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Recollections of Eminent Economists

A LIFE IN ECONOMICS

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Abstract:

The paper is the first inaugural contribution to the new series of "Recollections of Eminent Economists". Under this name, the previous series of the journal (then called "Banca Nazionale del Lavoro Quarterly Review") used to publish autobiographic essays in which renowned economists described their scientific path and reflected on the recent developments of the discipline. In this work, A.P. Thirlwall recalls his personal and academic biography, ranging from employment in the UK to consultancy work in developing countries, and comments on the reception of his main works. Among the latter, special attention is paid to regional and development economics, as well as to the relation between the balance of payments and economic growth. Throughout the discussion, the author emphasizes the Keynesian inspiration of his analyses.

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1. Early life and career

My economics education started in 1957 at the age of sixteen at a local grammar school in Harrow on the outskirts of London. The British education system then, and still today, requires students to specialise at an early age either in science, humanities, or social science, broadly defined. I chose economics, economic history and geography. I had a very charismatic economics teacher, Merlyn Rees, who later entered politics and became Home Secretary in the Labour government of James Callaghan from 1976 to 1979. He taught me both economics and economic history; but, above all, he taught me how to think; how to challenge assumptions, and how to write. I owe him an enormous intellectual debt.[1] Perhaps because of him, I have always

* I am grateful to Dr Penélope Pacheco-López, and to the former and the current editor of the *PSL Quarterly Review* for helpful comments on an early draft of the paper.

[1] One of my classmates was David Pearce who became one of the foremost environmental economists of his

been on the left of the political spectrum, but I don't believe that this has coloured my economics, although it probably influenced my chosen fields of interest and research. I took exams in each of the three subjects. My worst mark was in economics, which brought to mind Keynes's quip when he took the Civil Service exam in 1906 and discovered that his worst paper was likewise in economics, to which his reaction was "I evidently knew more about Economics than my examiners" (quoted in Harrod, 1951, p. 121). My poor mark in economics didn't stop me from going to Leeds University between 1959 and 1962 where the senior Professor was Arthur Brown (see Button, 2017) who had been appointed to the Chair there in 1947 at the tender age of thirty-three having worked in Government during the war years. He was Oxford trained in Philosophy, Politics and Economics (PPE), and in 1936 had graduated with the best first class honours degree in ten years, one reward for which was a prestigious Fellowship of All Souls College, Oxford. Other notable members of staff at Leeds at this time were Denis Sargan, who taught me statistics, and Walter Newlyn who lectured from the proofs of his new book *Theory of Money* (Newlyn, 1962).

After I graduated from the University of Leeds in 1962, I became a Teaching Assistant and Master's student at the small liberal arts college, Clark University in Worcester, Massachusetts, famous then for its geography department, and in the past for its psychology department where Freud delivered his only American lectures in 1909. The graduate teaching was of no particular distinction, but I took an unusual course in the history of economic thought taught by James Maxwell, a scholar of Alfred Marshall. There were just three set texts: Marshall's *Principles of Economics*; Chamberlin's *Theory of Monopolistic Competition*, and Keynes's *General Theory of Employment, Interest and Money.* We were expected to read the books from cover to cover, page by page, and I did. For the first time I had a clear vision of the fundamentals of both micro- and macro-economics from those who pioneered the subjects. There are not many students today, or academic economists for that matter, who read the great classics. Courses in the history of economic thought have all but disappeared from undergraduate and graduate teaching programmes, which impoverishes our discipline.[2] The potted textbook versions of the great masters can never be a substitute for reading the original texts since many of the insights are lost, or simplified to such a degree that their significance is diminished.

In 1963, I returned from the United States to start PhD work at Cambridge University, having been awarded a State Scholarship on graduation from Leeds a year earlier. I had developed an interest in the built-in flexibility of taxes and government transfers (i.e. the sensitivity of tax revenue and government welfare payments to changes in income), and their contribution to macroeconomic stability, and chose to be supervised by Alan Prest at Christ's College, who was an expert in this field (see Prest, 1962). It soon became apparent, however, that if the work was to be done properly, a full-scale econometric model of the UK economy would have to be built which was beyond my competence and interest. I therefore switched my research to another topic that interested me, namely the nature and causes of regional economic disparities in the UK, with particular reference to unemployment, and the impact of regional employment policies.[3]

generation.

[2] For a spirited defence of the teaching of the history of economic thought, see Roncaglia (2017).

[3] My work on the built-in flexibility of government transfers was not entirely wasted as it enabled me to publish a paper a few years later (Thirlwall, 1969a) on the built-in flexibility of unemployment compensation payments – one of the first studies of its kind.

Then, out of the blue in 1964 came an invitation from Arthur Brown at my *alma mater* to join the academic staff there as an Assistant Lecturer in Economics. I had plenty of time to complete my PhD, fortunately under the supervision of Brown himself, who shortly after my arrival was commissioned by the National Institute of Economic and Social Research, under the direction of David Worswick, to undertake a large research project on regional policy in the UK, which was subsequently published as *The Framework of Regional Economics in the United Kingdom* (Brown, 1972). A part of my own research in this area was later published as a book written with my former PhD student, Robert Dixon, entitled *Regional Growth and Unemployment in the United Kingdom* (Dixon and Thirlwall, 1975a).

In the summer of 1966, I left the University of Leeds to take up a Lectureship in Economics at the newly established University of Kent at Canterbury, and the beautiful and historic city of Canterbury has been my academic base ever since. The view of Canterbury Cathedral from my study at home is one of the great joys of my life. Naturally, at a new university there were many things to do (not all academic) and there was a wide range of teaching to cover. I volunteered a course in development economics that I had been exposed to at Clark University as a Master's student, and this has been one of my main areas of teaching and research ever since. But my first research, stemming from my PhD, was in the field of regional and labour economics.

In this contribution to the new "Recollections" series, I shall talk about my early work on regional unemployment, inflation and growth; my defence of Keynesian economics against its critics; the origins of my balance of payments constrained growth model, and lastly about my involvement in the teaching and research in development economics.

2. Regional and labour economics

A large part of my PhD was concerned with explaining persistent differences in unemployment rates between regions in the UK. It had been apparent, at least since the Second World War, that unemployment in regions of high unemployment tends to be more cyclically sensitive than in low unemployment regions. I documented this cyclical sensitivity for the first time (Thirlwall, 1966), and discovered that the major cause was not industrial structure but rather differences in the behaviour of the same industries between regions mainly because depressed regions tend to contain more branch plants which are the first to close in recessions. The greater cyclical sensitivity of high unemployment regions (from a common floor of non-demand deficient unemployment) would be an independent explanation of the continued existence of regional unemployment rate differences despite decades of regional policies designed to reduce them.

Later I attempted to use vacancy statistics to distinguish between frictional, structural and demand-deficient unemployment across regions, along the lines originally suggested by William Beveridge (1944) in his book *Full Employment in a Free Society* (Thirlwall, 1969c; 1974a). The decade of the 1960s was dominated by analysis of the Phillips Curve, following Phillips' pioneering article in 1958, where the position of the Phillips Curve in inflation/unemployment space, is partly dependent on the magnitude of frictional and structural unemployment. Unemployment in excess of vacancies represents demand-deficient unemployment, and the level of unemployment equal to vacancies must consist either of those who have the characteristics of labour demanded, and are therefore frictionally unemployed in transition between jobs, or those who don't possess the characteristics and are therefore

structurally unemployed. I was able to show that over the period 1949 to 1965, the difference in the degree of non-demand deficient unemployment between regions was far less than the degree of demand-deficient unemployment – supporting a Keynesian explanation of regional unemployment rate disparities relating to a lack of effective demand. This was not the conventional wisdom. If there are asymmetries in the way that markets adjust to changes in demand, with money wages and prices more flexible upwards than downwards, the distribution of unemployment between markets (geographic, occupational, industrial) will affect the position of the aggregate Phillips curve. Specifically, for a given level of aggregate unemployment, the overall rate of change of wages and prices will be higher the greater the dispersion of unemployment between markets around the mean (Lipsey, 1960). I made the first attempt to formally test this hypothesis by including a weighted and unweighted dispersion of industry and regional unemployment rates into a Phillips curve equation (Thirlwall, 1969b; see also Archibald, 1969). The results showed that the average degree of disequilibrium between markets displaced the macro-Phillips curve to the extent of an extra 1.5 percentage points of unemployment required for wage rate stability.

The potential effect of bottlenecks in the labour market on inflation became a major justification for the pursuit and design of active manpower policies during the Labour government of 1964-1970. In 1968, I became actively involved in this work when I joined, on a part-time basis, the newly established Research and Planning Division in the Department of Employment and Productivity (as it was then called), with the charismatic Barbara Castle as the Minister in charge. My task was to advise on how to improve the functioning of the labour market, with special responsibility for reorganisation of the Employment Exchange Service with its dour image of dreary buildings and dole queues. I wrote many background papers estimating the monetary benefits of speeding up the transition of labour from one job to another. The major policy initiative was the creation of a network of Job Centres across the country linked by computer in the attempt to match the characteristics of the unemployed with the skills in demand, in order to speed up the deployment of labour. Within the Research and Planning Division, I was also able to continue research on inflation, and it was here that I started work on the estimation of regional Phillips curves to test the hypothesis that the slopes of the curves were steeper in low unemployment regions than in high unemployment regions which, if so, would be a powerful additional argument for regional policy to reduce the aggregate rate of inflation at a given rate of unemployment. This turned out to be the case. The rank correlation between the level of regional demand pressure and the steepness of regional Phillips curves turned out to be very high.

