Economic Development and the Competitive Process

J. S. Metcalfe,
R. Ramlogan
and E. Uyarra

CENTRE FOR RESEARCH ON INNOVATION AND COMPETITION
AND SCHOOL OF ECONOMIC STUDIES
UNIVERSITY OF MANCHESTER

"Always history is being made; opinions, attitudes and institutions change, and there is evolution in the nature of capitalism" (Knight, 1933, p. 184).

I. INTRODUCTION

The concepts of competition and its derivatives, competitiveness and competitive advantage feature as highly on the current development agendas and policy debates of developing countries as they do in that of the developed world. As organizing concepts aimed at informing policy, they are indispensable yet they are sufficiently opaque to make any discussion of their relation to economic development a matter to be negotiated with 'some difficulty'. Economists write about competition; business scholars about competitive advantage and the term competitiveness in used by both camps but each uses these notions in very different ways. The common ground between these different approaches appears to be barren yet each perspective is indispensable for reaching an understanding that cuts to the heart of the questions that define the problem of development.

How competition works in the context of a specific developing economy, for they all are different, naturally informs the policy issue of the regulation of competition and the deeper issue of the relation between competition and the elimination of poverty. Ultimately this link is made because competition is a social device for discovering better ways of meeting human needs and thus for improving the efficiency and effectiveness with which resources are defined and applied to economic activity. It is a device, therefore, for the augmentation of knowledge and capability. If an economy is to develop it must be transformed from within, and to achieve this requires that its people be transformed, that they come to know things in relation to production, organisation and consumption that they currently

do not know (Metcalfe, 2001). These are challenging issues and this paper has no other purpose than to indicate how difficult may be the answers to the question of competition and development.

Many problems of interpretation and misunderstandings arise precisely because competitive advantage is not a property of any individual firm rather it reflects the interaction between firms in the market process. The identification of competitive advantage always involves comparison between firms or groups of firms and this comparison is contingent on the nature of the market environments in which the firms are operating. Thus while the contributions of business scholars often lack the wider systemic context, the contributions of economists are frequently lacking in any serious understanding of the competitive strategies and attributes of firms. Moreover, the endogeneity, the spontaneity of change that is competition is not an idea that fits easily into theories premised on the notion of equilibrium for which comparative statics and comparative dynamics are the normal tools of the trade.

In this short essay we will review some recent thinking on the connection between competition and development as a prelude to a study of wider concerns about innovation, income distribution, competition and development policy. Because there are contrasting views and approaches to competition and the link with development, it is better to start with a clean sheet, as it were, and build up as coherent position as we can in stages. This is our immediate purpose. Most importantly of all, we need to keep static and dynamic questions sharply separated, and to be as clear as possible that what is meant by competitiveness at one level of analysis may not carry over to other different levels of argument giving rise to endless scope for confusion and pointless disputation as the consequence.

The position we take here is that the problem of competitiveness and the problem of economic development are isomorphic by virtue of being examples of the phenomenon of economic evolution. Evolution is a theory of how the world changes or rather how it changes in such an uneven fashion. The shifting balance of agricultural and manufacturing employment, the rise of modern manufacturing and the decline of handicraft industries, the changing distribution of economic activity between the town and countryside are well-documented examples of how development necessarily takes place in all economies. All economies are from our perspective developing, albeit in ways that are qualitatively different. Many of the great contributions to development theory recognize this important fact and place structural change and the discovery and use of new ways of deploying resources at the centre of what is meant by development. Arthur Lewis is a prime example with his emphasis on the redeployment of labour from unproductive backward sectors to more productive uses (Lewis 1958). All economies are restless in the sense of the emergence of new, potential economic opportunities, the realization of which requires structural change in the importance of different activities in the economy. Impediments to structural change are impediments to development, and amongst the more important of these are impediments to competition. Thus the fundamental development issues relate to the generation of new economic opportunities and the rate at which they are realized through investment in capacity and human capability and through the growth of markets. This is why a process of competition is so central to the process of development.

The restless capitalism theme will be an ever-present subtext in the following and we should add that by the adjective restless we imply two properties. Restless capitalism is uncomfortable capitalism; the opportunities for change always pose threats of change and how these inconsistencies are resolved can create major social and political issues. Past investments in material and human capital can so frequently be undermined by the process of differential development, and with these losses are carried the disappointments of hopes and expectations falsified. From this aspect, bygones are never

bygones rather they are the experiences around which the future is imagined. But there is a more positive side to restless capitalism that of the ongoing search for economic improvement for better ways of adapting resources to meet human needs. At the core of this idea is the significance of the development of practical knowledge. This is Schumpeter's approach to development and competition with its emphasis on innovation, profits and the entrepreneur as the agent of improvement, together with the idea that it is the uneven development of knowledge that matters in processes of creative destruction.

The correspondence between evolution, competition and development is exact. Each is a theory of the growth of specified entities and populations of entities and since the focus is upon differences in growth rates the natural implication is that development and competition entail structural change. The essential aspect of evolutionary theory is that it explains differential growth in terms of three related phenomena, economic variety and non uniform behaviour, selection and sorting processes defined at various levels of an economic system, and processes to regenerate and replenish the economic variety on which the dynamics of evolution depend. In relation to the first we find the importance of differences between firms in their actual and intended competitive behaviour, in relation to the second we see the importance of the competitive process and its link to structural change, and in relation to the third we find the importance of innovation in the broad and indeed all those activities that enhance economic competence and create potentials for improvement within societies (Andersen, 1996; Nelson and Winter, 1984, 2002; Metcalfe, 1998; Dosi *et al*, 1988; Mazzucato, 2000).

What is meant by the development problem is, of course, the differential development over time of different economies and sub economies. Forging ahead, catching up and falling behind are metaphors for differential growth (Abramovitz, 1995; Mytelka, 1999). When countries form a development strategy, they do so to catch up on their more advanced comparators and the vehicle for achieving this is a faster rate of growth of per capita income than the advanced countries. In turn this requires faster growth of their productive activities and this is a reflection of a wider competitive process. More productive activities have to grow in importance relative to less productive alternatives. For traded goods, the relevant industries have to increase their share of world markets and thus out compete foreign rivals. Competition is the development process in a microcosm. Thus competition and development are each processes premised on differential growth and what has to be explained is the origin of and constraints upon diversity in rates of growth. Differential growth defines development within industries and between industries and maps onto competition within markets, between markets and for markets, although at each level the nature and dynamic of competition is different.

As a first step to unravelling different ideas about competition we present a brief history of the development of competing concepts of competition.

II. COMPETING CONCEPTS OF COMPETITION

It will be useful to begin with a review of some competing, well-established concepts of competition: for the meaning to be attached to this word is not easy to resolve, despite it being widely recognized as one of the core concepts of economic theory (Metcalfe, 1998; Dosi *et al*, 1988). Perhaps inevitably it has attracted multiple meanings and shades of emphasis, and it is surely odd that while competition is widely accepted as a legitimate economic concept, competitiveness is contested and surrounded

in doubt[1]. Needless to add, the nature of a theory of competition will depend on the explanatory purpose in view. A theory, which is designed to illuminate the allocation of given resources and methods to given ends, will be thoroughly different in character from one that is designed to explore the nature of economic development and the creation of resources and opportunities over time. If the first were perceived as the limiting outcome of the dynamic process implied by the second the two could be seen as natural complements. But in this regard there are good grounds to be cautious; the limit of a competitive process is not normally the dispersal of economic influence but the very opposite, its concentration. Thus the continuation of competitive conditions comes to depend very much on matters of dispersed innovation and entry, a theme we explore at a later stage.

Consequently, we should come clean at the outset. The required concept of competition should help understand why the economic world changes in the way it does and to identify the sources of change, the processes of change, the consequences of change and the mutual interdependence between source, process and consequence. Moreover, the aim of competition policy should be to further development. It is inevitable that innovation, as a primary source of change, will loom large in this story but it is as well to recognize that innovations are not simply to be equated with change of technology in a narrow sense

Some History of the Idea of Competition.

As far as the co-ordinating or resource allocating aspect of competition is concerned the classical theory coalesced around two central propositions. Firstly, that competition would tend to bring actual market prices into equality with natural prices. Secondly, that natural prices are also competitive prices in that they correspond to a situation in which the allocation of investable funds across different lines of activity has established a uniform rate of profits on the capital invested (due allowance being made for risk), while the allocation of labour across activities has imposed a uniform wage for skill and effort of each given type[2]. The dynamics of competition consequently involves two steps. Competition within a sector drives market prices into equality with costs of production and competition between sectors establishes a pattern of costs consistent with a uniform rate of profits on the capital invested. The resulting prices are called natural prices and are said to form centres of gravity to the system in the presence of disturbances. Thus the very meaning of natural prices implies the operation of competition, the two concepts are inseparable. The ultimate refinement of the classical method came with Marshall's attempt to deal with the time dimension of the competitive process in terms of temporal stages; so reducing a spectrum of market responses to a series of discrete categories, market period, short period, long-period and secular period. There can be little doubt that Marshall favoured a process view of competition and that he was always careful to emphasize that the data are never constant, so creating particular difficulties for any concept of a normal position. Indeed, it is worth noting that Marshall was reluctant to use the word competition, he much preferred the looser term 'freedom of industry and enterprise'.

Consider next the neoclassical perspective. The dominant themes of this alternative approach, ultimately connected with the work of Jevons, Edgeworth and Cournot, are competition expressed in

1 Stigler (1957), p. 1.

2 cf. Kurz and Salvadori (1995) and on the implicit dynamics of the uniform rate of profit process Duménil and Lévy (1995).

terms of trading activity and competition as a state of equilibrium, as the limit to the process of rivalry. The equation of competition with trade and exchange was the natural outcome of the search for criteria to judge the efficacy of market institutions in co-ordinating the allocation of resources. The consequent emphasis upon the nature of market institutions, the distribution of information about rival offers and demands, and the matter of who, if anyone, sets prices moved to the centre of the theoretical stage, and indeed moved economic theory away from questions of longer run development toward questions of the immediate allocation of given resources. This change in perspective on competition was closely tied in with the marginal revolution. Jevons (1871), for example, linked together his concepts of the market and competition in two requirements, that all traders have perfect knowledge of the conditions of supply and demand, and that there be complete freedom for anyone to trade with anyone else.

