impetus, with the appointments of James A. Mirrlees, John S. Flemming, Nicholas H. Stern, Maurice F. G. Scott and many others who were more neo-classical and micro-economic minded. For those who had interest in the macro-economic theories of income and wealth distribution before coming to Oxford, the moment was ripe for working on the micro-foundations of macro-economics. This was undertaken in order to build a bridge between the two approaches, following a suggestion formulated by John Hicks (1965) and Samuelson and Modigliani (1966). This is exactly what the first author of this volume set himself to develop when he arrived at The Queen's College in 1971 with a Florey

European scholarship awarded to him by the college. The starting points were the works of John Hicks, James E. Meade, and Anthony B. Atkinson, by keeping them in the frame of the macro-economic post-Keynesian theory of income and wealth distribution.[11]

The 'bridge' between the two research programmes is well-represented by Chap. XXI ('Optimum Saving') and Appendices D and E of Hicks's (1965) *Capital and Growth*, where a (social) utility function is postulated in order to find the level of consumption that maximises total utility and, at the same time, yields the level of consumption and savings that allows the system to place itself on a given growth path with well-defined properties. In this sense, Hicks has anticipated a wide literature on growth and optimal savings, which would proliferate in the late 1960s, 1970s, 1980s, and even later. It might be argued that Chap. XII of Hicks's *Capital and Growth* ('The Model in Outline', 131–47) represents a remarkable exception in John Hicks's way of working; for him to graft his growth model into the Cambridge theory of distribution is very unusual. In fact, where 'other writers feature mainly in footnotes', as Bliss (1987, 642) has it, here Hicks shares an approach that has a clear Cambridge post-Keynesian imprint. Post-Keynesian, neo-Ricardian as well as neo-classical two- (or multi)-class models consider a class of 'pure' capitalists whose income is derived entirely (or mainly, in certain cases) from capital, and a class of workers whose income is derived from both work and accumulated savings. As discussed at length in Baranzini (1991a) and Baranzini and Mirante (2013), the main features may be summarized as follows: (a) the savings ratio of the two classes is exogenously given and, hence, independent, for instance, of the rate of interest earned on savings (both life-cycle and inter-generational); (b) little attempt is made to explain the 'historical' importance of the inter-generational bequest of the system; and (c) the equality that may be observed in the long-run equilibrium between the rate of profit earned by the entrepreneurs and the rates of interest earned by the other classes on their accumulated savings.

The research line focuses on the patterns of accumulation of capital in a two- or multi-class model incorporating the basic ingredients of the life-cycle theory and the possibility of the existence of an inter-generational

[11] See, in particular, Baranzini (1976, 1991a, 2008).

bequest. This is not incompatible with the macro-economic analysis since, with appropriate mathematical tools, it is possible to aggregate individuals and to consider classes of individuals characterized by a homogeneous economic behaviour and propensity to transmit wealth to their heirs. In this context, the life-cycle theory may provide:

1. Greater insight into the determination of the distribution of income among classes and into the determination of the equilibrium variables of the model;
2. An understanding of the sort of reasons that may lead to historical class differences, to a different accumulation of capital (both life-cycle and inter-generational), and to the particular conditions under which a class may start (or stop) accumulating inter-generational assets;
3. An assessment of the relative strength of the life-cycle vs the inter-generational capital stock and the conditions, which favour one or the other of the capital stocks.

The results obtained throw additional light on the behaviour of consumers and, more importantly, on the process of capital accumulation. In particular, they show that in the very long run the system may explain the evolution towards a two-class (or multi-class) society of financial capital owners. In the case in which all classes may pass on a financial bequest (excluding education) to their children, in order to have a steady-state path, the capitalists must have a much stronger will to bequeath capital to their children than the other dynasties or classes. It is only in such a situation that all classes will hold a positive share of the total capital stock. Can this analytical result be reconciled with common sense and economic reality? The answer is bound to be positive, since: (a) the working class, by definition, derives a high proportion of its income from human capital stock, so this class may be inclined to discount its inter-generational bequest at a rate lower than average; and (b) it is not unrealistic to posit a situation where, in general, low-income families give higher priority to life-cycle consumption and, consequently, a lower one to the inter-generational capital stock. On the other hand, from a long-term perspective, those classes that derive a high proportion of their income from inter-generational wealth (and the remaining part from life-cycle

savings) are bound to give weight to the accumulation of such wealth, by discounting it at a rate higher than average. As already pointed out, several scholars have already explored a differentiated propensity to leave a bequest to the next generation. The general outcome of these studies is that bequests appear to be luxury goods, both with respect to permanent income and wealth of the donors. The 'permanent' income elasticity of bequests, according to Menchik and David, is always positive and ranges from about 0.3 for persons with a low income to 2.7–4.75 for high-income earners. Not surprisingly, indeed.

2.7 Italian Economists at Oxford Building on Production Theory

2.7.1 Introduction

We report now on works elaborated and published by Italian research students and scholars at Oxford in the field of the theory of production during the years 1975–2000. At that time, various distinguished economists could provide supervision in the field of the investigation of production processes, both at the conceptual and analytical levels. A non-exhaustive list would include Alan C. J. Brown, Francis Seton, Michael O. L. Bacharach, John Enos and Amartya K. Sen, as well as John Hicks himself.