Research on the Phillips curve took another sharp turn in 1968 when Milton Friedman brought to the fore the concept of the natural rate of unemployment, and vehemently denied that there is a long run trade-off between unemployment and inflation. The natural rate doctrine became enormously influential, and was a godsend to political parties of right wing persuasion anxious for economic arguments to justify reducing the discretionary role of the State in economic affairs. Note, however, that the concept of the natural rate of unemployment is premised on two key assumptions. The first is that there is no involuntary unemployment in the sense that there are no workers willing to work at a lower real wage (but at the same money wage) given the opportunity. Thus Keynes's powerful argument for public spending in conditions of high demand-deficient unemployment is denied from the start. The second assumption is that there are diminishing returns to labour, so that a reduction in real wages is necessary for an increase in employment, or a decrease in unemployment, that workers will

resist. But if there are not diminishing returns to labour, and real wages and employment are positively related, as they seem to be empirically, there is nothing for workers to resist, and the concept of a natural rate of unemployment makes no sense. A third point to make is that there is clearly a difference between Friedman's original meaning of the natural rate, as the frictional/structural minimum unemployment rate, and the natural rate as estimated from wage-price equations (or expectations augmented Phillips curves) which goes by the acronym NAIRU (the non-accelerating inflation rate of unemployment). In a paper entitled "What is the Natural Rate of Unemployment Measuring?" (Thirlwall, 1983a), I showed that the estimated parameters of so-called expectations augmented Phillips curves are all functions of the pressure of demand, so that the estimate of the natural rate of unemployment is bound to mirror the actual rate of unemployment, and so it has turned out to be in both the US and the UK. In the 1980s, estimates of the natural rate (over 10 percent in the UK) were being used in policy discussion to undermine the role of (Keynesian) demand management. The foremost exponent of the natural rate hypothesis in the UK was Patrick Minford, an adviser to Mrs Thatcher, who argued that virtually all of the over three million unemployed in the 1980s were of the 'natural' variety, but then claimed in the mid-1990s that because of the successful supply-side reforms of the Thatcher government, the natural rate had fallen to one million. I refused to believe at the time that institutions and attitudes change so quickly as to produce such a dramatic turnaround. The fact is that most of the increase in unemployment in the 1980s was the direct result of highly restrictive monetary and fiscal policy, combined with an over-valued exchange rate leading to rapid increases in import penetration, and then unemployment fell as monetary and fiscal policy was relaxed. Then, when monetary policy was again severely tightened during the UK's brief flirtation in 1992 with the European Exchange Rate Mechanism, recession was once again the consequence, with unemployment rising to over three million (roughly 10 percent of the labour force). This had nothing to do with movements in the natural rate of unemployment, and everything to do with Keynesian fluctuations in demand. Students beware: There is nothing natural about the natural rate of unemployment.

3. Keynesian economics

I have never lost faith in the soundness and relevance of Keynes's (and Keynesian) economics for the understanding of a wide range of macroeconomic issues. Indeed, during the dark days of the monetarist counter-revolution, led by Milton Friedman, which started in the 1960s and gathered pace in the 1970s, I became even more Keynesian. Like James Tobin, I was proud to call myself "Keynesian", as the economics profession and political commentary across the world lurched further and further in a monetarist direction. There are few areas of mainstream macroeconomics that cannot be satisfactorily analysed with the concepts and insights that Keynes bequeathed.

I first bought my copy of *The General Theory of Employment, Interest and Money* as a first year undergraduate in 1959. The paperback price was 8 shillings and six pence in old money, or 43 new pence. Today, the paperback price is over £ 25. When I take the latest edition into my macroeconomic seminars, and mention to students the increase in price over the last sixty years, the first question I ask them is why do you think the price has risen so much? Is it the profligacy of the Bank of England allowing the money supply to rise too fast? Is it the monopoly power of the publisher? Or is it rising wage and raw material costs that have obliged the

publisher to raise the price in order to make a profit and stay in business? I leave the answer to later in the course, but at least I get the students to think early on about the causes of inflation before turning to Keynes's chapter 21 on inflation in *The General Theory* , and his blistering critique of the quantity theory of money.

Today very few economists read Keynes's *magnum opus* in the original, and this must have been true in the past too. If Milton Friedman and his disciples had properly understood *The General Theory,* how could they have claimed that "money doesn't matter in Keynes"? It is liquidity preference that is the source of involuntary unemployment. If Robert Lucas and his followers knew their Keynes, how could they have possibly maintained that Keynes's macro-model cannot explain stagflation? It is true that textbook versions of Keynes cannot explain stagflation, but that is because very early on Keynes's economics was locked into the straightjacket of Samuelson's 45-degree line diagram which does not model the supply-side of the economy, unlike Keynes's own analysis in chapter 3 which incorporates an aggregate supply curve (or necessary receipts schedule) which can shift with changing wage costs. An upward shift in the supply curve combined with a downward shift in the demand curve (or expected receipts schedule) will produce stagflation.

When Milton Friedman launched his assault on Keynesian economics with his book with Anna Schwartz (Friedman and Schwartz, 1963) on a monetary history of the United States, and published his classic paper on the natural rate of unemployment (Friedman, 1968), many of us tried to keep Keynesian modes of thinking alive. At my own University of Kent between 1972 and 1993 we held eleven (biennial) Keynes Seminars on a variety of themes such as: *Keynes and International Monetary Relations* (Thirlwall, 1976b); *Keynes and Laissez Faire* (Thirlwall, 1978c); *Keynes as a Policy Adviser* (Thirlwall, 1982); *Keynes and Economic Development* (Thirlwall, 1987c); *Keynes and Money* (Hill, 1989); *Keynes as Philosopher-Economist* (O'Donnell, 1991), and *Keynes and the Role of the State* (Crabtree and Thirlwall, 1993). The seminars attracted scholars from all over the world, as well as a large student audience who in the 1970s, at least, were able to meet some of Keynes's great contemporaries in the flesh including Roy Harrod; Richard Kahn; Joan Robinson, and Nicholas Kaldor. Two of Keynes's biographers were also invariably present – Robert Skidelsky and Donald Moggridge. In the United States, Sidney Weintraub and Paul Davidson launched the *Journal of Post Keynesian Economics* which has become a major vehicle for the research and writing of economists dismayed and disenchanted with the sterility and irrelevance of much of what passes for mainstream macroeconomic theory, based on the assumptions of continuous market clearing and the rational expectations of economic agents. In more recent times, in 2012, Thomas Palley, Louis-Phillipe Rochon and Matias Vernengo established the *Review of Keynesian Economics,* which is also an outlet for those who want to keep Keynesian modes of thinking alive. In the UK, it was the great Cambridge Keynesian, Nicholas Kaldor (once described by *The Economist* newspaper as the best known economist in the world not to have received the Nobel Prize for Economics[4]) who led world-wide the assault on the doctrine of monetarism with his book *The Scourge of Monetarism* (Kaldor, 1982).[5] He lost the battle, but won the war, because Monetarism Mark 1 (Friedman monetarism) is now dead, and so too is Monetarism Mark 2 (the new classical macroeconomics of Robert Lucas).

[4] 20 January 1979.
[5] See King (2016) and Thirlwall (1987b) for a full exposition.

One of Keynes's greatest insights in *The General Theory* was the use of the concept of the multiplier derived, in turn, from the novel behavioural relation of the consumption function. Keynes didn't invent the multiplier – this was done in the early 1930s by Kahn (1931) and Warming (1932) – but he turned Kahn's employment multiplier into an income or output multiplier and showed for the first time how it was changes in income that equilibrated savings and investment in an economy, not the rate of interest. By this means, Keynes was able to demonstrate theoretically that economies may settle in equilibrium at less than full employment, and also to show that if government increased expenditure at less than full employment there could be the crowding-in of resources rather than crowding-out, as assumed by orthodox classical theory.

I always had an interest in multiplier analysis from my earliest days as a PhD student in Cambridge grappling with the impact of built-in stabilisers. I addressed the issue of the value of the multiplier in two papers (Thirlwall, 1972b; 1974b).The value depends primarily, of course, on the marginal propensity to consume or save, but fluctuations in income are not nearly as pronounced as might be expected from the value of the propensity to consume alone. This is because various automatic stabilisers exist in an economy which act to dampen rises in income and cushion falls (apart from leakages into imports in an open economy). There are four main potential automatic stabilisers: the built-in flexibility of taxes and transfers which cushion consumption as income changes; the real balance effect which cushions consumption as prices change; pro-cyclical variations in the rate of interest which stabilises investment, and finally, the pro-cyclicality of income distribution from wages to profits which stabilises consumption assuming the propensity to consume out of profits is less than out of wages. In Thirlwall (1974b) I estimated that the built-in flexibility of taxes and transfer payments dampen income changes by just over 50 percent, while the real balance effect also cushions income changes by about 30 percent. The contribution of interest rate changes and income redistribution to built-in stability is negligible.

