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Vicious Circles and Cumulative Causation

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SUMMER 1985

Thames Papers in Political Economy

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ISBN 0-902169-28-9

VICIOUS CIRCLES AND CUMULATIVE CAUSATION

Introduction

Orthodox neoclassical models of growth and international trade would tend to suggest a gradual equalisation of factor incomes between different regions and countries. The stylised facts of economic development do not however, support this hypothesis (see for instance Kuznets, 1971). One may choose to ascribe the lack of convergence to the effects of exogenous shocks, but it would seem more promising to examine the possibility that there exists endogenous economic forces which tend to cause income levels to diverge between regions and countries.

The Kaldor-Myrdal principle of circular and cumulative causation offers an alternative to the neoclassical vision. The principle of cumulative causation emphasises the existence of dual characteristics in the economy – the co-existence of advanced and backward sectors – as well as the importance of increasing returns. The combination of dual characteristics and increasing returns will entail endogenous tendencies for growth rates to diverge between different countries, and it implies that economic activity cannot be regarded as resource-constrained in any meaningful sense.

It is the purpose of this paper to relate the Kaldor-Myrdal principle of cumulative causation to both neoclassical and Keynesian theory, and to explore some general implications of the Kaldor-Myrdal view. The paper is in five sections. The Kaldor-Myrdal critique of neoclassical theory is outlined in the first section. The second section describes three different model-economies: a simple exchange economy, a Keynesian production economy and a Kaldor-Myrdal economy. The distinguishing properties of the Kaldor-Myrdal economy are discussed in the third section. The notion of vicious and virtuous circles is discussed in the penultimate section with the final section presenting a few concluding remarks.

The Kaldor-Myrdal critique of neoclassical theory.

Myrdal has been a long-standing critic of orthodox economic theory. In Myrdal (1957) he focuses on the large economic inequalities between countries and on the tendency for these inequalities to grow rather than diminish. He argues that orthodox theory is unable to account for these phenomena and that this is due to deep-seated problems in the dominant approach to economics: the dominant approach needs to be replaced by an alternative vision based on the 'principle of circular and cumulative causation'.

Myrdal's critique could be seen as a narrow critique of international trade theory of the Heckscher-Ohlin-Samuelson variety. The heart of the critique would be simply that neoclassical trade theory had proved inadequate to explain actual events. This narrow critique would hardly be terribly

contentious. Most economists would probably express misgivings regarding the direct applicability of Heckscher-Ohlin-Samuelson theory to real world problems. That the conclusions derived from the simple models still govern many policy recommendations is another matter and one well deserving of attention. But from a theoretical point of view, the significance of the critique would be limited.

International trade theory is not, however, completely separate from general economic theory. On the contrary, the central idea of international trade theory is that of general equilibrium, and the work on trade theory contributed to the development of the general equilibrium research programme in its early phases. As a matter of fact, the close links between Heckscher-Ohlin-Samuelson trade theory and the general equilibrium research programme provides, according to de Marchi (1976), a major part of the explanation for the resilience of the former in the face of what appeared to be decisive empirical refutation.[1] Myrdal insisted that his critique had wide ramifications and in view of the close connection[2] between international trade theory and the research programme which has dominated theoretical economics over the last forty years, it seems worthwhile to examine a wider interpretation of the critique.

Myrdal's central empirical proposition concerns the existence of large and in many cases growing inequalities. One might ask whether large and increasing regional inequalities are logically incompatible with the predictions of full-fledged general equilibrium models. The answer is no. Increasing inequalities are even compatible with the classical Arrow-Debreu model of intertemporal equilibrium. The specific conclusions in international trade theory regarding tendencies to equalisation are predicated on very special assumptions, and the general neoclassical model does not stand and fall with these assumptions. A general neoclassical model is perfectly compatible with a widening gap in living standards.

The generality of the full-fledged general equilibrium model, its ability to generate a wide variety of scenarios, obviously does not in itself imply that it is a useful framework. The generality may signify nothing but vacuity. Any finite set of observations will be consistent with an infinite number of theories, and the choice between these theories cannot be based on the observations with which they are all equally consistent. Similarly, a theory or a framework which is so general that it yields no operational predictions cannot be judged on the basis of its (non-existent) predictions. The very generality of general equilibrium theory means that an assessment of the framework must be based on the plausibility of its basic assumptions and of the mode of explanation of observed phenomena which it offers.

Myrdal actually presents numerous criticisms of basic neoclassical assumptions. It is to these criticisms that one must look in order to assess the validity of his critique. The criticisms also provide the clue to a proper understanding of the principle of circular and cumulative causation. Myrdal's presentation, however, suffers from a lack of precision on crucial issues. It will

therefore be helpful at this stage to draw also on Kaldor's later criticism of neoclassical theory and his formulation of the alternative vision.[3]

The main points which Kaldor and Myrdal raise can be summarised under four headings :

1 Any long run development must be seen as a sequence of short run events and it can only be understood and analysed if due recognition is given to the factors which determine the constraints and behaviour of 'agents' in the short period. Particular attention should be paid to the short and ultra-short run sequential patterns which are vital for the specification both of the constraints faced by agents and of their perceptions regarding the optimal course of action within these constraints.

2 The equilibrium notion associated with general equilibrium theory embodies a 'harmony predilection'. Conflict over the allocation of limited resources between competing ends is, of course, at the centre of general equilibrium theory. But in the static notion of simultaneous equilibrium, conflicts have been completely tamed; the preoccupation of neoclassical theory with questions of Pareto optimality is symptomatic of this. In place of a static theory of simultaneous equilibrium one needs a dynamic theory where the non-fulfilment of static equilibrium conditions acts as an impulse to change and where the induced changes will themselves alter the position of the (unattained) short period equilibrium in the ensuing period. The focus of economic theory should shift from questions of 'allocation' to questions of 'creation'.

3 Abstract mathematical generality and elegance must be relinguished as criteria for judging developments in economic theory. There is a need for abstract theory, but even abstract theories must be judged on their relevance and adequacy with respect to the specific problems and facts which they purport to illuminate.