2.7.2 Roberto Scazzieri

One research student who took up this line of research was Roberto Scazzieri, who came to Linacre College, Oxford, in January 1975. Another graduate of Bologna, Alessandro Zanello, arrived at the same time. He had come to Oxford after working at Bologna, under Quadrio Curzio's supervision, on a dissertation on Leonid Kantorovich's value theory, and was later to join the International Monetary Fund.[12] Scazzieri

[12] Alessandro Zanello, under the supervision of Hywel Jones, earned a B.Phil. degree at Oxford in 1977. He then moved on to the USA where, under the supervision of Edwin Burmeister, he wrote

has turned out to be one the most prolific scholars to have pursued the production theory line of research in his first years at Oxford. More generally, over the years, he has pursued several research lines of the Italian-Oxbridge school of economics. They were connected, in particular, with the research programmes of John Hicks, Piero Sraffa and Luigi Pasinetti in Oxbridge and with those of Alberto Quadrio Curzio, Paolo Sylos Labini and Giorgio Fuà in Italy. His works belong, at the same time, to the best tradition of the modern school of Italian Economic Thought and to the best of the modern Oxbridge schools of economics. In fact, both schools emphasize the long-run changes of economic systems, undergoing processes of structural change. Since January 1975, Scazzieri has been closely associated first, with the University of Oxford and, since the late 1980s, with the University of Cambridge. Apart from Sraffa, he is probably the Italian economist who has had the most long-lasting, intense and fruitful involvement with Oxbridge. Scazzieri is son of an electrical engineer whose university education was deeply influenced by a meeting with Guglielmo Marconi and the early development of communication technology. He took a laurea in Economics and Politics with first class honours at Bologna with a dissertation on 'Productivity Laws and Price Determination' written under the supervision of Alberto Quadrio Curzio. He was then awarded a Stringher scholarship and, in January 1975, he enrolled at Linacre College, Oxford. For five years, he worked on an M. Litt. thesis on 'Scale and Efficiency in Classical and Post-Classical Models of Production', first, under the supervision of David Soskice and, thereafter, Michael Bacharach. He then worked under the supervision of Michael Bacharach on a D.Phil. thesis on 'Tasks, Processes and Technical Practices: A Contribution to the Theory of the Scale of Production'.

Scazzieri's research in Oxford initially dealt with foundational aspects of production theory; in particular, considering the relationship between scale, the efficiency ranking of technical practices, and the overall efficiency of production structures. In this way, Scazzieri took up an important research line that was being kept alive at Oxford by a number of people: John Hicks (in his *Capital and Time*); Francis Seton (in his

a Ph.D. on multi-sector models of growth. During part of his career, he was associated with the Department of Economics of Dartmouth College.

works on the structural theory of value); J. A. C. Brown; another Oxford research student, Michael A. Landesmann (in his works on production analysis and structural dynamics); and Amartya K. Sen, who was, at that time, Drummond Professor at All Souls. His interests in production theory had originally been fundamentally stimulated by his former mentor at Bologna, Alberto Quadrio Curzio, especially though his volume *Accumulazione del capitale e rendita* published in 1975. The friendship with Michael A. Landesmann played a pivotal role in the evolution of Scazzieri's interests at Oxford, as he himself points out:

> The first friend that I should recall […] is perhaps Michael A. Landesmann, a graduate from the University of Vienna who was then at Balliol. We first talked to each other in the tower of Nuffield College library and we soon discovered that we had many interests in common: essentially history and philosophy. We also found ourselves sharing the belief that economic theory should be primarily concerned with historical dynamics of forms of organization, particularly in the production sphere. Already at that time, Michael was a tireless organizer of meetings and 'private seminars', and his room became one of the most intellectually lively places for young economists in Oxford. (Scazzieri 1993b, 105)

When Scazzieri started his research at Linacre College in January 1975, the study of the relationship of output to productive efficiency was deeply rooted in the history of economic theory. Nonetheless, there would have been few economists satisfied with the state of the arts in this field. The reason is that economic theory did not seem to provide a satisfactory explanation of phenomena of 'increasing and diminishing returns', 'economies and diseconomies of scale' and so on. Scale-efficiency relationships provided a fertile arena in which heated debates took place, often starting with differences in basic definitions and hypotheses. The original discussion took place mainly in *The Economic Journal*, among John Clapham, Cecil Pigou, Dennis Robertson, Piero Sraffa and others, during the 1920s. Another important debate developed in the late 1940s between Chamberlin, Hahn and McLeod in the *Quarterly Journal of Economics*. This debate was concerned with the issue of input divisibility in relation to increasing returns to scale (Scazzieri 1982, 19–42).

In fact, as Scazzieri maintains, scale-efficiency relationships are treated in a distinctly different way depending on whether we consider the classical or the 'post-classical' theory of production. The main dissimilarity is to be found in the fact that decreasing and increasing efficiency by the classics were treated as the outcome of producers' behaviour, vis-à-vis technical alternatives—in particular, under constraints relative to the scarcity of inputs (such as land) or the indivisibility of given production processes. On the other hand, in the 'post-classical', or modern theories, scale-efficiency relationships decreasing or increasing efficiency are the direct outcome of technological laws, and no longer connected to variations of scale affecting producers' choices. This might appear a paradox in the evolution of production theory, for the view of scale of scale-efficiency phenomena accepted by neo-classical economists severs the link between such phenomena and technical decisions; and such an outcome seems to contrast with the pervasive role of choice in the neo-classical view of the productive world. Scazzieri, in the final part of his paper, discusses the general 'philosophy' of the two approaches and concludes that the classical approach can provide a useful starting point for the formulation of an economic theory of scale-efficiency phenomena.