Important elements in our understanding followed, not least that the notion of a perfect market is quite distinct from the notion of perfect competition. As to who sets prices, and setting Walras's fictional auctioneer aside, there emerged a wealth of possibilities ranging from market makers, merchant-traders who release and absorb stocks and quote prices on organized anonymous exchanges, to individual firms who quote prices and sell to customer order on a personalized bilateral basis. In the latter case from whom one buys may be as significant as what one buys. Ultimately, these categories of price setting where reduced by Hicks (1965) to a distinction between those market behaviours and institutions that promoted price flexibility and those which promoted price rigidity. Roughly speaking, a distinction between markets in which centralized, specialized merchant traders set prices and markets where individual firms set prices (Okun, 1981; Lachmann, 1986). There can be no question that this emphasis on the importance of the institutions of the market and the arrangements for diffusing information is of the first importance and an essential part of any study of the development of competition in an industry. However this is not the aspect of the neoclassical revolution which has received most attention: much more pervasive has been the emphasis upon competitive equilibrium as a state of rest relative to given data.

The crowning achievement of this strand of thinking is the theory of perfect competition, the central organizing theme of the last century of economic theory. This brings together three independent ideas: that of a perfect market; that of atomistic behaviour; and that of freedom of entry and exit in regard to any level of activity. In the first and last respects it mirrors classical thinking. The crucial innovation is that of atomistic behaviour, the explicit hypothesis that no one trading in the market has a sufficient volume of sales or purchases to influence the market price[3]. It is the foundation of the theory of general equilibrium and its offshoots in international trade theory, public finance and welfare economics; and it is the basis for judging the (in)efficiency of any market situations which depart from its axioms. Through the postulate of freedom of entry and exit, it encompasses the classical concern with resource mobility and the equalization of suitably defined rates of return on investment. Through the conditions equating behaviour at the margin with market prices it gives a coherent set of standards for evaluating, at least in principle, whether given economic arrangements are efficient or otherwise, and it gives market prices a deeper meaning as indexes of relative scarcity. Over time the whole apparatus has been extended. Monopoly and perfect competition

3 cf. Knight (1946), p.102. 'The "perfect" market, of theory at its highest level of generality, is conventionally described as perfect or purely "competitive". But use of the word is one of our worst misfortunes of terminology. There is no presumption of psychological competition, evolution, or rivalry, ... atomistic is a better word for the ideas'.

provide the extremes of market organization, with the middle ground filled in with monopolistic competition and, where strategic interdependence cannot be ignored, duopoly and small-numbers oligopoly concepts.

A wide variety of economists have expressed their dissatisfaction with the neoclassical view in a number of ways, some less polite than others, and it will be as well to outline several of the main contributions. Thus, Morgenstern (1972) claims that competition as a word employed by economists has lost touch with reality simply because it has replaced struggle and rivalry with equilibrium. Clark (1961) in his major contribution to this literature began by claiming that the shift from equilibrium to process was the most challenging question in the theory of competition, and he suggested four broad elements necessary for effective competition, namely: competent customers able to appraise accurately the competing products on offer; freedom of individuals and organizations to engage in any trade or activity (remember Marshall!); access to all the necessary means of production; and, a climate of independence of attitude and strategy among firms in the industry. Given these elements, the actual conditions of competition would depend upon the organization of the market, together with the competitive behaviour of the rivals, and foremost among the competitive behaviours will be changes in the nature of what is being supplied. In short the elements of a theory of competition should not be chosen to characterize equilibria but to explain economic change. Particularly interesting in his appraisal of competition theory is Georgescu Roegen (1967) who points to the fact that, as normally portrayed, competition is absent within the industry and only takes place between industries,

> 'the condition commonly labelled as a 'perfectly competitive industry' actually involves no competition at all' (p. 32).

Thus arises a major paradox: competition only becomes active when we allow a monopoly element premised upon the fact that firms are different, and scope for competition lies not in the number of firms but in the conditions creating diverse behaviour. In a sense, all the elements above were contained in Chamberlin's Monopolistic Competition but for him the grip of equilibrium thinking was too strong. Brenner (1987) is also a notable contributor to this literature, with the emphasis being placed on bets upon new ideas and the insistence that

> 'Businessmen pursue strategies to discover a combination of customers and services with respect to which they have an advantage over those who they perceive as their competitors' (p. 49).

Among all the economists who have been critical of the equilibrium approach none has been more devastating from a development perspective than Hayek (1948, 1978) with his view that an equilibrium concept of competition is a contradiction in terms. In a much-quoted passage he suggests that

> 'if the state of affairs assumed by the theory of perfect competition ever existed, it would not only deprive of their scope all the activities which the verb 'to compete; describes but would make them virtually impossible' (p. 92).

Instead competition is a succession of events, a dynamic process, a voyage of exploration into the unknown in which successively superior products and production methods are introduced, and consumers discover who meets their particular needs and how. Neither producers nor consumers

know in advance the outcome of the competitive process, for that can only be established by trial and error; the market process is necessarily an experimental process. Again we begin to see a link between the process view and the emphasis on differential behaviours of rival agents, and we should note Hayek's insistence that differentiation of this kind undermines any claim that agents can have complete knowledge of all the factors relevant to market behaviour. Knight too favoured an exploratory perspective on the economic process in which not only the capabilities of firms but also the preferences of individuals become the endogenous outcome of a trial and error economic process[4].

In many ways this viewpoint has been most felicitously expressed by Fisher and colleagues in their compelling account of an ill starred anti-trust case against IBM, a case which ultimately collapsed because of a confusion between the requirements of a competitive equilibrium state and a healthy competitive process. Thus they suggest,

> 'When new opportunities continually arise, one will see under competition a continuing process of change which carries with it continued opportunities for profit and growth. One cannot hope to understand the competitive nature of such a process by examining it in terms of static competitive equilibrium' (1983, p.39).

The implications of such a position for the meaning and conduct of competition policy are, of course, profound. Here lies another clue to the contrast between different notions of competition: a competitive process creates patterns of change, something that Schumpeter understood well. Let us begin with the later Schumpeter, of Capitalism, Socialism and Democracy, for there he outlines the obvious fact that economic progress has continued unabated despite the absence of perfect competition as an organizing principle in industry. Nonetheless, progress is closely linked with competition, which is

> 'intrinsic to the mechanism of capitalism which is by nature a form or method of economic change and not only never is but never can be stationary' (1945, p. 82).

The driving force in competition is not the adjustment of price but innovation, the theory of which had occupied Schumpeter in two previous major works, Business Cycles and The Theory of Economic Development. It is through innovation that firms command a decisive cost or quality advantage affecting not their marginal profits but their very existence. Thus it is a matter of comparative indifference whether atomistic price competition in the ordinary sense operates more or less promptly. Capitalism is not to be judged in terms of its immediate efficiency in allocating given resources across given opportunities but in terms of its ability over time to create resources and opportunities and adapt to the potentials so created. Hence the central idea of change driven from within, brilliantly captured in his phrase 'creative destruction'. This it should be emphasized is not an optional extra to the capitalist process but is the capitalist process: equilibrium capitalism is for Schumpeter a contradiction in terms.

4 On this see the stimulating paper by Emmett (1994) where the contrast is made between Knight's narrow vision of the rational, 'maximising' agent and his broad vision of the 'good sport' adept at discovering better patterns of economic behaviour. In two of Knight's major essays, 'The Ethics of Competition' and 'The Limitations of Scientific Method in Economics', the idea that "life is an exploration in the field of values" plays a predominant role in the argument. The former essay linked this theme to the idea that wants are provisional and a consequence of the workings of the prevailing economic system. Seeds here of an evolutionary theory of preferences, one which is sorely needed (Knight, 1933).

Let us take stock and summarize the specific charges brought against the equilibrium view of competition. We take them seriatim. Because the degree of competition is identified with the number of competitors and not the behaviour of competitors it ends up condemning attempts to create a competitive advantage as attempts to gain monopoly power. This was the complaint of Morgenstern and Hayek but it has been well put by Joan Robinson (1954) in the following terms:

> 'In the broad sense in which businessmen understand it (competition) largely consists in destroying competition in the narrow economists sense' (pp. 245-6).

The implication of this view is profound because it means that competitive behaviour is in part motivated by the search for monopoly positions. It is from this that an ambiguity in the interpretation of any firm's alleged monopoly profits follows naturally. Are these profits a consequence of the abuse of monopoly power or are they the consequence of superior productive behaviour? Of course, the number of competitors becomes a very imprecise concept as soon as we identify potential entrants currently outside the industry but willing to enter if prospects improve. It has been suggested that the threat of potential entry can be as strong a discipline as actual entry, a claim, which is explored in depth in the literature on the contestability of markets (Baumol, 1982; Shepherd, 1984). Moreover, the identification of competition with the number of competitors, *simpliciter*, implies that those competitors are identical; otherwise they cannot be presented by a single number. This has several unfortunate consequences, it rules out behavioural heterogeneity, it equates competition with the opposite of monopoly (McNulty, 1967), and it ignores two other important implications of a greater number of competitors, as a barrier to collusion and in their role as multiple independent sources of variety in innovative behaviour. This is a point made by Clark (1961, p. 197) but it is perhaps most fully expressed in a famous passage in Marshall:

> 'Every locality has incidents of its own which affect in various ways the methods of arrangement of every class of business that is carried on in it: and even in the same place and the same trade no two persons pursuing the same aims will adopt exactly the same routes. The tendency to variation is a chief cause of progress: and the abler are the undertakers in any trade the greater will this tendency be' (8th edition, p. 355).