The real balance effect was central to the response of the classical economists to Keynes's contention that economies may suffer under-employment equilibrium for long periods of time. Keynes's major classical antagonist in Cambridge was Arthur Pigou who argued that Keynes's central theory must depend on the assumption that money wages and prices are rigid, because if prices fall in a recession this would increase the real value of people's money balance holdings leading to more spending, pushing the economy back to full employment. This mechanism came to be called in the literature the "Pigou effect", or the price-induced part of the wealth effect, and in a Hicksian IS-LM framework it will shift the IS curve upwards by increasing consumption and decreasing saving. Price falls will also increase the real value of the money supply, which will shift outwards the LM curve, lowering the rate of interest and increase consumption and investment if either are interest-elastic. Keynes himself recognised this possibility – now known as the "Keynes effect" – but he did not set much store by it. When I was a Visiting Economist at Princeton University in the academic year 1971-1972, I started work on estimating the magnitude of the effect of price changes on income and the rate of interest in an IS-LM curve framework (Thirlwall, 1972b). The Pigou and Keynes effects operate in the same direction on income, but in opposite directions on the rate of interest, so it becomes an interesting empirical question in itself of whether the rate of interest rises or falls, and therefore whether the interest-induced part of the wealth effect on income is positive or

negative.[6] I set up a standard IS-LM model and simulated it for a one percent change in the price level using realistic parameter values for the model obtained from different sources. The overall conclusion was that the Pigou effect is very weak; that the Keynes effect is stronger producing a long-run money multiplier close to unity, and that, as far as the rate of interest is concerned, the Keynes effect outweighs the Pigou effect leading to a slight fall in the rate of interest, so that the interest-induced part of the wealth effect on income is also positive. To rely on price falls to eliminate deep recessions, however, is a fragile reed to cling to. Patinkin (1956) reminded us a long time ago of the depressing effect that falling prices can have on investment by increasing the real value of business liabilities and reducing the real value of assets. Pigou (1947, p. 188) himself recognised at the end of his life that his point about price flexibility was a theoretical exercise never likely to be played out on the "chequer board of actual life".

The multiplier in an open economy with foreign trade also needs particular scrutiny. My colleague at the University of Kent, Charles Kennedy, – one of the foremost economic theorists of his generation (Thirlwall, 1999) – developed a bee in his bonnet many years ago about the specification of the foreign trade multiplier. In a paper written while teaching at the University of the West Indies (where Arthur Lewis was Vice-Chancellor) (Kennedy, 1966), he argued that it is a fundamental misspecification to relate imports to income, as is done using the marginal propensity to import, because this implicitly assumes that either all imports are consumption goods or that all components of demand have the same import coefficient, so that the marginal propensity to import is independent of the initial expenditure change. The correct specification is to relate imports to expenditure because all components of demand will have an import content, but the import coefficients are likely to differ so that the propensity to import will *not* be independent of the initial expenditure change. Kennedy and I (Kennedy and Thirlwall, 1979) show that it is just as easy to present the more realistic multiplier relating imports to expenditure, which then allows the multiplier to differ depending on which component of autonomous demand changes and on the magnitude of the import coefficient. This more realistic formulation of the foreign trade multiplier ought to find its way into textbooks, especially for teaching in developing countries where the import coefficient of investment may be three to four times higher than the import coefficient for other components of demand, owing to the absence of a capital goods sector, so that the investment multiplier is consequently very low and much lower than for changes in other components of demand.

During the 1980s, when the monetarist counter-revolution against Keynesian economics was at its zenith, and unemployment in the UK exceeded three millions, I tried to defend Keynesian employment theory (Thirlwall, 1981). I argued that Keynesian employment theory had not suddenly become redundant, and I took issue with those who maintained that the rise in unemployment was of the non-demand deficient variety caused by more rapid technical progress, and a greater degree of voluntary unemployment associated with high unemployment compensation payments and an unwillingness of labour to accept cuts in real wages. The experience of the late 1980s proved unreconstructed Keynesians, such as myself, right because when there was monetary and fiscal expansion in the wake of the 1987 stock market crash, and prior to a General Election, unemployment fell from well over three millions to well under two millions with very little extra inflationary pressure. The thousands who had been queuing at factory gates when jobs were advertised were not voluntarily unemployed holding out for a higher real wage than their marginal product justified. They wanted to work

[6] A rise in interest rates reduces the money value of wealth and vice versa.

at the existing money wage, but couldn't find it, which is Keynes's basic definition of involuntary unemployment.

In the late 1980s and into the 1990s there was a renaissance of Keynesian economics (see Blinder, 1988), and I penned an article with the same message (Thirlwall, 1993), originally given as a talk at Dalhousie University in Canada in 1992 at the invitation of John Cornwall. I picked out six central messages of Keynes's vision of the functioning of capitalist economies that I believe are still valid and highly relevant for our understanding of macroeconomic behaviour today. John King (2015) takes these six central propositions as the starting point for his book on an advanced introduction to Post Keynesian economics.

The first proposition is that the aggregate level of employment and unemployment are determined in the goods market by effective demand, not in the labour market. Cuts in money wages in the attempt to reduce real wages will not necessarily increase employment and reduce unemployment, because wages are both a cost and a component of aggregate demand, so there is no way of knowing the effect of wage cuts on aggregate employment except by analysing their effect on the components of aggregate demand, namely consumption, investment and the foreign balance.

The second proposition is that unemployment cannot simply be viewed as all voluntary due to a refusal of workers to accept cuts in real wages, as in classical theory. There can be involuntary unemployment defined as labour willing to work at the current money wage, and at a lower real wage if necessary, given the opportunity. Workers can be off their supply curve unable to equate the real wage with the marginal disutility of work because they can only determine their money wage, not their real wage, which depends on the price level.

The third proposition is that the act of saving does not necessarily lead to an equivalent amount of investment via changes in the rate of interest. The interest rate is determined in the money market by the supply and demand for money, not in the goods market, and it may bear no relation to the rate required to equate savings and investment which is necessary for equilibrium in the goods market. It is changes in income that equilibrates saving and investment via the multiplier process.

A fourth central message is that money has peculiar properties which makes a monetary economy fundamentally different from either a barter economy, or models of an economy in which money is treated simply as another good. Money is not like other goods because it is costless to produce (a zero elasticity of production, as Keynes described it), so as people switch from goods to holding money, less factors of production are employed. Then, if prices fall, people don't switch easily from holding money to buying goods because they may wish to remain liquid (a zero elasticity of substitution, as Keynes described it). The existence of money, and the ability to hold it liquid, also creates uncertainty for an economy because there is no knowing when saving will become spending. As Keynes (1936, p.210) put it:

> A decision not to have dinner today [...] does not necessitate a decision to have dinner or buy a pair of boots a week or a year hence or to consume any specified thing at any specified date [...] it is a net diminution of demand.

A fifth proposition is that the quantity theory of money, which lies at the heart of the doctrine of monetarism, holds only under the very special assumptions that an economy is at full employment and that the velocity of circulation of money is constant (or stable); otherwise there will be no direct (or predictable) link between the quantity of money and the price level.

This is apart from the fact that for money to be *causal* in the inflation process, it must be exogenous to the economic system, which is highly debatable in a credit money economy.

Finally, what drives a capitalist economy is the decision to invest. It is the sentiment and whims (or "animal spirits" as Keynes called them) of entrepreneurs that determine both cyclical fluctuations of economies and their long-run economic performance.

All this applies to a closed economy. But trade and the balance of payments also matter for economic performance.

4. The balance of payments and growth

Ever since the Second World War, the UK economy has been plagued by balance of payments crises. Early in my career, I took a strong interest in balance of payments issues (Thirlwall, 1970b; 1974c; 1978a; 1978b) before developing a formal model of balance of payments constrained growth (Thirlwall, 1979), which has now been applied and tested across several countries (see Thirlwall, 2011 for a survey of work).[7] In all the previous papers, I questioned the role of relative price changes, through currency depreciation or devaluation, as an efficient balance of payments adjustment mechanism for launching a country on a higher *growth* path consistent with balance of payments equilibrium. Persistent balance of payments difficulties of countries normally lie in the structure of production and trade which determine the income elasticities of demand for exports and imports. In the absence of capital inflows, it is income that adjusts to preserve balance of payments equilibrium, not relative price changes.[8]

In 1991, I presented a paper to Section F of the British Association for the Advancement of Science (Thirlwall, 1992) with the title "The Balance of Payments as the Wealth of Nations". In it, I point out that both orthodox mainstream growth and trade theory ignore the balance of payments. The classical and neoclassical approach to the analysis of the growth performance of countries is to focus on resource availability and the supply of factor inputs, including technical progress, all exogenously given. Balance of payments difficulties, or the notion of foreign exchange as a scarce resource, are not considered because either the models are closed economy models, or the balance of payments is assumed to look after itself. Likewise, orthodox trade theory ignores the balance of payments. Great importance is attached to the role of trade in promoting growth, and rightly so, but the whole emphasis of trade theory is on the augmentation of real resources. There is no recognition that the pattern of trade dictated by comparative advantage may have different balance of payments consequences for countries, so that trade may not be mutually profitable to all parties if balance of payments deficits can only be rectified by domestic deflation and unemployment. This was the basic point made by Prebisch (1950) who criticised real trade theory for ignoring the monetary consequences of trade, and argued that the real resource gains from trade may be offset by the real resource losses from unemployment. In practice, it is not possible to understand growth rate differences between countries, even over long periods of time, without reference to the strength of demand, and the major constraint on demand in an open economy is likely to be a country's balance of payments position.

[7] The prediction of the model is that if relative prices or the real exchange rate remain unchanged, long-run growth can be approximated by the growth of real exports divided by the income elasticity of demand for imports.
[8] In 1980, I published a book, *Balance of Payments Theory and the United Kingdom Experience* (Thirlwall, 1980a).