> The point of view chosen by post-classical [i.e. neo-classical or marginalist] writers implies that only an extra-economic explanation is possible. However, such an outcome is not a necessary consequence of admitting that scale-efficiency phenomena can partly be explained by laws independent of producers' choices. The reason is that, at least in principle, it is possible have an economic theory of such phenomena and also to allow natural or technological laws to play a part in their determination. If one accepts the latter point of view, the analytical representation of production technology can no longer be based on the linearity assumption, unless *ad hoc* qualifications are introduced. Additionally, it will be possible to deal with the cases in which scale-efficiency phenomena arising from producers' choices appear in conjunction with nonlinearities based on natural or technological laws. (Scazzieri 1982, 40)

In 1993, Scazzieri published with the Clarendon Press a volume that was the result of nearly ten years of research in Oxford: *A Theory of Production. Tasks*, *Processes*, *and Technical Practices*:

> The aim of this study is to consider the structure of productive processes within a general description of human, technical, and environment capabilities and their utilization in 'supporting' networks of productive tasks. As a result of this investigation, the view will emerge of the overall economic system as a set of interdependent funds (such as workers, machinery, natural resources) executing, according to a co-ordinated pattern, a certain transformation or set of transformations. Such patterns will affect the physical characteristics of the material environment and/or capabilities of the funds involved in productive activity. (Scazzieri 1993a, 1)

Clearly, Scazzieri's work fills an important gap in the existing theoretical literature on production structures. Unsurprisingly, in the mid-1980s the editors of *The New Palgrave Dictionary of Economics* asked Scazzieri and Luigi Pasinetti to write the entry 'Structural economic dynamics'. In this way, Scazzieri remains one of the few economists to have published a joint paper with Luigi Pasinetti. We may add that in Landesmann and Scazzieri's (1996) edited volume on *Production and Economic Dynamics* this research line has been further refined. The volume, as Landesmann and Scazzieri point out, takes into account two different research programmes. The first considers the issue of structural economic dynamics based on the interlocking research lines of John Hicks on traverse analysis, Luigi Pasinetti on non-proportional growth models, and Richard M. Goodwin's methods of dynamic decomposition and economic fluctuations. The second research programme is that started by Nicholas Georgescu-Roegen in the field of the organization of production as a field characterized by 'the interrelationship between tasks, fund factors and material transformations'. According to Landesmann and Scazzieri:

> This volume proposes a new approach in the analysis of structural dynamics, in which a comprehensive view of the dynamics of the whole economic system is associated with the decomposition of the latter into subunits (such as processes, industries, integrated sectors, eigensectors) in order to represent the disaggregated dynamics of structural adaptation and compositional change. On the other hand, a detailed representation of micro-organisational features leads to the analysis of networks and networking processes within and amongst such subunits. (Landemann and Scazzieri 1996, xv; 2nd edn, 2009)

This is the extent to which Scazzieri examined the foundational aspects of production theories during his Oxford years. Later, we shall introduce the research programme he carried out while at Cambridge.

2.7.3 Mario Morroni

Another Italian scholar worth mentioning here is Mario Morroni, with his two Cambridge University Press volumes: the first, published in 1992 under the title *Production Process and Technical Change*; the second, published in 2006 under the title *Knowledge*, *Scale and Transactions in the Theory of the Firm*. Morroni is life member of Clare Hall, Cambridge, where he spent several terms; in 1992, he was awarded the Myrdal Prize of the European Association for Evolutionary Political Economy. The purpose of Morroni's first book is to present a 'consistent scheme capable of unifying the economic analysis of the production process in order to understand the effects of technical change' (Morroni 1992, 1). As the author further points out, the study may be carried out along two lines: either (a) defining a scheme of relations among the economic variables of the production processes, variables that may be varied by institutional aspects such as industrial relations changes, or changes in expectations; or (b) as an empirical *methodology* that may allow for the study of the economic implications of changes in techniques. The inclusion of temporal and organizational aspects allows the author to examine the analytical implications of recent research on the nature of firms and the characteristics of technical change, while the model is used to analyse technical changes that involve variations of scale or degrees of flexibility. Industrial economics and management studies are therefore brought together in a new way. Nathan Rosenberg of the University of Stanford, reviewing Morroni's 2006 Cambridge University Press volume, writes that 'Morroni writes with refreshing analytical clarity on the current status of the theory of the firm. His book provides a masterful re-examination of neo-classical theory at a time when academic economists have been challenged to integrate such intractable forces as internal economies of scale, high transaction costs, and radical uncertainties into their theoretical models. His book is an invaluable guide to all who share these concerns.'

2.7.4 Antonio Andreoni

As Roberto Scazzieri moved to Cambridge towards the end of the 1980s, the line of research on production theory also moved, at least partially, to the Cam. The issues of production and structural analysis—or, better, of the structural analysis of production processes and economic dynamics—have been recently taken up by Antonio Andreoni. Formerly a research associate at the Centre for Science, Technology and Innovation Policy, at the Institute for Manufacturing, Department of Engineering, University of Cambridge, Andreoni has been since 2014 at the School of Oriental and African Studies (SOAS), University of London. He holds a B. Sc. and M. Sc. from the University of Bologna, where his supervisor had been Roberto Scazzieri, and an M.Phil. and a PhD. (obtained in 2013) in Development Studies from the University of Cambridge. His Ph.D. Dissertation on 'Manufacturing Development: Structural Change and Production Capabilities Dynamics' was supervised by Ha-Joon Chang, a former pupil of Bob Rowthorn and also an associate of Ajit Singh. His research areas cover manufacturing and industrial systems, the political economy of manufacturing development, structural economic dynamics and intersectoral linkages, industrial competitiveness and skills: metrics and benchmarking, and industrial and innovation policies evaluation. He has written various papers in his research areas. In a paper on 'Structural Learning: Embedding Discoveries and the Dynamics of Production', an effort is made to open the 'production black box' by proposing the analytical map of production as a tool for disentangling the set of interdependent relationships among capabilities, tasks and materials. The concept of structural learning is introduced to identify the continuous process of structural adjustment triggered and oriented by existing productive structures at each point in time. The author maintains that structural learning trajectories allow for the transformation of structural constraints, such as bottlenecks and technical imbalances, into structural opportunities. In addition, complementarities, similarities and indivisibilities are essential focusing devices for activating compulsive sequences of technological change, as well as for discovering structurally embedded opportunities. The paper finally investigates the tension between structure and agency present in structural learning trajectories, and examines

the form it takes in different productive organizations. (This research programme builds on a research line initiated by Scazzieri 1981, 1993a.)

