

The New Development Economics

After the Washington Consensus

Edited by
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Preface

Development economics emerged as a distinct branch of economics after World War II, especially from the 1950s (Bardhan 1993; Hirschman 1981). Its antecedents are to be found in earlier schools of economics, for much of economic thinking over the centuries has been concerned with accelerating economic growth and transformation (Chang 2002). The emergence of development economics as a distinct field was encouraged by widespread recognition of the different economic and other conditions that prevailed in what has come to be referred to as the third world, or the South, or the developing world. Much of East Asia, then South Asia and later Southeast Asia, as well as Africa and the Caribbean, gained independence from colonial powers in the two decades after the end of World War II. The post-war ascendance of the United States of America at the expense of war-torn Europe, especially the United Kingdom, and the beginning of its Cold War with the Soviet-led 'communist bloc' provided the political motivation and intellectual space for the emergence and particular content of what is now termed old, or classical, development economics.

The experience of the Great Depression, the continuing reverberations and apparent relevance of the Keynesian revolution, and the preoccupation of pre-war Central European economists with 'catching up' and 'late industrialization' inspired and encouraged heterodox economic thinking that was distinct from the increasingly dominant mainstream, marginalist or neoclassical economics. It ranged much more widely in every respect than the limits imposed by the dominant debate in the United States between Paul Samuelson's neoclassical synthesis (US neo-Keynesianism) and free market conservatism led by Milton Friedman's 'monetarism'. Most importantly, the rationale for development economics derived from the very different economic conditions believed to prevail in Asia, Africa and Latin America. These included the generally larger significance of agriculture and primary commodity production, and the correspondingly modest role of manufacturing as well as different types of labour markets. Later, the understanding of economic development was extended beyond the conventional focus on generating economic growth (and employment) in different conditions, to include considerations of equity or distribution.

The 1980s saw a dramatic reversal in the fortunes of mainstream

New Growth Theory More Problem than Solution

Ben Fine

Growth in the History of Economic Thought'

Growth theory has a prominent, if shifting position in the history of economic thought. For classical political economy, beginning with Adam Smith in the late eighteenth century and lasting for a hundred years or more, preoccupation with growth was central. Smith himself is famous for opening the *Wealth of Nations* with an account of the division of labour as a source of productivity increase, making reference to the manufacture of pins. For him, the wealth of nations depended upon the productivity to be gained from a growing division of labour. But this was itself liable to be constrained by the extent of markets. Large-scale pin manufacture depended upon mass markets. For this reason, it was important to Smith that feudal barriers to the expansion of commerce should be overcome. This is an important perspective in which to set his commitment to the invisible hand, that is all too commonly perceived to be more about the efficiency of free markets in light of modern theories of equilibrium.

Nonetheless, Smith believed that growth could not be sustained indefinitely because the growing division of labour would ultimately exhaust the market, leading to over-investment and declining profitability. The result would be what was known to classical political economy as a stationary state. Smith's argument, while usefully raising the issue of how technical change and productivity increase is accommodated by the market, is incorrect because it extrapolates, from a single sector to the economy as a whole, what is known as a fallacy of composition. There is no reason why all markets should not expand together indefinitely.

With Ricardo and his contemporaries, writing some fifty years later, a different reason was given for the common belief that a stationary state was the inevitable fate for capitalism. Rather than arguing that growing productivity across all sectors would exhaust growth, they argued that declining productivity in one particular sector would be responsible. That sector was agriculture. To accommodate the nutritional needs of a growing population, it was believed that ever-less productive land would need to be brought into cultivation ultimately, once again, reducing profitability as the cost of provisioning wages grew, and undermining the capacity for further growth.

Marx's political economy took a different view. He argued that accumulation was unavoidable under capitalism. For it was a consequence of the competition between capitalists in pursuit of profitability through productivity increases. Larger capitals had better chances of success and survival. For Marx, there were neither market nor natural absolute barriers to growth under capitalism, but the growing economy would intensify stresses and strains that could not be accommodated by the market mechanism alone. As a result, economic growth would be punctuated by crises of greater or lesser severity and frequency. These, once resolved, would furnish the basis for a renewal of growth, unless capitalism was itself overthrown by socialist revolution.

With the emergence of the marginalist revolution in economic thought in the 1870s, and despite a major depression soon afterwards across the capitalist world, the last decades of the nineteenth century were marked by a lack of interest in growth theory. The newly emerging discipline of economics – it had previously been political economy – focused instead on problems of efficiency through the market mechanism. This was to remain the case for fifty years until the end of the Great Depression, when Harrod raised the question of whether equilibrium growth was possible and, if so, whether it was stable. He was doubtful of positive answers in both cases.

But, by the mid-1950s, what is now known as old growth theory came to the fore, explaining growth in terms of flexible combinations of capital and labour in the production process – growth in factor inputs – and unexamined growth in productivity. Old growth theory will be examined in greater detail later. For the moment, it suffices to report that it faded from prominence towards the end of the post-war boom, its swansong being prompted by the oil crises of the early 1970s. Growth could be sustained, even with a scarce resource such as oil, as long as productivity in its use rose or substitutes for it were invented sufficiently fast. It was more than a decade before growth theory once again occupied a leading position in economics. What distinguished it from what came before?

Pinpointing New Growth Theory

Crafts (1996: 30), one of Britain's leading economic historians, reports from just a decade ago: 'In a speech in the autumn of 1994, the Shadow Chancellor, Gordon Brown, referred to "post-neoclassical endogenous growth theory"'. The press seized upon this phrase and lampooned Mr Brown.' This anecdote says much about the press' reaction, both to what is taken to be esoteric economic theory and a pretentious appeal to it by a prospective First Treasury Minister with an otherwise dour reputation. At that time, endogenous or new growth theory was less than a decade old, its emergence generally being credited to what are now deemed to be the classic articles of Romer (1986) and Lucas (1988). Over the last twenty years, new growth theory (NGT) has enjoyed a meteoric rise in the academic world, spawning thousands of published articles, numerous books, a secure place in core graduate teaching of economics, and a favourite topic for student dissertations and essays.

