Classical, Neoclassical and Keynesian Views on
Growth and Distribution

Classical, Neoclassical and Keynesian Views on Growth and Distribution

Edited by

Neri Salvadori

Professor of Economics, University of Pisa, Italy

Carlo Panico

Professor of Economics, University 'Federico II', Naples, Italy

Edward Elgar
Cheltenham, UK • Northampton, MA, USA

Contents

SECTION THREE: KEYNESIAN VIEWS

Figures

Tables

Contributors

Renato Balducci, *Politechnical University of Marche*

Enrico Bellino, *Catholic University of Milan 'S. Cuore'*

Luciano Boggio, *Catholic University of Milan 'S. Cuore'*

Pasquale Commendatore, *University of Naples 'Federico II'*

Antonio D'Agata, *University of Catania*

Simone D'Alessandro, *University of Siena*

Luciano Fanti, *University of Pisa*

Davide Fiaschi, *University of Pisa*

Maria Daniela Giammanco, *University of Catania*

Michele Limosani, *University of Messina*

Piero Manfredi, *University of Pisa*

Giuseppe Mastromatteo, *Catholic University of Milan 'S. Cuore'*

Arrigo Opocher, *University of Padua*

Mario Pomini, *University of Padua*

Rodolfo Signorino, *University of Palermo*

Introduction

Carlo Panico and Neri Salvadori

The problem of economic growth and income distribution was a major concern of the classical economists. Ricardo's argument about what he called the 'natural' course of the economy contemplated an economic system in which capital accumulates, the population grows, but there is no technical progress: the latter is set aside. In Ricardo the rate of accumulation is endogenously determined. The demand for labour is governed by the pace at which capital accumulates, whereas the long-term supply of labour is regulated by the 'Malthusian Law of Population'. The required size of the workforce is considered essentially generated by the accumulation process itself. In other words, labour power is treated as a kind of producible commodity. It differs from other commodities in that it is not produced in a capitalistic way by a special industry on a par with other industries, but is the result of the interplay between the generative behaviour of the working population and socio-economic conditions. In the most simple conceptualization possible, labour power is seen to be in elastic supply at a given real wage rate basket. Increasing the number of baskets available in the support of workers involves a proportional increase in the workforce. In this view the rate of growth of labour supply adjusts to any given rate of growth of labour demand without necessitating a variation in the real wage rate. Labour can thus set no limit to growth because it is 'generated' within the growth process. The only limit to growth can come from other non-accumulable factors of production: as Ricardo and others made clear, these factors are natural resources in general and land in particular. In other words, there is only endogenous growth in Ricardo. This growth is bound to lose momentum as the scarcity of natural factors of production makes itself felt in terms of extensive and intensive diminishing returns. (Technical change is of course envisaged to counteract these tendencies.) If land of the best quality were available in abundance it would be a free good and no rent would be paid for its use. In this case the system could grow for ever. Ricardo was perfectly aware of this implication (Ricardo, *Works* VI, p. 301).

Contrary to Ricardo, Adam Smith's attention focused on the factors determining the growth of labour productivity, that is, the factors affecting

'the state of the skill, dexterity, and judgment with which labour is applied in any nation' (*WN* I.6). Smith maintained that the key to the growth of labour productivity is the division of labour which in turn depends on the extent of the market and thus upon capital accumulation. In his analysis in the first three chapters of book I of *The Wealth of Nations* Smith established the idea that there are *increasing returns*. Smith's analysis foreshadows the concepts of *induced* and *embodied* technical progress, *learning by doing*, and *learning by using*. The invention of new machines and the improvement of known ones is said to be originally due to the workers in the production process and 'those who had occasion to use the machines' (*WN* I.i.9). At a more advanced stage of society making machines 'became the business of a peculiar trade', engaging 'philosophers or men of speculation, whose trade it is, not to do any thing, but to observe every thing; and who, upon that account, are often capable of combining together the powers of the most distant and dissimilar objects'. Research and development of new industrial designs becomes 'the principal or sole trade and occupation of a particular class of citizens' (ibid.). New technical knowledge is systematically created and economically used, with the sciences becoming more and more involved in that process. The accumulation of capital propels this process forward, opens up new markets and enlarges existing ones, increases effectual demand and is thus the main force behind economic and social development (*WN* V.i.e.26). Also Smith saw that the scarcity and potential depletion of renewable and the depletion of exhaustible resources may constrain human productive activity and the growth of the economy (*WN* I.xi.i.3; see also I.xi.d). However his explanation of a falling tendency of the rate of profit in terms of 'competition' (*WN* I.ix.2) does not stand up to close examination.