4 Neoclassical theory is built on a number of 'unrealistic assumptions'. The following stylised facts – neglected by neoclassical theory – are of particular importance :
a) The world economy (as well as most if not all national economies) has the characteristic of a dual economy. Advanced and dynamic sectors coexist with backward sectors. The exact delineation of 'advanced' and 'backward' sectors is a matter of judgment and will depend on the purpose of the analysis. In many cases, however, it is useful to identify the advanced sector with industry and the backward sector with agriculture. The service sector is rather a mixed bag, some parts of it being definitely advanced but others backward.
b) Production in manufacturing industry is subject to increasing returns. Three different forms of increasing returns are distinguished : The classical case of static increasing returns which are internal to the individual firm; external increasing returns associated with Adam Smith's and Allyn Young's recognition of the interdependence between the division of labour and the extent of the market; and, finally, dynamic increasing returns denoting

endogenous changes in the production possibility set. Although often conceived of in a narrow sense as 'endogenous technical progress' or 'learning by doing', dynamic increasing returns could also encompass wider social aspects such as endogenous changes in industrial relations or in attitudes to work and risk-taking.

c) Apart from supplying industry with necessary raw materials, the primary sector and parts of the service sector also play an important role as a repository of hidden unemployment; the marginal contribution of additional workers to output in traditional agriculture and in some small scale services is zero or negligible.

d) The notion that exogenously given factor endowments and production possibility sets act as binding constraints on economic outcomes is false except in the very short run – this is almost a corollary of b and c above.

The four criticisms raised under 1-4 above are closely related. The charge of a 'harmony predilection' in neoclassical theory is reinforced by the simultaneity of the equilibrium concept in general equilibrium models. The term conflict is inherently dynamic. It is in the nature of a conflict that the conflict is played out in actual time and that the actions of one party to the conflict will affect the (future) opportunity set of other parties. In the terminal states of simultaneous general equilibrium the focus is on (logically possible) final outcomes, and a final outcome can only be a *final* outcome if it is akin to a compromise accepted by all parties; in a final outcome the conflict has been resolved. A – perhaps rather silly – metaphor may help to clarify. A football match is a simple example of a limited and well-defined conflict. In order to understand and analyse this conflict one will have to pay careful attention to the 'sequential patterns' of events on the field. Split seconds can make all the difference on the effect of an otherwise beautiful pass down the middle. The possible final outcomes, however, can be described in simple static terms: either one of the two sides will win or it will be a draw. The rules of football stipulate that the final outcome will be found after 90 minutes of play. In the economic 'game' there is no such time limit; a terminal state for an economy is therefore more like a football match which is interrupted before full time by the two sides resolving their conflict and agreeing on a suitable compromise, a draw for instance.

There is also a link between the need for on the one hand sequential analysis and, on the other, a relevance criterion to assess abstract theory. One of the main reasons why many economists regard general equilibrium theory as the appropriate general framework of analysis, is the way the framework can accommodate an arbitrary number of commodities and agents. The theory, in other words, seems to offer true generality in the commodity and agent spaces. In practical applications one may need and want to aggregate and to introduce specific assumptions, but the general framework, it is held, eschews the need for any such 'ad hoc' restrictions.[4] In fact, the generality of general equilibrium theory is somewhat illusory even as regards the commodity and agent spaces but, more importantly, disaggregation in the commodity and agent spaces is achieved at the expense of extreme aggregation in the time dimension: the simultaneous equilibrium of general

equilibrium theory is fundamentally static. The research strategy of general equilibrium is that of a corner solution: (almost) complete disaggregation in the agent and commodity sphere goes hand in hand with (almost) complete aggregation in the time dimension.[5] It is the alleged 'generality' of the general equilibrium framework which supposedly leaves the framework immune to questions of relevance and realism, and the illusory character of this generality is most clearly seen in the treatment of time in general equilibrium theory. All theories must be 'partial theories'; there are no truly 'general theories', and the common view that 'partial theory' (or partial equilibrium analysis) is 'bad' and 'general theory' (or general equilibrium analysis) is 'good' is either wrong or based on an identification of partial with 'leaving out relevant factors' and general with 'including all the factors which I consider relevant'. Down to earth questions of 'realism' and 'relevance' are, in other words, pertinent even with respect to abstract theory.

'Realism', obviously, should not be taken in the sense of detailed, accurate, descriptive realism, but in a weaker sense: if one has reason to believe that factors which are omitted by a given theory exert a significant and systematic influence on the problems which the theory addresses or if the theory includes assumptions which are known to be at variance with the properties of the real world counterparts which the assumptions refer to, and if one has reason to believe that this discrepancy is of material importance for the conclusions derived from the theory, then the theory has failed the test of realism. The wording here may be thought so vague that the statement verges on the meaningless. The wording, however, reflects the simple fact that 'good judgement' will always be involved in the test for realism; economics and pure mathematics are very different ball games.

If it is agreed that general equilibrium theory neglects sequential patterns and adopts an extreme aggregation in time, then the next question becomes whether this is acceptable. Does the neglect of the time dimension have a material effect on the relevance of the model. The answer to this question will depend crucially on the characteristics of the economy and this is where Kaldor's and Myrdal's fourth point – the unrealistic assumptions of neoclassical theory – becomes important. Broadly speaking, the more static are the underlying 'real factors' of the ecomony the less important are the sequential patterns likely to be. The next section presents three examples which illustrate this point.

Three model economies

Consider first a pure exchange economy. At the beginning of each period individual agents receive endowments in the form of fixed bundles of (perishable) goods.[6] The endowments may differ between individuals but the endowment of any given individual is the same in all periods. An agent may either consume his/her endowment or try to alter the composition of the consumption bundle through trade.