Thus an industry is not competitive simply by virtue of the number of firms it contains but because increasing numbers imply increasing scope for differential behaviour (Loasby, 1982). The intensity of innovative competition is independent of the existing condition of the market, it depends on actions not structures and " works even if the innovator is a monopolist" (Demsetz, 1995, p.138.) Consequently, there are as many dimensions of competitive intensity as there are possible competitive behaviours. As has long been recognised, output competition, the standard case, is only one of many possibilities.

Perhaps the most obvious and well-documented indicator of the lifeless nature of the equilibrium concept is its inability to encompass entrepreneurial behaviour. By definition the rewards to entrepreneurship are transient and relate to the operation of markets in conditions of disequilibrium. Such rewards cannot be included in any definition of equilibrium, they are, in Schumpeter's words 'at the same time the child and the victim of development'[5]. This is well understood. Like Schumpeter,

5 Schumpeter, 1934, p. 154.

Baumol (1993) has emphasised the non-routine behaviour involved in entrepreneurship, encompassing such traits as imagination, boldness, ingenuity, leadership, persistence and determination in pursuit of wealth, power and position. These are not obviously amenable to Cartesian analysis. In equilibrium this group of attributes cannot be rewarded, all that can be rewarded is the routine behaviours, which define the good stewardship of existing resources. We note in passing, that entrepreneurial behaviour is necessarily differential behaviour, a theme to which we will return below. Notice also that the transient incomes associated with innovation related profits may provide the resources for further innovations and so create the possibility of a self-exciting economic system which is permanently in transition.

Competition as Contests

In popular usage the word competition is reserved almost entirely for the concept of a contest, a race or game or sport, involving competitors playing according to agreed rules of the game[6]. One of the first economists to elaborate upon this connection was Frank Knight in his essay 'The Ethics of Competition' written in 1923. Here Knight makes the point that participation in business is stimulated not simply by the desire to satisfy wants but by the search for achievement and the satisfaction derived from participation, that is to say, by the desire for action. Here is a framework for interpreting competition, which focuses upon actions and behaviours and fits naturally with the evolutionary perspective. Any contest has a number of important characteristics. Chief among these is a clear set of accepted and enforceable rules of the game, the institutions of competition, which determine the nature of the contest, the principles on which contestants are to be rewarded, and the principles on which they can enter, or be eliminated from the contest. The rules of the game, a code of conduct, serve to co-ordinate the behaviours of the rivals, define permissible behaviours and establish the set of prizes, and they are to be judged in terms of their neutrality or otherwise toward rival contestants, that is by their fairness[7]. The second element is the set of contestants and their particular attributes of skill, dexterity and effort. However, should these contestants be uniquely ranked in all circumstances we would hardly term the situation a contest, for its results would be perfectly predictable. Hence the contestants must show variation in their competitive attributes. From this follows the final element in any contest, the inherent unpredictability of outcomes. In part this may arise from uncertainty about the environment of the contest, since not all contingencies can be written into the rules, and in perhaps greater part from a lack of predictability about the behaviour of the contestants. Neither the outside observer nor the contestants can observe or anticipate the plans and strategies of the various rivals or predict the multiplicity of contingent circumstances which affect performance at a particular play[8]. Luck is an essential part of all contests. The fall of the favourite, the emergence

6 Marshall (8th edition, p. 5) claims that 'The strict meaning of competition seems to be the racing of one person against another, with special reference to bidding for the sale or purchase of anything'. Of course, he was at pains to suggest that this is only the surface reflection of the more fundamental characteristic of economic freedom. Cf., also Stigler (1957), p.1.

7 Which is what businessmen typically mean by a level playing field.

8 This is one good reason to be sceptical of insights from equilibrium game theory whenever they involve the full enumeration of possibilities including probability distributions of possibilities.

of the dark horse, are intrinsic to our idea of competition, and as this degree of unpredictability declines so often does the desire to call it a contest. In this regard, contests are discovery procedures to find the best behaviour out of a set of rival behaviours. Of course, what is best is entirely contingent on the rules of the game and entirely relative to the set of contestants. As Alchian (1951) so aptly remarked

> 'As in a race, the award goes to the relatively fastest, even if all the competitors loaf. Even in a world of stupid men there would still be profits'. p. 213, (our emphasis)[9].

Hayek too would find this idea of a contest fully compatible with his own insistence that the results of the competitive process cannot be foreseen. In short, true contests have rivals competing according to established rules. The rivals apply skill and effort to different degrees to win prizes but the outcomes are neither entirely predictable nor entirely random. For, if they were entirely random there would be no incentive to apply effort to the conduct of the contest.

The process perspective on competition has a natural connection with the modern theory of evolution, and we now intend to explore this connection in more depth. The theme will be that contests are selection processes and the contestants are to be distinguished by their differential behaviours. A number of questions naturally arise at this point. What are the rules of the economic game, and to what extent do they depend on the institutions of the market place, the factors that condition trading as we outlined previously? What constitutes a good set of rules? What shapes the behaviours of the contestants, how different can they be and what processes result in those differences? What are the uncertainties, which make economic contests unpredictable and indeed open-ended in their possible outcomes? Where does organizational and behavioural innovation fit into the competitive scheme of things?

III. AN EVOLUTIONARY FRAMEWORK FOR THE COMPETITIVE PROCESS

It is clear from the account above that competition encompasses two broad sets of conflicting ideas, competition as a structure and competition as a process. In the first, competition is a statement about the structure of the industry not a statement of the characteristics of the individual firms that may as well be treated as identical. In the second it is the properties of the firms that matter crucially in determining how much rivalry exists and rivalry is measured by the changes in the positions of the different firms. How these differences are resolved into patterns of structural change depends on the coordinating role of the relevant markets. It is this developmental perspective that we now explore in more detail. What are the elements required for an evolutionary model of competition? We may list them as follows.

9 The following is a quote which captures this view with perfect sense "I am not a good businessman, it's just that others are worse than me" attributed to Mr Wing Yip, one of Britain's most successful Chinese businessmen, in Connections Winter 1996 the magazine of Sun Alliance plc. On Knight's metaphor of economics as sport, see Emmett op cit. See also Khalil (2001) for further discussion.

- A population of rival competing units, normally described as for profit firms or more accurately business units, producing a particular product with the associated methods of production. Each firm is characterized by a set of operating procedures and strategic aims that determine what is produced and how the production and other processes, such as marketing, are organized.
- A set of markets in which those business units jointly sell output and acquire inputs, and which generate a mapping from the bundle of competitive characteristics to a pattern of competitive advantages for the rival producers. Competitive characteristics are the property of a firm but they do not define competitive advantages; *any competitive advantages can only be identified by comparing two or more firms in a specific market context.*
- A set of rules of the game in relation to the requirements for entering a specific population and the conditions for elimination from that population, that is for entry and exit. A set of rules of the game for the growth and decline of individual business units.
- Thus competitive advantages are a mapping from the competing characteristics of the set of rival firms into measures of firm performance over some time interval. They are measures of differential success and failure, and performance is only measured meaningfully relative to the outcomes for rival firms. The measures of differential performance fall into three broad categories: in relation to the profitability of a line of business; in relation to the ability to invest and grow that business; and in relation to the ability to innovate and transform that business.

The crucial step in this argument is that competitive performance follows from competitive advantage but unlike the competitive characteristics, performance is not a property of a firm. Competitive performance is an emergent property of a competitive process and it arises from the interaction between rival firms in a market context, a struggle for custom, as any businessman would understand. Thus it makes no sense to talk of the competitive advantages of a firm outside of a particular competitive process and independently from a specification of the rival producers. A firm may be competitive relative to some rivals, uncompetitive relative to others. It is the differences in competitive characteristics across firms that matter together with the manner in which the market environment evaluates those differences to determine the distribution of competitive advantages at a point in time. If the market rules change then so will the distribution of competitive advantages and the successful business strategies.

There is a further important implication of this evolutionary view. The intensity of competition is to be measured by the changes that take place in the market in the relative positions of the rival producers. A market in which shares are frozen is at best neutrally competitive, the actions of the rival firms cancelling out any competitive advantages. More normally, relative shares are changing and the rate at which structure changes provides one measure of the intensity of competition.

Competitive Advantages in Three Dimensions

From these elements we can construct an evolutionary process of competition in which the firms decide what to produce and how, and set the prices for outputs and inputs consistent with their plans. This is where markets play the crucial role in connecting the firm to customers and suppliers of inputs while at the same time constraining the prices that firms can set to their outputs and

inputs. Not only product markets but, in addition, the markets for labour, for produced inputs, and for capital funds contribute to the determination of competitive advantages. Market evaluation matters because it establishes the prices, the terms of trade, which determine the different degrees of profitability of the rival firms.

It is this process of market coordination that evaluates the different lines of business and so determines the profitability of the set of competitive characteristics. Profitability matters in an absolute sense, in relation to a viability test, firms do not usually survive unaided over the longer term if they cannot break even at ruling prices and as a standard against which potential entrants can test their business plans (Alchian, 1951). But profit also matters in a relative sense, what is determined in the market process is the differential profitability of the different rivals. The share of the total profit earned by a firm in that industry will increase with its profit margin and with the share it enjoys of the total output of the industry. Thus two standards of competitive advantage follow at this level, in relation to viability and in relation to differential profitability.

While the emphasis is rightly on the differences between firms, it is equally true that the evolutionary view emphasizes the ***role of markets*** in the competitive process. Firms set prices as a general rule, but their freedom so to do is greatly constrained by the market environment. The more perfect the markets in which they buy and sell the less the latitude to set prices and wages and costs of borrowing that reflect any superiority in their individual competitive characteristics. The better connected are the market participants, the more they share common information about rival offers to buy and sell then the less variability there will be in the prices and wages set by the rival firms. Thus the information structure and its support in market organization matters greatly for the competitive process. Since market organization absorbs resources it is a legitimate question to ask who supplies those resources and what return they obtain for doing so.