For these reasons alone, it is worthy of close critical attention – whether it warrants lampooning or not is a different matter. NGT addresses at least three compelling, and closely inter-related, questions. These are:

1. What are the sources of productivity increase?
2. Do, and if so why, some economies persist in growing faster than others? Or do laggard economies tend to catch up with leaders, the so-called convergence hypothesis?
3. What is the impact of socio-economic variables such as institutions and culture on economic growth, as opposed to the simple accumulation of factor inputs such as capital, and more or less skilled labour?

These are big questions, and they are far from new. But, remarkably, they have tended to be absent from the forefront of mainstream, neoclassical economic theory. When previously they have been addressed within the discipline of economics, it has usually been on the margins, as part of applied economics, political economy, or in economic histories of technologies or particular countries. As if to make up for its neglect in the past, mainstream economics has swung to the opposite extreme, purporting to examine the three questions listed above within a general framework, as opposed to the piecemeal efforts of applied economists, economic historians and development economists. It has also warranted the claim of being post-neoclassical.

In presenting NGT, it would be natural to begin by comparing it to old growth theory, or exogenous growth theory, as it is known, in contrast to endogenous or new growth theory,² which will be taken up later. But for purposes of exposition, it is more instructive (and less demanding on those unfamiliar with the old), to examine how new growth theory has turned out, not least in its empirical work. This has revolved around statistical investigation of the second question listed above. Do economies converge upon one another (in per capita income)? If so, those with a lower starting level of income would be expected to grow faster than those with a higher level. This suggests a simple statistical test of what is known as the hypothesis of *absolute* convergence. Run a regression on the following equation:

$$g = c - a_0 \gamma_0$$

where g is growth rate, γ_0 is initial level of income, and c and a_0 are parameters to be estimated. The expectation (for convergence) is that a_0 is positive, so that those with lower starting incomes grow faster and those with higher initial incomes grow more slowly.

While appealing in its simplicity, there are very serious problems with this statistical exercise that are worth highlighting, before engaging with the more sophisticated statistical work around NGT. First, it is not necessarily the case that convergence is being tested.³ Suppose, for example, just for the sake of argument, that growth rates are randomly distributed across countries – each country has a growth rate that depends upon the throw of dice (which can also have negative numbers on them) from one period to the next. Those countries

that have grown rapidly in the past, by chance, it must be emphasized, will have higher incomes and, by the law of averages, their growth rates will tend to be lower in the future, simply because they have been lucky enough to hit the jackpot in the past. Of course, exactly the opposite is true for those countries that have been unlucky in the past. On average, they will be luckier in the future. As a result, under these assumptions, there is an inbuilt automatic inverse relationship between past and future economic performance, even though, it should be emphasized, that performance is purely random. In other words, to the extent that the world is random, there is a bias towards supporting the hypothesis of absolute convergence.

Second, putting this aside, there is a more complex issue of whether like is being compared with like. An economy recovering from recession, for example, will tend to grow faster than another about to enter a recession. How do we know that we are comparing economies fairly over the phases of growth and cycles? It is not a simple matter of separating out peaks and troughs in growth performance, and only comparing peaks with peaks or troughs with troughs. This is to doctor the results, for the regression is supposed to explain differences in performance, and one economy's apparent trough might represent lower long-term growth as opposed to a temporary blip.

The problem can be illustrated in a different way by introducing the distinction between the short run and the long run, and the idea of steady state balanced growth (SSBG). For the latter, a term first put forward in the context of old growth theory, the economy is essentially in a growing equilibrium. A constant growth rate applies to all variables – capital, labour, savings and investment – and to output itself augmented by productivity. The economy from one period to the next looks just like an enlarged snapshot of what went before. The significance of SSBG will be examined later but, for the moment, the issue of peaks and troughs can be interpreted in terms of whether economies are adjusting along or towards their SSBG paths.

In other words, are we comparing the SSBG path of one country, as opposed to another (presumably, the ultimate determinant of convergence or otherwise), or the adjustment to such paths? If, as seems most likely in empirical work, it is the latter, then, there are serious problems, as illustrated by the diagrams. In Figure 1, it seems as if the two growth paths are converging without doubt. But what if, as illustrated in Figure 2, this is a perverse adjustment to SSBGs that are far from converging?⁴

The third problem with the simple regression of growth against initial level of per capita income is that it tends to presume that growth rates are independent of one another – they only depend on one's own initial level of income. But the world economy is full of interdependencies, which means that the growth rate of one country will depend not only on its own characteristics, but also on those of other countries. As the saying goes, when the US sneezes, the whole world catches a cold. But some have worse symptoms than others (and the same is true of feedback effects). As with the adjustment to SSBG paths, the

regression may be picking up short-run interactive effects, rather than a process of convergence.

Fourth, the equation as such does not explicitly lay out a full model and test it against any alternatives. As already seen, there might be random explanations for an inverse relationship. More generally, for any model from which the estimated equation is derived (as a reduced form), there are other empirical implications that ought to be tested as well – at least, in principle, as far as data allow. This is a way of interpreting the second problem: how does the equation relate to growth along SSBG, as opposed to adjustment to it? More substantive and wide-ranging, the process of growth will incorporate all sorts of other relations, such as those with savings and investment, and the distribution of income between wages and profits. Any model allowing for the reduced form is liable to have implications for these aspects as well. They ought to be used to test the model. Putting this another way, and more bluntly, even if the regression gives a good fit in some statistical sense, it would tell us very little about the causes of growth. This is partly because these are excluded from the regression itself; and partly because their own roles in the economy, in relation to other variables have been set aside (how growth might affect such variables rather than vice versa – does the savings share tend to rise or fall with the growth rate, for example).