In the absence of an omniscient auctioneer or recontracting facilities it is

highly unlikely that all acts of trading in the first period will reflect the same relative valuation of the commodities. The relative prices of commodities will change within the period and if different bilateral acts of trade take place simultaneously, then the ratio in which one good is exchanged for another may not even be uniform at a given moment in time. 'False trading' and 'false consumption'[7] will be pervasive. In subsequent periods, however, agents will be influenced by their past experience. They will have gathered some information on the preferences of other agents and on the trading possibilities which they face. Although it may be extremely difficult to set up a formal (and interesting) analytical model and establish the result rigorously, it seems reasonable to suppose that the continuous learning experience of agents will make the economy approach a 'terminal state'; i.e. the trading and consumption pattern of agents will asymptotically be constant.[8] In the analysis of the long run properties of an economy like this it would therefore be justified to focus on the properties of possible terminal states. The set of Walrasian general equilibrium states will only be a subset of the set of possible terminal states[9] and, furthermore, the actual pattern of 'false trading' and 'false consumption' in the early periods will in general play a part in determining which particular terminal state will emerge. Nevertheless, even the simple Walrasian model would probably not be grossly misleading if one were concerned merely with the asymptotic outcome in an exchange economy of this sort.[10]

If production is introduced, matters become a little more complicated. The extent of the complications will depend on the precise assumptions. In the simplest case where production takes place wholly within each unit period and where there is no possibility of augmenting production possibilities in one period by the transfer (investment) of resources from the previous period, the introduction of production makes no material difference. Each period will in this case remain completely self-contained with given exogenous constraints which are independent of events in previous periods. But this type of production economy is a far cry from actual modern production economies.

To be interesting, the model of a production economy must allow for the possibility of investment; i.e. for the existence of produced inputs to production and the possibility of transferring produced inputs from one period to the next. The implication of this is that the individual periods cease to be self-contained. Intertemporal considerations, expectations concerning trading possibilities in future periods, will now play a part in determining the outcome in any given period. Furthermore, past mistakes in the form of false trading, false consumption and false investment will directly affect current trading possibilities and current constraints on consumption and investment. A priori one would expect this to diminish the chances of the economy settling down to a terminal state or at least to slow down the speed of convergence to a terminal state. But without more specific assumptions regarding the structure of the production economy it is impossible to say much more.

One theory of a production economy which has at least some claim to relevance in relation to advanced capitalist countries is the Keynes-Kalecki

theory of effective demand (Keynes, 1936; Kalecki, 1971). The theory of effective demand, however, is a short run theory. The unemployment equilibrium described by Keynes is at most a temporary terminal state. The accumulation of physical and financial assets will gradually change some of the parameters determining the behaviour of agents and thus induce changes in the short run equilibrium configuration. The possibility (or likelihood) of persistent involuntary unemployment is thus put into question. As a matter of fact, it is difficult to see how *large* and *persistent* rates of unemployment could be directly attributed to Keynesian involuntary unemployment. Involuntary unemployment involves the coexistence of extra capital capacity and unemployment. Endogenous investment and scrapping decisions of firms will, however, ensure that the long run average rate of utilization of capital will be close to the desired rate of utilization. The long run average rate of involuntary unemployment is thus limited by the desired degree of excess capacity. But, of course, demand shifts which effect the current level of output and capacity utilization could have a long term effect on the rate of growth of capital capacity: the investment decisions, which help determine the position of the short run equilibrium, will also imply a certain rate of growth of capital capacity, and the rate of growth of capacity in conjunction with the rate of growth of labour augmenting technical progress sets an upper limit to the potential rate of growth of employment.[11] If this upper limit falls below the rate of growth of the labour supply then 'Marxian' unemployment may result. The appearance of Keynesian involuntary unemployment in any given short period may therefore have long run repercussions in the form of subsequent Marxian unemployment.

Empirical evidence, however, shows that registered rates of unemployment fluctuate within relatively narrow limits. If one were to accept, as Keynes apparently did, that the allocation of employed resources is always optimal in the sense that the marginal value product – at the ruling prices – of any input is at least as high in the line of production where it is actually used as in any other line and if, furthermore, one assumes – as most modern growth models do – that technical progress and the growth of the labour force are exogenous, then the conclusion seems inescapable: the long run growth rate is determined by exogenous supply constraints. Keynes' theory of employment may explain short run variations of actual from potential production, and the average level of production (as a proportion of potential output) may be affected by trade cycle fluctuations, but the long run growth rates of output and productivity remain anchored to exogenous and real supply constraints. With some qualifications, neoclassical theory may therefore provide an acceptable stylised description of how the economy works in the long run. The qualifications relate to the *level* effects of the average degree of underutilization of resources associated with fluctuations in effective demand.

The existence of underutilized resources is of course no unimportant matter. If in this sort of economy the careful demand management policies of a central government could succeed in raising permanently the average degree of utilization by, say, 1% then this would certainly be an achievement of great importance. The point therefore is not the government intervention is un-

necessary in a 'Keynesian production economy' but merely that neoclassical theories of simultaneous general equilibrium may provide a useful account of average long run outcomes (the one proviso being that the level of the average actual activity will be below the potential level predicted by neoclassical theory). The scene is then set for a division of economic theory into short run Keynesian theories of market failure and of the determination of the level of economic activity relative to the potential given by exogenous resources, and on the other hand long run neoclassical theories of market success in the efficient allocation of all employed resources, the average rate of employment of resources being constant. The Keynesian analysis of the short run behaviour of the economy may rely on explicit considerations of sequential patterns (cf. Skott, 1983a), but empirical evidence of relatively narrow limits on fluctuations in registered unemployment in conjunction with Keynes' acceptance of all but one of the neoclassical postulates implies that exogenous supply constraints reassert themselves in the long run, and the average long run behaviour of the economy can therefore be understood without reference to socio-economic factors and the sequential patterns of the socio-economic system.

As the third example consider a simple model economy which departs more radically from orthodox neoclassical models and which embodies some of the Kaldor-Myrdal assumptions described in the previous section. The model economy is divided into two main sectors, A and M. Sector M may be thought of as a 'modern', capitalistic, industrial sector (producing 'machines') and sector A as a 'backward' agricultural sector (producing 'corn').