In another paper written for the *Oxford Review of Economic Policy*, written jointly with three of his colleagues, with the title 'What is New in the New Industrial Policy?', Andreoni explores the recent evolution of manufacturing-related policies in leading OECD economies–Germany, Japan, the United Kingdom and the United States. A new framework, the industrial policy matrix, is used to illustrate and compare policy approaches in terms of factor inputs, intervention levels and degrees of coordination. In yet another highly technical paper, 'International Industrial Policy Experiences and the Lessons for the UK' (written with H.-J. Chang and M. L. Kuan), Andreoni reviews a diverse set of countries with the most successful industrial policy experiences since the Second World War—the USA, Germany, Japan, Italy, Finland, (South) Korea, Singapore, China and Brazil—with a view to deriving lessons for the UK. The picture that emerges is an alarming one, in which the UK's industrial performance distinguishes itself for being the worst and for getting worse all the time. In another paper written with M. Gregory, 'Why and How Does Manufacturing Still Matter: Old Rationales, New Realities', Andreoni calls for 'the renaissance of a manufacturing oriented view of the economic system'. He begins by providing a critical review of the main turning points in the manufacturing versus services debate evaluating the analytical and empirical arguments deployed in favour of each view. He then goes on to describe the profound transformations in industrial systems and the redistribution of manufacturing production across countries over the last two decades, which challenge some of the assumptions on which the service-oriented view is built. The paper ends by investigating the negative consequences of de-linking manufacturing production from services (off-shoring) are explored by highlighting the systematic disruption of the bundle of technological linkages constituting the industrial commons. Finally, we should mention the important paper 'Triggers of Change: Structural Trajectories and Production Dynamics', written jointly by Andreoni and Scazzieri (2013) for the *Cambridge Journal of Economics*. The paper concentrates on production processes as principal loci of structural economic dynamics along increasing and decreasing returns trajectories. According to the authors, these trajec-

tories are triggered by structural opportunities and constraints embedded in production systems, and their historical realization is subject to different institutional configurations. This approach suggests the governance of economic dynamics via structural policies working both on the technological and organizational conditions of production. The authors finally stress that capitalist economies have to rely on a mix of coordination devices across different production units and aggregation levels in order to capture structural opportunities and thus avoid structural constraints. These works surely represent a continuation and progress of the long-standing tradition of the Italian and Oxbridge school of economic thought.[13] Since his appointment at the Cambridge Institute for Manufacturing in 2013, Andreoni has promoted the Babbage Industrial Policy Network and the associated Babbage Lecture Series. The aim of the Network is to stimulate the exchange between production economists and technologists, and Lecture Series has hosted presentations by leading thinkers, among whom have been Mike Gregory, Ha-Joon Chang, Mario Sergio Salerno, Patrizio Bianchi, Ken Warwick, Bob Rowthorn, Lord Sainsbury, Lord Adonis, Michael Best, Philipp Shapira, Giovanni Dosi, Thomas Kurfess and Mariana Mazzucato. Andreoni, now at SOAS, University of London, is also a Member of the Global Young Academy.

2.8 Italian Scholars at Michael Bacharach's Bounded Rationality in Economic Behaviour Unit

Michael O. L. Bacharach, student (i.e. fellow) of Christ Church since 1969 and university professor from 1996 until his death in 2002, founded the Oxford Laboratory in Experimental Economics and the Bounded Rationality in Economic Behaviour Unit. It attracted a number of distinguished scholars, among whom we would like to mention Daniele Giovanni Zizzo and Michele Bernasconi, who have both published scientific papers jointly with Michael Bacharach.

[13] Andreoni confirmed a number of the above points in a letter to the present authors.

2.8.1 Daniele Giovanni Zizzo

Daniele Giovanni Zizzo is now Dean of Research and Innovation in the Faculty of Humanities and Social Sciences at Newcastle University, as well as a Professor of Economics in the Newcastle University Business School. He graduated from the University of Palermo and earned an M.Phil. and D.Phil. in Oxford. Zizzo was a stipendiary lecturer at Brasenose College, a junior research fellow, and, from 2001 to 2004, a student (i.e. fellow) of Christ Church College and a university lecturer. As he points out in his personal page, while in Oxford he 'was an acting director of BREB (*Bounded Rationality in Economic Behaviour Unit*) and experimental laboratory coordinator, managing the research unit and convening research workshops and conferences'. From 2004 to 2008, he was at the University of East Anglia, where he was promoted to full Professor. He considers himself 'primarily an experimental and behavioural economist. His research is motivated by the search for more realistic empirical and theoretical foundations of economic decision-making, using mainly experimental, but also analytical and computational methods as required'. According to his personal page, Zizzo considers himself 'a mainstream economist, but one interested in pushing forward the boundaries of mainstream economics, and one firmly committed to a wider perspective as an interdisciplinary social scientist'. In fact, he has published in top scientific journals, and in 2004 edited, inter alia, with Palgrave Macmillan the volume *Transfer of Knowlegde in Economic Decision Making*.

2.8.2 Michele Bernasconi

Michele Bernasconi is now Professor of Public Finance at the University of Venice 'Cà Foscari'. His fields of research include economics and psychology, experimental economics and public finance. He holds a Ph.D. in economics from the University of Pavia (1993) and a Ph.D. in economics from the University of York (1992). At York, he wrote a thesis on 'Non-conventional Decision Analysis: Theories, Evidence and Implications'; and he was a recipient of various research fellowships: a Mortara fellowship from the Bank of Italy (1986), a Luigi Einaudi research fellowship

(1987), an Ellis Hunter teaching fellowship from York (1987–88) and a British Academy Postdoctoral fellowship (1983). In 1992, he was a research officer of the Institute of Economics and Statistics at Oxford and, in 1997, together with Michael Bacharach, he published a paper on 'The Variable Frame Theory of Focal Points. An Experimental Study' in *Games and Economic Behavior*.

