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THE LEWIS MODEL AFTER FIFTY YEARS

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Abstract

The article reassesses the contribution of Sir Arthur Lewis's 1954 article entitled 'Economic Development with Unlimited Supplies of Labour' to our understanding of economic development, and to the establishment of development economics as an academic discipline. It argues that Lewis's key insight into the structural dualism characterising developing countries mapped out a new and distinctive field for development economics and policy. The article has had a profound impact over the last fifty years and continues to yield valuable lessons for understanding the nature of economic transformation.

INTRODUCTION

Arthur Lewis's article entitled 'Economic Development with Unlimited Supplies of Labour', published in *The Manchester School* in May 1954, is widely regarded as the single most influential contribution to the establishment of development economics as an academic discipline. As Findlay (Findlay 1980, p64) rightly pointed out, almost all of Lewis's subsequent work, and a large part of the literature on development economics, can be seen as 'extended commentary on the meaning and ramifications' of the ideas set out in the 1954 article. The fiftieth anniversary of the publication of this seminal article provides us with a timely opportunity to re-assess the impact of Lewis on the development of economics and development economics.¹

During a distinguished academic career at the LSE, Manchester, and Princeton, Lewis made a wide ranging contribution to economics and economic history, and in the process mapped out the field of development economics. He also made a significant contribution to advancing development economics in his capacity as Deputy Managing Director of the UN Special Fund and as Economic Advisor in Ghana, as well as Vice-Chancellor of the University of the West Indies. His 1954 article in *The Manchester School* developed what is, for most commentators, his key contribution: an insight into the role of dualism in the process of economic transformation which has come to be known as the Lewis Model.

The papers in this Issue provide a range of perspectives on assessing the Lewis Model after fifty years, and draw attention to its relevance to current thinking in development economics. This paper does not attempt to provide a synthesis of these perspectives, or a

definitive assessment of the Lewis Model - the authors of the companion papers perform these tasks from a superior vantage point - but instead, it comments on the Lewis Model in the context of the 1954 article, making reference to its Manchester background, its reception and the discussions that followed, and its legacy. The article concludes that Lewis's insight into the dualistic structure of developing economies, and his concern with real world problem-solving, continue to yield valuable lessons for today's development economists.

THE LEWIS MODEL AND MANCHESTER

Lewis was born in St Lucia in the West Indies in 1915. At the age of seventeen he won a university scholarship and began studies for the Bachelor of Commerce degree at the London School of Economics, which he was awarded with first class honours in 1937. He remained at the LSE for a further ten years, obtaining his doctorate in 1940 and was then appointed to the teaching staff. During his time at the LSE, Lewis's main field of study was industrial economics and his early publications dealt mainly with monopoly, pricing and competition issues. His lifelong interest in economic history and the world economy also began at this time, having been asked by Frederick Hayek, then Acting Chairman of the LSE Department of Economics, to teach a course on 'what happened between the wars'. These lectures provided the basis for Lewis's first book, *Economic Survey, 1919-1939*, published in 1949.

In 1948, aged 33, Lewis was appointed to the Stanley Jevons Chair of Political Economy at the University of Manchester, a position he held until 1958 when he moved to become Principal, University College of the West Indies (1959-1962) and subsequently Vice-Chancellor of the newly established University of the West Indies (1962-1963). He was appointed to the Chair in Political Economy at Princeton University in 1963, a post he occupied until his death in 1991. Lewis was knighted in 1963 and was awarded the Nobel Prize in Economics in 1979, jointly with Theodore Schultz, for his contribution to our understanding of economic development.