The A sector supplies consumption goods to workers in the M sector and raw material inputs to the M sector. It also serves as a repository of surplus labour: employment in the M sector is determined by the demand for labour in that sector leaving employment in sector A as the residual. There is no overt unemployment but the marginal contribution of labour to output in sector A is zero.

It is assumed that production of machines takes place at two different production centres, Birmingham and Essen, which are, as it were, isolated M sector islands in a sea of agricultural production.[12] Output from the two centres is indistinguishable and, since there are no costs of transportation, will be sold at the same price, p_m. The capital output ratio is the same in the two centres and constant over time, and both centres have an infinitely elastic supply of labour (from the surrounding A sector) at the ruling wage rates, w_b and w_e respectively.

The production of machines is subject to dynamic increasing returns to scale. The rate of growth of labour productivity in Birmingham (Essen) is positively related to the rate of capital accumulation in Birmingham (Essen) and, ignoring for the moment production lags and variations in the utilization rate of capital, the rate of accumulation is equal to the rate of growth of production. Algebraically this is expressed by

$$\hat{q}_b = f(\hat{M}_b) \qquad (1a)$$

$$\hat{q}_e = f(\hat{M}_e) \qquad (1b)$$

where $\hat{q}_b$ ($\hat{q}_e$) and $\hat{M}_b$ ($\hat{M}_e$) denote the proportionate rates of growth of labour productivity and output in Birmingham (Essen).

The rates of growth of production, in turn, are determined by profitability conditions,

$$\hat{M}_b = g(\pi_b, \pi_e) \quad ; \quad g_1 > O, g_2 < O \qquad (2a)$$

$$\hat{M}_e = g(\pi_e, \pi_b) \quad ; \quad g_1 > O, g_2 < O \qquad (2b)$$

where π_b and π_e are the profit shares (which are proportional to profit rates) in the two centres),

$$\pi_b = 1 - \lambda\, p_a/p_m - w_b/(p_m\, q_b) \qquad (3a)$$

$$\pi_e = 1 - \lambda\, p_a/p_m - w_e/(p_m\, q_e) \qquad (3b)$$

where λ is the agricultural raw material input per unit of industrial output.

Equations (2a)–(3b) reflect the hypothesis that the desired rate of growth of production in, say, Birmingham depends on the absolute level of profitability in Birmingham as well as on the relative profitabilities in the two production centres; there is some degree of international (money) capital mobility and firms are induced to invest in the country offering the highest prospective return. Current profitability acts as an indicator of future prospects.[13]

Substituting (2a)–(3b) in (1a) and (1b) appropriately, one gets

$$\hat{q}_b = f(g(\pi_b\,,\, \pi_e)\,) = h(1 - \lambda p_a/p_m\,,\, w_b/(p_m q_b),\, w_e/(p_m q_e)\,) \qquad (4a)$$

$$\hat{q}_e = f(g(\pi_e\,,\, \pi_b)\,) = h(1 - \lambda p_a/p_m\,,\, w_e/(p_m q_e),\, w_b/(p_m q_b)\,) \qquad (4a)$$

where $h_2 < O$, $h_3 > O$

If it is assumed that efficiency wages in the two industrial centres are equal initially and that nominal wages grow at the same proportional rate in the two centres, it is readily seen that the two centres will have identical profit shares and hence the same rates of growth of output and labour productivity. It is also easy to see, however, that if for some reason firms take a pessimistic view of future prospects in, say, Birmingham and therefore initially expand production in Birmingham less than indicated by equation (2a), then this pessimistic view will be vindicated by actual events: the slower rate of expansion will lead to slower rates of productivity growth, profitability in Birmingham will suffer relative to profitability in Essen and even if 'animal spirits' revive and expansion starts following equation (2a), the rates of growth of output and

productivity in the two centres will diverge. A similar process of divergence would result if, say, 'false trading' in the initial period led to Essen machines fetching on average a higher price than Birmingham machines. In this model short run events may set in motion a cumulative process; 'false trading' or 'false investment' at any given moment in time may have dramatic effects on the long run outcome. The long run outcome is not determined by exogenous constraints.[14]

It may be noticed that divergence does not depend on the absence of catching-up effects of the sort that have played an important role in the debate following Kaldor's inaugural lecture.[15] Even if equations (1a) and (1b) were replaced by

$$\hat{q}_b = f(\hat{M}_b) + \phi(q_b/q_e)\ ;\ \phi' < O \qquad (1a)'$$

$$\hat{q}_e = f(\hat{M}_e) + \phi(q_e/q_b)\ ;\ \phi' < O \qquad (1b)'$$

there would be no tendency to equality in the growth rates of output or in the levels of productivity.

Properties of the Kaldor-Myrdal model

In the preceding section the Kaldor-Myrdal model was described in a rather simultaneous way: we paid only limited attention to the short run sequential patterns, and these patterns are of vital importance. Consider the problems facing the centre which for some reason has become the slow growing region. As it stands, the model suggests that a lowering of money wages in the region would improve profitability instantaneously and boost the rate of growth of output and productivity. If the cut in money wages is sufficiently large – and if money wages in the fast growing centre are unaffected by changes in the slow growing centre – then profitability in the initially slow growing centre will come to exceed profitability in the initially fast growing centre and the relative ranking of the centres in terms of growth will be reversed. Even if the money wage change is insufficient to reverse the growth ranking it will still lead to an improvement in the relative growth performance of the slow growing centre. The growth rate of the slow growing region will be enhanced and the growth performance of the fast growing centre will deteriorate – On close examination this clearcut conclusion may, however, become suspect.

Notice first that there are no obvious reasons why money wages in the slow growing region should fall relative to money wages in the fast growing region. Both centres have, by assumption, an infinitely elastic supply of labour at the ruling wage rates.[16] If the reserve army of hidden unemployment exerts downward pressure on money wages then it should do so in both centres. Declining levels of employment in the slow growing region – and thus a threat of redundancy to already employed workers – could be a factor making for adjustments in relative wage rates, but industrial employment may be increasing even in the slow growing region. Indeed, if wage adjustments do

not come into operation unless the employment level is decreasing then they can at most arrest the speed of decline of the slow growing centre. Finally, firms are likely to prefer workers with previous industrial job experience so the possibility of migration of workers as well as general pressures for wage comparability may limit the extent to which wage rates can diverge, between regions.