2.9 Other Distinguished Italian Scholars Who Undertook Research at Oxford

As observed in the Introduction to this volume, we cannot report on all the Italian economists who have studied at Oxford. However, we would like to mention Pierluigi Ciocca and Stefano Mieli, as well as Renato Balducci, Francesca Sanna-Randaccio, Mario Biagioli, Paolo Piacentini-Karnizawa, Michele Morciano, Bruno Salituro and Lia Fubini.

2.9.1 Pierluigi Ciocca

Pierluigi Ciocca (1941) graduated in law from the Sapienza Universities of Rome in 1965 and, for the next two years, he undertook graduate work at the Institute for Studies and Economic Researcy (ISRE) in Rome under the guidance of Bruno de Finetti, Paolo Sylos Labini, Luigi Spaventa and Sergio Steve. With the support of a Luigi Einaudi fellowship, he enrolled at Balliol College, Oxford, between 1967 and 1969 and undertook research work under the supervision of John Wright and Robin Matthews. While at Balliol, he took part in seminars organized by John Hicks, Roy Harrod and Robert Solow. Having returned to Rome, he began a prominent career at the Bank of Italy, where he attained the position of Deputy Director General (1995–2006). In 2005, he was shortlisted for the position of *Governatore della Banca d'Italia* but, due to the opposition of the then Italian prime minister, his name was not put forward for selection. He has taught in various universities and has published extensively in the fields of monetary theory, policy and regulation.

Particularly well-known is the volume *Money and the Economy*: *Central Bankers' Views*, which he edited in 1987 (Macmillan/St. Martin's).

2.9.2 Stefano Mieli

Stefano Mieli (1947) graduated in Rome in 1973. Between 1973 and 1975, with a Stringher grant from the Bank of Italy, he undertook post-graduate work in Oxford. In 1975, he entered the Bank of Italy where he pursued a prestigious career, reaching the rank of *direttore centrale*. He has published in the field of finance regulation and has taught in the universities of Reggio Calabria and Florence.

2.9.3 Renato Balducci

Renato Balducci (1947) is now Emeritus Professor at the University of Ancona (now the *Università Politecnica delle Marche*). He graduated in 1972 in economics from Ancona with a thesis on '*Aggiustamento della bilancia dei pagamenti, liquidità internazionale e inflazione*', supervised by Fausto Vicarelli. Giorgio Fuà encouraged him to apply for a Mortara grant in order to pursue his academic development abroad. The grant that he duly obtained allowed him to spend a considerable period in Oxford, from 1973 onwards, before returning to teach at Ancona. In 2005, with Neri Salvadori, he jointly edited the volume *Innovation*, *Unemployment and Policy in the Theories of Growth and Distribution* (Edward Elgar). As the author has confirmed to us in a recent correspondence, the volume integrates the analytical methods and the research themes of New Growth Theory into the cultural tradition of the classical and post-Keynesian economists. It provides a new insight into the processes of the growth of modern economies, which highlights the interdependence between distribution and growth. The contributions show that 'political and social stability, security of property rights, efficiency of the capital market, research, education, investment in physical and human capital, public spending and taxation policies are all necessary for the success and stability of a country's development process'.

2.9.4 Francesca Sanna-Randaccio

Francesca Sanna-Randaccio is full Professor of Economics at the Faculty of Engineering, La Sapienza, Rome. In 1971, she graduated in political science at La Sapienza; in 1973, she earned an M.A. in International Relations at Johns Hopkins and, in 1980, an M. Litt. in economics at Oxford. She has published especially in the fields of international and industrial economics, and in economics of the firm. She has published in the *Journal of International Economics*, *Review of International Economics*, *International Journal of Industrial Organisation* and *Journal of International Business Studies.*

2.9.5 Mario Biagioli

Mario Biagioli (1946) earned a degree in economics in Rome in 1969 and a post-degree diploma in economic development in Naples in 1971. He was admitted to Linacre College in 1976 and, in 1980, obtained an Oxford M. Litt. with a thesis on the 'Sources of External Imbalance and Demand Management Policies in Italy during the Seventies' (he was supervised by Andrea Boltho, and his examiners were David Soskice and Peter Oppenheimer). He has since that time been associated with the University of Modena (1975–96) and with the University of Parma (1996–2016), where he has been full Professor of Economic Policy since 2001. He had focused on labour economics and on exchange rate mechanisms. One of his earliest fields of research concerned the effects of the flexible exchange rates of 1970. In a paper presented at the economic theory and econometric seminar at The Queen's College, Oxford, in 1979 he concluded that, when the hypotheses made by the monetary approach hold (i.e. full employment of all productive resources and clearing of all markets):

> there are two main implications of the monetary approach for policy-making. First, the only possible remedy to external imbalances (either deficits in external payments or a depreciation of the exchange rate) is a reduction of the rate of credit expansion. Second, exchange rates changes are assumed not to have any long-lasting effects on real variables. Then,

> exchange rates changes *per se* are regarded as an ineffective means to improve the external position of a country. However, the contribution of flexible exchange rates advanced by monetarist authors is usually positive, since they regard floating as a "second best" measure for restoring the possibility of decreasing real wages when nominal wages are sticky. (Biagioli 1982, 219–20)

A third conclusion indicated in the thesis is that those indications do not apply when the economy does not fulfil the conditions requested by the monetary approach, and the economy works under Keynesian conditions, as had been the case with Italian experience since that period. In this situation, the economy is subjected to a balance-of-payments restraint of the kind studied by Harrod and by Thirlwall, among others; other kinds of policy remedy are required. These conclusions were a clear warning for the years of financial international disorder that were to follow and for the adoption of a common currency, the Euro, which characterized the macroeconomic policies adopted by European policy-makers thereafter. Most of the scientific work generated by Biagioli in the 35 years (1980–2015) that have passed since his studies in Oxford was aimed at broadening and developing the ideas first expounded while at Oxford. In the field of labour economics, he focused his studies along three lines: first, the evolution of Italian pay systems and wage differentials and the problems these posed to macroeconomic policies. Second, he considered the economics of 'profit-sharing', with the aim of examining the situations in which profit-sharing might increase productivity and economic performances, both at the micro- and macroeconomic levels. His third line of study was the econometric estimations of the theory of human capital.