The classical economists linked the theory of growth closely to that of income distribution. Smith described the position of the social classes in the process of production and distribution, attributing to each of them a different behaviour with respect to saving and expenditure decisions. He made capital accumulation depend on the saving decisions of the emerging capitalist class and underlined the role of technical progress in the growth process. Smith presented an analysis of this subject, which can be considered an antecedent of modern cumulative causation and evolutionary methodologies. His approach was used by the other classical political economists and by Marx. Some of them accepted Say's Law; others denied its validity. They all considered the theory of *personal* distribution, which studies the distribution of income among the different social groups or classes, as relevant for the analysis of the evolution of society. By using this approach they assessed how each class participates in the growth process. Economic and other socio-institutional factors determine one distributive variable. In most classical writings the real wage rate was determined by the conditions of reproduction

of the working class at its historical level of capability; and by taking this variable as given, classical economists calculated the earnings of the capitalist class and their savings. In this way the pace at which capital accumulated and, as a consequence, the rate of growth of the economy, including that of the working population, are determined.

With the rise of the neoclassical school in the second half of the nineteenth century, economic theory took a different perspective. The analysis of resource allocation replaced the theory of growth as a major topic of the economic literature and the problem of distribution was seen as one aspect of the general pricing and allocation process. Neoclassical economists argued that competitive forces, operating through factor substitution and variations in relative prices, generate a tendency to full employment and to the exploitation of the growth potential of the economy. Within their writings, Say's Law thus acquired a new form, which made it coincide with the tendency to full employment. At the same time, there was a shift from the analysis of *personal* distribution to that of *functional* distribution, which examines the earnings of the different factors of production, rather than those of the different classes.

The severity of the Great Depression raised the problem of a new economic theory able to clarify whether competitive forces can lead the economy towards full employment or government intervention is required to restore it. Keynes's *General Theory* proposed using the notion of effective demand and the analysis of its influence on the level of activity to deal with market failure. At the same time, Harrod's work renewed interest in the theory of growth by re-formulating Keynes's theory of effective demand in a dynamic context.

Harrod (1939), followed by Domar (1946), set the basis of the modern theory of growth. He used the notion of steady growth to discuss the ability of the economy to exploit its growth potential. The problems of instability he raised were first analysed in a debate, in which authors like Samuelson (1939), Hicks (1950), and Goodwin (1951) participated, on the long-term trends produced by the cyclical fluctuations of the economy. Subsequently, the same problems were at the centre of another debate, which directly examined the conditions of the steady growth equilibrium. In this debate, Tobin (1955), Solow (1956), and Swan (1956), on the one side, and Kaldor (1955–56) and Pasinetti (1962), on the other, presented their theories of growth and distribution.

The dynamic version of the neoclassical theory was presented by Tobin, Solow and Swan in terms of *functional* distribution and was extended by Stiglitz (1969) to the case of *personal* distribution. By turning the classical approach upside down, the theory took the rate of growth as exogenously given and determined within the model all distributive variables. It argued

that factor substitution and variations in relative prices lead the economy to a full employment steady growth path. This conclusion came under scrutiny in the debate on capital theory, stimulated by the publication in 1960 of Sraffa's *Production of Commodities by Means of Commodities*. The 1966 Symposium in the *Quarterly Journal of Economics* represented a major moment in this debate, in which some outstanding neoclassical economists acknowledged that in a long-period analysis, when more than one commodity is produced, the occurrence of 'reverse capital deepening' must be seen as the general case.