The model, however, does indicate that *if* changes in relative money wages can be effected then these changes will have immediate and powerful effects on growth. A Keynesian policy of increasing the demand for industrial output by fiscal measures on the other hand will improve profitability in both centres and may not enhance the relative performance of the slow growing centre.[17] A stimulus to industrial demand does not correct the underlying cause of relatively slow growth, namely the relatively low profitability in the centre. Money wage policies or devaluation would thus – from the point of view of the slow growing region – seem preferable to demand management policies.

These conclusions depend on the postulated short run behaviour of the economy. The model ignores factors such as product differentiation, information lags and (short run) consumer loyalties. It was assumed that output from the two industrial centres is indistinguishable even in the short run and that a common price of machines is therefore established.[18] Variations in capital utilization rates, production lags and lags in firms' responses to different stimuli were also neglected. If these factors are allowed for, the conclusions may not hold: strong short run consumer loyalties and competitive advantages on the home market would greatly improve the chances of success for a policy of domestic demand expansion; the benefits of increased productivity may occur before the factors limiting competition in the short run wear out.

The simple remedy of lowering money wages or devaluing the currency, on the other hand, becomes more suspect in these circumstances. Product differentiation implies that a larger cut in money wages will be required to ensure the same effect on profitability and growth[19]; the almost immediate effects of wage cuts on (nominal) domestic demand in conjunction with a semi-protected home market also weaken the effects of a given wage cut on profitability. The danger of wage cuts as a remedy against slow growth are thereby aggravated: cuts in money wages will almost certainly upset relative wage differentials within the industrial centre (at least temporarily) with likely adverse short run effects on industrial relations and productivity. And in so far as reductions in the price of output lead to lower levels of money profits, the financial position of firms may also be put under stress and bankruptcies may add their weight to the adverse effects. The larger the average wage cut required to ensure significant positive effects, the more severe are the adverse effects likely to be.

A policy of devaluation would have a better chance of reducing all wages simultaneously without upsetting wage differentials within the centre, but devaluation carries with it its own dangers. Inflationary tendencies may have implications for business confidence and industrial relations. Secondly, and

perhaps more important, the fast growing region will probably not just sit back and allow its competitiveness and growth to be undermined by an undesired revaluation of its currency. The outcome of an attempted devaluation by the slow growing region could therefore well be a whole series of exchange rate adjustments with little or no effect of the relative profitability and growth rates of the two regions but with inflationary consequences. Beggar-thy-neighbour policies of wage reductions or devaluations thus offer little hope of success in improving the overall growth of industrial production, and retaliation may even make the prospect of success for any individual centre doubtful.[20]

We may conclude that short run sequential patterns will be of crucial importance in the Kaldor-Myrdal economy. *The sequential patterns will influence the short run effects of 'exogenous shocks'* – be they policy interventions, stochastic changes in agricultural prices or sudden changes in workers' money wage demand – and *the short run outcome may have cumulative long run effects.* This indeed is one of the main points of the example. The vital importance of sequential patterns is one of three important characteristics which distinguishes the Kaldor-Myrdal economy from the general equilibrium vision of the world.

The second distinguishing characteristic concerns the relationship between economic and non-economic factors. The model predicts inherent tendencies to divergence between regions. The prediction of the long run winners in the growth game is however extremely hazardous if, initially, industrial regions experience similar rates of profit and growth; a small shock may turn what looked like a winner into a loser. If, on the other hand, large disparities in profitability and growth rates have developed then this will almost certainly provoke strong attempts at direct intervention. If the regions belong to the same political entity, the intervention will probably take the form of centrally financed schemes to counteract the relative decline of slow growing regions and to rejuvenate industry in these regions. If the regions are in fact sovereign states, then pressures for government intervention are likely to mount in the slow-growing countries. In the first instance the intervention could be measures to stimulate demand. If this created balance of payments problems then import controls or exchange rate policies might follow. But if differences in growth rates persist and lead to significant shifts in relative economic power between countries, then political and institutional upheavals can be expected. The breakdown of the Bretton Woods agreement following two decades of relative decline of the US economy is a case in point. The rise of German strength (in particular vis-a-vis England) and the outbreak of the first world war is another example. The general idea, that political and social institutions are adapted to a particular economic situation and that changes in the economic sphere lead to (possibly abrupt and violent) changes in the superstructure, is of course straight out of Marx.

The implication of the above is not that balanced growth of the industrial regions will be established as the result of direct intervention. The outcome of any such intervention may not be that desired by the party who instigated the change and even if a 'loser' had complete knowledge of the causes of uneven

development it may not be within the powers of the 'loser' to effect changes which will remedy the situation. The important conclusion therefore is quite different. It is that a narrow economic analysis which takes institutions and socio-political factors as given is likely to be misleading. A free market laissez-faire game will create winners and losers and this will cause pressures for revisions of the 'rules of the game' to be built up. The model points to latent conflicts and the uneven development predicted by the model will exacerbate these conflicts and bring them out into the open. The conclusion of the model is that it may be very difficult for Birmingham to arrest a relative decline but that attempts to do so by direct intervention (changing the rules) are to be expected. The outcome will depend both on the economic and political strength of Birmingham (which defines the range of feasible interventions) and on the skill and wisdom exercised 'by Birmingham' in the choice and implementation of intervention measures. Both of these factors will in turn be influenced by the extent of social conflict within Birmingham and by the balance of forces in those internal conflicts – Birmingham is no homogeneous decision unit.