The first of these issues has been extensively examined in the NGT literature, under the rubric of testing for what is termed *conditional* convergence. The growth rates of two economies might differ not only because they differ in initial levels of per capita income, allowing for catch-up, but also because of differences in other variables that affect growth. Obvious candidates are levels of skills, however measured, but, in principle and in practice, a hundred variable or more could be reckoned to effect growth performance – from trade performance to levels of trust of one another, the judiciary and politicians. In this light the equation for testing convergence is modified to introduce other independent variables, as many as a hundred, say, $X_1, X_2, X_3 \dots X_{100}$. Accordingly, the regression becomes:

$$g = c - a_0Y_0 + a_1X_1 + a_2X_2 + a_3X_3 + \dots + a_{100}X_{100}$$

These are known as Barro-type regressions.⁵ As remarked, they have the effect of correcting for differences between countries in other variables which testing for convergence from higher or lower levels of initial per capita income. But they also incorporate another effect of much greater significance. Not only do they 'correct' the test by shifting from absolute to conditional convergence they also test for the impact on growth of each variable X_i . The estimated parameters, a_i , inform us of the quantitative effect of each of the hundred variables c more on growth. In a nutshell, we are provided with a complete calculus for the causes of growth.

Unfortunately, apart from whatever is gained by adding more variables, Barro-type regressions suffer from exactly the same problems as the simpler test

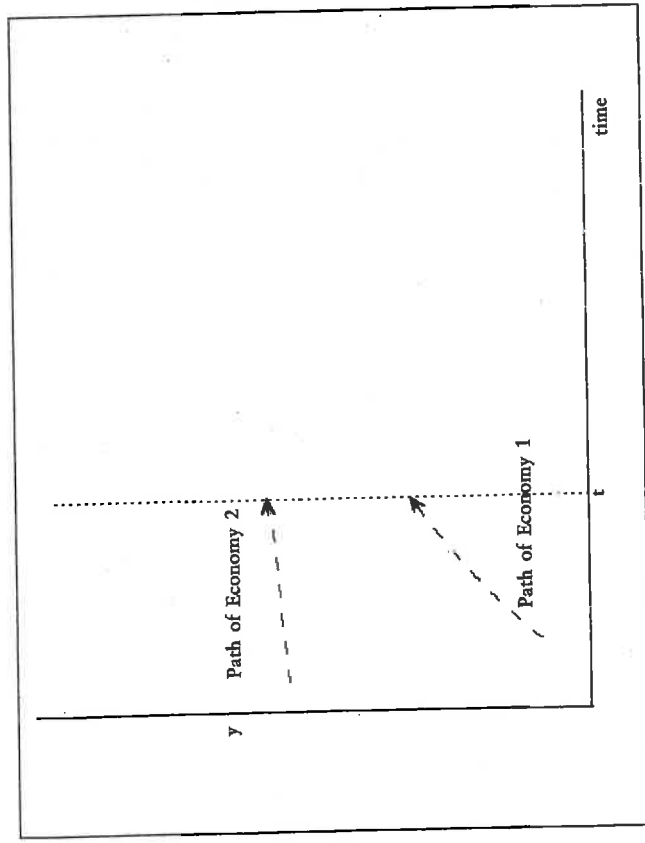


Figure 1

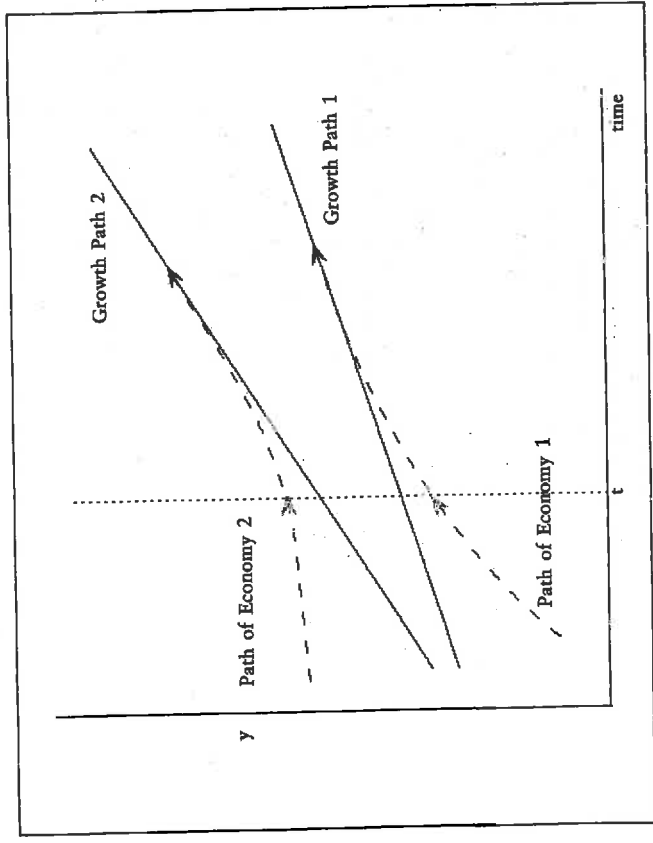


Figure 2

for absolute convergence. Indeed, they both intensify the earlier problems and add others of their own. Any model or theory underpinning the regression has faded into the distant background, at best. The result is remarkable. On the one hand, it is presumed that the quantitative impact of a hundred or more variables can be simply gauged for their impact on growth without regard to time, place and other specificities. On the other hand, the interaction among these variables is collapsed into a one-dimensional contribution to growth, while, in principle, ranging over all economic and non-economic variables as if they were independent of one another. Can we really expect to explain the levels of growth across all times and places by what is little more than a highly computerized process of graph-drawing and extrapolation?