There are several historical antecedents of this unorthodox view, including the doctrine of Mercantilism (Mun, 1664); Keynes's defence of Mercantilism (see Moggridge, 1973); the Harrod trade multiplier theory (see below) (Harrod, 1933), and Chenery's dual gap model in the context of developing countries (e.g. Chenery and Bruno, 1962). All these dissident voices against the mainstream make the point that relative price changes in international trade cannot be assumed to rectify current account balance of payments disequilibria, and that if ever-increasing deficits cannot be financed indefinitely, income must do the adjusting, either directly or indirectly through higher interest rates. A link is therefore immediately established between the balance of payments and economic performance – a link missing in classical growth and trade theory by belief in the price specie-flow adjustment mechanism of David Hume (1752), and in neoclassical theory by blind faith in the equilibrating properties of flexible exchange rates. Despite the switch in the world economy in 1972 from fixed to flexible exchange rates, however, massive payments imbalances across the world have persisted.

In 1979 I presented a more formal model of balance of payments constrained growth, and derived a simple formula for a country's balance of payments constrained growth rate of $g = x/\pi$, where g is the growth of GDP, x is the growth of real exports, and π is the income elasticity of demand for imports. The two assumptions to derive the formula are that the current account in the long run must balance and the real exchange rate stays constant. This formula turns out to be the dynamic analogue of Harrod's static foreign trade multiplier first derived in 1933, of $Y = X/m$, where Y is the level of GDP, X is the level of exports, and m is the marginal propensity to import – derived on the same assumptions as the dynamic multiplier (Harrod, 1933). Paul Krugman (1989) also stumbled on my result and called it the 45-degree rule because what the model predicts is that if real exchange rates are sticky, a country's growth rate relative to all others will be equi-proportional to its ratio of the income elasticities of demand for exports and imports. He reverses, however, the direction of causation. In my model it is relative income elasticities, determined by the structure of exports and imports, that determines relative growth rates, while in Krugman it is relative growth rates (unexplained) that determine relative income elasticities (see Thirlwall, 1991a, for a detailed response to Krugman). Differences in the income elasticity of demand for exports and imports are at the heart of the classic centre-periphery models of growth and development of Prebisch (1950; 1959) and Seers (1962) (see Thirlwall, 1983b). In my 1979 paper, I showed how closely my 'rule' mirrored the actual growth experience of several developed countries over the period of the 1950s and 1960s; and several other researchers have shown how well the simple model predicts the long-run growth performance of many other countries over different time periods.[9] Setterfield (2011) has generously referred to the "remarkable durability of Thirlwall's law".

I originally developed the model of balance of payments constrained growth as a result of working with my research student, Robert Dixon, on regional growth models, inspired by Kaldor's (1970) regional export-led growth model incorporating Myrdal's notion of "circular and cumulative causation" (Myrdal, 1957). Output growth is a function of export growth; export growth is a function of changing price competitiveness and income growth outside the region; changing price competitiveness is a function of the difference between wage growth and productivity growth, and productivity growth is a function of output growth (Verdoorn's

[9] For a survey of the literature and case studies, see McCombie and Thirlwall (1994; 1997a; 2004), Thirlwall (2011), Soukiakis and Cerqueira (2012).

Law). Kaldor's model was purely verbal, but Dixon and I (Dixon and Thirlwall, 1975b) formalised it and derived the stability conditions. Kaldor liked the model, and subsequently we became friends; later, I wrote an intellectual biography of him (Thirlwall, 1987b). He made me his literary executor (not his executioner as I was once introduced at a conference in his honour!). It was difficult to apply Kaldor's model to regions in the UK because of lack of data, but when it was applied to the UK as a 'region', it considerably over-predicted the growth rate of the economy. The tentative explanation we gave was that the UK had suffered perpetual balance of payments difficulties over the post-war period and the model makes no allowance for the fact that its parameters may generate an unsustainable growth of imports in relation to exports. It was only then that I realised that the best way to proceed was to model growth from the start within the framework of the balance of payments equilibrium condition, which I subsequently did.

In 1982, with another research student, Mohammed Nureldin Hussain from the Sudan, we extended this basic dynamic Harrod trade multiplier model to include capital flows, allowing countries to run deficits, and we applied the model to several developing countries (Nureldin Hussain and Thirlwall, 1982). In this model, however, there is no limit imposed on the size of deficits, capital flows or the debt to GDP ratio. Later, McCombie and I (McCombie and Thirlwall, 1997b) and Moreno-Brid (1998) showed theoretically that even with a deficit to GDP ratio of 10 percent, the extended model's prediction differs from the simple model by less than one percentage point. The role of capital flows is minor compared with the growth of exports in driving overall growth.

In 1979, I was invited by the Economic Council of Canada in Ottawa to debate with the neoclassical growth theorist, George Borts, of Borts and Stein (1964) fame, the causes of slow growth and unemployment in depressed regions. I prepared a paper "Regional Problems are Balance of Payments Problems" (Thirlwall ,1980b), the main thesis of which was that regional problems of slow growth and unemployment are, at root, balance of payments problems even though regions within a country using a common currency don't have payments difficulties in the conventional sense of an exchange rate to defend. But regions import goods which are a leakage from the circular flow of income and the only way to compensate for these imports is to export to other regions, otherwise output will fall and unemployment will rise in the absence of sufficient capital transfers. In a regional context, it is frankly ludicrous to think of growth being supply-constrained (except for regions totally dependent on land-based activities) because labour and capital are freely mobile between regions. What drives a region's growth and prosperity is its propensity to export relative to import. Thus, the dynamic Harrod trade multiplier model is as applicable to regions as it is to countries, and the model provides the basis of a general theory of regional growth and development, and of interregional growth rate differences.

The slow growth, high unemployment and indebtedness of the peripheral countries of the Eurozone today are essentially balance of payments problems financed by capital flows from surplus countries, particularly Germany and the Benelux countries. Greece has been the major victim, and to a lesser extent, Italy, Spain and Portugal. The Eurozone is a classic example of a centre-periphery model, where the centre gains at the expense of the periphery.[10] In the late 1990s/early 2000s, I was part of the "No" campaign against the UK adopting the euro as its

[10] Not only is there no possibility of currency adjustment in the Eurozone to give the periphery a temporary respite, but also there is a common monetary policy and rigid fiscal rules. For a discussion of these issues, see Alessandrini and Fratianni (2015) and Terzi (2016).

currency because one could easily see the consequences ahead, and I wrote a pamphlet for the New Europe Research Trust entitled *The Euro and 'Regional' Divergence in Europe* (Thirlwall, 2000, p. 28). Regrettably, all my dire predictions have materialised. I wrote in the conclusion:

> It would be churlish to wish the euro ill, but I fear it is going to do great damage to the economies of Europe, and to the noble objective of greater European harmony and cooperation. Economic and social disparities between countries and regions of Europe are still vast, and there is nothing in the euro itself which is going to eliminate these disparities. If anything […] they are likely to widen, making the task of political integration […] that much more difficult.

My view of the growth and development process in an open economy, both regions and countries, as an alternative to the supply-oriented vision of orthodox neoclassical theory which neglects demand, is set out in my book *The Nature of Economic Growth: An Alternative Framework for Understanding the Performance of Nations* (Thirlwall, 2002), based on a series of lectures I gave at the National Autonomous University of Mexico (UNAM) in 2000, which I then expanded into *Economic Growth in an Open Developing Economy: The Role of Structure and Demand* (Thirlwall, 2013a), based on lectures I gave in 2008 and 2011 at the National Polytechnic Institute in Mexico City. It is the balance of payments equilibrium growth rate which determines the actual long-run growth rate of countries, and then the actual rate of growth impacts on the rate of growth of productive potential – what Harrod (1939) originally called the natural rate of growth, given by the rate of growth of the labour force and the rate of growth of labour productivity. These variables are exogenously given in Harrod, and in virtually all subsequent growth theory, but there is substantial evidence that both labour force growth and labour productivity growth through technical progress are endogenous to demand or to the actual growth rate. Labour supply is very elastic to demand through an increase in hours worked; by an increase in participation rates; through the absorption of unemployed and underemployed labour, and by migration. Labour productivity growth may be endogenous to demand through static and dynamic increasing returns to scale and learning by doing. These mechanisms are captured by Verdoorn's Law (1949) showing a strong relation across countries and regions between the growth of labour productivity in manufacturing as the dependent variable and the growth of manufacturing output as the independent variable. There have been several studies testing the endogeneity of the natural rate of growth, including Leon-Ledesma and Thirlwall (2002) for European countries; Vogel (2009) and Libanio (2009) for Latin American countries; Dray and Thirlwall (2011) for some Asian countries, and Lanzafame (2014) for OECD countries, and all of them find a substantial sensitivity of the natural rate of growth to the actual rate of growth. There is nothing 'natural' about the natural rate of growth, just as there is nothing 'natural' about the natural rate of unemployment. It all depends on the strength of demand. The most convincing evidence to date for my conjecture that the balance of payments is the ultimate constraint on long-run growth, which then determines the actual and natural growth rates, comes from Lanzafame's (2014) study of 22 OECD countries over the period 1960-2010 which confirms that the actual growth rate approximates to the balance of payments equilibrium growth rate, and that the direction of causation runs from the balance of payments equilibrium growth rate to the actual and natural rate.