In a world of uniform firms there would be no basis for speaking of competitive advantage. Above normal profits would there be equated with the absence of competition or with transient economic states. As soon as we allow the firms to be heterogeneous then profits arise that are unrelated to market power and premised entirely on the differential ability of the firms to attract custom and produce efficiently. Profits are the reward associated with superior competitive characteristics. Profits generated by different competitive characteristics have the attribute of quasi rents, and we normally expect quasi rents to be transient. This takes us to a second meaning of competitive advantage, which connects differential profitability with the differential investment, and thus the differential growth in the productive capacities of the rival firms. Differences in profitability are the basis for enhancing or losing a market position and the simplest way to capture, short run fluctuations apart, is through the *changes* in market shares of the different competitors. Changes in market share reflect differences in rates of growth of capacity over the longer term and these changes are derived via the market environment from the causal and different competitive characteristics of the firms. On this view, a firm that is gaining market share over some interval, *ipso facto,* has a competitive advantage over any firm that is loosing market share. Competition is a transfer process in which some firms gain in relative importance and others decline, it is a process of structural change and development. Notice carefully that this process is contingent on the market environment *and* the characteristics of the population of rival firms. The competitive characteristics of a given firm may give it advantages in some circumstances and disadvantages in others. Hence we can see why benchmarking becomes relevant, to identify and copy 'good' sets of competitive characteristics: we can also see why it is a slender guide to good practice if either the market environment or what is 'best practice' is changing.

Finally, this leads to the third dimension of competitive advantage, the ability of firms to reposition

themselves over time through changes in their bundles of competitive characteristics, that is, through ***innovation*** broadly conceived. To the extent that this ability is linked to the sums available to invest in innovation it reflects the first dimension of advantage, to the extent that it reflects the scale of operation of the firm it reflects the second. It is differential performance at innovation that matters to the competitive process, and the rewards are the rewards of innovating more successfully than rivals. Over the longer term it seems that this is the crucial dimension of competitive advantage, the ability to generate and follow through sequences of innovations more ably than rivals. Unfortunately for the firm, this appears the most difficult to sustain of all the foundations of competitive advantage, and it is fortunate for the market process that this is so. If innovation depended only on resources invested, a firm that moves ahead would stay ahead, and concentration of output in a single producer would be the consequence. It is because innovation is unpredictable, that it depends on imagination and lucky breakthroughs as well as investments in R&D, that leaders become followers and conversely. Consequently, keeping competition active depends on the satisfaction of two conditions: the maintenance of open markets in which outsiders and insiders can freely challenge established positions, and continued commitments to innovation as the basic form of competitive rivalry. From this follows the joint importance of competition policy and innovation policy in a pro-development strategy, a matter we return to below.

The above is an outline of a standard kind of evolutionary argument, in which variety in the attributes of the rivals is evaluated by the environment and converted into differential fitness, rates of market growth in this case. Development is about finding new uses for resources, it is a creative process in which qualitative and quantitative change are intertwined. Innovation redefines the basis for generating profits and this reshapes the evolution of the market structure. The general argument is that firms create bundles of technological, organizational and strategic characteristics, competitive characteristics for short, that map into their differential performance in the marketplace. In turn, differential performance maps into differential profitability, which provides the wherewithal to further develop those competitive characteristics. Differences in propensities to invest map profitability differences into capacity growth differences and, over the longer term, differences in innovation performance reposition the rivals in terms of their competitive characteristics. This is a positive feedback process in which the firm that is ahead can draw further ahead but for the uncertain consequences of competitor's actions in generating better business performance despite a disadvantage in terms of resources. As articulated by Jack Downie (1958), competition is a balance between the transfer mechanism and the innovation mechanism.

This is why we can group the competitive characteristics of the rival firms into three broad groups: in relation to current efficiency and effectiveness of the use of resources; in terms of the willingness and ability to relate profitability to growth of capacity; and, in relation to the ability to innovate to improve technology and organization and thus improve efficiency and effectiveness. It is non trivial for a firm to attain and sustain relative superiority across all three competitive dimensions. Many are profitable but are unable or unwilling to expand with the general market and they decline in economic significance over time. Small firms often make the strategic choice to remain small firms, even when their products and process of production are very profitable. Growth is not preordained. Moreover, a relatively inefficient firm can increase its market share relative to a more efficient rival if it has superior abilities in relation to the investment process. Yet again, some can grow but only at the cost of a decline in efficiency and effectiveness. Some can be very profitable but are unable to sustain innovation beyond an initial success, so that more creative rivals erode their position.

It should be clear that this evolutionary framework is a description of the elements of an enterprise

economy. Entrepreneurship, the introduction of new productive combinations, is the driving force that continually creates new competitive advantages and opportunities for profit and growth. Furthermore, enterprise depends on the institutions of the market broadly defined. Open markets make possible and generate incentives to venture innovation challenges to established positions, efficient markets evaluate those challenges in the way that most favour growth in economic efficiency and effectiveness at meeting human needs over time. This is the basis for the idea of creative destruction and for the negative as well as the positive aspects of restless capitalism. It will also be clear that this is also a description of the development process in general. Development is a feature of all capitalist economies and development is a non-equilibrium process that arises from within the system. At root it is a matter of the development of human agency and thus of the development of knowledge.

This epistemic dimension, the connection between productive knowledge, competitive advantage and development, the issue of how firms acquire and develop their competitive characteristics is of considerable importance. We cannot do justice to this rich literature here other than draw attention to its emphasis on the acquisition of skills and capabilities, or rather the differential acquisition of skills and capabilities. Building on the work of Penrose (1959) this literature places the evolution of a set of competitive characteristics under the control of managers, characteristics that include the use of technology, the specification of the products produced and the particular form of organization, distribution and marketing, brought together in a specific theory of the business opportunity addressed by the particular firm. In all these dimensions firms are taken as different and the basis for these differences is argued to reside in the knowledge and skills of all the employees and the way these are organized into distinctive capabilities. While these capabilities evolve over time they are sufficiently durable to give a firm relatively stable advantages and disadvantages in the market place in the short run (Lall, 2001). In understanding the development of the firm it is not sufficient to focus only upon its internally generated capabilities but in addition take account of the ability to co-operate with external agencies in the acquisition of skills and knowledge. Firms frequently co-operate to develop competitive characteristics and the availability of a rich ecology of potential collaborators is an important part of the development and competition connection. This is where the idea of innovation systems fits in. In many sectors of industry the relative importance of 'distributed innovation systems' is increasing *vis-a-vis* the stylised model of a sovereign firm (Coombs and Metcalfe, 2002, 2000; Coombs *et al*, 2001).

From this core framework for treating the generation of competitive advantage as an evolutionary process a number of additional aspects fall into place. Innovation is often associated with new entrants deploying a different bundle of competitive characteristics which ads to the variety in the population. At the opposite extreme the process of competition gradually eliminates those firms with unviable characteristics bundles so that exit and entry form part of the competitive dynamic. Generally speaking but not always, the firms that fail are at the lower tail of the distribution of efficiency. (Roberts and Tybout, 1996)

A further consequence of an evolutionary perspective is that one cannot conduct the analysis in terms of representative economic agents. Evolutionary arguments are naturally statistical so one can always rely on statistics such as the mean and median of a population distribution to represent a summary of the prevailing variety. However, what is representative cannot be determined *a priori*, rather it is a necessary outcome of the analysis. What denies the possibility of an evolutionary approach is the idea of the uniform agent the representative nature of which is trivial. Secondly, it follows that a macro economic theory of development must necessarily miss the point, which is that

the development process is a matter of self- transformation from within. Economies grow only insofar as they also develop and this has always been so. While the idea of semi stationary or proportional growth may have been helpful in the early stages of growth theory, as for example, in the Von-Neumann growth model, it cannot help in the context of understanding development since it rules out, *ex hypothesi,* the most important of all the stylized facts, namely, structural change. Economies never develop in a uniform fashion, for the imbalances that arise in the course of development are a natural consequence of the competitive processes through which the gradual and uneven growth of knowledge finds economic application. None of this prevents us constructing and measuring macro indices of the rate of growth or the average level of productivity. However, these are never natural measures that relate to actual agency as macro phenomena are necessarily constructed statistics and they have no independent existence beyond their reflection of the underlying structure of the ensemble. While we can measure in macroeconomic terms we cannot comprehend in those terms, and this is a central tenet of the evolutionary approach. Consequently there is no point approaching the study of development other than in terms of the properties of a particular economic system.

Competing Nations

We have been quite explicit in suggesting that competitive advantages are defined at the level of competition in particular markets. Recent debate has extended the application of the idea of competitive advantage to the competitiveness of nations, and has been condemned for doing so by, among others, Krugman (1996). This is not the place to review that debate (Cellini and Soci, 2002) but some comment is in order.

Our criterion for competitive advantage at the level of the firm has been the rate of increase of market share, that is, relative growth not absolute growth. There is nothing to prevent the same logic being applied to groups of firms, say domestic and foreign located firms. A national industry has a competitive advantage relative to some other countries if its share of world production is increasing during a particular time interval. If this is sustained over time it is likely to reflect superior profitability of the industry, superior investment behaviour and superior innovation behaviour. The advantage of this definition is that it protects against the dangers of growth absolutism. If an industry is growing at 10% per annum this might seem, *prima facie,* to reflect national success but not if the world output of that group of commodities is growing at 20%. In global terms this industry is lacking in competitive advantage. There is nothing, in logic, to prevent the application of the same argument to an entire region or economy. Ultimately, the comparative development of an economy depends on the share it acquires in world productive activity, across all the industries and activities in which it engages. The more competitive its industries are in terms of gaining market share on a world basis the comparatively greater will be its share in world income. In this narrow sense competition is a zero sum game. However, since to achieve this outcome it will need to be comparatively more effective and efficient in its activities it follows that it will have a correspondingly greater share of per capita world income, and this is a non zero sum game. However, there is an essential truth in the Krugman argument, namely that greater success in some industries will through the operation of dynamic comparative advantage involve less market success in other industries, as for example, exchange rates adjust to reflect the balance of payments consequences of the competitive process. To this degree, Krugman is correct to deny that competitive advantage is meaningful at the

national level. Only activities and the organizations that promote them should be treated in this fashion.