The Barro-type regressions also add another statistical problem of their own: what is known as the stability of the regression. With a hundred or more variables that can be included or excluded, what happens if you add another variable or two, take some away, or do both? The answer is that not only, and not surprisingly, can the estimated effects of the variables change in magnitude – maybe trade liberalization was not so important after all – but also, the signs on the variables can change. What appears to indicate that a variable contributes to growth in one regression suggests that it does the opposite in another.

This conundrum is beautifully illustrated by the title of a paper by one of the leading practitioners in the field and Barro's co-author, Sala-i-Martin (1997), 'I Just Ran Four Million Regressions'. In order to get around the problem of the stability of the regression, he sets his computer to run that number of calculations automatically, including and excluding different sets of variables. The whole exercise is motivated by the idea that if a certain variable appears to affect growth significantly and in the same direction a sufficient number of times, then, it can be presumed to be reliable as a source of growth. In days gone by, such a procedure, albeit on the basis of considerably less computer power, would have been understood as 'data-fishing' and be considered illegitimate.

The classic example is the correlation, but not causation, between the rise of young women's miniskirts and the decline of the church. But the point can be made in more sophisticated fashion. Suppose, once again, for the sake of argument, that all variables – both growth and X_t – are randomly distributed. There is no relationship between any of them. By statistical chance, some will appear to be correlated (just like miniskirts and the church). Running four million regressions is one way of finding random correlations that are almost bound to exist. And if you ran the regressions in ten years' time, when the data have changed, the results might be entirely different.

In other words, the empirics of NGT are liable to teach us very little about the causes of growth (Kenny and Williams 2001). This is because of the failure to address the complex interactions among various variables in generating growth, and the different ways in which those variables interact with one another from one country to another, and from one time to another. In short, the empirical work is not well founded in theory. This is paradoxical, given its claim

to derive from new or endogenous growth theory. So it is appropriate to look at the theory on its own merits, and see how it relates to the empirical work just described.

New Growth Theory for Old?

As already mentioned, new or endogenous growth theory takes the old or exogenous growth theory as its point of departure, and comparison between the two is instructive in highlighting how the new version is deemed to be an improvement on the old. Without going into great detail,⁶ old growth theory is essentially a view of how the simple accumulation of resources leads to an expansion of output. The growth rate is, first and foremost, heavily constrained by the rate of growth of population, known as the natural rate of growth, and taken to be fixed, say, n . This is the rate at which the labour force can grow. On the other hand, capital stock grows at the rate s/v , where s is the savings rate and v is the capital-output rate (the inverse of how well capital resources are turned into output). This is known as the warranted rate of growth, say, g .

There is no immediate reason why g and n should be equal. If g is greater than n , there will be labour shortages for full utilization of available capital, and if n is greater than g , there will be high unemployment. The old neoclassical growth theory addressed this problem by presuming that capital and labour could be brought together in any combination. With a high savings rate (or low v), capital growth would not outstrip available labour because more capital-intensive techniques could be used, guaranteeing full employment of all resources at all times. Crucially, though, in such circumstances, the long-run growth rate still remains tied to n , taken as exogenous. At most, the high savings rate has the effect of increasing v (to bring s/v down to the level of n) and output per worker, but the growth rate remains the same.

Thus, old growth theory is unable – indeed, does not attempt – to explain productivity increase over time. At most, it can explain that one economy has a higher level of productivity than another (because of higher savings rate or lower rate of population growth). Productivity increase as a source of growth is taken as *exogenous*, falling like manna from heaven, to deploy a phrase used at the time, and explaining how the old growth theory got its name. As a result, in statistical work using the old growth theory, productivity increase is, at most, measured, rather than explained.

This is done through a technique known as growth accounting or measuring changes in total factor productivity. Consider an economy at two different points of time. Output, capital and labour will all have grown by a certain amount. Suppose output has grown by 6 per cent, capital by 4 per cent and labour by 2 per cent. Clearly, there has been some growth in productivity (2 per cent capital productivity, and 4 per cent labour productivity). Change in total factor productivity is measured by taking a weighted average of the two (using share of profit to weigh capital's contribution to growth, and share of wages for labour's). It is worth re-emphasizing that productivity increase is not being

explained here; it is only being measured after deducting any contribution that has been made by capital and labour (or growth of inputs) from output growth. Explicitly, what is left over was called the residual or unexplained contribution to growth, and it was deemed to be the result of technological progress – how the economy better uses resources to turn inputs into outputs.

Despite these limited ambitions, there are a number of devastating problems with old growth theory worth highlighting. First, without going into details, it is based upon the assumption of perfect competition and full employment in all markets (possibly justified by the view that such assumptions hold in some nebulous long run). If resources are not fully employed at all times, then, changes in factor use will be measured as a change in productivity, even though technology may have remained unchanged. Similarly, if, for example, there are trade unions or monopolies, shifting the weights assigned to labour and capital, these will distort (upwards) the measured contributions made by these inputs. Paradoxically, a standard procedure is to measure shifting total factor productivity over time, and then to explain its patterns by the emergence of trade unions, or a long depression, for example. But such explanations violate the assumptions on which the calculations have been made in the first place!

Second, old growth theory is based on SSBG, previously described in terms of an economy growing at a constant rate and, otherwise, everything remaining in the same proportions. Casual acquaintance with the history of growth suggests how inappropriate this is. In particular, development is based upon major transformations in the proportions of activity in the economy – as agriculture, for example, gives way to industry, which, in turn, gives way to services in 'mature' economies. This is indicative of a broader point that, even if we reduce development to growth, the process is embedded in major socio-economic transformations that are omitted from consideration by the old growth theory – industrialization, urbanization, the creation of health, education and welfare systems, etc., all tied to the emergence of a modern state.