5. Development economics

Many things happen in life through chance or accident, and so it was with my interest in development economics which I was first introduced to as a Master's student at Clark University in Worcester, Massachusetts in 1962-63. There were not so many development texts around then, as there are now. Kindleberger (1958), Higgins (1959), and Arthur Lewis's (1955) classic book, *The Theory of Economic Growth*, were the set texts, with Myrdal's (1957) *Economic Theory and Underdeveloped Regions*, Hirschman's (1958) *Strategy of Economic Development*, and Rostow's (1960) *Stages of Economic Growth* as supplementary reading. As I read and studied, I used to recall what Keynes said when he was once asked what first attracted him to economics. It was, he said, its intellectual rigour combined with its potentiality for good. Teaching and research in development economics is a rewarding way of treating economics as a moral science – as a branch of ethics – in the Cambridge tradition of Alfred Marshall, Henry Sidgwick, Arthur Pigou and Keynes himself, because it focuses directly on the lives and welfare of poor people in poor countries.

At the University of Kent from 1966, I have been involved for more than fifty years in the teaching of development economics to undergraduate and post-graduate students. My textbook, *Growth and Development: with Special Reference to Developing Economies* (Thirlwall, 1972a), first published in 1972, was based on my undergraduate lectures, and went through eight editions, before the title was changed in 2011 to *Economics of Development: Theory and Evidence.* In 2017, a tenth edition was published in collaboration with my wife, Penélope Pacheco-López, herself a development economist with much practical experience working with the United Nations agencies of UNIDO in Vienna and UNCTAD in Geneva.

6. Working in a developing country

My first experience of working in a developing country was in 1974 when I went to the University of Papua New Guinea in Port Moresby to finish a book with my former research student, Robert Dixon, who was teaching there, and to teach a fourth year course on growth and development theory. The numbers were small, but the students were highly motivated and particularly concerned with the relevance of conventional growth theory to an understanding of the growth and development process in quite primitive, agrarian economies such as Papua New Guinea. This is a perennial question asked by students of development economics and my answer is always the same – that some 'conventional theory' is relevant, but some is not, and that what is important is to be eclectic and to try and draw on all paradigms and schools of thought in order to elucidate a particular issue, whatever it may be.

In 1977, I developed an association with the Sudan, first as an external examiner for the University of Khartoum, and then as an adviser for the establishment of the new University of Gezira in Wad Medani. In that period of the late 1970s into the early 1980s, we had at the University of Kent four excellent PhD students from the Sudan, two of whom I supervised and later published with (see El-Shibly and Thirlwall, 1981; Nureldin Hussain and Thirlwall, 1982; 1984). I fell in love with the Sudan and its people, but have not returned since 1979. My days as external examiner came to an end when English was abandoned in favour of Arabic as the teaching language.

I have also enjoyed the experience of acting as examiner or external assessor for other Universities in developing countries, including the University of Malaya, the University of Botswana, and the University of the South Pacific in Suva, Fiji, where in 1988 I was given the task of assessing the whole of the Department of Economics, in particular the range of teaching, the quality of research and staffing needs. These can be difficult assignments, and it is easy to make enemies (as I have discovered to my cost) even though one tries to be constructive in criticism.

The experience of teaching on short courses in developing countries is also rewarding, but equally fraught with dangers. In two consecutive years, I acted as a Visiting Specialist for the SEANZA banking courses in Kathmandu (Nepal) and Dacca (Bangladesh). These courses are run by a consortium of the central banks of South East Asia, New Zealand and Australia for some of their bright young officials, particularly from developing countries in Asia and the Pacific Rim. The teaching is generally orthodox, and why I was invited I am not quite sure, but I regularly got myself into trouble with some of the senior officials for daring to be unorthodox and preaching heresy to young impressionable minds, questioning, for example, the mutual profitability of free trade and for criticising some of the policies of the International Monetary Fund (IMF). Many of the students warmed to a different point of view, but I was not invited again. Hans Singer told me he suffered the same fate.

I have never succumbed to the temptation of lucrative consultancy work. I have resisted for three main reasons. First, I do not have a particularly high taste for income; secondly, I wanted to be free to write and research on topics of my own choosing; and thirdly, I have wanted to be free intellectually and not in hock to any institution with a particular orthodoxy or philosophy that one is expected to endorse. In the past, however, two assignments attracted me. The first was for the Pacific Islands Development Programme (PIDP) based at the East-West Centre in Hawaii (directed by one of my former PhD students from Tonga – Steven Halapua – the first Tongan ever to be awarded a PhD in economics). The PIDP acts like a 'think tank' and secretariat for the Pacific Island Leaders Conference, which meets every few years to discuss a particular theme of relevance to the Pacific Islands. I acted as a consultant prior to the 1989 conference, and was given the specific task of preparing a report on the functioning of the Pacific Island economies in the context of the world economy, which was subsequently published as a small book (Thirlwall, 1991b). I was interested in three major issues: first, the absolute performance of the Pacific Island economies in the 1970s and 1980s and their performance relative to other developing economies, and particularly with reference to other small island economies; secondly, the trading relations between the island economies themselves, and between themselves and the outside world; and thirdly, how the island economies fared with cyclical movements in the world economy, looking especially at the prices of their primary commodities and export earnings. When I presented my findings, and views on economic development in general, in a keynote address to the Leaders Conference held on the big island of Hawaii in 1989, I again got into trouble with officials representing some of the international organisations for questioning the liberal economic orthodoxy that permeates the IMF and international banks. The Prime Minister of Fiji, Ratu Mara, also reprimanded me for suggesting that, if the Pacific Islands formed a free trade area or customs union, most of the benefits would accrue to Fiji as the dominant member. This has been the experience of other customs unions, where the strongest country reaps most of the gains; but Ratu Mara took my views as an attack on Fiji itself. The tightrope between truth and diplomacy is a difficult one to tread.

While I was working in the region, I also advised the Tongan Development Bank that was under threat from international donors and needed to justify its existence. I had no difficulty in pointing out that it was able to take risks (lending to small farmers) that the private banking system in Tonga was not willing to take, and that it had been highly successful in lending for squash production (a risky commodity) which later accounted for 70 percent of Tonga's export earnings. There is still a role for Development Banks world-wide.

The second consultancy was with the African Development Bank in Abidjan, Cote D'Ivoire, where again I was asked by a former PhD student working in the Research Department of the Bank (Mohammed Nureldin Hussain[11]) to act as Chief Consultant for the second half of the 1994 African Development Report devoted to the topic of financial liberalisation in Africa. Not knowing very much about financial liberalisation, let alone in Africa, this was indeed a challenge, although some years earlier I had written a short book, *Financing Economic Development* (Thirlwall, 1976a), and had just finished a paper with one of my current research students from the Bank of Mexico on the relation between interest rates, financial saving, investment and growth in Mexico (Warman and Thirlwall, 1994). I did a great deal of prior reading; digested the papers sent to me by the Bank, and completed the report on time. There is something exciting in approaching a subject fresh (as a new-born baby, as Keynes might have said) and eventually making some sense of it.

In 1984, I was invited to a conference at the Middle East Technical University in Ankara to reflect on the state of development economics as a discipline, and to forecast its future health, in the wake of Albert Hirschman's (1981) pronouncement of its impending death. I concluded, to paraphrase Mark Twain, that the reports of its death are grossly exaggerated. I argued then (Thirlwall, 1984), and would still argue today, that the understanding of the development process (which is what development economics is all about) is, and will remain so for a long time, the intellectual and social challenge equivalent to the challenge of depression and mass unemployment in the west between the two world wars, which attracted so many brilliant minds, including Keynes, to economics and other social sciences.

The nature of the challenge, however, is not quite the same. There is no divorce between theory and the observed facts, as there was with mass unemployment in the 1930s. The mainsprings of growth and development are well known – increases in the quantity and quality of resources of all kinds. Countries are poor because they lack the resources or the willingness or the ability to bring them into use. Development economics and development economists have an important role to play in the formulation of appropriate economic policy. The charge that development economics is a soft option and attracts only those economists who are not clever enough to cope with the more mainstream branches of economics, is belied by the facts and the names of distinguished economists who historically and contemporaneously have applied their minds to the subject of development economics. Adam Smith, one of the fathers of modern economics, was a development economist, and so too were Thomas Malthus, David Ricardo, John Stuart Mill and Karl Marx. Today, the list of distinguished development economists (past and present) reads like a Who's Who in Economics, including winners of the Nobel Prize in Economics: Theodore Schultz; Arthur Lewis; Simon Kuznets; Gunnar Myrdal; Amartya Sen; Elinor Ostrom; Joseph Stiglitz, and Angus Deaton.

[11] Mohammed was one of Africa's best young applied economists who died prematurely in 2005, aged 51. I give an appreciation of his work in the *African Development Review* (Thirlwall, 2006).

I also believe that development economics has made a distinctive contribution to the science of economics as a whole through the introduction of new concepts and models, designed specifically to cope with issues arising in developing countries, but which turn out to have wider applicability. Such innovative contributions include the concept of the low-level equilibrium trap, the theory of the big push (associated with externalities), models of dualism, the theory of circular and cumulative causation (as a challenge to equilibrium theory), the concept of dependency, growth pole analysis, models of population and growth, refinements to social cost-benefit analysis, models of rural-urban migration, the notion of immiserising growth, models of structural inflation and last, but not least, the concept of dual-gap analysis and the treatment of foreign exchange as a scarce resource because the balance of payments does not look after itself. Many of these new ideas and concepts have become part of the tool kit and vocabulary of international economics, labour economics and mainstream macroeconomics.