2.9.6 Paolo Piacentini-Karnizawa

In 1971, Paolo Piacentini-Karnizawa (1948) earned a First degree in economics at La Sapienza in Rome; in the mid-1970s he moved to Oxford where, in 1978, he was awarded an M. Litt. degree with a thesis on the economics of Georgescu-Roegen. He is now full Professor at La Sapienza

in Rome. He has published in various fields; his early interest was in the representation of production processes and technical progress, with particular reference to the extension and application of the 'flow-fund' approach.

2.9.7 Michele Morciano

Michele Morciano, after obtaining a laurea in economics at La Sapienza in Rome, applied and was admitted to Trinity College, Oxford, where he obtained an M. Litt. in economics with a thesis on the dynamics of relative prices and income distribution in an input-output model (written under the supervision of Alan Brown). Returning to Italy, after a period of research and teaching, he entered the banking sector and, later on, the field of public administration.

2.9.8 Bruno Salituro

Bruno Salituro holds a degree in economics from the University of Bologna (1974). From 1976 to 1978, Salituro was a research student at Linacre College, Oxford, where he obtained a B.Phil. degree in 1978. He has published a successful textbook of macro-economics with Anna Soci, and has researched and published in the field of monetary theory (national and international), as well as labour economics. He is now Professor in the Department of Economics of the University of Bologna.

2.9.9 Lia Fubini

Lia Fubini is full Professor of Labour Economics in the University of Turin. She graduated in economics from Turin in 1972, was a research fellow at the Einaudi Foundation 1972–73 and undertook research in Oxford, at Linacre College, in 1973–74 and 1976–78. There, she focused on multinational firms and on issues of monetary economics. On her return to Italy in 1978, she began work on industrial economics and vertical integration. Since the mid-1990s, she has switched her focus to macro- and

labour-economics. She has mainly published in the field of labour market flexibility. In her (2003) paper on 'Women's Unemployment in Italy' she stresses that 'the low employment rate of married women and the high unemployment rate in Southern European Countries seem to provide important indications of labour market and a social system that do not provide enough flexibility for women to combine work with demanding family activities.'

Bibliography

Agliardi, E., & Agliardi, R. (2008). Progressive taxation and corporate liquidation policy. *Economic Modelling, 25*(3), 532–541.

Amendola, M., & Gaffard, J.-L. (1988). *The innovative choice, an econometric analysis if the dynamics of technology*. Oxford: B. Blackwell.

Amendola, M., & Gaffard, J.-L. (1998). *Out of equilibrium*. Oxford: Clarendon Press.

Amendola, M., & Gaffard, J.-L. (2008). Sequential analysis and out-of-equilibrium paths. In R. Scazzieri, A. Sen, & S. Zamagni (Eds.), *Markets, money and capital. Hicksian economics for the twenty-first century*, *op. cit.*, pp. 382–404.

Andreoni, A., & Scazzieri, R. (2013). Triggers of change: Structural trajectories and production dynamics. *Cambridge Journal of Economics, 38*(6), 1391–1408.

Baranzini, M. (1976). *On the distribution of income in two-class growth models*. D. Phil. thesis, The Queen's College, Oxford.

Baranzini, M. (1979). Review of *Protagonisti del pensiero economico,* Vol. I: *Nascita e affermazione del marginalismo* (1871–1890); Vol. II: *Tradizione e rivoluzione in economia politica* (1890–1936). In A. Quadrio Curzio, & R. Scazzieri (Eds.), *Economic Journal*, *89*(3), 480–482.

Baranzini, M. (1991a). *A theory of wealth distribution and accumulation*. Oxford: Clarendon Press.

Baranzini, M. (2000). Luigi Lodovico Pasinetti. In P. Arestis & M. Sawyer (Eds.), *Biographical dictionary of dissenting economists* (2nd ed., pp. 417–24). Cheltenham: E. Elgar.

Baranzini, M. (2008). Flexible saving and economic growth. In R. Scazzieri, A. Sen, & S. Zamagni (Eds.), *Markets, money and capital. Hicksian economics for the twenty-first century*, *op. cit.*, pp. 287–308.

Baranzini, M., & Harcourt, G. C. (Eds.). (1993). *The dynamics of the wealth of nations: Growth, distribution and structural change: Essays in honour of Luigi L. Pasinetti*. Basingstoke/New York: Macmillan/St. Martin's Press.

Baranzini, M., & Mirante, A. (2013). The Cambridge post-Keynesian school of income and wealth distribution. In G. C. Harcourt, & P. Kriesler (Eds.), *The oxford handbook of post-Keynesian economics*, *op. cit.*, Vol. I, pp. 288–361.

Baranzini, M., & Scazzieri, R. (Eds.). (1986). *Foundations of economics. Structure of inquiry and economic theory*. Oxford/New York: Basil Blackwell; and 'Knowledge in economics: A framework', 1–87.

Besomi, D. (1999). *The making of Harrod's dynamics*. London: Macmillan.

Biagioli, M. (1982). A monetary model of exchange-rate determination applied to the Italian experience with flexible exchange rates. In M. Baranzini (Ed.), *Advances in economic theory*, *op. cit.*, pp. 207–224.

Bliss, C. J. (1987). Hicks John, Richard (1904–89). *The New Palgrave: A Dictionary of Economics*, Vol. 2, 641–46, Macmillan.

Bliss, C. J., & Cippà, R. (1982). Temporary equilibrium with rationed borrowing and consistent plans. In M. Baranzini (Ed.), *Advances in economic theory*, *op. cit.*, pp. 45–66.