It was during his time at Manchester University that Lewis developed his path-breaking work on the process of economic development and laid the foundations for the emergence of development economics as an academic discipline.² Lewis had been engaged, however, with issues on economic development from the beginning of his career. His first publication in 1939 was on *Labour in the West Indies*, written for the Fabian Society, and he acted as

an economic adviser to the Colonial Economic Advisory Committee and its successor body the Colonial Economic and Development Council during the war years. But, as he recalled in his brief Autobiography, 'it was the throng of Asian and African students at Manchester that set me lecturing systematically on development economics from about 1950, following Hayek's rule that the way to learn was to teach' (Lewis 1980, p.3).³ His most famous work, the article on 'Economic Development with Unlimited Supplies of Labour', published in The Manchester School in 1954, was followed by the *The Theory of Economic Growth* in 1955. The Manchester years were also the period when Lewis was most actively involved with development policy. Recalling this period, Lewis tells us that 'half my interest was in policy questions, and here my knowledge broadened in the 50s and 60s as a result of numerous visits to, and work stints in, African and Asian countries'(Lewis 1980, p.2). During this period there were major reports, on the British West Indies in 1950, on *Measures for the Economic Development of Underdeveloped Countries* for the United Nations in 1951, and on the Gold Coast in 1953, all of which reflected Lewis's distinctive approach to development strategy.⁴

The main focus of Lewis's research during his time at Manchester was 'in the fundamental forces determining the rate of economic growth' (Lewis 1980, p.3), and it was this issue which he addressed in the 1954 article on unlimited supply of labour and then developed further in the 1955 treatise on economic growth. For Lewis, 'the central problem in the theory of economic development is to understand the process by which a community which was previously saving and investing 4 or 5 per cent of its national income or less, converts itself into an economy where voluntary saving is running at about 12 to 15 per cent of national income or more' (Lewis 1954, p.155). The answer which Lewis gave drew on the historical experience of Western industrialised countries and on the ideas of the classical economists to provide a dualistic model of the development process. 'All one needed to do was to drop the assumption – then usually (but not necessarily) made by neoclassical macroeconomists – that the supply of labour was fixed. Assume instead that it was infinitely elastic, add that productivity was increasing in the capitalist sector, and one got a rising profits share' (Lewis 1984, p.132). A 'capitalist' sector develops by drawing labour from a non-capitalist 'subsistence' sector. The existence of 'surplus labour' in the subsistence sector ensures that during an extended period wages in the capitalist sector remain constant because the supply of labour to the capitalist sector exceeds demand at this wage rate. The surplus of output over wages is captured by the capitalists as profits. Within the capitalist sector, growth occurs as the share of profits in national income rises and are directed to profitable invested.

Unlimited supplies of labour ensure that capital accumulation is sustained over time, but the dynamics of the economic forces at play lead towards economic transformation. Eventually, the reservoir of surplus labour in the 'subsistence' sector is exhausted, and wages in the subsistence sector begin to rise. This pushes wages in the capitalist sector upwards and reduces profit levels. The process of capital accumulation slows down. At some point in the process, the transfer of labour from the subsistence to the capitalist sector comes to reflect sectoral differences in the marginal productivity of labour, eventually leading to an integrated labour market and economy. At the end of this process of structural economic transformation both wages and profits are determined by marginal productivity. Unlimited supplies of labour in the context of a dualistic economy, explain the sustained process of capital accumulation which provides the foundation for the process of economic transformation towards a homogeneous economy.

The assumption of unlimited supply of labour also 'solved another problem that had bothered me since undergraduate days: what determined the relative prices of steel and coffee?' (Lewis 1984, p.132). The 1954 *Manchester School* article contains a section on the open economy which begins with an examination of the role of immigration and capital export as means of postponing the turning point at which rising wages begin to undermine the capitalist surplus signalling the end of the period of rapid capital accumulation. In Lewis's open economy model, provided there is surplus labour in other countries, the capitalists can avoid this turning point by encouraging immigration or by exporting their capital to countries where there is still abundant labour at a subsistence wage.