However, there is another side to this debate, national environments are not irrelevant to how national firms compete. This is the force of Porter's assessment (1996) of the factors that make for successful development, and this is likely to be particularly relevant to innovative performance and the development of capabilities. Thus, for example, the ability to attract high value added activities, serving high growth markets based on R&D intensive innovation is a national attribute that policy can influence. The possession of an education system that supports high skill activities and relaxes labour market constraints on their growth will facilitate the growth of an economy relative to its comparators. Similarly, policies that keep markets open and facilitate the stream of adaptations in resource use required to capitalise on innovation will be pro development. In short, countries can in effect compete as environments to support the generation of competitive advantages and through this promote a more rapid growth of their share of world GDP.

There is a further consequence of this debate namely the inappropriate nature of balance of payments indicators as measures of competitiveness. A country has a payments surplus in regard to a particular industry if its share of world production exceeds its share of world consumption. Being more competitive as defined above will certainly improve the trade balance but so will a reduction in the national share of world consumption. Trade balance measures are inherently difficult to interpret for this reason alone. Far safer is the analysis of the evolving shares of national and export markets in the assessment of national competitive advantage (Lall, 2001a).

IV. EVOLUTIONARY COMPETITION AND POLICY: RECENT VIEWS FROM A DEVELOPING COUNTRY PERSPECTIVE

We have argued that economic orthodoxy does not adequately address the relationship between competition (including competitiveness and competitive advantage) and development. Not only do modern macro-theories of economic growth fail to deliver a sound theoretical understanding of the development process, the empirical evidence offers little support for such theories and consequently little guidance for the efficacy of any particular policy prescription (Kenny and Williams, 2001). In this section we reflect on some of the issues related to competition and policy that have been debated in the more recent development economics literature. We first however set out the framework for competition policy that derives from an evolutionary understanding of the economy and of competition as a process.

An evolutionary take on the competitive process carries over into new, or rather refocused, perspectives on competition policy. From an orthodox perspective the central issue in competition policy is the relation between market power, conduct and performance. Firms with market shares above some threshold are deemed to possess market power (the Lerner-Cournot rule) and are presumed to exploit that power so as to price output higher than they would otherwise do. Large market shares are associated with above normal profits and these become the twin tests applied by competition authorities in many countries. Of course, any competition assessment has to establish the actions that firms take to distort the market and lever prices in their favour, for it is only in relation to such acts that remedies can be formulated.

From an evolutionary perspective, matters are seen differently, not that of market power but of market capabilities. There is no presumption that 'excess profits' are the result of undue market

power. They can just as readily result from superior performance created by superior innovative ability. As such we expect them to be transient but this depends on the abilities of rivals to compete away the rents. Similarly, the accumulation of a 'high' market share can legitimately be interpreted as evidence of superior competitive ability. In so far as development is a matter of putting resources to more productive uses it requires the 'better' firms to out-compete their inferior rivals in any line of activity. Competing means exactly this. Thus the conventional tests for competition look quite different from an evolutionary viewpoint, as witnessed in the sharp controversy over the Microsoft anti-trust case in recent years (see the account in Liebowitz and Margolis, 2001). Monopoly is not bad, *prima facie*. Rather, the real cost of monopoly and collusion more generally is that it stifles innovative effort and places barriers to the challenge of established position. There is a natural affinity here with the Chicago perspective on competition policy, in which unless there are strong reasons to believer the contrary, it is taken that the market process will always encourage the innovative entry that destroys an incumbent position. The view that firms compete for monopoly positions now falls into place. Monopoly is permitted under the assumption that it is transient and that it is based on superior use of resources. The positions are transient because the system encourages competition through innovation and so the thrust of competition policy should be to encourage innovation based competition and open efficient markets on which it depends. There is of course no redress for incumbents from the behaviour of better rivals but there is redress from the effects of distorting competition. The patent system is the obvious instantiation of this point. If a patented idea is copied the inventor can seek redress through the legal system. If a better idea, based on different technological principles is the basis of competition, then there is nothing the incumbent can do except compete. It is a consequence of this view that transient positions with market power as conventionally understood become the basis for a discovery- based process of development.

However, these remarks do not justify a Panglossian view of the market process. Firms have an interest in distorting markets in pursuit of competitive advantage and governments an interest in discouraging and penalizing such behaviour. Markets, whether for outputs or inputs that can be segmented or which contain artificial barriers to competition will have the effect of distorting the competitive process and of slowing down the rate of economic evolution. Firms have a natural interest in preventing their customers from switching to rivals, in tying them in, as well as in erecting barriers to entry by innovating rivals, both of which are sufficient reason for a strong competition policy. The issue here is not simply the behaviours of the firms but rather the ***adequacy of the instituted rules of the market process***. Policy to ensue a level playing field should be the aim so that rents are ability rents not distortion-based rents. Here we wish to emphasise how much this is a matter of the rules of the game that transcend competition policy in a narrow sense. The ease with which new business ventures can be created without administrative and regulatory burden is clearly crucial if competition is to be robust. Similarly, the continued survival of unprofitable firms through public or private subsidy also distorts and slows the competitive process. Rules for non-viability are of crucial importance to the competitive process. Equally important, in appraising market efficiency it is important that rival firms are evaluated on a 'level playing field' and that markets are open to the challenge of innovators whether from within or without the current set of rivals. Markets are important both for their efficiency and for their openness. Indeed it is a central feature of the market process in enterprise capitalism that no position is free from potential challenge. Markets provide both the incentives to mount these challenges to the status quo and they actively facilitate them by keeping open access to customers and suppliers of inputs. However, markets are not given naturally, they are socially constructed and they are not costless to establish and operate. One striking implication

of this is that the effectiveness of competition depends not only on the effectiveness of markets for specific goods but equally on the markets for labour and capital or inputs more generally. If more efficient and effective firms face barriers to the recruitment of labour or artificially limited access to free capital the force of the competitive process is blunted and distorted. The second of our three dimensions of firm performance, the growth dimension, depends almost entirely on undistorted access to factor markets by the more creative firms. Similarly, the market for corporate control can play a key role in promoting competition through innovation. The ability to efficiently add to or dispose from a set of business units is an important way in which companies build strong competitive position. While mergers and acquisitions should always be treated with caution, particularly between large firms, it remains the case that this route to competitive advantage is of considerable importance.

By far the most significant implication of the evolutionary view is the interdependence between competition policy, innovation policy and market regulation more generally. Since competition is driven by differential competitive characteristics, it follows that innovation policy has a role to play in stimulating enterprise and competition. New products and processes become the route to challenging established positions and to enhancing resource productivity. A low innovation economy is in all probability a low competition economy. Consequently, the dynamic case against monopoly or the concentration of economic power comes to depend on how this concentration influences the rate and direction of innovation in the economy. This is not usually a matter that concerns competition authorities but it should. By extension, science and technology policy and enterprise policy are complementary to competition policy. Thus there is a great difference between competition policy as a negative discipline on firms, punishing deviant behaviour, and competition policy as a set of positive incentives to facilitate the creation of better business opportunities to compete.

All of this suggests that competition policy, especially in the context where market institutions are not well developed, involves attention to much more than the narrow search for market power or excess profits. We turn now to explore how these ideas interact with some of the recent policy debates that have been presented in the recent economic development literature.

V. COMPETITION AND COMPETITIVENESS: POLICY DEBATES IN DEVELOPING COUNTRIES

Concerns about globalisation, technical change and the pace of liberalisation have given rise to a numerous competitiveness studies, rankings and policy initiatives by governments, consultants and research institutions across many developed and developing countries. Part of this discourse relates to and interacts with the competition policy debate. For developing countries, explicit concern with this issue is a relatively recent phenomenon. Up to the 1990s, for example, formal competition policy appeared on the policy agendas of only 16 developing countries but this number has increased substantially in subsequent years with the encouragement and technical assistance of international institutions. More recently the new International Financial Architecture being constructed in the wake Asian crisis has brought renewed international pressures on developing countries to institute or reform their own competition policies if not participate in some form of multilateral arrangement to ensure 'fair play' and 'level playing fields' between countries (Singh, 2002).

The issue is not a simple choice between whether developing countries should have a competition policy or not, it is rather the purpose and structure of that policy. For competition to favour development, market processes must not distort the scope for better products and processes to absorb more of the available economic resources over time. But clearly, the types of policies adopted by developed

countries need not necessarily be appropriate for developing countries. Moreover, the type of policy that may be appropriate for one developing country may not be adequately suited to another. The attention to allocative efficiency and lower prices that underlies competition policy in developed countries may be too narrow and static from a development perspective. In order to focus competition policy on development, competition cannot be strictly perceived in the quantitative sense of more being better. Development may require in some instances that competition be restricted while in others be vigorously promoted. Thus Singh and Dhumale (1999) and Singh (2002) call for the emphasis to be on dynamic rather than static efficiency and the formulation of an optimal degree of competition (rather than maximum competition):

> 'that would entail sufficient rivalry to reduce inefficiency in the use of corporate resources at the micro economic level, but not so much competition at it would deter the propensity to invest' (Singh and Dhumale 1999, p12).