Third, empirical measures of the residual depend heavily on what inputs are included at what levels of disaggregation. As more inputs are incorporated – such as the skills of the workforce, for example – the unexplained part of the residual tends to be nibbled away. So the division between the explained and the unexplained contributions to growth depends on how far the explanation is taken.

But the most destructive weakness of the old growth theory in its neoclassical version derives from what is known as the Cambridge critique or controversy over capital theory.⁷ This has many dimensions, and is open to a number of complementary interpretations. It is best summarized here as follows. The old neoclassical growth model treats the economy as if it has only one sector or one good that serves, for example, in this capacity for all consumption and investment purposes in all respects. The issue is whether such a model, with only one good, offers theoretical and empirical results that can stand as representative for models (and hence, economies) with more than one good. Not surprisingly, the answer is a simple negative.

Even on its own neoclassical terms, the one-sector model necessarily misrepresents the properties of more general models. In general, for example, any change in the more complicated model must be interpreted as if it is due to change within the one-sector model. If there is a shift in demand alone, that is, with no change in conditions of supply or total factor productivity, this can only be measured as a change in the latter. Suppose preferences shift towards consumption goods that are more capital-intensive in production. This will tend to increase the demand for capital goods and their price. In one-sector terms, this will have to be measured as an increase in the supply of capital itself (as there is, in the one-sector model, with no relative prices between goods, no way of distinguishing a change in the quantity of capital and a change in its price).

Such unavoidable problems in the empirical measurement of total factor productivity have equally devastating counterparts in the theoretical results of the one-sector model – the idea, for example, that there is necessarily an inverse relationship between the quantity of capital and the profit rate, or that the marginal product of capital from a production function can determine the rate of profit, and similarly for the marginal product of labour and wages. The simple conclusion is that the old growth theory is an unacceptable shambles.

Tellingly, such had been accepted, after considerable resistance, in the closely fought controversy itself. Literally, the conclusion drawn in the very last word in the debate at the time went to leading neoclassical economist and Nobel Prize winner, Paul Samuelson (1966: 582): 'If all this causes headaches for those nostalgic for the old time parables of neoclassical writing, we must remind ourselves that scholars are not born to live an easy existence. We must respect, and appraise, the facts of life.' Unfortunately, his advice has not been heeded, and the neoclassical parables drawn from the one-sector model have continued to be prominent in both theoretical and empirical work.

This is an apposite point at which to assess the extent to which NGT represents a theoretical advance over the old growth theory, and whether and in what sense it warrants Gordon Brown's nomenclature of 'post-neoclassical', as suggested in the earlier quotation. In terms of the consequences of the Cambridge critique of capital theory, it might just as well not exist, as far as NGT is concerned. The whole literature suffers a collective memory loss and proceeds, for example, as if production can still be based on a simple production function, with marginal products determining distribution, etc.⁸ In this and, as will be seen, in other respects, NGT displays total continuity with its predecessor. The failure to formulate proper hypotheses with alternatives, to explore the full empirical implications of the model as a whole, and the fallacies of the empirical techniques employed are also carried over from old to new, even if with changed characteristics. In addition, both draw heavily upon SSBG as an organizing concept, although NGT does allow the possibility for multiple equilibria (the same model might have two or more equilibrium growth rates, the exact outcome depending on initial conditions or choices, over saving rates, for example).

In what sense, then, is NGT new? Its own claims to novelty rest upon a

breach with the assumption that productivity increase is exogenous, and that the growth rate is otherwise tied to the rate of population growth. For the old growth theory, if there is mobility of capital and of technology, for example, then there would be a tendency for capital-labour ratios to be equalized across the world. This is because capital-deficient (rich) countries would have higher (lower) marginal products of capital, and stimulate inflows (outflows) in pursuit of higher profitability. Similarly, it would make sense to use best available technology with available resources, or, in more technical terms, the same production function should prevail across the world. All this leads to the conclusion of the absolute convergence of per capita income, an inevitable conclusion of the old growth theory (for factor and technology mobility). Such explains the focus in NGT empirical work on the convergence hypothesis.

Now, it might be argued that the assumption of free flows of capital and technology is unrealistic. At least implicit in the old growth theory is the idea that countries are integral in some sense, and form barriers to such free flows. NGT does not necessarily dispute the presence of such barriers but, equally, it does not take them to be exogenous. If capital and technology do not flow freely to equalize per capita incomes around the world, this should be studied as a matter of choice within economic theory itself. Why would optimizing agents persist in accumulating more capital in one place, rather than spreading it around, and why would not best-practice technology always be made widely available, even if at a price?

Answers to this question, arising out of the perceived weaknesses of the old growth theory in unambiguously predicting convergence, also open up examination of the sources of productivity increase (whether equalized or not). Underpinning old growth theory are two crucial assumptions: perfectly working markets and constant returns to scale. In order to endogenize growth and productivity, NGT breaches both of these assumptions.

It assumes increasing returns to scale. The implications of doing so are immediate and dramatic. With increasing returns, the level of productivity depends upon the absolute size of the economy, and there is an incentive to concentrate production in one place (although this may have to be balanced against the costs of monopoly, transport and other costs to consumers, and so on). Further, whichever economy has an initial advantage, for whatever reason, in 'industrialization' will tend to maintain and even widen that advantage. Put in slightly different terms, if an economy has a higher savings rate, it will tend to attract higher productivity increases as it accrues economies of scale. Not surprisingly, NGT tends to argue that, left to the market, the savings rate will be too low relative to some social optimum.