I have always approached the study of development very much from a Keynesian-Kaldorian perspective, as is apparent in my paper "Keynes, Economic Development and the Developing Countries", which was given at the seventh Keynes Seminar held at my own University in 1985 (Thirlwall, 1987a). Although Keynes may not have written a treatise on economic development, he addressed himself to several development issues and clearly had a vision of the mainsprings of long-run economic progress at a time when very few, if any, economists were writing about growth and development, and before the sub-discipline of development economics had officially been born. The roles of capital accumulation and planning are critical themes that run through much of his writing. Also the new aggregate economics of the static *General Theory* gave such disciples as Roy Harrod, Joan Robinson, Nicholas Kaldor and others the necessary tools to extend Keynesian theory to the long-run to provide a framework for the analysis of long-run growth in both developed and developing countries. In fact, Keynes in his essay on "Some Economic Consequences of a Declining Population" (Keynes, 1937) invented the concepts of the natural and warranted rates of growth (normally attributed to Roy Harrod) which provide the analytical framework for the discussion of so much economic policy-making in developing countries, particularly policies to raise the savings ratio, to reduce the capital-output ratio by the use of more labour-intensive techniques of production, and to reduce the rate of population growth in the typical conditions of developing countries where the natural rate of growth exceeds the warranted rate.

In his later years, Keynes saw the world clearly as an interdependent system held together through trade where balance of payments problems in some countries, and primary product price fluctuations, may impair the functioning of the whole world economy. He believed it imperative to have institutional mechanisms to take deflationary bias out of the world economic system and to stabilise primary product prices. These matters are as relevant to the developing countries today as they were when Keynes was writing about them in the 1930s and negotiating at Bretton Woods to establish the International Monetary Fund and the World Bank. Unfortunately, as he used to joke, his proposal for a bank became a Fund (the IMF) and what is called a Bank is not a bank at all but a fund!

In 1979 I spent the summer term on sabbatical leave in Cambridge, as a Visiting Fellow of King's College, with the intention of starting work on an intellectual biography of Nicholas Kaldor, himself a Fellow of King's from 1950 to his death in 1986.[12] He had already retired and

[12] My intellectual biography of Kaldor was published in 1987 (Thirlwall, 1987b), having spent the previous seven

stopped formal teaching, but he still gave occasional lectures, which I attended along with other visitors, students and younger members of the Faculty of Economics, including at that time David Vines, anxious to see the great man in action. He lectured in a discursive way on a two-sector model of the world economy in which he attempted to argue that the long-run constraint on industrial growth (or the growth of developed economies) is the rate of growth of land-saving innovations in agriculture as an offset to diminishing returns. The lectures were rich in insights about the importance of distinguishing between increasing returns activities, on the one hand, and diminishing returns activities on the other, and the role of the terms of trade between agriculture and industry in maximising the growth rate of the system as a whole. What was missing from the lectures was any precise formulation of the model. A challenge presented itself which David Vines and I took up. We were later to go our own separate ways, but we worked hard together for a long time and later produced our own versions of the model – mine in *Oxford Economic Papers* (Thirlwall, 1986a) and his in the *Economic Journal* (Molana and Vines, 1989). I saw the relevance of the two-sector model not only as an aid to an understanding of growth and fluctuations in the world economy, but also as a general model of growth and development applicable to individual countries from their earliest stages of development, which start closed, and then open themselves up to trade. I tried to develop a longitudinal model in which the driving force behind industrial growth in the early stages is the growth of the agricultural sector and, in the later stages, when the economy is open to trade, the growth of exports. Agricultural demand and export demand represent the two fundamental sources of autonomous demand for industrial output to offset the leakages of food expenditure on the one hand and imports on the other. A similar model was developed by the Italian economist, Ferdinando Targetti (1985), and both models have generated some interest and criticism (see, for example, Canning, 1988, and Dutt, 1992), but the fundamental proposition, I believe, remains intact that industry, because it experiences increasing returns, must be regarded as the main engine of growth in both the world economy and individual developing countries, but industrial growth may be constrained by a stagnant agricultural sector, by a slow growth of exports, or by a disequilibrium in the terms of trade between the agricultural and industrial sectors.

The idea of manufacturing as the 'engine of growth', based on static and dynamic increasing returns to scale in manufacturing industry, is now referred to in the growth and development literature as Kaldor's growth laws, which have been extensively tested across developed and developing countries, and across regions within countries, and found to be generally valid. A student and I (Wells and Thirlwall, 2003) tested the laws across 45 African countries over the period 1980-1996, and found strong support. Countries with an excess of manufacturing output growth over non-manufacturing output growth of one percentage point grew 0.41 percentage points faster. The policy message is plain. The fastest growing countries in the world today are the countries where the share of manufacturing output in total output is rising.

years on and off reading all of his published work, and spending a year in his house in 1985 sorting out his papers; reading his correspondence, and interviewing him extensively.

7. Research in development economics

My main research interests in development and growth economics have been on: inflation and growth; population growth and economic development; terms of trade movements; international debt; the determinants of domestic saving; financial liberalisation; trade liberalisation, and the determinants of differences in the productivity of investment across countries.

The idea that inflation may be a stimulus to growth has a long and distinguished ancestry, going back at least to David Hume (1752). It is necessary, of course, to distinguish between types of inflation, and also between different rates of inflation. No one would argue that cost inflation is beneficial for growth, but there are many reasons for supposing that a mild demand inflation may promote growth, and that structural inflation may be a natural concomitant of growth particularly in developing countries. Keynes (1930), in his *Treatise on Money, Vol. 2*, claims to have been struck by the extraordinary correspondence in history between periods of inflation and deflation and national rise and decline, respectively. Elsewhere (Keynes, 1931, p. 103), he described inflation as unjust and deflation as inexpedient, but of the two inflation is to be preferred "because it is worse in an impoverished world to provoke unemployment than to disappoint the rentier". The price of financial conservatism may be stagnation. This is what struck me when I first started to prepare my lecture course on economic development in the 1960s, and noticed from the inflation statistics that far from the common perception of developing countries as extremely inflation prone, most of the countries outside of Latin America had very low rates of inflation, and many countries in Africa and Asia were exercising monetary and fiscal prudence to an unwarranted degree.

A demand inflation can stimulate investment by raising prospective yields, reducing real interest rates, and redistributing income from wages to profits. I developed the hypothesis that there is likely to be a positive relation between inflation and growth up to a certain level of inflation, and then for the relation to become negative as high inflation leads to uncertainty and diverts investment into speculative activities. I tested this hypothesis (see Thirlwall and Barton, 1971) across 51 countries over the period 1956-67, cross-classifying countries according to their level of development and rate of inflation. Taking the whole sample of countries, there was no discernible relation between the two variables, but taking sub-samples there appeared to be a definite positive relation between inflation and growth in the high-income countries up to an inflation rate of approximately 8 percent, and a definite negative relation in the very high inflation countries. I followed up this preliminary work with more detailed research on the relation between inflation and saving and inflation and investment across a wider sample of countries, which also showed a quadratic relationship between inflation and the variables considered (Thirlwall, 1974d). I continued to work on this project while I was a Research Associate in the Industrial Relations Section at Princeton University between 1971 and 1972, the acting Director of which was the labour economist, Orley Ashenfelter. My friend, Albert Rees, the Director, who had invited me there, was on leave. I was fortunate to have as my research assistant Halbert White, later to become one of the foremost econometricians of his generation. While still only an undergraduate, his brilliance was already evident. He was the valedictorian of the University in 1972. He was also an accomplished musician and led the Princeton Tigers into the football stadium every week playing the

trumpet.[13] I later expanded the project into a book, *Inflation, Savings and Growth in Developing Economies,* published in 1974 (Thirlwall, 1974e). All the recent research shows that the relation between inflation and growth is quadratic, with growth maximised between 3 to 8 percent inflation.[14] There is no theoretical support or scientific evidence for an inflation target below 2 percent chosen by the European Central Bank, the pursuit of which has done so much harm to the economies of the European Union over the last two decades.

I have also had a long-standing interest in the impact of population growth on economic development. By nature, I have an iconoclastic streak, and I react against fashionable doctrines. One such doctrine is the conventional wisdom that population growth is uniformly depressing on the growth of living standards in developing countries. It is true that population growth adds to the number of mouths to feed, but more people can also have positive growth-inducing effects working through induced investment, scale economies, and the utilisation of unused land and natural resources. The world has grown progressively richer as the population has expanded.

In a lecture given to the Eugenics Society in 1985 (Thirlwall, 1988b), I consider some of the costs and benefits of population growth. I reach a basically agnostic conclusion, as, indeed, Keynes did, when he gave the Galton Lecture to the Eugenics Society in 1937 on the topic of the economic consequences of a declining population (Keynes, 1937), where he contrasts the devil of Malthusianism (or too many people) with the devil of unemployment escaping through a breakdown of effective demand (because population is falling). He suggests that this might also be called a Malthusian devil since it was Malthus who first recognised the possibility of demand deficiency.[15] Keynes continues (p. 17)

> Now when the Malthusian devil P [population] is chained up, the Malthusian devil U [unemployment] is liable to break loose. When devil P of population is chained up we are free of one menace, but we are more exposed to the other devil U of unemployed resources than we were before.

Keynes saw quite clearly that population growth can be both a stimulus and impediment to economic development, but where does the balance lie? After considering the debate between the optimists and the pessimists, my conclusion is that it is probably sensible for most developing countries (especially where there is manifest overcrowding) to run the risk of type-2 error and adopt policies of population control, not because a reduction in population growth would make any significant difference in the growth of living standards, but because there are many other dimensions of the development process that need to be addressed, such as unemployment and under-employment, congestion and environmental pollution, which are exacerbated by large numbers of people.