The dynamic version of the post-Keynesian theory argued that market forces operate along lines, which are different from those envisaged by neoclassical authors and similar to those described by classical economists. By assuming that each earning group has a different behaviour with respect to saving decisions, Kaldor (1955–56) argued that variations in income distribution bring about variations in total saving and aggregate demand, leading the economy to steady growth. Kaldor's analysis, which considered earning groups rather than classes, dealt with *functional* distribution. Pasinetti (1962), considering the behaviour of the different classes, focussed instead on the *personal* distribution of income. He introduced what was later called the 'Pasinetti theorem' or the 'Cambridge equation', stating that, in steady growth, the rate of profit is equal to the ratio between the rate of growth and the capitalists' propensity to save, and does not depend on technology or on the workers' propensity to save.

In 1966 Samuelson and Modigliani challenged this conclusion and proposed an 'anti-Pasinetti' or 'dual' theorem. They argued that in steady growth, if the capital owned by the capitalist class is zero, the capital–output ratio is equal to the ratio between the workers' propensity to save and the rate of growth, while the rate of profit depends on the technological relation connecting this variable to the capital–output ratio. Whether the 'Pasinetti' or the 'dual' theorem applies depends on this technological relationship too.

Within this debate, the post-Keynesian theory was extended by Kaldor (1966) to the analysis of *institutional* distribution, that is, the distribution of income among the different sectors of the economy (that is, the 'personal' and the 'corporate' sectors or, alternatively, 'households' and 'firms'). By using this analytical framework Kaldor presented the 'neo-Pasinetti theorem', which assumes that new investment is financed through retained profits (that is, profits generated in the production process that are not distributed to shareholders) and the issue of new securities. These funding conditions of investment make the rate of profit depend on the rate of growth, on the fraction of investment financed through the issue of new securities, and on the percentage of profits that is not distributed to shareholders, that is, on the propensity to save of the corporate sector.

During the same years, the post-Keynesian economists also dealt with other aspects of the classical theories of growth, focussing on the role of division of labour and technical progress. In opposition to the analysis of the equilibrium conditions they developed the method of 'cumulative causation', which saw the growth process as an unbalanced one. These analyses provided accurate descriptions of this process, linking the influence of economic, technological and socio-institutional factors. They occupied a major place in the literature of those years and subsequently gave rise to several lines of research, ranging from the evolutionary approach (see Nelson and Winter, 1974 and 1982) to the modern Kaleckian and Goodwin-type (see Goodwin, 1967) theories of growth, in which the long-run equilibrium emerges from a sequence of short-run equilibria.

After a decade of dormancy, since the mid 1980s, economic growth has become once again a central topic in economic theorizing. New growth theory[1] seeks to provide an endogenous explanation of technical progress able to generate a growth process which does not slow down in time. New growth theorists account for a non-diminishing rate of per capita growth considering externalities of various kinds and origins. Adopting the scheme of rational and optimizing agents, they draw on notions like Arrow's learning by doing, or the importance of human capital accumulation stressed by Uzawa (1965) and that of technical knowledge, to provide an explanation of *technical progress*. As partly public and non-excludable, these 'commodities' (for example, human capital and the stock of 'knowledge'[2]) may generate externalities in the production process tied to the spread of knowledge and scientific discoveries. Firms which undertake research cannot immediately reap the economic results of their efforts because of the diffusion of innovative ideas, the consequence being that private investment in research may be less than optimal for growth. Agents may behave in an optimizing fashion, but because they operate in a setting which is not perfectly competitive, they engender a second-best growth path.

> Most of these models are 'closed' in the sense that they have enough relations to determine an equilibrium growth rate. In one, everything hinges on the production of human capital, in another this is ignored and we focus on R&D, while in yet another it is the process by which the variety of goods is increased which makes the world go round. … The theories I am concerned with … are all intent on models which allow equilibrium growth at constant rate (Hahn, 1994, p. 1).