Interestingly, the explanation for endogenous productivity increase in the previous paragraph, based on given increasing returns to scale, is limited for examining technical change. To use the vernacular, it does allow for shifts along the production function (increasing returns) but does not explain shifts (upwards) in the production function. This is where the bulk of the NGT literature lies, as it

seeks to explain and endogenize increasing returns to scale through the presence of market imperfections (of which increasing returns is an example in and of itself, since competitive price-taking cannot lead to equilibrium, given 'natural' monopoly).

Broadly, this is done in three different, if often overlapping, ways. The first is to posit a theory of the production of productivity increase. This can be direct, with a production function itself for technical change, with choices being made over the level of R&D expenditure or other social and economic infrastructure that contribute, directly or indirectly, to productivity performance. Here, there can be a trade-off between use of current resources (at the expense of consumption) and higher productivity in the future. Whatever is achieved in productivity increase may not be generalized because of market imperfections such as a patent system or the non-marketability of new technology. By the same token, productivity increase can arise from resources devoted to raising the skills (human capital, training, etc.) of the workforce. Such direct methods of raising productivity (through allocation of resources to that end) are complemented by indirect methods derived automatically from economic activity itself, the most prominent example being learning-by-doing or on-the-job training.

The second way of generating productivity increase in NGT is by appeal to externalities (that lead to increasing returns to scale). A most favoured example is that of the industrial district and its generation of spill-over effects. One firm's activity may create advantages for others that do not accrue to itself (and vice versa). Consequently, there is a tendency to underinvest; but, the more investment there is, the faster is the growth of productivity. Of course, any positive externality can be interpreted in this way.

Third, NGT can rely upon some sort of structural (mis)match to explain differences in growth performance. Suppose there are two different paths that an economy can take - low and high roads. For the low road, workers do not bother to train themselves because no skilled jobs are available, and firms do not invest in new technology because there are no skilled workers available to use it. The opposite holds for the high road, in which workers commit to training and firms are innovative. For economic theory, it is an interesting modelling exercise to determine whether the economy goes for the high or the low road, and what might make it switch from one to the other.

This account offers an overall perspective on how NGT proceeds analytically. In a nutshell, some forms of market imperfections lead directly or indirectly to increasing returns to scale, and thus allow for differences in productivity and, hence, growth rates. More detailed and critical scrutiny of the literature offers the following insights.

First, the literature has grown explosively. The reason is that there is such a wealth of market imperfections on which to draw and to project on to productivity increases. Learning-by-doing, for example, can be disaggregated into learning by adopting, adapting, importing and exporting. Without exaggeration, it is appropriate to see the literature as drawing upon the idea of

technical change in two different ways. One is purely speculative, invented. Let us suppose that education is created through a production function and the corresponding skills are used similarly. The other, less prominent, is to draw parasitically upon earlier literature, and strip it out of its broader vision and context, for which reliance upon Schumpeter is an example (for his waves of creative destruction).

In either case, the complex and diverse ways in which technological change and productivity increase are generated, and how scholars of (the history of) technology have highlighted this, are studiously ignored.⁹ The same is true of the approaches of classical political economy and Marxism. Adam Smith, for example, opens the *Wealth of Nations* with a discussion of the division of labour and its impact on productivity increase (not least through the famous pin factory).¹⁰ And Marx's mature political economy is heavily concentrated on the sources and implications of productivity increase.¹¹

Second, whether in terms of its analytical origins or in terms of the model as theory itself, NGT is profoundly microeconomic in content. Individuals optimize and/or the economy is treated as if made up of representative individuals. In this respect, it is worth citing Lucas (1987: 108) to the effect that 'the term "macroeconomic" will simply disappear from use and the modifier "micro" will be superfluous'. This is not simply, however, a matter of commitment or otherwise to methodological individualism – the idea that there is no such thing as society or holistic or systemic analysis other than through aggregating over individuals.

Even accepting its individualism, the NGT literature is remarkable in going from one contribution to another for each to draw upon a single microeconomic idea. Lucas (1988), for example, draws on produced human capital as a source of productivity increase, projecting it on to the performance of the economy as a whole. Perversely, when we aggregate thousands of individual contributions in this vein, the result is at least hundreds of different microeconomic effects on macroeconomic performance. These will have different interactions and impacts by sector, country and other circumstances. How can we study each micro-factor in isolation as if it were macro? The answer is that we cannot, but, as already seen above, an entirely unacceptable resolution is found by banging out questionable Barro-type regressions.

Third, such conundrums shed light on the mathematics and modelling of NGT. Given that the literature as a whole is made up of any number of microeconomic factors generating productivity increases, it would make sense to combine as many of these as possible into a single model. The problem is that the mathematics becomes intractable once more than one or two factors are introduced. Despite this, NGT models are able to generate more or less any sort of dynamic behaviour required – across both multiple equilibria and complex dynamics. Choose any stylized facts about patterns of growth, and a competent mathematical economist can model them.

Even so, the models tend to be subject to restrictive requirements in order to be able to generate SSBG as the focal point for the dynamics, and without which they tend to lead to infinite output in finite time or the decline of endogenous productivity increases to marginal proportions. Solow (1992), the initiating author of old growth theory, shows, for example, that Lucas' (1988) model of endogenous growth through skilled labour depends upon the arbitrary and apparently unwitting assumption of constant returns to scale in producing skills and increasing returns in using them! In this light of – dependence on SSBG, intractability of the model when including relevant variables, sensitivity of the model to its assumptions – it is hardly surprising that the empirical work should have such loose and questionable connections to the theory.

At this point, it is worth commenting, in passing, that proponents of the old growth theory tend to be disparaging about the pretensions of the new. This is not simply, as the new might have it, a defence of old ideas for the sake of it. In his summary of prospects for macroeconomics in the twenty-first century, Solow (2000: 153, 154) comments that new growth theory 'appears to be dwindling to a modest flow of normal science. This is not a bad thing. . . . It is hard to see where growth theory is going.' Indeed, 'endogenous growth theory is no longer expected to be the key that unlocks the secret of the universe. . . . Does endogenous growth theory have anything to tell us about [growth in the US over the next few decades]?'