In Thirlwall (1972c), I develop a more formal model of the relationship between population growth and living standards in which I look at the link between population growth and capital accumulation on the one hand, and total productivity growth on the other; the two fundamental factors determining the growth of living standards in a production function approach to the analysis of growth. The project was also started while I was at Princeton, and again I was fortunate to have Halbert White as my research assistant. He used to work in the computing laboratory at night, keeping Richard Quandt company doing his Monte Carlo

[13] His first paper was a joint paper with myself (White and Thirlwall, 1974).
[14] For a survey of evidence, see Thirlwall and Pacheco-López (2017).
[15] Keynes acknowledges a debt to Malthus in his *General Theory.*

experiments! I took a cross-section of 32 developing countries and 17 developed countries over the period 1950 to 1966 and found that it does seem to be true (as the population pessimists claim) that population growth adversely affects the rate of capital accumulation by reducing a country's savings ratio. On the other hand, there appears to be a strong positive relation between population growth and the growth of total factor productivity, no doubt reflecting scale economies and the pressures set up to overcome the adverse consequences of population growth. The fact that there is no discernible relation across countries between population growth and the growth of living standards is probably due to the fact that these two effects offset one another.

The subject of the terms of trade between primary commodities and manufactured goods, and the cyclicality of primary product prices, has always interested me. The long-run deterioration in the terms of trade of primary commodities relative to manufactured goods was first highlighted independently in the 1950s by Prebisch (1950) and Singer (1950), and became known in the development literature as the Prebisch-Singer thesis. The causes of this long-run deterioration, which has been confirmed time and again by subsequent studies, are a mixture of demand-side and supply-side factors.[16] On the demand side, the income elasticity of demand for primary products is lower than for manufactures (Engel's Law), so the growth of demand in world trade is lower for commodities than for manufactures. On the supply side, technical progress reduces costs and prices for both types of goods, but wages tend to rise to match productivity growth in industrial activities, but stay low in primary production where labour is in surplus and trade unions are weak. The fruits of technical progress in primary producing, developing, countries thus get transferred to developed countries through a deterioration in the terms of trade. On top of this mechanism, Prebisch put forward an asymmetry hypothesis that the elasticity of the price of primary commodities relative to manufactures is greater on the downswing of the trade cycle than on the upswing, which, if so, would also lead to long-run deterioration. A graduate student and I (Thirlwall and Bergevin, 1985) were the first to test this hypothesis taking thirteen primary commodities over the period 1960-1982. The prices of primary commodities were certainly found to be more cyclical than manufactures, and more so from developing countries than developed countries, but there was no support for the asymmetry hypothesis. Nonetheless, terms of trade deterioration and primary product price instability still plagues poor countries. This not only reduces real income directly, and creates uncertainty for producers and individual exporting countries, but also contributes to instability in the world economy and retards the growth of countries if the terms of trade are not in equilibrium (Thirlwall, 1986a). Over eighty years on from the paper delivered by Keynes to Section F of the British Association for the Advancement of Science in 1938 (Keynes, 1938), and Keynes's war-time plan for an international agency for stabilising commodity prices (see Moggridge, 1980), the world still lacks the requisite international agreement and institutional structures for greater stability of primary product prices and a fairer deal for poor countries which live by exporting them.

For many developing countries, particularly in Africa and Latin America, the 1980s were dominated by the international debt crisis. I presented a paper on "Foreign Debt and Economic Development" (Thirlwall, 1986b) at two conferences in 1984: one at the University of Kebangsaan, Malaysia, to celebrate the tenth anniversary of the University's foundation; the other at Finafrica in Milan at which the late Bela Balassa was a very critical discussant because,

[16] For a survey of studies, see Thirlwall and Pacheco-López (2017).

like many neoclassical development economists, he did not believe in foreign exchange as a scarce resource, or rather believed in the easy substitution of foreign and domestic resources as long as "prices are right" (including, of course, the exchange rate). By contrast, I emphasised that the debt problem is a foreign exchange problem because debts have to be serviced and repaid in foreign currency, and that if domestic resources can be so easily converted into foreign exchange, why is there so much resource underutilisation in indebted countries? The origin of the international debt crisis in the early 1980s was that countries that had borrowed heavily the foreign exchange surpluses from oil in the 1970s found it difficult to service the debts in the 1980s when interest rates rose, the prices of primary commodities fell and world economic activity slumped. I argued that since the debt crisis was not the sole fault of the borrowers, and because borrowing conferred an externality on the whole world community in the 1970s by avoiding slump, the burden of repayment should be shared three ways – by the debtors, the creditors and the whole world community itself. In the latter half of the 1980s, the debt service situation improved in many countries. The major source of improvement (apart from debt relief schemes) came from an increase in export earnings associated with the recovery of world economic activity, which by itself had the effect of reducing the debt service ratio overall by over 10 percentage points (Gibson and Thirlwall, 1993). This is a good illustration, if another is needed, of the overwhelming importance of conditions in the world economy for the economic health and creditworthiness of the developing countries.

The only sure way to avoid excessive foreign borrowing and debt is for a country to augment its foreign exchange by improving its balance of payments. It can do this either from the demand-side or the supply-side. Exchange rate depreciation allows either the price of domestic goods to be reduced in foreign markets to increase the demand for exportables, or the domestic price of exportables to be raised to increase the profitability of exporting (or a combination of both). The price of imports will also rise in domestic currency, which is supposed to discourage imports. I have always been sceptical of the efficacy of exchange rate adjustment as a weapon to improve the balance of payments from the demand side, particularly in developing countries where the goods exported are generally primary commodities with low price elasticities of demand, and the goods imported are necessary imports, also with low price elasticities. The IMF now seems to recognise this, and indeed in the 1970s it switched its advocacy of currency devaluation away from the demand-side to the supply-side, arguing that currency depreciation is necessary to raise the profitability of exporting. The supply-side approach to devaluation was pioneered (at least in print) by Nashashibi (1980) in a paper in the *IMF Staff Papers* entitled "A Supply Framework for Exchange Reform in Developing Countries: the Experience of the Sudan". He was a member of the IMF Mission to the Sudan in 1978, and became closely involved in the formulation of Sudanese economic policy.

Nureldin Hussain and I (Nureldin Hussain and Thirlwall, 1984) scrutinize closely this supply-side approach to devaluation, with particular reference to the Sudan, taking the four major crops of gum arabic, groundnuts, coffee and sesame (and exports in total). It is shown that whether the profitability of exporting improves or not in practice depends crucially on the response of export prices, import prices, domestic input prices and export supply to changes in the exchange rate. Owing to the inflationary repercussions of devaluation and low export supply elasticities, it is shown that, overall, devaluation was at best neutral in its effects on profitability, and may even have reduced profitability in the case of one or two crops. Even if profitability does increase, the overwhelming argument against devaluation is that it ossifies

the production structure, perpetuating a pattern of production that is the source of balance of payments difficulties in the first place. What countries like Sudan desperately need is structural change.

Another fashionable doctrine in development economics in the recent past has been the view that the major obstacle to growth in developing countries is financial repression, particularly the repression of real interest rates through the government imposition of nominal interest rate ceilings, which discourages savings (and therefore investment in accordance with classical theory) and distorts the allocation of resources by causing credit rationing. The issues to be decided are whether total saving is positively related to real interest rates; whether investment depends on saving, and whether financial liberalisation necessarily eliminates credit rationing. These questions were explored for the case of Mexico with one of my Mexican research students, Fanny Warman. We found (Warman and Thirlwall, 1994) that *financial* saving is positively related to the interest rate, but not total saving. The supply of credit from the banking system is positively related to financial saving, and investment is positively related to the supply of credit, but the net effect of interest rates on investment is negative because of the strong negative effect that higher interest rates have on investment demand. The conclusions of our study for Mexico are consistent with others in this field, which therefore casts some doubt on the main tenets of the financial liberalisation hypothesis, but should occasion no surprise among economists of Keynesian persuasion. One of the central messages of Keynesian theory is that it is not saving that determines investment, but investment that determines saving, and one of the central messages of post-Keynesian theory is that it is not bank deposits that determines loans, but loans that determines deposits. What developing countries require above all are incentives to invest. Across the world, there are huge differences between countries in the ratio of savings to national income, and in 1998 I embarked on a major project with a colleague, Khaled Hussein, to understand what determines these differences. We took a sample of 62 developing and developed countries over the period 1967-1975 in which the mean domestic savings ratio was 17.8 percent and the range was from 1.6 percent in Rwanda to 41.4 percent in Saudi Arabia, and applied panel data estimation. A basic distinction was made between the capacity to save and the willingness to save. The capacity to save depends primarily on the level of per capita income (the Keynesian absolute income hypothesis) and the rate of growth of income (the life-cycle hypothesis of saving). The willingness to save is assumed to depend on financial variables such as the rate of interest, the level of financial deepening, and inflation. The empirics strongly support the Keynesian absolute income hypothesis with the savings ratio rising non-linearly with per capita income to an asymptote of 24 percent. The life cycle hypothesis of saving is also supported, but no evidence was found for a positive interest rate effect on saving. However, there is strong evidence that financial deepening, measured by the ratio of quasi-liquid liabilities to GDP, positively affects saving. Inflation exerts a mild positive effect on savings but soon turns negative (Hussein and Thirlwall, 1999).