The closeness of these models mentioned by Hahn is the basis of the link envisaged by Kurz and Salvadori (1998, 1999, 2003) between these models and the models developed by classical economists. By a simple comparison Kurz and Salvadori draw the following conclusion: the role played by 'labour' in the classical authors is assumed by 'human capital' or

'knowledge'. Both labour, on the one hand, and human capital or knowledge, on the other, are taken to be producible; with constant returns to scale the rate of profit and, therefore, the rate of growth are determined and constant over time. The use of externalities allows the presence of increasing returns similar to the division of labour found in Adam Smith's reasoning. In another book (Salvadori, 2003) some of the authors of the chapters presented herein explored this point of view from different perspectives.

The links between classical and new growth theories can be traced in other elements too, like the relevance of increasing returns and that attributed to socio-institutional factors alongside economic factors. Yet, these elements are introduced in the analyses of the two schools of thought in different ways. In the analyses of classical economists the introduction of these elements leads to the development of 'cumulative causation' and 'evolutionary methodologies' for the study of social processes. The same elements are instead considered by the new growth theorists in models of equilibrium growth at a constant rate based on the nominalistic methodology of rational agents.

The use of representative agent models by the new growth theorists has inhibited a simultaneous comeback of the analysis of distribution. Yet part of this literature examined the effect of inequality on the rate of growth, focusing this time more on wealth than on income distribution, linking this analysis to that of the endogenous determination of re-distributive policies, and arguing that policies aiming at a more equalitarian society have a positive effect on the rate of growth.

The papers presented in this volume reconsider the different stages of the previously outlined literature on growth and distribution. They have been developed by a research group, which has tried to achieve, by analysing the approaches of the different schools of thought, a wide-ranging interpretation of some important economic phenomena. The elements characterizing each approach have often been identified and attempts have been made to derive thereby a variety of insights into the complexity of the growth processes.

The volume is divided into three sections. Section 1 deals with some classical analyses of growth and distribution. Chapter 1 presents a model worked out by Balducci and derived from Goodwin (1967), where capitalists save and take investment decisions, while workers' attempts to increase their distributive quota are constrained by the level of unemployment. Balducci compares the results produced by the model with those of the new (endogenous) growth theories. He shows that cooperation among classes leads to results similar to those of Rebelo (1991), while conflictual relations over income distribution tend to increase the gap between the rate of growth produced by the model and that corresponding to the social optimum.

In Chapter 2 Fiaschi and Signorino consider the relation between the pace at which an economy grows and the customs and habits determining the long-term real wage rate. This rate has often been called the 'natural' wage rate. It has a demographic and socio-political component, both influenced, as Fiaschi and Signorino point out in their historical and analytical investigation, by the intensity of the growth processes.

In Chapter 3 D'Alessandro examines the effects of luxury consumption on the ecological–economic dynamics of the system. Following the lines set by Pasinetti (1960), D'Alessandro elaborates a Ricardian model where a luxury good is produced by using a renewable and exhaustible resource. The model can be considered a variant of that proposed by Brander and Taylor (1998) to examine the ecological–economic dynamics that might have affected Easter Island. D'Alessandro's results underline the role that property rights on land have in producing the long-run dynamics towards 'sustainable' or 'unsustainable' ecological regimes.

In Chapter 4 Giammanco examines Marx's evolutionary approach to technical progress, comparing it with the content of the evolutionary theory proposed by Darwin and trying to argue that it can also be used to deal with the passage from one mode of production to another.

Section 2 of the volume deals with some neoclassical analyses of growth and distribution. Chapter 5 deals with the influence of different regimes of population growth and age distribution on income and wealth inequality. Fanti and Manfredi examine this subject by considering a Solow–Stiglitz framework. They reach results that suggest the existence of a trade-off between efficiency and equity within this theory of economic growth.