Lall (2001b) challenges the concept of national level competitiveness and considers the implications for policy. He particularly takes issue with the theoretical foundation of competitiveness measures (in particular the World Economic Forum (WEF) indices used for benchmarking countries)[10] that have become significant in the policy discussion in many developing countries. He starts his analysis by examining the logic of Krugman's objection (Krugman, 1994) to the use of a broad concept of competitiveness that is related to the medium to long term economic performance; and in which the focus is on structural factors such as productivity, innovation, capabilities and skills. Although he agrees with Krugman that in the context of a general equilibrium framework this concept of competitiveness is misplaced, he does not completely agree that competitiveness should be ruled out as an economic issue. This is particularly so because the strong assumptions underlying (trade) theory are not met in reality. Market failure gives rise to valid issues relating to national competitive ability. Thus developing countries in which market failure is particularly diverse and widespread may require coordinated strategies to move their economies from low-skilled, low technology activities to higher valued activities. Lall suggests that a structuralist (selective intervention) rather than a market friendly approach may be more appropriate for developing countries in overcoming the impediments (diffuse information, market failures, cost of mastering tacit technology, existence of widespread externalities and linkages, pervasive weaknesses in factor markets and institutions) that constraint growth and development. He is clear in his understanding that strategies or policies for correcting market failure should in no sense be seen as 'remedying deviations from a perfectly competitive equilibrium' (p.1505) as the goal for developing countries is not to attain some ideal static equilibrium but to create the conditions that will take them towards a high disequilibrium growth path.

Lall's critique of the WEF 'model' and the derived competitiveness index is particularly incisive. He perceives competitiveness as being a 'multifaceted and complex' phenomenon perhaps too much so to 'permit easy measurement' (p.1520). The WEF model/index suffers in several respects. Firstly, it represents an oversimplification of the process of structural change in developing countries. The underlying assumption appears to be that markets are efficient in all countries and that the primary requirement for success is a competitive setting with full exposure to international markets. This

10 See WEF 2000

implied efficiency assumption suggests a 'market friendly' policy intervention that disregards the reality of developing countries where market failure may indeed call for selective intervention. Secondly, the broad definition of competitiveness adopted fails to distinguish clearly between competing and non-competing activities, a particularly difficult exercise in practice. The quantitative measure of performance in the index for example relates to per capita GDP (at purchasing power parity). While it is acknowledged that a significant proportion of GDP may be accounted for by competing activities in small countries Lall is concerned that such an approach dilutes the analysis of structural factors affecting competitiveness.

Thirdly the specification of the model, the choice and number of variables, the causal relationships and the collection and use of the data are less clear than they might be. The resulting 'theory of competitiveness' is less of a theory and more of a catalogue of factors associated with competitive success 'strung together by loose ideas on how they are interrelated'(p.1512). This is part due to the attempt to integrate corporate strategy theory and growth economics to conduct a growth accounting exercise without the required analytical and empirical tools.

Overall therefore, it is not immediately transparent what exactly is being compared across countries in the competitiveness index and this raises questions whether such measures should form the basis of policy analysis and action. Lall admits that there is a strong case for constructing indices but cautions that such exercises should be more limited in coverage, use a smaller number of variables, and adopt a more modest approach.

The multi-faceted nature of the connection between competitive characteristics and competitive performance is one reason why managerial notions of competition do not fit well with their economic counterparts. In the context of the debate that links new management concepts, such as inter-firm networking with Japanese-style organisational principles and competitiveness, Meyer-Stamer (1995) urges caution based upon the evidence from developing countries, arguing that "things are more complicated that they may first appear" (p.143), that different paths to competitiveness exist and that no best practice is evident (p.147).

Meyer-Stamer's analysis is organised around three points. Firstly, the discussion of new management concepts tends to be concentrated largely on firm related production process, largely neglecting other functions of the firm such as marketing, logistics, R&D, and sourcing of capital, labour and produced inputs. From a strategy point of view therefore, imitating the experience of other countries in one dimension may not necessarily bring about the expected improvements precisely because competitive characteristics form an interrelated bundle. Meyer-Stamer illustrates with reference to Brazil, where he argues that new organisational concepts may prove insufficient to bring about the desired change, given the peculiar structural problems of the Brazilian economy such as a low propensity to invest and a generally low technological base. Secondly, there is more than one pattern of organisation through which firms can be competitive. In the case of China for example, companies tend to be based on traditional internal organisational structures (small size, centralised, paternalist and cost efficiency driven) but they are linked through dense networks of relationships which allow them sustained close contacts, continuity in supplier relationships, regular exchange of information and low transaction costs (p.146). Thirdly, firms can be competitive without being organised around collective networks. Korean firms are also organised along traditional organisational principles but their competitiveness rests on two pillars: efficient patterns of organisation at the firm level, and selective support of individual firms by associations and public sector institutions (p.147). In the Korean context the state effectively substituted for the inter-company network by setting the institutional framework (technology, training, quality control, export marketing and so on) that

supported the development of firm competitiveness. Competitiveness, concludes Meyer-Stamer, is created at the firm level. But it is partly derived from a systemic context and emerges from complex patterns of interactions between government, enterprises and other actors, and will therefore exhibit different forms in each society.

An innovation dimension of the competition-development debate is explored in Mytelka (1999). Here the concern is with understanding the relationship between windows of opportunity existing in different industrial sectors for the entry of latecoming countries and their national policy initiatives in order to assess the impact of these policies on the firm level innovation and competitiveness. Drawing upon empirical evidence from four developing countries - China, India, Korea and Brazil - in the machine tools, telecommunications, petrochemicals and biotechnology sectors, Mytelka argues that that there are wide differences in the nature and pace of innovation and in the conditions of global competition during the period considered (1970-1990). The traditional indicators of competitiveness (based on cost and price competition) have not applied to all industries at all times as new rules of competition were constantly being set. Thus different causal factors drive competitiveness in different industries and these can change over time (p.211). The implication following from this is that no simple or clear policy guidelines are appropriate. This calls for:

> 'a better understanding of both the changing role of competition within industrial sectors and the attitudes, habits and practices of firms in these sectors notably with respect to competition and innovation would thus appear to be the essential first steps in the policy design phase' (p. 205).

One of the key Mytelka insights is that competition policies (eg, market opening policies) can even render unwanted or perverse effects if other conditions are not ensured (p.22). Thus a distinction is established between firm innovation strategies: *catching up*, *keeping up* and *getting ahead* and how these different strategies relate to necessary firm capabilities, resources and competitive conditions. The general conclusion, which resonates strongly with Meyer-Stamer, is that 'the historical habits and practices of firms need to be considered when designing policies to stimulate innovation and competitiveness'(p.22).

V. COMPETITION AND INNOVATION POLICY FRAMEWORKS

No evolutionary account of the link between development and competition can be complete without acknowledging the particular role of technology and more generally innovation. In a globalising world environment, a country's development is closely linked to its ability to be creative and innovative on its own account or through its use of technologies created elsewhere. An understanding of the competitive process needs to take account of how technology is generated, how it is absorbed and adapted and how market failures affect such processes. There is a growing literature on the policy implications of the innovation process, much of it produced by scholars working under a broad Schumpeterian if not evolutionary banner. Our purpose is not to review all its ramifications here but rather draw attention to a few instances where it overlaps with the theme of competition and interacts with development (Metcalfe, 1995, 2001; Malerba, 2002).

Technological behaviour as Katz (2001) observes, comes from a co-evolutionary process. It is the outcome of the co-evolution of the micro (learning strategies of individual firms), the meso (the

competitive and technological regime) and macroeconomic forces (organisation, regulatory systems, institutions and public policies). Thus, how innovation (variety generation) occurs in relation to technology and organisation is not independent of market processes. Competitive pressures in open markets are a sufficient incentive to stimulate innovation in search of competitive advantage and the capabilities to innovate depend greatly on prior market experience of trial and error developments. From such a perspective the nature of the firm can be characterised as an experimental agency embedded in an institutional context. Competitiveness in this sense can be seen as the outcome of a continuous process of innovation that enables firms to catch up to, keep up with or move ahead of their rivals in the market processes. As we have intimated in the earlier discussion, a system that facilitates an open competitive process permits new firms to acquire customers and resources at the expense of established firms. Such systems are extremely competitive but not in the sense of notions of perfect competition. It is not a competitive economic structure that matters but rather a competitive economic process in which there is a high rate of business experimentation.

The traditional basis for innovation policy lies in the market induced divergence between private and social rates of return to investment in knowledge and innovation (Arrow, 1962; Stoneman, 1988). Thus the role of the policy maker was simply to stimulate innovative activity by cleverly realigning the divergent incentives through suitable fiscal and other incentives. Such incentivisation, while especially relevant for developing economies, pales into insignificance besides the chasm in practical knowledge that exists between (and within) developing and developed countries. The innovation challenge is not simply a question of catching up with developed countries in established areas of world production, it is about developing an internal capacity for independent technological development and business knowledge. It is about learning to learn and that is demanding both of time and resources. Not only is the internal knowledge base for mastering technology in developing countries weak, the supporting networks (other enterprises, institutions and so on) are also underdeveloped. The issue of how to overcome these formidable barriers has been tackled by a number of scholars. Some of the most penetrating work on technology policy and the formation of capabilities through national innovation systems has been carried out by Morris Teubal and colleagues. Lall and Teuball (1998) for example suggest a foundation for a dynamic learning perspective to research and development activity. They place considerable emphasis on collective learning - externalities, spillovers, and the non-market exchanges of skill and information – that originate in networks of activities and argue that one of the main aims of technology policy should be to tap, promote and extend collective learning by focusing on those activities that generate more externalities than others (p.1347). This involves widening the policy intervention framework beyond the focus of selectivity (targeting sectors or industries) and functionality (improving in particular, factor markets) to incorporate a horizontal dimension geared at promoting selected activities across sectors for which markets are missing or are particularly difficult to create. Technological development thus involves a mix of functional, vertical and horizontal policies that are context dependent, both in terms of country and in terms of the capabilities of policy makers. This framework for a "market stimulating technology policy" does not express *a priori* preferences for any policy mix but allows for policy learning and thus provides for a 'richer and more realistic framework for understanding policies' (p.1370). The imperative for 'new' innovation policies for developing countries is made more urgent by the changing trends in the external and internal environments of developing countries, rapid technological change and deregulation. These lead Bartzoukas and Teubal (2001) to argue the case for more sophisticated policy frameworks and institutions. They propose a conceptual framework based on evolutionary and systems perspectives that goes beyond market failure analysis, together with a 'policy portfolio'

and policy process framework based upon a range of different types of programmes (both general and targeted), rather than a uniform, general policy promoting R&D. Moreover, this 'set' of policies should be subject to change, as no policy is valid indefinitely and applies to all circumstances (Teubal, 1997). The increased complexity and openness of systems of innovation imply new roles for policy in the areas of learning processes and co-ordination problems, institutions including the institution of policy itself, new patterns of knowledge flows, the complexity of capital markets and the allocation of resources in a global economy.