In contrast, as if to prove Solow's case of barely concealed contempt for the gap between the ambition and achievement of the new growth theory, in the same issue of the journal, on the same topic of twenty-first-century macro, Luca (2000) offers a model of the history of industrialization across the world in which national economies *randomly* enter a growth and catch-up process. The model did not work (that is, fit the data) until modified to allow rate of entry to growth to increase over time. Lucas recognizes that the model

is mechanical, without much in the way of explicit economics. It lacks an explicit description of preferences, technology, and market arrangements. . . . It entitles omits factors, like capital flows and the demographic transition, that continue to play essential roles in the diffusion of the industrial revolution: why it began in England, why it began in the eighteenth century, why it spread first to other European economies, or why it diffused so slowly for so long.

And, without any sense of irony, he adds: 'But for all these deficiencies, it is undeniably an *economic* model: No one but a theoretical economist would have written it down' (ibid.: 166).

Further, it leads Lucas to predict that the inequality of the past industrial revolutions will be overcome as others industrialize over the coming century. This is all because people across time and space behave much the same, and differ only in the resources at their disposal – and these will tend to be equalized with the mobility of capital to its highest rate of return. No wonder, Solow

schooled in an intellectual environment of greater respect for Lucas' omitted factors and lesser expectations of *economic* models, is little short of scathing in his assessment of new growth theory.

Fourth, in view of the properties of NGT, in what sense does it warrant the claim to advance and novelty over the old? Note that neither market imperfections nor increasing returns to scale are new to neoclassical economics. And, in this sense, NGT cannot legitimately claim to be post-neoclassical. However, the traditional neoclassical treatment of market imperfections (externalities and increasing returns) is through partial equilibrium, and, as such, goes back to Alfred Marshall more than a century earlier. His treatment gave rise to the idea of lost consumer surplus as a result of the inefficiencies associated with market imperfections.

Essentially, NGT departs from this in two significant ways. On the one hand, it elevates the microeconomics of market imperfections to the economy as a whole. On the other hand, it translates static shifts in consumer surplus (what are termed once and for all 'dead-weight' gains or losses) into permanent differences in growth rates. As it were, the consumer surplus associated with market imperfections is allowed to accrue over time. Nor is the treatment of productivity increase through a variety of mechanisms new to NGT. Arrow (1962), for example, is the classic source for learning-by-doing. He drew his theory from the empirical example of the construction of wooden aircraft frames, with labour time declining with output. It is hardly surprising that this and other studies of productivity increase in the past should have hesitated before positing their insights as a general theory of growth for economies as a whole.

Significantly, older neoclassical economists steeped in old growth theory have limited sympathy for NGT. One reason is that the presence of market imperfections and increasing returns to scale effectively undermines any remaining rationale for a one-sector model. The mainstream preoccupation with general equilibrium theory coincided with the emergence of the old growth theory. It seemed to justify the idea, as with Keynesian macroeconomics, that some simultaneous equilibrium of markets, with corresponding prices ironed out of supply and demand, lay behind the simpler one-sector model of growth. For Arrow (2000: 173), though:

The steady history of competitive equilibrium theory and the contrasting history of increasing returns theory are themselves conditions on the coherence of one theory and the lack of it in the other. . . . Increasing returns arguments have been applied fruitfully . . . but one has to start again each time. In particular, what should be the core of any economic theory, a theory of value, is still not yet well defined.

Thus, paradoxically, in seeking to explain why capitalist economies experience differences in rates of growth and productivity, NGT effectively assumes away the presence of markets by failing to provide, or being able to fall back upon, a theory of value.

Another reason for antipathy to NGT from within traditional mainstream neoclassical economics derives from the extent to which NGT simplistically incorporates non-economic variables into the explanation for growth. This is transparent in the case of the Barro-type regressions or, indeed, for the role of 'human capital' through the education and skill system. But traditional neoclassical economics also displays reservations over the extent to which rational choice can be extended beyond the market sphere, as if each and every variable and outcome is explicable in terms of agents optimizing over given preferences. But this is to engage with the very different intellectual climates in which old and new growth theory emerged. Addressing these sheds different light on the relationship between the two than suggested by the idea of the new as the improved version of the old.

New Theory for New Times

Old growth theory dates from 1956, in the middle of the Cold War, when developing countries were first beginning to experience independence. A key text of the time, linking economics to history and history to development, was Rostow's *Stages of Economic Growth*.¹² It sought to draw out stylized stages of development from the experience of the industrialized countries in order to provide lessons for the developing world in ways that would offer alternatives to the Soviet-type system. In this respect, old growth theory had very limited aims. It showed what could and could not be achieved through the simple accumulation of resources. Indeed, Solow's (1957) original calculation of the residual contribution to growth put it as high as 87.5 per cent. Consequently, the drive to the stage of mass production and consumption could not rely exclusively on high rates of savings and investment. For Rostow, it also depended upon the release of entrepreneurial spirit from the confines of both authoritarian communism, as well as Rostow's pre-capitalist custom and culture.

Consequently, his 'non-communist manifesto' sought to persuade developing countries to follow the lead taken by the western world. This had to be interpreted and understood in terms of Keynesianism, welfarism and modernization in the first decades of the post-war period. It involved considerable intervention by the state, to provide socio-economic infrastructure and also the policies necessary for successful industrialization. Such were the perspectives informing the McNamara era at the World Bank. They were, however, complemented by a particular understanding of the relationship between economics and the other social sciences. Questions concerning custom and culture were perceived to lie outside of economics as a discipline, alongside more focused attention on entrepreneurship and technological change. In short, old growth theory displayed an acute awareness of its limits and limitations. At most, it represented a theory of resource accumulation as a core process around which other, unexplained processes revolved.