In the early years of the new millennium, my research interests switched to the topic of trade liberalisation and its impact on export performance, import growth and the balance of payments. It came about through the supervision of a PhD student, Amelia Santos-Paulino, who now works in UNCTAD, who had an interest in examining the impact of trade liberalisation on the trade performance of developing countries. I was conscious that most of the published literature related to trade liberalisation and export performance, but there were very few studies of the impact of liberalisation on imports, and nothing on the effect on a country's

balance of payments. Given all the work I had done in the past on balance of payments constrained growth, there clearly existed enormous scope for widening the agenda on trade liberalisation. Because the fact is that if trade liberalisation leads to a faster growth of imports than exports, and the balance of payments goes into deficit, the Ricardian real resource gains from trade may be offset by the underutilisation of resources resulting from deflationary policies necessary to correct the balance of payments.

We take 22 developing countries for analysis that had undertaken significant trade liberalisation since the mid-1970s. Trade liberalisation was measured using tariff levels and a dummy variable for the year(s) in which trade liberalisation took place. Control variables were the rate of change of the real exchange rate; domestic income growth in the import demand function, and world income growth in the export demand function. Dynamic panel data estimation was used, and it was found that, on average, trade liberalisation increased export growth by 2 percentage points; import growth by 6 percentage points, with the trade balance worsening by 2 percentage points of GDP (Santos-Paulino and Thirlwall, 2004). The results clearly have lessons for the speed and sequencing of trade liberalisation to ensure that import growth does not exceed export growth, and that balance of payments deficits do not arise, which require deflation to correct them.

In 2004, I was successful in being awarded an Emeritus Leverhulme Research Fellowship to carry on work in this field with the research assistance of a former PhD student, Dr Penélope Pacheco-López. The project we embarked on proved a very fruitful one, culminating in a book *Trade Liberalisation and The Poverty of Nations* (Thirlwall and Pacheco-López, 2008).

The focus of the work for which the research grant was awarded was the impact of trade liberalisation on Latin American countries. The adverse effect that trade liberalisation had had on the Mexican economy had already been documented by Pacheco-López (2005) who showed how the rise in the income elasticity of demand for imports post-liberalisation in 1974-75 had halved Mexico's balance of payments constrained growth rate from an average of over 6 percent per annum before liberalisation to under 3 percent per annum after. We repeated the analysis for 17 Latin American countries (including Mexico) over the period 1977-2002, and found the same result of a rise in the income elasticity of demand for imports not matched by a commensurate increase in the growth of exports (Pacheco-López and Thirlwall, 2006). The ultimate test of a successful liberalisation programme on growth performance is to see whether liberalisation improves the negative trade-off between growth and the balance of payments. Testing formally for the impact of trade liberalisation in a full model of trade balance and current account balance determination, we found that only in Chile and Venezuela had the trade-off unequivocally improved. In the other countries, there was either a significant deterioration or no change. Nine of the seventeen countries grew faster post-liberalisation than pre-liberalisation but, except for Chile and Venezuela, it was at the expense of a wider trade or current account deficit which is not sustainable in the long run (Pacheco-López and Thirlwall, 2007).

In 2012, I gave the Einaudi Lecture to the Italian Economics Association on "The Rhetoric and Reality of Trade Liberalisation in Developing Countries", and concluded that on balance trade liberalisation across the world has not delivered the promises, or benefits, expected (Thirlwall, 2013b). In the age of globalisation since the 1950s, with the massive freeing of trade, international income inequality has increased measured by the Gini ratio; in other words, rich countries have benefited more than poor. Domestic income inequality has increased contrary to the predictions of the Heckscher-Ohlin theorem. Export growth has accelerated, but import

growth into developing countries has increased even more causing severe balance of payments difficulties. This has important lessons for the future concerning the management of globalisation, with greater attention to who are the gainers and who are the losers.

My most recent research in the field of growth and development economics, with another former PhD student, Kevin Nell, has been concerned with the question of what determines differences in the productivity of investment across countries in the context of 'new growth theory', and testing the orthodox neoclassical assumption of diminishing returns to investment. We do this by converting a new growth theory estimating equation into a productivity of investment equation, measuring the productivity of investment as the ratio of the long run growth of GDP to a country's investment ratio. Nineteen potential determinants of differences in the productivity of investment are then considered, taking a sample of 84 developed and developing countries over the period 1980-2011, and tested using the general-to-specific model selection algorithm of Autometrics, originally developed by one of my colleagues at the University of Kent, Hans Martin Krolzig, with David Hendry (2001). The results show that the major determinants of differences in the productivity of investment, in order of importance, are: export growth; political rights; latitude (distance from the equator); education; trade openness; macroeconomic stability, and government consumption. There is no evidence of diminishing returns to investment – that the productivity of investment is higher in poor countries than in rich countries – which supports the AK model of new growth theory (Nell and Thirlwall, 2017; 2018).

8. Concluding remarks

The years since I first started studying economics in the 1950s have been interesting and exciting times both with respect to controversies in economic theory and also economic events. In the field of growth economics, the 1950s and 1960s were dominated by debates between Cambridge, England, represented by Nicholas Kaldor, Joan Robinson, Richard Kahn and Luigi Pasinetti, and Cambridge, Massachusetts, represented by Paul Samuelson, Robert Solow and Franco Modigliani, with no satisfactory resolution. My modest contribution in the 1970s and 1980s was to try and shift away from the supply-side approach to growth of neoclassical theory which is a one-good model in which the structure of production doesn't matter; demand is left out of the picture, and the supplies of factors of production are treated as exogenous, to a demand-oriented model in which the external demand constraint of the balance of payments plays a key role, and in which factor supplies of labour and capital accumulation, and technical progress, are treated as endogenous (Thirlwall, 2013a).

In macroeconomics, the 1960s and 1970s were dominated by debates between so-called monetarists, led by Milton Friedman, and Keynesians, the most prominent of which was Nicholas Kaldor. I tried to keep Keynesian modes of thinking alive by reminding the profession of Keynes's concept of involuntary unemployment, and by undermining the concept of the natural rate of unemployment by showing that it moves with the actual rate of unemployment and therefore is largely demand-determined. The monetarists won the battle, but they lost the war because the doctrine of monetarism is now dead.

In the world economy, the 1980s and 1990s witnessed the application of neoliberalism across the globe with many poor developing countries forced by multilateral institutions, such as the IMF, World Bank and World Trade Organisation, to undertake both financial

liberalisation and trade liberalisation before they were fully prepared. This has damaged the economies of many of these countries.

The major intellectual influences on my thinking, and my approach to economics, have been: Arthur Brown, my early mentor, whose favourite aphorism was "the economy is made for man, not man for the economy"; Nicholas Kaldor whose thinking in economics coincided most closely to my own (Thirlwall, 2017); Gunnar Myrdal (1957) for his challenge to equilibrium theory; Amartya Sen, the foremost development economist of his generation; Charles Kennedy, my colleague at the University of Kent for many years, who taught me many things; Paul Davidson, the world's leading post-Keynesian economist, and John McCombie in Cambridge, who I have been inspired by, and worked with, for nearly 40 years. I also owe a debt to many PhD students and colleagues, who I have collaborated with over the years, including Robert Dixon, Mohammed Nureldin Hussain, Khaled Hussein, Amelia Santos-Paulino; Heather Gibson; Antonio Marques-Mendes; Marcelo Piancastelli di Siquiera; Penélope Pacheco-López; Fanny Warman; Kevin Nell; Matteo Lanzafame and Miguel Leon-Ledesma.

Lastly, I would like to say that I have never been unduly concerned with the state or status of economics as a social science, or joined in the 'handwringing' of critics because economic forecasting has a poor record. Forecasting the future is not economics. Economics will never be value-free; economists are bound to take different views about the way economies function depending on various prior predilections and political views. The distinguished historian, E.H. Carr, once said that in order to understand history, you have to understand the historian writing it. The same might be said for economics. As far as approaches to economics are concerned, however, I much prefer the inductive approach, which is the basis of applied economics. If economics is to be useful to improve the welfare of mankind, facts must be first observed, then hypotheses advanced, and then models built to test them empirically. Of utmost importance is understanding what is exogenous and what is endogenous if false inferences are not to be made. Treating as exogenous of what is endogenous is the source of most fallacies in economics. The alternative deductive approach to economics can be more theoretically rigorous, and appeal to those who want to demonstrate their mathematical virility, but I don't understand the point of constructing abstract models based on unreal assumptions, and pretending that the conclusions have any practical or policy relevance.

In my professional life as an economist, I have tried to follow the recipe for the master economist given by Keynes (1933, p. 170) in his obituary of Alfred Marshall:

> The master economist must possess a rare combination of gifts [...]. He must be mathematician, historian, statesman, philosopher [...] in some degree. He must contemplate the particular in terms of the general, and touch abstract and concrete in the same flight of thought. He must study the present in the light of the past for the purposes of the future. No part of man's nature or his institutions must be entirely outside his guard. He must be purposeful and disinterested in a simultaneous mood, as aloof and incorruptible as an artist, yet sometimes as near the earth as a politician.

I would be happy with just two of the ingredients, but I always give the recipe to my students in the hope that one day, one of them might turn out to be another Keynes who, in Bertrand Russell's opinion, had

> the sharpest and clearest [intellect] that I have ever known. When I argued with him, I felt I took my life in my hands, and I seldom emerged without feeling something of a fool. I was sometimes inclined to feel that so much cleverness must be incompatible with depth, but I do not think this feeling was justified. (Russell, 1967, p. 72)

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