An interventionist view of technology policy for developing countries also finds favour with Chang and Cheema (2001) and Ahrens (1999). The latter argues that contrary to the Washington consensus, market enhancing government activism is important for technology policy in developing countries. Indeed the East Asian experience implies that a neutral policy regime is neither a necessary nor a sufficient condition for successful development. Ahrens advocates the market enhancing view (Aoki et al, 1997) in which government acts not as a substitute for private sector coordination but as an institutional facilitator that supports private coordination and improves information exchanges between the private sector and itself. Chang and Cheema argue that the pro-market view of technology policy which focuses on efficient utilisation of given technologies does not seriously address issues of technological development and innovation. Market imperfections provide the rationale for a policy to foster learning and innovation rents in developing countries. For these authors, an activist technology policy is therefore required to promote technological learning and this is achieved by socialising the risk involved in the process and internalising the inter-temporal externalities associated with it (p. 21). The success of such a policy depends partly on the underlying policy design but also on the underlying institutional and political conditions. Thus a state promoting view starts from the premise that effective use of technology requires not only its adaptation to local conditions but in addition, a significant amount of investment in 'organisational and institutional adaptation'. The crucial condition for the successful use of learning rents is that the state is able and committed to monitoring relative firm performance and imposing penalties in the event of non-performance. This requires state autonomy, a capable state bureaucracy, intermediate institutions to manage information flows between the bureaucracy and the corporate sector (such as Japan's deliberation councils and Korea's export promotion meetings) and state-controlled institutions, such as the management of state-owned enterprises and the control over the financial sector.

These kinds of policy prescriptions draw partly from new theoretical directions and from the experience of the newly industrialising countries of East Asia and Latin America. Linsu Kim's early analysis (Kim 1993) of Korea's national system of innovation provides many insights into the factors behind that country's rapid economic progress and technological development. Strong government, the promotion of technological learning in the private sector through chaebols complimented by rapid formal education programmes and government funded research institutes lie at the heart of Korean success. While not particularly relevant in the pre-1970 period, technology policy came into its own during the 1980s with the international economic slowdown and shift towards more protectionist trade policies in Europe and North America. Responding to the reluctance of foreign countries to transfer technologies, the Korean government set about a series of liberalising reforms and a major shift in science and technology policy. This was encouraged by various mechanisms such as tax incentives and preferential financing to set up of research laboratories. The government funded research institutes have been the backbone of national research and development since the 1980s' (Kim, 2000). They played an important role in helping to firms to acquire prior knowledge about technology and prospective technology suppliers in the early years of industrialisation and

joint research with these institutes enabled firms to assimilate and adapt technology rapidly. The skills and activities involved in reverse engineering allowed Korean firms to attain the capabilities necessary to approach the world technological frontier in several new industries. Moreover strategies for reaching technology frontiers have followed a number of routes including setting up outposts in Silicon Valley to leap-frog to state-of-the-art technology, the development of ties with multinationals, promoting industry ties with local public R&D institutes and heavy investment in in-house R&D activities.

Technology policy that favoured the strengthening of endogenous capability also featured highly in Latin American import substitution industrialisation strategy (Meyer-Stamer 1997). In the case of Brazil for example, Dahlman and Frischak (1993) point to the impact of technological factors and the role of its innovation system in the development process. Sectoral technological initiatives closely aligned to the military governments interests started in the 1950s with the establishment of the National Research Council and the Technology Institute for Aeronautics. Towards the 1960s however, the focus shifted towards strengthening the technological competence in support of the import substitution industrialisation with various programmes for funding technical training, machinery and equipment acquisition in addition to a planning system for Science and Technology with strong emphasis on institutional development. This framework held such great promise that at the start of the 1970s there appeared to be little doubt that Brazil would close the gap with the OECD countries in much the say way that South Korea and Taiwan did in the 1980s (Meyer-Stamer, 1997, p33). That this failed to be the case has been the subject of considerable analysis.

Dahlman and Frischak (1993) cite a number of factors for this failure. They contend that apart from the agro-technology and aerospace sectors, government industrial R&D programme has been ineffective due to weak linkages with the productive sector. Moreover, public sector R&D which accounts for 70 to 90% of total R&D expenditure remained low in comparison to other newly industrialising countries at a time where East Asian economies were increasing their R&D expenditure at a rapid pace. They further argue that in contrast to the Korean case, the education system was one of the main obstacles to technological upgrading. It is characterised by low primary and secondary education enrolment and the limited effectiveness of higher education in upgrading technological capabilities due to the poor quality of university education and postgraduate system, and a small proportion of student in science, mathematics and engineering.

Katz (2001) also notes the disarticulation between R&D and the productive sector in Latin America more generally but cautions about underestimating the achievements during the period of import substitution development. Public sector efforts in developing the scientific and technological infrastructure, training human resources and large scale production facilities, far from telling a story of failure, tell a story of the success of domestic technological capabilities. While economic growth in LA was by no means as impressive as it had been in the East Asian countries, it was characterised by an increasing degree of technological sophistication. The consequent learning dynamics resulted in a rapid expansion of labour productivity and of manufacturing exports in Argentina, Brazil and Mexico in the 1970s (Katz 2000). But sustaining such progress was not possible given the international macro economic environment of the 1980s and 1990s when there has been a rise of relatively low technology labour intensive industries and a large shift of industrial specialisation towards raw material processing.

The essence of the problem for Latin America from Katz's vantage point (Katz, 2001) is that the national innovation systems that did develop were of a highly fragmented nature lacking in sense of purpose and depth. It represents a failure of policy learning and policy adaptation. The key appears

to lie with the bureaucratic culture that developed within and around the R&D institutes and the lack of linkages with the productive structure of the economy. Meyer-Stamer (1997) contests this perception arguing that although there were elements of a system they were without systemic character (p 85). While there were loosely linked activities in different sectors there has been no continuous practice of a systematic, cross-sectoral technology policy. The concerns of the state appeared to weigh in favour of science – basic research – over activities dealing with applied research and technology development. Moreover a nexus of technological cooperation between firms, universities and research institutions did not emerge.

Clearly activist technology policies have been employed with varying degrees of success in the recent past by East Asian and Latin American countries. Whether such an approach to policy is possible in view of the changing context of domestic and international contexts of technology policy is questionable. Chang and Cheema suggest that developing country deregulation and the emergence of a 'liberal' world order represented by the WTO are no longer conducive to such developments. Certainly the move towards liberalisation and deregulation in most developing countries is rendering a rent-creation mechanism more difficult to implement. Moreover, a move towards a more 'liberal' international regimes marked by the establishment of the WTO constrains the freedom of individual countries in the use of trade, industrial and technology policies. Although not impossible, activist technology policy may require more careful policy design. However, policy and policy makers may need to be more adaptive to changing circumstances. The Korean case is particularly instructive. While its innovation system was adequate for its development in the 1960s and 1970s, the formal and informal institutions were not sufficiently reformed to take account of the rapidly changing market and technology environment over recent years (Kim, 2000). Thus in an era when growth and development relies on collective knowledge and creativity the continuation of that country's progress now appears to rest on wide scale changes to its innovation system including its refocusing from being state centred to industry driven, a restructuring of the administrative apparatus associated with the science and technology strategy and a refocusing of a rigid formal and informal education sector to one that favours creativity and initiative (Kim 2000).

VI. CONCLUDING THOUGHTS

Current thinking about development (and economic growth) has often failed to grasp the complex, causal nature of the social world and more often than not, presents an inappropriate and ahisorical account of the economic process across countries (Kenny and Williams, 2001). It is no wonder then that Stiglitz (1998) notes that recent treatments of the development process have begun to re-emphasise the complex and interlinked nature of the economy reminiscent of writing in the 1950's and before. Our linking together of competition and development is offered in the same spirit, and is also a plea to a return to earlier traditions of economic thinking (Nelson,R., and Winter, S., 2002).

Our central conclusion is that competition, and by implication competition policy involves complex and subtle issues that transcend the view of competition as a structural feature of specific markets as if they are arranged on a spectrum from monopoly to perfect competition. Instead we have insisted that competition is a dynamic process not readily analysed in terms of states of equilibrium, and we have claimed that an evolutionary view of competition is isomorphic to an evolutionary view of development processes. Indeed many of the great development economists could wear an evolutionary label with comfort. The neoclassical emphasis on equilibrium creates as many difficulties for the

understanding of development as it does the understanding of competition. Both development and competition depend deeply on notions of coordination but co-ordination is not equilibrium it is order, and knowledge based orders change from within. Developing economies are never in equilibrium because knowledge is never in equilibrium. The emphasis on order naturally places the operation of markets, the boundaries of markets and the regulation of markets at the forefront of the analysis. Indeed all markets are regulated as part of their instituted framework although much of this regulation can be informal, organised by the market participants and transcending matters of competition in the narrow sense.

Our perspective presents competition as multi faceted, with entry and exit, changes in market shares of surviving incumbents, with a central role reserved for product and process innovations (including innovations in organisation) and imitation of the same. If relative profitability is the first standard against which to measure competitive advantage, then these same market processes ensure that patterns of relative profitability are transient as investment and innovation reshape the population of rivals. While competitive characteristics can be sustainable, indeed impervious to the efforts of managers and policy makers to reform them, the sustainability of competitive advantages is far less secure. Because the sources of competitive advantage are typically multi dimensional, and they operate as an interdependent bundle of causes, their working is not necessarily transparent. Policy makers need to face the perhaps unpalatable conclusion that there may be no single indicator or comparable index of indicators, that adequately captures the distribution of competitive advantages or their relative variation over time or the processes by which they are generated. Furthermore, the interpretation of multiple and possibly, conflicting indicators presupposes a framework that evaluates tradeoffs between different indicators.