Caravale, G. A., & Tosato, D. A. (Eds.). (1980). *Ricardo and the theory of value, distribution and growth*. London/Boston: Routledge & Kegan Paul.

Casarosa, C. (1978a). A new formulation of the Ricardian system. *Oxford Economic Papers, 30*, 38–63.

Casarosa, C. (1978b). Un contributo all'analisi dei fondamenti microeconomici della teoria keynesiana della domanda effettiva. *Rivista di politica economica, 68*(11), 1371–1409.

Casarosa, C. (1981). The microfoundations of Keynes's aggregate supply and expected demand analysis. *Economic Journal, 91*(361), 188–194.

Casarosa, C. (1982a). The new view of the Ricardian theory of distribution and economic growth. In M. Baranzini (Ed.), *Advances in economic theory*, *op. cit.*, pp. 227–239.

Casarosa, C. (1982b). Aggregate supply and expected demand analysis in Keynes's general theory: An essay on the microfoundations. In M. Baranzini (Ed.), *Advances in economic theory*, *op. cit.*, pp. 67–79.

Casarosa, C. (1984). The microfoundations of Keynes's aggregate supply and expected demand analysis: A reply. *Economic Journal, 94*(376), 941–945.

Casarosa, C. (2004). Gli studi nel Regno Unito della seconda generazione. In G. Garofalo, & A. Graziani (Eds.), *La formazione degli economisti in Italia (1950–1975)*, *op. cit.*, pp. 535–554.

Casarosa, C., & Zamagni, S. (1985). Sir John Hicks: il pensiero e l'opera. *Studi Economici, 27*, 3–75.

Cippà, R. F., & Guidi, V. (1982). Temporary equilibrium with rationing. In M. Baranzini (Ed.), *Advances in economic theory*, *op. cit.*, pp. 90–112.

Collard, D. A. (1984). The ascent of high theory. A view from the foothills. In D. A. Collard et al. (Eds.), *Economic theory and Hicksian themes* (pp. 1–10). Oxford: Clarendon Press.

Costabile, L., & Scazzieri, R. (2012). Il pensiero economico nei decenni successivi al secondo dopoguerra. In V. Negri Zamagni, P. L. Porta, L. Costabile, R. Faucci, C. Perrotta, R. Scazzieri, & G. Todeschini (Eds.), *Il contributo italiano alla storia del pensiero. Economia* (pp. 739–765). Rome: Enciclopedia Italiana di Scienze, Lettere ed Arti.

Delbono, F., & Denicolò, V. (1991). Incentives to innovate in a Cournot Oligopoly. *Quarterly Journal of Economics, 106*(3), 951–961.

Delbono, F., & Denicolò, V. (1993). Regulating innovative activity: The role of a public firm. *International Journal of Industrial Organization, 11*(1), 35–48.

Denicolò, V. (2002). Sequential innovation and the patent-antitrust conflict. *Oxford Economic Papers, 54*(4), 649–668.

Di Matteo, M. (2010). On Harrod's model and instability once again. *Studi e Note di Economia, 15*(2), 285–295.

Dimsdale, N. H. (1973). Review of R. S. Masera's *the term structure of interest rates: An expectation model tested on post-war Italian data. Economic Journal, 83*(330), 569–571.

Ferri, P. (1971). *La disoccupazione in un processo di sviluppo economico*. Milan: Giuffré.

Ferrulli, S. (2012). *Economisti italiani a Cambridge (1960–1980). Processi formativi, aggiornamenti teorici e nuovi orientamenti di politica economica*. Ph. D. thesis, Rome Tre.

Fubini, L. (2003). Women's unemployment in Italy. In D. Del Boca & M. Repetto-Alaia (Eds.), *Women's work, the family & social policy* (pp. 109–123). Berne/Frankfurt: P. Lang.

Goodwin, R. M. (1982b). In M. Palazzi (Ed.), *Intervista a un economista: Richard M. Goodwin*. Bologna: Clueb.

Hagemann, H. (1990). The structural theory of economic growth. In M. Baranzini, & R. Scazzieri (Eds.), *Foundations of economics*, *op. cit.*, pp. 144–171.

Harré, R., & Madden, E. H. (1975). *Causal powers*. Oxford: B. Blackwell.

Hicks, J. R. (1939). *Value and capital: An inquiry into some fundamental principles of economic theory*. Oxford: Oxford University Press.

Hicks, J. R. (1959). *Essays in world economics*. Oxford: Clarendon Press.

Hicks, J. R. (1965). *Capital and growth*. Oxford: Clarendon Press.