The third major difference between a neoclassical vision and the Kaldor-Myrdal view concerns the nature of the effective constraints on the economy. The economy described by neoclassical models (and to some extent by the Keynesian model discussed in the previous section) is constrained by exogenous and real supply factors. The same cannot be said about the Kaldor-Myrdal economy. To be sure, all real world economies are faced with some exogenous constraints. Land and other natural resources, the size of the population and the inherited capital equipment, technical knowledge as well as the socio-economic set-up are predetermined at any given moment in time, and there are no doubt upper limits to the possible rate of change in these factors. But *it is difficult to ascertain what those limits are.*

Even the available quantity of land and natural resources which would seem the most promising candidate for a truly exogenous constraint, may change over time. New mineral deposits may be discovered. Hitherto unused and barren land may be turned into fertile farm land following the invention of new farming techniques. Whether one wants to classify these changes as advances in knowledge rather than as changes in the available natural resources makes little difference. The point is that the discovery of mineral deposits or the introduction of new farming techniques are the results of human activity, and human activity – including all economic activity – will always and everywhere take place in a social context. Social factors and exogenous physical and physiological constraints are inextricably mixed in the outcome. Exogenous physical and physiological production possibility sets are unknown and unknowable, but even if they were known this would not be very helpful in explaining the actual development of an economy: the relevant 'possibility sets' are constrained also by the social and institutional organisation of economic activity. And we do know that social factors can play an important part. It is not contentious, for instance, to argue that feudal societies differed from capitalism with respect to innovative dynamism. Debates in industrial economics about the effects of X-efficiency and dynamic

efficiency of different market structures also reflect an awareness even within orthodox economics of the impact of the social environment on technical efficiency and dynamism.

The fact that exogenous production possibility sets are unknown and unknowable implies that notions of Pareto-*optimality* and intertemporal *efficiency* become meaningless. Recognition of the social character of economic activity and of the interaction between the economic sphere and wider social factors means that questions of 'efficiency' and 'optimality' in an absolute sense become ill-defined and irrelevant. The social framework may constitute the effective constraint on the growth path of the economy.

In the simple Kaldor-Myrdal economy, for instance, the 'animal spirits' of industrial firms have a decisive influence on the growth rate of the whole economy. An upward shift in the g-functions describing the production and investment decisions in industry would take the economy to a new growth path with a higher rate of growth. A shift in the g-functions could be the result of, say, changes in the financial sphere which for given rates of expansion and profitability diminish the risk of bankruptcy and takeover for individual firms; the position of the g-functions is not determined by exogenous supply constraints. The increase in growth rates following the shift in the g-functions may of course entail a temporary drop in real wages, but since the supply of labour is infinitely elastic at the given money wage rates this does not imply an effective constraint on growth. The constant capital output ratio does set an upper limit to the potential rate of expansion of industrial production, but this constraint is hardly likely to be binding. The surplus of agricultural production which is made available for workers' consumption and as raw material input in industry could also constrain industrial production. The agricultural production and its growth rate cannot, however, be regarded as exogenously given. The social and institutional framework plays a prominent part in determining the agricultural surplus, and a cursory look at the world economy today suggests that social and institutional factors rather than constraints of technical feasibility present the more important limits on primary production and its rate of expansion.

We may summarise this section as follows: the Kaldor-Myrdal vision breaks with neoclassical orthodoxy on three fundamental issues: (i) the nature of the relevant constraints on the economy, (ii) the relation between the economic sphere in a narrow sense and wider social developments, and (iii) the importance of short run sequential patterns and adjustments speeds for the long run evolution of an economy. It is the difference in these areas which more than anything else separate Kaldor and Myrdal from neoclassical economics. Where neoclassical economists see intertemporal equilibria constrained by exogenous possibility sets, Kaldor and Myrdal see economies which are not effectively constrained by exogenous factors but by social and institutional factors, and they predict that (under capitalism) inherent tendencies to unequal development across regions and sectors will generate irresistable pressures for changes in the social and institutional set-up. It should be apparent that although it is cast in different terms, the Kaldor-Myrdal

position has in fact many affinities with traditional Marxian views.

Vicious and virtuous circles

The section on 'Three Model Economies' presented three simple models. Assumptions of private property and the pursuit of self-interest were common to the three models, but they differed with respect to the specification of exogenous and socio-economic constraints. Perhaps not surprisingly, these differences had dramatic effects on the behaviour of the economies as well as on the appropriate framework for analysing the economies.

It seemed plausible that the simple exchange economy could be described and analysed within a timeless general equilibrium framework. The Keynesian one sector production economy allowed for the occurrence of involuntary unemployment but when the secular development of advanced Western economies were looked at through the glasses of the Keynesian one sector model, then long run growth rates appeared to be determined by exogenous supply constraints and a modified neoclassical framework seemed adequate for the analysis of the long run properties of these economies.

The Kaldor-Myrdal economy differed from the Keynesian economy in three respects: dynamic increasing returns were introduced along with some dual economy features and some spatial disaggregation. This meant that there would be a tendency for growth rates in different industrial centres to diverge and that socio-economic constraints – as opposed to exogenous, 'technical' constraints – came to the forefront also as regards long run development.

As far as medium to long run questions are concerned, the main division is between the Kaldor-Myrdal economy on the one hand and the resource constrained exchange economy and Keynesian production economy on the other. By abandoning the idea that exogenous resources are the effective constraints on the long run development of actual economies, a new vision is opened up. One enters a world of circular and cumulative causation where success breeds success and failure only failure. Some regions will find themselves in a virtuous circle of rapid and self-sustained growth and other regions will be thrown into a vicious circle of relative decline, and the reasons for success in one region and failure in another have more to do with historical accident than with exogenous resource endowments.

The notion of vicious/virtuous circles can be viewed as a dynamic long run analogue to Keynes' notion of involuntary unemployment. The existence of involuntary unemployment implies that the level of production is not constrained by available resources. More workers would be willing to work even at a reduced real wage rate and firms would employ more workers if the real wage rate were lower. But the specific social organisation of economic activity under capitalism makes it impossible for workers to engineer a decline in real wages and thus to increase employment. Workers may accept a cut in

money wages but this will not in itself cause a change in real wages and declining money wages may even destabilise the whole system and aggravate the employment situation. The effective constraints on the levels of production and employment are social and institutional; the social organisation of production prevents the full utilization of available resources.