In the remainder of the section on the open economy Lewis develops an argument for the secular deterioration of the terms of trade for primary products, based on the surplus supply of labour assumption. The 'north' produces steel and the 'south' produces coffee, and both countries produce food. Each region has a linear transformation curve for the two goods it produces so that the relative prices of steel and coffee are determined in terms of food, from the supply side. This allows the terms of trade between the north and the south to be determined purely by relative labour productivities in food, independent of demand conditions (Findlay 1980, p.71). With low labour productivity in food production in the labour surplus economies of the south, the terms of trade will be unfavourable to the southern producers of coffee. In his later work, notably the 1969 Wicksell Lectures (Lewis 1969) Lewis develops these ideas further to provide a rigorous argument for the Prebisch-Singer

thesis of a secular deterioration in the terms of trade. To reverse this secular terms of trade deterioration, Lewis recommends raising productivity in food, through investment in physical and human capital, technological change and government support.

In comparison with the long first section of the 1954 article dealing with the closed economy, the much shorter section on the open economy has received little attention, with the result that the closed economy model is commonly taken to represent the Lewis Model. Perhaps this reflects the apparent conflict between the policy implications of the closed economy model which stresses the need to expand the capitalist sector ('industry') and the open economy model which emphasises the importance of raising productivity in the subsistence sector ('agriculture').⁵

It would be wrong to assume, however, that Lewis was interested primarily in closed economy analysis. Throughout his work he was acutely aware of the need to study the problems of economic development in low income developing countries in the context of the world economy as a whole. Indeed, prior to the publication of 'unlimited supplies of labour', in 1952 he published an article in the *Manchester School* on 'World Production, Prices and Trade 1870-1960' in which he constructed and estimated a simple econometric model of world production and trade in manufactures. This laid the foundations for *Growth and Fluctuations 1870-1913*, published in 1978, of which the distinguished trade economist Ronald Findlay says, 'This is a truly remarkable work....no one else possesses the combination of qualities needed to write it, which are acute theoretical insights, vast historical knowledge and painstaking labor in the collection and analysis of statistical data'(Findlay 1980, p.73).

DUALISM AND THE CONVENTIONAL WAGE

The publication of the 1954 article on Economic development with unlimited supplies of labour' had an immediate impact upon the economics profession. In Lewis's own words, 'the publication of my article on this subject in 1954 was greeted equally with applause and with cries of outrage' (Lewis 1980, p.3). Judging by the reception of the article, perhaps it could have been predicted that it was to have a lasting effect upon the scope and direction of thinking on development as a process of structural transformation. Discussion and debate on the ramifications of Lewis's article mapped out the sub-discipline of development economics,⁶ and continue to unfold today.⁷

Criticism of the Lewis Model turned on the validity of his central postulates, that the subsistence sector in developing countries contains an abundance of labour, ensuring that the conventional 'wage' in the subsistence sector rules over the entire economy. Other criticisms interpreted the Lewis model as advocating industrialisation and the neglect of agricultural development.⁸ Criticism was also made of the assumed process of labour migration from the 'subsistence' sector to wage employment in the 'capitalist' sector, especially in the light of rising urban unemployment observed in developing countries (Harris and Todaro, 1970; Godfrey, 1979). This led, in turn, to the reformulation of informality in the 1970s (Mezzera 1989; Turnham, Salomé et al. 1990), and of its implications for the terms of trade across the sectors. The model was also criticised for its neglect of the role of international trade, and for assuming that the capitalist surplus would be reinvested in full. Many of these controversies are discussed below and in the other contributions to this special issue.⁹ Suffice to note at this point, that Lewis did respond on a number of occasions to his critics.

As noted by Leeson (1979, p.199), Lewis's answer to the criticisms was in part to ask his critics to read his original article more carefully (Lewis 1972). The two sectors were the 'capitalist' and 'subsistence' sectors, not the industrial and the agricultural, nor the urban and the rural. The urban poor, domestic servants, petty traders, household retainers, were specifically listed among the groups contributing to the abundance of labour supply. Accumulation applied as much to capitalist agriculture, mining or plantations as to industry. Lewis's distinction of sectors was grounded on structural factors, the rules applying to production and distribution, rather than their products. The model described the process of growth in economies with surplus labour, such as India and the West Indies, and not in economies such as the Gold Coast where surplus labour conditions did not pertain.