In Chapter 6 Pomini examines the role played by income distribution in the neoclassical tradition, moving from Solow's 1956 contribution, which dealt with the 'functional' distribution of income. Pomini first describes Stiglitz's extension of Solow's analysis to the case of 'personal' distribution. Then he considers two recent developments of the endogenous growth theories, which have made the rate of growth depend on income distribution and, consequently, on redistributive policies. The first development is proposed by Bertola (1993), Alesina and Rodrik (1994) and Persson and Tabellini (1994). It determines endogenously both the rate of growth and the redistributive policy. The second is developed by Galor and Zeira (1993) and by Benabou (1996) and focuses on the impact of distribution on production dynamics.

In Chapter 7 Opocher distinguishes among different versions of the neoclassical theory of distribution, pointing out that some of them were trying to use its analytical framework in order to argue that the level achieved by distributive variables reflects the relative scarcity of the factors of production in the economy, while others were simply considering the

equality between marginal productivity of the factors and their rates of remuneration as a maximizing equilibrium condition.

In Chapter 8 Limosani reconstructs the evolution of Tobin's contributions to the theory of growth and distribution and the attempts of the Nobel Prize winner to introduce within the neoclassical analysis of this subject some Keynesian elements. Limosani recalls that Tobin's first contribution to this literature anticipated those of Solow and Swan and points out that in Tobin's macroeconomic models changes in government policies have an influence on distributive variables owing to the lack of money super-neutrality.

Section 3 of the volume deals with some Keynesian analyses of growth and distribution. In Chapter 9 Bellino presents a comprehensive survey of that part of the literature on growth which allows for unemployment. The chapter examines the analysis of the different schools of thought, but focuses in greater detail on the Schumpeterian approach proposed by Aghion and Howitt (1994), on the growth-cycle analysis of Goodwin (1967) and of Akerlof and Stiglitz (1969) and on the analyses of structural change carried on by Pasinetti (1965).

In Chapter 10 Boggio deals with the role of increasing returns in the analysis of the stability of steady growth in a neoclassical and in a Goodwin-type model. Boggio argues that labour market disequilibria and their effects on distribution are crucial to analyse this problem, particularly because when full employment is approached wages tend to grow faster than productivity, owing to the increased bargaining power of the workers. Boggio's chapter points out that in neoclassical models the instability potential of increasing return is kept in check by the stabilizing forces coming from the flexibility of technical coefficients. In a Goodwin-type model, instead, cumulative processes dominate and the stability of the growth path cannot be achieved. In this case, increasing returns can be seen as a powerful source of growth, which call for a systematic action of economic policy aimed at preventing instability.

In Chapter 11 Mastromatteo explores whether some microeconomic underpinning can be provided for the relationship between real wage and unemployment assumed by Goodwin in his models. Mastromatteo considers several ways of financing this relationship, from Kalecki's writings to the contributions of Rowthorn (1977), Carlin and Soskice (1990), the 'right to manage' and the 'efficiency wage' literature. He thus lends support to Goodwin's position by clarifying the content and implications of his assumptions on the formation of the real wage rate.

In Chapter 12 D'Agata presents a post-Keynesian model of growth and distribution in which price formation depends on a mark-up that is driven by the threat of new entries. The model shows that, given the wage rate, full

employment growth may not be reached and there is room for government policies ensuring an 'optimal' degree of competition in the market.

In Chapter 13 Commendatore deals with the role of effective demand in long-run Kaleckian models of growth and distribution. To respond to some criticism levelled at these models, Commendatore presents an analysis, based on non-linear dynamics, that reduces the relevance of steady growth equilibrium and increases that of growth paths involving regular or chaotic fluctuations. This analysis allows Commendatore to argue that effective demand does affect growth and long-run profitability.

This book is one of the main products of a research group. Each chapter was discussed several times by members of the group and at least once within a debate which involved one or two discussants. On the basis of the results of the discussion, one of the discussants, or both, then supervised the editing of the chapter. Some papers have been excluded on the basis of this procedure and others have been heavily revised. The process revealed that at times non-anonymous discussants can be much more demanding than anonymous referees.

NOTES

1.   See Romer (1986, 1990), Lucas (1988), Barro (1990), Rebelo (1991), Mankiw, Romer and Weil (1992), Aghion and Howitt (1992, 1994, 1998), Grossman and Helpman (1991), etc.
2.   For a critique on the use of 'knowledge' as a quantity, see Steedman (2003).