In the 1980s, however, when NGT first appeared, the appeal of the Soviet system was in decline, and neoliberalism had emerged as the

ideological response to the end of the post-war boom and as the driving force behind development policy in what came to be known as the Washington Consensus. Not surprisingly, the Washington Consensus had no point of contact with NGT since the latter suggested that market forces do not work well in the presence of market imperfections and increasing returns to scale. But, by the mid-1990s, the appeal and legitimacy of the Washington Consensus had begun to fade and it ultimately gave way to the post-Washington Consensus launched by Joseph Stiglitz.¹³ In principle and rhetoric, the corresponding new development economics emphasizes the heavy incidence of market imperfections and how they give rise to both economic *and* non-economic outcomes in the form of institutions, for example. Further, the new development economics pioneered by Stiglitz and arising out of market imperfections is itself part and parcel of a much broader expansion of the approach. It incorporates the new economic sociology, the new institutional economics, the new political economy, the new economic geography and so on.¹⁴

In this respect, it is hardly surprising that NGT should so readily discard the traditional respect for the boundaries of the economic approach and incorporate rate socio-economic variables into its analysis. It does so with little or no regard for the insights of other disciplines except to provide lists of variables to incorporate within Barro-type regressions. The result is to allow for a redefinition of developing countries and development. First, the modernization of the McNamara era is displaced by the neoliberalism of the Washington Consensus. The latter, it should be noted, rests on an appeal to a mechanism – the market – without specifying what it brings as development, especially in terms of the traditional concerns of modernization.

By the same token, the more rounded post-Washington Consensus appeals to development as the correction of market and institutional failings, with limited acknowledgement of what development is in terms of the major transformations associated with industrialization, urbanization and so on. In the case of NGT, this limited understanding of the complexity and diversity of development – a one regression fits all – has its counterpart in the vanity of almost perfect economic and social engineering. For, what the regression tells us is the way in which growth will respond to each and every (policy) variable. From telephone lines per thousand population to the impact of a black market in foreign exchange, the policy-maker is empowered with a calculus of cause and effect that can only be envied in a world so riddled with poverty.¹⁵

Notes

- 1 See Fine (1982) for a fuller account of classical political economy in these terms, and Fine and Saad-Filho (2003) for Marx's political economy.
- 2 See Fine (2003a) and Fine (2000) for a more extensive, if earlier, critical review of the literature. See Aghion and Howitt (1998) for an excellent overview from an *orthodox perspective*.
- 3 What follows refers to a long-established statistical fallacy, known as Galton's regression to the mean.
- 4 On all of this, see especially Quah (1995, 1996a, 1996b).

⁵ See Barro and Sala-i-Martin (1995).
⁶ For an excellent outline of the old growth theory, see Sen, ed. (1970), especially his introduction. Solow (1956, 1957) are the classic contributions.
⁷ The name derives from the debate that took place primarily between Cambridge, England (the critics) and MIT, Cambridge, USA (the orthodoxy). For reviews of the debate, see Harcourt (1976) and Fine (1980: Chapters 5, 6).
⁸ See Hodgson (1997) and Fine (2003b).

⁹ NGT makes practically no reference, for example, to the national system of innovation approach or to evolutionary approaches. See Nelson (1997), for example.

¹⁰ See Kurz (1997).

¹¹ See Fine and Saad-Filho (2003).

¹² See the chapter titled 'The New Development Economics' in this volume for a broader discussion of what follows.

¹³ For a useful collection of Stiglitz's articles elaborating the post-Washington Consensus, see Chang, ed. (2001), and Fine, Lapavistas and Pincus, eds (2001) for critical assessments.

¹⁴ For an assessment in these terms, see Fine (2002).

¹⁵ The example is taken from the first and, for some time, the only theoretical paper purporting to support PRSPs (Devarajan *et al.* 2000). For a critique, see the chapter on 'Financial Programming and the IMF' in this volume.

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Financial Programming and the IMF¹

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This chapter is concerned with the financial programming (FP), or macroeconomics, of the International Monetary Fund (IMF). FP, in principle, is associated with preferential loans to member countries of the IMF that need support to adjust to severe balance of payments problems. In practice, FP has gone far beyond this. First, it has been much more than a temporary set of measures in response to acute crises. Rather, the so-called conditionalities have been attached to loans over relatively long periods of time. Second, they have also been extended to cover far more policy variables than those usually associated with a short-term response to a balance of payments crisis.

Of course, this could be rationalized on the grounds that FP is required not only to make short-term adjustments, but also to guard against recreating the causes of balance of payments problems in the future. This is, in a sense, to acknowledge that short-run adjustment needs to be set in the context of the longer term, which, for developing countries, means promoting development itself. It is also to raise the issue of the relationship between the IMF and the World Bank, with the latter presumed to be more concerned with longer-term issues (and, as a mirror image, its concern that short-term crises should not undermine its project and other finance). At times, there have been tensions between the two organizations over who makes what sorts of loans and with what conditionalities. More often than not, these tensions have been resolved with a division of responsibilities and/or conformity of approach, most notably in the Washington Consensus and, equally, its successor in the form of poverty reduction strategy papers (PRSPs).²

These concerns raise other issues worth highlighting. One is how development itself is conceived within the framework of FP. This is something on which some emphasis will be placed in what follows. If FP is designed to stabilize or adjust the economy, it is reasonable to ask to what end the economy is being guided. Further, it is important to distinguish the scholarship (or analytical) content of FP from its rhetorical or ideological role, and these, in turn, from policies in practice. Thus, for example, the IMF has been closely associated variously with monetarism, neoliberalism, Reaganism and Thatcherism. And for good reason.