The notion of vicious circles generalizes this Keynesian notion: a regional economy is in a vicious circle if the endogenously generated forces of the socio-economic system depress the economic growth and development of the region relative to the development of other regions. Similiarly, a regional economy experiences a virtuous circle if endogenous forces of socio-economic system favour the economic development of the region relative to the development of other regions.

These definitions do not really have the clarity and precision that ideally one would desire. For a start, vicious/virtuous circles have been defined in purely relative terms. The focus is on the differential impact of the socio-economic system on the development opportunities of different regions, and if one were interested in more than two regions – as in most cases one would be – then some regions may experience a vicious circle if the most favoured region is used as a yardstick and a virtuous circle if comparison is made with the least favoured regions. This ambiguity is closely related to the absence of an absolute measure of 'neutral development' or 'potential development'.

By accepting most of the neoclassical postulates and limiting himself to short run issues where the size and composition of the capital stock and the labour force as well as the skills, attitudes and values of all 'agents' could be taken as given, Keynes was able to devise a measure of actual achievement relative to the short run resource constrained potential of the economy. It was argued above, however, that the set of potential development paths of an economy which is constrained only by initial conditions and physical and physiological resources, is unknown and unknowable. There is no way therefore – even in principle – of measuring the performance of an economy over some period of time relative to its 'potential'. One may try to estimate the likely effects of some specified change in the social organisation of the economy on the time path of the economy; i.e. one may compare the predicted 'no change path' with the predicted path following the specified change.[21] But the larger the change, the more uncertain the conclusions, and changes in social organisation will in general entail changes in attitudes and preferences which further complicate the comparison.

With respect to an open regional/national economy there is an additional reason for the impossibility of devising an absolute measure of potential development. The development path of an open economy must inevitably be influenced by what goes on in the rest of the economic system which it is part of. This 'complication', however, also creates the possibility of comparing the development paths of different regions and investigating whether endogenous forces of the prevailing socio-economic structure lead to a concentration of economic growth and development on some regions and

(relative) decline in other regions, or whether they tend to produce a uniform level of development in all regions. The definition of regional vicious and virtuous circles given above relates to this kind of evaluation of the extent to which the world-wide economic system is conducive to economic development in different regions. The notions of regional vicious/virtuous circles, thus, are based on inter-regional comparisons within a given socio-economic structure.

An assessment of the effects of the socio-economic structure on regional development must be based on a theory which separates basic socio-economic causes from the influence of 'other factors' (e.g. natural resources, stochastic disturbances and political interventions). Endogenous socio-economic factors and 'other factors' will interact in their effects on development. The separation therefore cannot take the simple form of allocating, say, 50% of a region's economic growth over some time period to socio-economic factors and the remainder to 'other factors'. The separation must consist in a theoretical explanation of the dynamic interaction between different factors which produced the outcome. It is therefore only in the context of a fully articulated theoretical model that the notion of vicious circles can be given a precise meaning.[22]

Consider for instance the simple Kaldor-Myrdal model. The industrial centre which initially happened to have the lowest profitability would subsequently experience the effects of a vicious circle. The precise meaning of vicious circle is quite clear here: the vicious circle consists in (i) the tendency for investment and growth to take place where profitability is high and (ii) the fact that investment and output growth determine the growth of labour productivity with the implication that initial difference in profitability will be exacerbated. Uniformity in the movement of money wages in different regions, profit induced investment, interregional mobility of money capital for investment, and dynamic increasing returns to scale are the socio-economic factors behind the vicious circle.

Some degree of vagueness is inherent in all terms which attempt to capture and describe the content of a general outlook (or vision, paradigm, research progremme). The notions of 'general equilibrium approach' or 'monetarism', for instance suffer from a similar lack of precision. And the vagueness of 'vicious circle' does not imply that the term will not be useful. Giving a name to something may be a necessary first step: the name, the conceptualisation, may guide and stimulate further research.[23]

Summary and conclusions

The Kaldor-Myrdal approach asserts the central importance of factors which are ruled out a priori in orthodox theory. Prominent among these factors are (i) the existence of hidden unemployment and (ii) increasing returns to scale in industry. In this paper I have tried to argue that these factors may have implications not just for specific neoclassical models but for the appropriate

general theoretical framework of analysis.

Where neoclassical economics see only exogenous constraints and given preferences, Kaldor-Myrdal see socio-economic factors interacting with truly exogenous constraints of nature. Where neoclassical theorists see questions of allocation of given resources between competing ends, Kaldor-Myrdal see questions of the creation of resources: the economic system constantly transmits impulses to change and the changes are not just movements along some exogenously given frontier. The behaviour of agents changes as a result of the signals they receive; the signals cause revision of perceived constraints as well as of general attitudes and preferences. And changes in the behaviour of agents have effects on the socio-economic factors which influence (or 'constrain') the path of the economy. The absence of well-defined and binding exogenous constraints implies that sequential patterns become vitally important.[24] If the economy were always at or near some well-defined exogenous constraints then the socio-economic factors could 'only' influence the exact position of the economy along the exogenous constraint boundary. Nature or God-given physical constraints can be expected to have permanence (relative to the time scale of human activity). These constraints can therefore be stated in static or timeless form, and if they exert a powerful influence on economic outcomes then economic theory might also be cast in static simultaneous form.

Without binding exogenous constraints (and with an unknown position of the exogenous constraints), the 'relevant constraints' will be socio-economic in character. And the constraints imposed by the manner in which the social interaction of agents takes place, cannot be understood without regard for the time dimension. The law of gravity may be equally valid in 1066 and 1985, but the outcome of an industrial dispute can not be understood on the basis of a simple listing of 'events' which have taken place; the time ordering of the sequence of events is crucial.

The essence of the Kaldor-Myrdal approach was put succinctly by Young (1928), very early on, indeed! Modifying Smith's famous dictum, he stated that "the division of labour depends in large part upon the division of labour" (p. 533). This as Young argued, is more than a tautology. It means that economic activity is not in general constrained by exogenous resources. The division of labour is both cause and effect in a dynamic process, a chain reaction, where the socio-economic system transmits signals and the responses of agents produce new signals which induce new responses. The chain reaction may sometimes (or in some regions) proceed at a fast pace and at other times (or in other regions) at a slow pace. The absence of known and well-defined exogenous constraints on economic activity implies that the emphasis in economic theory must be on the socio-economic factors which shape the chain reaction of economic development. This is the central message of the Kaldor-Myrdal approach.