REFERENCES

Aghion, P. and P. Howitt (1992), 'A model of growth through creative destruction', *Econometrica*, **60**, 323–51.

Aghion, P. and P. Howitt (1994), 'Endogenous technical change: the Schumpeterian perspective', in L.L. Pasinetti and R.M. Solow (eds), *Economic Growth and the Structure of Long-Term Development*, London: Macmillan, pp. 118–31.

Aghion, P. and P. Howitt (1998), *Endogenous Growth Theory,* Cambridge, MA and London: MIT Press.

Akerlof, G.A. and J.E. Stiglitz (1969), 'Capital, wages and structural unemployment', *Economic Journal*, **79**, June, 272–81.

Alesina, A. and D. Rodrik (1994), 'Distributive policies and economic growth', *Quarterly Journal of Economics*, **109**, 465–90.

Barro, R. (1990), 'Government spending in a simple model of endogenous growth', *Journal of Political Economy*, **98**, S103–S125.

Benabou R. (1996), 'Inequality and growth', *NBER Macroecomics Annual*, 11–74.

Bertola, G. (1993), 'Factor shares and savings in endogenous growth', *American Economic Review*, **83**, 1184–98.

Brander, J.A. and M.S Taylor (1998), 'The simple economics of Easter Island: a Ricardo–Malthus model of renewable resource use', *American Economic Review*, **88**(1), 119–38.

Carlin, W.J. and D.W. Soskice (1990), *Macroeconomics and the Wage Bargain. A Modern Approach to Employment, Inflation and the Exchange Rate*, Oxford: Oxford University Press.

Domar, E. (1946), 'Capital expansion, rate of growth, and employment', *Econometrica*, **14**, 137–47.

Galor, O. and J. Zeira (1993), 'Income distribution and macroeconomics', *Review of Economic Studies*, **60**, 35–52.

Goodwin, R.M. (1951), 'The non-linear accelerator and the persistence of business cycles', *Econometrica*, **19**, 1–17.

Goodwin, R.M. (1967), 'A growth cycle', in C.H. Feinstein (ed.), *Socialism, Capitalism and Economic Growth. Essays Presented to Maurice Dobb*, Cambridge: Cambridge University Press, pp. 54–8.

Grossman, G.M. and E. Helpman (1991), *Innovation and Growth in the Global Economy*, Cambridge, MA: MIT Press.

Harrod, R.F. (1939), 'An essay in dynamic theory', *Economic Journal*, **49**, March, 14–33.

Hahn, F. (1994), 'On growth theory', Quaderni del Dipartimento di Economia Politica, no. 167, Siena.

Hicks, J.R. (1950), *A Contribution to the Theory of the Trade Cycle*, Oxford: Oxford University Press.

Kaldor, N. (1955–56), 'Alternative theories of distribution', *Review of Economic Studies*, **23**(2), 83–100.

Kaldor, N. (1966), 'Marginal productivity and the macroeconomic theories of distribution: Comment on Samuelson and Modigliani', *Review of Economic Studies*, **33**(4), 309–19.

Kurz, H.D. and N. Salvadori (1998), '"Endogenous" growth models and the "classical" tradition', in H.D. Kurz and N. Salvadori (eds), *Understanding "Classical" Economics. Studies in the Long-Period Theory*, London and New York: Routledge, pp. 66–89.

Kurz, H.D. and N. Salvadori (1999), 'Theories of "endogenous" growth in historical perspective', in M.R. Sertel (ed.), *Contemporary Economic Issues. Proceedings of the Eleventh World Congress of the International Economic Association, Tunis,* Vol. 4: 'Economic Behaviour and Design', London: Macmillan, pp. 225–61.

Kurz, H.D. and N. Salvadori (2003), 'Theories of economic growth: old and new', in N. Salvadori (ed.), *The Theory of Economic Growth: A 'Classical' Perspective,* Cheltenham, UK and Northampton, MA, USA: Edward Elgar, pp. 1–22.