Hicks, J. R. (1973). *Capital and time: A Neo-Austrian theory*. Oxford: Clarendon Press.
Hicks, J. R. (1974). *The crisis in Keynesian economics*. Oxford: B. Blackwell.
Hicks, J. R. (1976). "Revolutions" in economics. In S. J. Latsis (Ed.), *Method and appraisal in economics* (pp. 207–218). Cambridge: Cambridge University Press.
Hicks, J. R. (1979b). *Causality in economics*. Oxford: B. Blackwell.
Hicks, J. R. (1986). Is economics a science? In M. Baranzini, & R. Scazzieri (Eds.), *Foundations of economics. Structure of inquiry and economic theory*, *op. cit.*, pp. 91–101.
Hicks, J. R., & Hollander, S. (1977). Mr. Ricardo and the moderns. *Quarterly Journal of Economics, 41*, 351–369.
Hildebrand, G. H. (1965). *Growth and structure in the economy of modern Italy*. Cambridge, MA: Harvard University Press.
Kindleberger, C. P. (1967). *Europe's postwar growth. The Rome of labor supply*. Cambridge, MA: Harvard University Press.
Landesmann, M. A., & Scazzieri, R. (Eds.). (2009). *Production and economic dynamics.* Cambridge: Cambridge University Press (1st ed. 1996).
Lewis, W. A. (1954). Development with unlimited supplies of labour. *Manchester School, 22*(2), 139–191.
Lindhal, E. (1939). *Studies in the theory of money and capital*. New York: Rinehart.
Lutfalla, M. (1983). Review of A. Quadrio Curzio and R. Scazzieri (Eds.), *Protagonisti del pensiero economico*, t. 3, *Rivoluzione industriale e economia politica (1817–1848)* and t. 4, *Struttura produttiva, scambio e mercati (1848–1872).* Bologna: Il Mulino (1982), *Revue d'économie politique*, *93*(4), 610–611.
Lutz, V. (1962). *Italy: A study in economic development*. Oxford: Oxford University Press.
Maneschi, A. (1993). Ricardian comparative advantage and the perils of the stationary state. In M. Baranzini, & G. C. Harcourt (Eds.), *The dynamics of the wealth of nations: Growth, distribution and structural change. Essays in honour of Luigi L. Pasinetti, op. cit.*, pp. 124–146.
Miconi, B. (1967). On Harrod's model of instability. *L'industria, 19*(4), 455–478.
Morroni, M. (1992). *Production process and technical change*. Cambridge: Cambridge University Press.
Morroni, M. (2006). *Knowlegde, scale and transactions in the theory of the firm*. Cambridge: Cambridge University Press.

Pasinetti, L. L. (1959). On concepts and measures of changes in productivity. *The Review of Economics and Statistics, 41*(3), 270–282.

Pasinetti, L. L. (1963). A multi-sector model of economic growth. Revised Ph.D. Diss., King's College, Cambridge.

Pasinetti, L. L. (1965a). Causalità e interdipendenza nell'analisi econometrica e nella teoria economica. In *Annuario dell'Università Cattolica del Sacro Cuore 1964–65* (pp. 233–250). Milan: Vita e Pensiero.

Pasinetti, L. L. (1965b). A new theoretical approach to the problems of economic growth. *Pontificiae Academiae Scientiarum Scripta Varia, 28*, 572–696.

Pasinetti, L. L. (1974). *Growth and income distribution: Essays in economic theory*. Cambridge: Cambridge University Press.

Pasinetti, L. L. (1982). A comment on the "new view" of the Ricardian theory. In M. Baranzini (Ed.), *Advances in economic theory*, *op. cit.*, pp. 240–242.

Pasinetti, L. L. (1986). Theory of value – A source of alternative paradigms in economic analysis. In M. Baranzini, & R. Scazzieri (Eds.), *Foundations of economics.*, *op. cit.*, pp. 409–431.

Pasinetti, L. L., & Mariutti, G. (2008). Hick's "conversion" – From J. R. to John. In R. Scazzieri, A. Sen, & S. Zamagni (Eds.), *Markets, money and capital. Hicksian economics for the twenty-first century, op. cit.*, pp. 52–71.

Pugno, M. (1992). *Roy F. Harrod: dall'equilibriodinamico all'instabilità ciclica*. Bologna: Il Mulino.

Quadrio Curzio, A. (1993a). On economic science, its tools and economic reality. In M. Baranzini, & G. C. Harcourt (Eds.), *The dynamics of the wealth of nations: Growth, distribution and structural change. Essays in honour of Luigi L. Pasinetti*, *op. cit.*, pp. 246–271.

Quadrio Curzio, A. (1993b). Distribuzione della ricchezza e del reddito. In *Enciclopedia delle Scienze Sociali* (pp. 194–207). Rome: Istituto della Enciclopedia italiana Treccani.

Salter, W. E. (1961). *Productivity and technical change*. Cambridge: Cambridge University Press.

Samuelson, P. A. (1959). A modern treatment of the Ricardian theory. *Quarterly Journal of Economics*, 1–35 and 217–31.

Samuelson, P. A., & Modigliani, F. (1966). The Pasinetti paradox in neoclassical and more general models. *Review of Economic Studies, 33*(4), 269–301.

Scazzieri, R. (1981). *Efficienza produttiva e livelli di attività. Un contributo di teoria economica*. Bologna: Il Mulino.

Scazzieri, R. (1982). Scale and efficiency in model of production. In M. Baranzini (Ed.), *Advances in economic theory, op. cit.*, pp. 19–42.

Scazzieri, R. (1993a). *A theory of production: Tasks, processes and technical practices*. Oxford: Clarendon Press.

Scazzieri, R. (1993b). Action, processes and economic theory. In A. Heertje (Ed.), *The makers of modern economics* (Vol. I, pp. 84–114). Aldershot/Brookfield: E. Elgar.

Scazzieri, R., & Zamagni, S. (2008). Between theory and history: On the identity of hicks's economics. In R. Scazzieri, A. Sen, & S. Zamagni (Eds.), *Markets, money and capital. Hicksian economics for the twenty-first century, op. cit.*, pp. 1–37.

Soro, B. (2012). Harrod, Kaldor, and the idea of the "foreign trade *multiplier*". *Economia Internazionale, 65*(1), 173–187.

Zamagni, S. (1973). Struttura del capitale e crescita non uniforme, Appendix to J. R. Hicks. *Capitale e tempo. Una teoria neo-austriaca* (pp. 247–286). Milan: Etas Libri.

Zamagni, S. (1983). Strumentalismo causale *versus* realismo causale in economia. In M. C. Galavotti & G. Gambetta (Eds.), *Causalità e modelli probabilistici* (pp. 111–146). Bologna: CLUEB.

Zamagni, S. (1984). On Ricardo and Hayek effects in a Fixwage model of traverse. In D. A. Collard et al. (Eds.), *Economic theory and Hicksian themes* (pp. 135–151). Oxford: Clarendon Press.

Zamagni, V., and Zamagni, S. (2002) Italian Economists and Linacre College, The Linacre Journal, *6*, 25–38.