Writing in the special issue of the *Manchester School* to mark the 25th anniversary of the publication of his by- now- famous article (and in the same year as he was awarded the Nobel Prize in Economics), Lewis offered a considered reflection on the usefulness of the dual economy model. In the 1979 article he renamed the two sectors while retaining his original insight into the structural differences separating them, and reformulated the perfectly elastic supply of labour assumption in more general terms: 'The version I am using here has three characteristics. First, there are two sectors, hereinafter called 'modern' and 'traditional', such that the modern sector grows by recruiting labour from the traditional. Secondly, unskilled labour is paid more in the modern sector than in the traditional sector

for the same quantity and quality of work. And thirdly, unskilled labour is initially abundant in the sense that at the current wage much more labour is offered to the modern sector than that sector wishes to hire' (Lewis 1979, p. 211). Lewis added a footnote to his third point: 'the phrase 'surplus labour' is not used in this essay since it causes emotional distress. As always, the idea intended to be conveyed is that of an infinitely elastic supply of labour to the modern sector at the current wage' (p.211).

Much of the debate following Lewis's 1954 article in *The Manchester School* focused on his return to the classical economists for an analytical framework relevant to countries with surplus labour. Lewis's optimistic vision of rapid capitalist accumulation and economic transformation was grounded on a dualistic economy. As noted above, in this economy sectors are distinguished by the rules applying to their production and distribution.¹⁰ In the capitalist sector, competition and profit maximisation ensures resources are allocated on the basis of their marginal productivity. In the traditional sector, on the other hand, the rules applying to production and distribution maximise consumption, and resources are distributed to an important extent in line with social conventions. In the initial stage, labour in the traditional sector is not therefore remunerated in line with its marginal productivity. In the case of family farms, members may share their output equally, and 'wages' correspond to average productivity per person (Sen 1966). Even where a 'wage' is paid, for example to domestic servants, it has at best a weak link to marginal productivity as "in overpopulated countries the code of ethical behaviour so shapes itself that it becomes good for each person to offer as much employment as he can. The line between employees and dependents is very thinly drawn" (Lewis 1954, p.142). A key implication from this dualism is that an abundance of unskilled labour in the traditional sector ensures an unlimited supply of labour to the capitalist sector at the conventional wage, thus ensuring at the same time sustained surpluses to stoke up capital accumulation.

The conventional wage is the fulcrum of the model, and because it is borrowed from the classical economists it was certain to attract criticism. Lewis did not help his case, in the eyes of neoclassical economists, by seeming to argue that output in the traditional sector was unlikely to decline in the initial stages of transformation as in countries with abundant labour "there are large sectors of the economy where the marginal productivity of labour is negligible, zero, or even negative" (Lewis 1954, p141). In response to his critics, he later notes that as far as the validity of his model is concerned, "it makes no difference whether the loss of non-capitalist output is zero or positive, so long as it is less than the value added

by the labour in the sector to which this is transferred" (Lewis 1972, p.78). But he also insisted that his "model does not attempt to derive the conventional wage: as in the classical system, this depends not only on productivity but also on social attitudes" (Lewis 1972, p.77). The precise nature of the conventional wage, and its parentage in classical economics, has been a constant in the debates that have surrounded the Lewis Model in the last fifty years, and can be attested by the contributions to this Issue, but especially by the discussion in Fields (2004).