FOOTNOTES

* I wish to thank Philip Arestis, Paul Auerbach, Victoria Chick and Peter Swann for helpful comments on an earlier draft.

1. Cf. the celebrated Leontief paradox. The debate which followed the publication of Leontief's original paper, Leontief (1953), is surveyed in Chipman (1966) and Bhagwati (1965).
2. Blaug (1980) goes as far as to argue that "the assessment of the Ohlin-Samuelson research program thus cannot be separated from the assessment of the wider Hicks-Samuelson-Arrow-Debreu general equilibrium research program of which it forms an integral part" (p. 213).
3. In particular Kaldor (1972); but see also Kaldor (1970, 1978).
4. Tobin (1960) expressed this in a rather extreme form, Defending neoclassical distribution theory, he argued that "For all the flaws that Mr Kaldor detects in it, neoclassical theory is general; it will divide up the national product among 3 or 101 factors as well or as badly as between 2. Mr Kaldor's substitute should not do less." (p. 191)
5. This argument is developed in greater detail in Skott (1982).
6. The beloved text book example of red cross parcels to inmates in a prison camp may serve as a case in point.
7. I.e. acts of consumption which in the light of subsequent information on trading possibilities are seen to be suboptimal.
8. A mathematical literature on learning does exist but whether it is interesting is perhaps an open question. It seems to me that agents are usually assumed to possess far too high a degree of rationality and computational powers while on the other hand important sources of information (e.g. direct communication with other agents and publicly available information in newspapers etc.) are neglected. Furthermore, analytical difficulties make the formal modelling of learning processes virtually impossible except in the very simplest of cases, and the relevance of the very simple cases to more interesting learning problems is not obvious.
9. 'Possible states' in the sense that they cannot be ruled out given the information presented above.
10. Assuming that one had reason to believe that the effects of direct personal domination of some agents over others or of theft and other violations of the rules of private property were insignificant.
11. Assuming that the scope for capital labour substitution is very limited once 'capital' has taken the specific forms decided as part of the investment decision; i.e. assuming that capital is of the putty-clay or clay-clay variety.
12. The analysis could easily be generalised to allow for more than two centres of production.
13. A more rigorous justification for the link between growth and profitability is given in Skott (1985).
14. The determination of p_m/p_a need not concern us here. See Skott (1983b) for a more complete specification of the Kaldor-Myrdal model.

15. Among others, Kaldor (1966), Rowthorn (1975), Gomulka (1971, 1982), Cornwall (1977), Parikh (1978).

16. This assumption implicitly restricts the applicability of the model to situations where the real wage rate (in terms of consumption goods) is above a certain minimum level.

17. Whether in fact it does will depend on the chosen measure of relative performance and on the exact specification of the output expansion functions, (2a) and (2b).

18. For the long run the indistinguishability assumption is less objectionable. A Citroen Visa may be different from a Mini Metro and in the short run demand may not be very sensitive to variations in the relative price. But the long run price elasticities of demand are likely to be high, and even if they are not and if, say, the production of Metro in the low productivity (high cost) country yielded higher profits then the Citroen designers would surely be able to come up with a new modified Metro look-alike. The possibility of changes in the composition of output makes the specification of long run demand functions without perfect substitutability of goods from different regions very dubious. The problem therefore is not so much whether the (long run) demand function should stipulate perfect substitutability but whether it is at all resonable to specify a stable long run demand function defined over regional 'goods' whose composition will change endogenously over time.

19. If firms do not adjust their production decisions then the impact effect on profitability of a cut in money wages will be the same as in the absence of product differentiation. Increased growth and a relative expansion of market shares, however, will require that firms lower their prices relative to the prices of firms in the other region.

20. This should not be taken to mean that substantial changes in efficiency wages and competitiveness cannot be effected. But where large economies are involved, extraordinary circumstances may be required in order to make the increase in competitiveness acceptable to other countries, and to make the concomitant decline in living standards acceptable to workers. The gross undervaluation of the German and Japanese currencies after the second world war may be a case in point. This undervaluation may provide part of the explanation for the post-war economic 'miracle' in the two countries. It is unlikely that other countries would have accepted the undervaluation if circumstances had not been extraordinary, and only the effects of fascism and war on the strength of the working class made the large squeeze in living standards possible.

21 The change in question may be a relatively minor adjustment of an orthodox policy instrument or it may be more fundamental changes, e.g. land reforms or the nationalisation of all major financial institutions. Ellman et al (1974) give an interesting attempt at quantifying the likely economic effects of some fundamental changes in the socio-economic structure.

22. An analogue may be the use of the term multiplier in short run Keynesian theory. Given a fully specified model of the economy, it is possible to work out exactly the effects on all variables of the model of an autonomous change in some variable. In general, a change in one variable will have effects on many, if not all, variables. The effects will be drawn out over time and the magnitude of the effects may not be a simple linear function of the size of the original change. Yet it may sometimes be convenient to refer to 'the multiplier'. Should this give rise to confusion, one may always go back to the fully specified model.

23. Kuhn's notion of 'paradigms' may illustrate this in more ways than one. Paradigm is one of the central concepts in Kuhn's work on the evolution of science. But the concept is not precisely defined. Masterman (1970) identified 21 different and partly contradictory uses of the term in Kuhn (1962). In spite of the lack of precision, the term paradigm and the various descriptions and analogies used by Kuhn to give it content, conjured up something which many researchers (and non-researchers) felt they could recognize. It gave a name to 'something' and thereby facilitated and stimulated further work on the way research is and should be carried out.

24. It is no accident that Keynes' theory departs from Walrasian general equilibrium theory with respect to both the appearance of socio-economic constraints on output and employment and the explicit attention to sequential patterns, cf. Skott (1983a).

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