Lucas, R. (1988), 'On the mechanics of economic development', *Journal of Monetary Economics*, **22**, 3–42.

Mankiw, G.N., D. Romer and D.N. Weil (1992), 'A contribution to the empirics of economic growth', *Quarterly Journal of Economics*, **107**, 407–37.

Nelson, R.R. and S.G. Winter (1974), 'Neoclassical vs. evolutionary theories of economic growth: critiques and prospectus', *Economic Journal*, **84**, 886–905.

Nelson, R.R. and S.G. Winter (1982), *An Evolutionary Theory of Economic Change*, Cambridge, Mass.: Harvard University Press.

Pasinetti, L.L. (1960), 'A mathematical formulation of the Ricardian system', *Review of Economic Studies*, **27**(2), 78–98.

Pasinetti, L.L. (1962), 'Rate of profit and income distribution in relation to the rate of economic growth', *Review of Economic Studies*, **29**(4), 103–20.

Pasinetti, L.L. (1965), 'A new theoretical approach to the problem of economic growth', *Pontificia Academia Scientiarum Scripta Varia*, 28.

Persson, T. and G. Tabellini (1994), 'Is inequality harmful for growth?', *American Economic Review*, **84**(3), 600–621.

Rebelo, S. (1991), 'Long run policy analysis and long run growth', *Journal of Political Economy*, **99**, 500–521.

Ricardo, D. (1951 ssq.), *The Works and Correspondence of David Ricardo*, 11 volumes, edited by P. Sraffa in collaboration with M.H. Dobb, Cambridge: Cambridge University Press. In the text referred to as *Works*, volume number and page number.

Romer, P. (1986), 'Increasing returns and long-run growth', *Journal of Political Economy*, **94**, 1002–37.

Romer, P., (1990): "*Endogenous Technical Change*", Journal of Political Economy 98, S71-S102.

Rowthorn, R.E. (1977), 'Conflict, inflation and money', *Cambridge Journal of Economics*, **1**(3), 215–39.

Salvadori N. (ed.) (2003), *The Theory of Economic Growth: A 'Classical' Perspective,* Cheltenham, UK and Northampton, MA, USA: Edward Elgar.

Samuelson, P.A. (1939), 'Interactions between the Multiplier Analysis and the Principle of Accumulation', *Review of Economic Statistics*, **33**(4), 269–302.

Samuelson, P.A. and F. Modigliani (1966), 'The Pasinetti paradox in neoclassical and more general models', *Review of Economic Studies*, **21**, 75–8.

Smith, A. (1976), *An Inquiry into the Nature and Causes of the Wealth of Nations*, 1st edn 1776, Vol. II of *The Glasgow Edition of the Works and Correspondence of Adam Smith*, edited by R.H. Campbell, A.S. Skinner and W.B. Todd, Oxford: Oxford University Press. In the text quoted as *WN*, book number, chapter number, section number, paragraph number.

Solow, R. (1956), 'A contribution to the theory of economic growth', *Quarterly Journal of Economics*, **70**, February, 65–94.

Sraffa, P. (1960), *Production of Commodities by Means of Commodities. Prelude to a Critique of Economic Theory*, Cambridge: Cambridge University Press.

Steedman, I. (2003), 'On "measuring" knowledge in new (endogeneous) growth theory', in N. Salvadori (ed.), *Old and New Growth Theories: An Assessment,* Cheltenham, UK and Northampton, MA, USA: Edward Elgar, pp. 127–33.

Stiglitz, J.E. (1969), 'Distribution of income and wealth among individuals', *Econometrica*, **37**, 382–97.

Swan, T.W. (1956), 'Economic growth and capital accumulation', *Economic Record*, **32**, November, 334–61.

Tobin J. (1955), 'A dynamic aggregative model', *Journal of Political Economy*, **63**, 103–15.
Uzawa, H. (1965), 'Optimal technical change in an aggregative model of economic growth', *International Economic Review*, **6**, 12–31.