Lewis's restatement of the dual economy in 1979 went on to discuss why the original dual economy model 'has illustrated both more and less than intended; more in the extent to which it is used by some writers to explain recent developments in mature industrial countries, and less in the speed with which real wages have risen in some labour-rich developing societies, in defiance not only of the model but also of previous historical experience' (Lewis 1979, p.211). The application of the Lewis model to post war developments in Europe (Kindleberger 1967; Cornwall 1977) clearly pleased him, but it is in the almost continued reassessment of the informal sector that his insight into the sources of dualism continue to have relevance (Fields 1990; Ranis and Stewart 1999; Fields 2004).^{11 12}

Several commentators have focused on a perceived divergence of the testable hypotheses arising from Lewis's model with empirical observation. These covered the predicted impact on the economy of a withdrawal of labour from agriculture¹³, or the persistence of poverty and inequality in the traditional sector in the face of sustained growth. Lewis himself was more concerned about explaining the rise in urban wages, which he described as "the real theoretical puzzle of the period" (Lewis 1979, 224). The answer he found was again based on a form of dualism. A combination of unions and large scale employers able to exploit economies of scale and therefore less troubled by competition from small scale producers, could enforce restrictions on recruitment resulting in rapidly rising wages. In the small scale sector, on the other hand, "productivity has no meaning...because of the dominance of service outputs...This wage level lies between two extremes, those of great prosperity and of great depression...the minimum is determined by minimum wage laws, by trade unions or by the subsistence level" (Lewis 1976, p.228). In Lewis analysis, institutional factors are again important in explaining the rise in urban wages in some developing countries.

The preceding discussion confirms that the conventional wage has a central role within the model, but it can also be surmised from the discussion that the conventional wage is representative of Lewis' methodological approach. This approach can best be characterised

as a search for both simplicity and realism. His explanation and description of the conventional wage, he argued, distinguished his approach from those of others. The conventional wage drifts over a range depending on the state of the economy. He acknowledged that tying the conventional wage “rigidly to agricultural productivity...yield precise numbers for wages and earnings...But what is gained in precision is lost in realism” (Lewis 1972, p.84). Lewis does not defend the dual economy model as a predictive model, but instead shows how it can be used as an analytical framework to describe and interpret what has happened. On this basis, he concludes that ‘dualism will continue to be an appropriate mode of analysis until cessation of population growth and immigration create a single market for labour’ (Lewis 1979, p228).

THE LEGACY OF THE LEWIS MODEL

Fifty years on from the publication of the Lewis model in *The Manchester School*, the article retains its place as one of the key contributions to the development economics literature. Judged according to its marginal product, it can be said to be ‘one of those rare achievements for which any economist would gladly swap at least ten theoretical papers in the leading professional journals’ (Bhagwati 1982, p.24). Despite the many attacks and criticisms that have been levelled against it over the past half decade, few textbooks or lecture courses in development economics fail to include a detailed discussion of the Lewis Model. To what can we attribute the lasting impact and influence of the 1954 article?

Development economics was in its infancy when ‘Economic Development with Unlimited Supplies of Labour’ was published in 1954. In a single article, Lewis made two fundamental contributions to the subsequent emergence of development economics as an academic discipline. The first was to present development economics as first and foremost a policy science, concerned with the problems of economic underdevelopment and low standards of living for the vast majority of the world’s population. For Lewis, this goal transcended the competing claims of neoclassical and classical approaches to economics: ‘ It is not primarily an essay in the history of economic doctrine, and will not therefore spend time on individual writers, enquiring what they meant, or assessing its validity or truth. Our purpose is rather to bring their framework up to date, in the light of modern knowledge, and to see how far it then helps us to understand the contemporary problems of large areas of the earth’ (Lewis 1954, p.140).¹⁴ Most development economists have followed Lewis’s approach, by being concerned more with problem-solving using the instruments of public policy, than with the theoretical refinement of competing schools of economics.¹⁵ As Toye notes, the key defining

characteristic of development economics since its establishment in the 1950s has been 'its exploration of the problem of government- engineered economic transformation', recognising that ...'The state that contents itself with holding the ring within which economic actors contend no longer provides a convincing image of the state that will achieve sustainable development' (Toye, 2003: 21, 36).

The second contribution of the 1954 article which has had a lasting impact on development economics is the emphasis on development as a multidimensional process of economic, political, social and institutional change. Based on his deep understanding of economic history and his own experience in the West Indies, Lewis was fully aware of the ways in which the complex interactions between economic, social and political forces could both help and hinder the development process. The reader of the 1954 article is constantly reminded of this point: 'Behind this analysis lies the sociological problem of the emergence of a capitalist class' (Lewis 1954, p.159); 'Governments affect the process of capital accumulation in many ways (p.167); '...the agricultural or commercial employer is expected to keep his labour force somehow or other- it would be immoral to turn them away, for how would they eat, in countries where the only form of unemployment assistance is the charity of relatives (p.142). Thus, the Lewis 'model' can be regarded as providing an illuminating framework within which to discuss the reality of the process of development, not taking the homogeneity of its sectors literally, but looking behind this to uncover their internal workings and heterogeneity (Leeson 1979, p208). As Lewis later reflected, 'the upshot seems to be that the model is illuminating in some places at some times, but not in other places or other times. This was said when it was first presented ...I was trying to understand not to prescribe' (Lewis 1984, pp133,134).

The continuing salience of Sir Arthur Lewis's 'Economic Development with Unlimited Supplies of Labour' is a lasting testimony to the author's extraordinary ability to combine theory and history into a coherent framework which can aid our understanding of the problems of underdevelopment. It has motivated subsequent generations of economists to follow the example set by Lewis, whose distinguished academic career as a development economist was devoted to alleviating the 'contemporary problems of large areas of the earth' (Lewis 1954, p.140).

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Notes

¹ An International Conference on 'The Lewis Model after 50 Years: Assessing Sir Arthur Lewis' Contribution to Development Economics and Policy' held at the University of Manchester in July 2004 assembled a group of specialist researchers. The papers in this Issue reflect the spirit and conclusions of the deliberations at the Conference.

² See Tignor's article in this Issue for a detailed discussion of the development of, and influences on, Lewis's thinking leading to the 1954 article.

³ The tradition of teaching and research in development economics at Manchester University established by Lewis, is described in Leeson and Nixon (2004).

⁴ For further discussion of Lewis's contribution as a policy adviser, see Ingham (1991; 2004), Toye and Toye (2004) and Mine (2004).

⁵ Findlay (1980, p.72) argues that this contradiction can be explained in terms of the dynamic nature of the closed economy model and the static nature of the open economy model. What is needed to explain alternative trade development strategies is a dynamic open economy model: Lewis's models 'simply do not have enough structure to enable valid policy conclusions to be derived from them'.

⁶ See the Ranis article in this Issue.

⁷ See the Fields article in this Issue for a discussion of the synergetic relationship between Lewis' work and labour economics. See also the Mosley article in this Issue for a demonstration of the inspirational effect of Lewis's work on development economics.

⁸ See the Figueroa article in this Issue for a detailed consideration of this point.

⁹ See the examination of the objections to the Lewis Model in the Ranis article in this Issue.

¹⁰ As several commentators have noted, whether two or more sectors are identified in practice adds complexity to the model, but does not undermine its validity.

¹¹ As in the classic Harriss-Todaro model which relocated the conventional wage to the modern sector (Harris and Todaro 1970).

¹² Recent work has also focused on the importance of dualism for distribution (Bourguignon and Morrisson 1998).

¹³ See the exchanges in the Economic Journal between Schultz and Sen on Schultz's test of the impact of the 1818-19 influenza epidemic in India (Schultz 1967; Sen 1967).

¹⁴ As Findlay notes, the Lewis model combines both classical and neoclassical ideas in providing a model of economic growth: 'the relationship ...is one of complementarity.... they are not alternative hypotheses attempting to explain the same phenomena'(Findlay 1982, p.67).

¹⁵ In an influential survey article on development economics, Stern simply defines development economics as '...the use of economic analysis to understand the economies of poor or developing countries' (Stern, 1989:597).