Yet market processes play a key role in this view of development but not in the conventional way, if that is taken to mean an emphasis on the efficiency in the allocation of given resources to given ends. Rather the institutions of the market economy are to be judged in terms of the discovery of new uses for economic resources. It is the role of open market processes in incentivising and facilitating creative change that matters. The socially and legally embedded rules of the game matter because they underpin this view of capitalism and competition as contest and enterprise. No economy attains high levels of development without building a rich ecology of market institutions to facilitate open competition. However, markets are the instruments not the outcome, they are necessary but not sufficient generators of development. It is innovation broadly conceived that is the root source of all economic progress and it is thus the link between innovation and competition that matters for competition policy, and any broad conception of innovation must recognise that there is much more to it than a command of science and technology. Thus competition policy terms out to be complementary to innovation policy with all that implies for the difficulty of assessing market power in relation to long run economic performance.

In contrast to the general, direct and optimising perspective of market failure based technology policy, a structuralist and evolutionary perspective presents a multidimensional and multi-targeted focus, directed to a wide array of technological bases, and employing multiple tools. Moreover, the selection of policy alternatives should not be a static process, as there is no policy adequate to the task of remaining relevant or effective over a prolonged period of time (Teubal, 1997). A transition or evolution in the application of policies should be allowed for, and effected according to appropriate evaluation of various effects and changes in the overall competitive environment. The multi-layered, multi-dimensional and multi-targeted nature of policy and policy-making necessitates complex and effective policy learning mechanisms that allow policy-makers to both monitor and evaluate policies,

and to anticipate and effectively react in advance to future changes. Such views further emphasise the aforementioned reason for advocating a diversity of co-ordinated actions between some general and some narrowly focussed policies and activities, related to the non-neutrality of technology policy (unlike the vision of neoclassical perspective of general policies affecting all sectors). A policy based on enhancing the allocation of existing resources is often insufficient. Under a neo-classical view, such policies were justified by externalities of knowledge and market failure at the aggregate level. An evolutionary perspective justifies innovation policy in terms of system failures, deficiencies in the ecology of organisations and their interconnections that promote development but this is properly the subject of a separate paper (Malerba, *et al,* 2002)

To conclude, competition is central to the development process but competition is a process not a state of equilibrium. It is the necessary but not sufficient element in restless capitalism. Consequently competition policy is not reducible to a simple-minded concern with the exploitation of market power and the search for excess profits. It is in its fundamentals a matter of the creativity of an economic system. This is one reason why pragmatism rules for competition authorities they must be sensitive to inter industry difference in relation to the main drivers of competitiveness in different industries, the role of innovation in competitiveness, the policies necessary to promote innovation, and the effect of competition on the innovation process.

REFERENCES

Abramovitz, M., 1986, 'Catching Up, Forging Ahead and Falling Behind', Journal of Economic History, Vol. 46, No 2, pp. 385-406.

Ahrens, J., 1999, 'Governance and the Implementation of Technology Policy in Less Developed Countries', International Workshop: The Political Economy of Technology in Developing Countries, University of Sussex, Brighton.

Alchian, A., 1951, 'Uncertainty, Evolution and Economic Theory', Journal of Political Economy, Vol. 60, pp. 211-221.

Anderson, E.S., 1994, Evolutionary Economics: Post Schumpeterian Contributions, Pinter, London.

Aoki, M., Murdock, K. and Okuno-Fujiwara, M., 1997 'Beyond the East Asian Miracle: Introducing the Market-Enhancing View', in M. Aoki, H-K. Kim, and M. Okuno-Fujiwara (eds.) The Role of Government in East Asian Economic Development. Comparative Institutional Analysis, Oxford: Clarendon Press, pp. 1-37.

Arrow, K., 1962, 'Economic Welfare and the Allocation of Resources to Invention' in Nelson, R.R. (ed.), The Rate and Direction of Inventive Activity, NBER, New York.

Bartzokas, A. and Teubal, M., 2001, 'A Framework for Policy Oriented Innovation Studies in Industrialising Countries', Discussion Paper, No. 6, UNU/INTECH.

Baumol, W.J., 1982, 'Contestable Markets: An Uprising in the Theory of Industry Structure', American Economic Review, Vol. 12, pp. 1-15.

Baumol, W.J., 1993, Entrepreneurship, Management and the Structure of Payoffs, MIT Press.

Brenner, R., 1987, Rivalry: In Business, Science, Among Nations, Cambridge University Press.

Cellini, R. and Soci, A., 2002, 'Pop Competitiveness', Banca Nationale del Lavoro, March.

Chamberlin, E, 1934, Monopolistic Competition, Harvard University Press.

Chang, H. and Cheema, A., 2001, 'Conditions for Successful Technology Policies in Developing Countries - Learning Rents, State Structures and Institutions', Discussion Paper, UNU/INTECH.

Clark, J.M., 1961, Competition as a Dynamic Process, Brookings Institute, Washington.

Coombs, R., Harvey, M. and Tether, B., 2001, 'Analysing Distributed Innovation Processes', CRIC Discussion Paper No 43, University of Manchester.

Coombs, R. and Metcalfe, J.S., 2000, 'Organising for Innovation: Coordinating for Innovative Distributed Innovation Capabilities' in N. Foss and V. Mahnke (eds), 'Competence, Governance and Entrepreneurship', Oxford: Oxford University Press.

Coombs, R. and Metcalfe, J.S., 2002, 'Innovation in Pharmaceuticals: Perspectives on the Coordination, Combination and Creation of Capabilities', Technology Analysis & Strategic Management, Vol. 14, No. 3, pp 261-271.

Dahlman, C. and Frischtack, C.R., 1993, 'National Systems Supporting Technical Advance in Industry: The Brazilian Experience', in Nelson, R.R. (ed.), National Innovation Systems: A Comparative Analysis, Oxford University Press.

Demsetz, H., 1995, 'The Intensity and Dimensionality of Competition', in his, The Economics of the Business Firm, Cambridge University Press.

Dosi, G., Freeman, C., Nelson, R., Silverberg, G. and Soete, L., 1988, Technical Change and Economic Theory, Pinter, London.

Downie, J., 1958, The Competitive Process, Duckworth, London.

Duménil, G. and Lévy, D., 1995, 'Stylized Facts about Technical Progress Since the Civil War', Structural Change and Economic Dynamics, Vol. 5., pp. 1-24.

Emmett, R.B., 1994, 'Maximisers versus Good Sports: Frank Knight's Curious Understanding of Exchange Behaviour', in Marchi, N. and Morgan, M. (eds) Higgling, Duke University Press.

Fisher, F.M., McGowan, J.J. and Greenwood, J.E., 1983, Folded, Spindled and Mutilated, MIT, Boston.

Georgescu-Roegen, N., 1967, 'Chamberlin's New Economics and the Production Unit' in Kuenne, R. (ed.), Monopolistic Competition Theory. Studies on Impact, Wiley, New York.

Hayek, F.A., 1948, 'The Meaning of Competition' in Hayek, F.A. (ed.), Individualism and Economic Order, University of Chicago Press.

Hayek, F.A., 1978, 'Competition as a Discovery Process' in Hayek, F.A. (ed.), New Studies in Philosophy, Politics, Economics and the History of Ideas, London, Routledge and Kegan Paul.

Hicks, J.R., 1939, Value and Capital, Oxford University Press.

Hicks, J., 1965, Capital and Growth, Oxford University Press.

Hoekman, B., 1997, 'Competition Policy and the Global Trading System: A Developing-Country Perspective', World Bank Working Papers, International Economics. Trade, Capital Flows, No. 1735.

Jevons, W.S., 1871, The Theory of Political Economy, Macmillan, London.

Katz, J., 2000, 'The Dynamics of Technological Learning during the Import-Substitution Period and Recent Structural Changes in the Industrial Sectors of Argentina, Brazil and Mexico', in Nelson, and Kim (eds.), Technology, Learning, and Innovation: Experiences of Newly Industrializing Countries, Cambridge University Press.

Katz, J., 2001, 'Structural reforms and technological behaviour: The sources and nature of technological change in Latin America in the 1990s', 'Research Policy', Vol.30, pp.1-19.

Kenny, C. and Williams, D., 2001, 'What Do We Know about Economic Growth? Or, Why Don't We Know Very Much?' World Development, Vol. 29, No. 3, pp1-22.

Khalil, E., 2001, 'Survival of the Least Foolish of Fools: The Limits of Evolutionary Selection Theory', Journal of Bioeconomics, Vol.

Kim, L., 1993, 'National System of Industrial Innovation: Dynamics of Capacity Building in Korea', in Nelson (ed.), National Innovation Systems: A Comparative Analysis, Oxford University Press.

Kim, L., 2000, 'Korea's National Innovation Systems in Transition' in Kim, L. and R. R. Nelson (eds) 'Technology, Learning , and Innovation: Experiences of Newly Industrialized Economies'. Cambridge, Cambridge University Press.

Kirkpatrick, C., 2001, 'Regulatory Impact Assessment in Developing Countries: Research Issues', Working Paper, No. 10, Centre on Regulation and Competition, University of Manchester.

Knight, F., 1923, 'The Ethics of Competition', Quarterly Journal of Economics, Vol. 37, pp. 579-624.

Knight, F., 1933, 'The Economic Organisations', New York: University of Chicago Press.

Knight, F., 1946, 'Immutable Law in Economics: Its Reality and Limitations', American Economic Review, Vol. 36 (May), pp. 93-111.

Krugman, P., 1996, 'Making Sense of the Competitiveness Debate', Oxford Review of Economic Policy, Vol12, pp. 17-25.

Krugman, P., 1994, 'Pop Internationalism', MIT Press.

Kurz, H. and Salvadori, N., 1995, Theory of Production, Cambridge University Press.

Lachmann, L., 1986, The Market as an Economic Process, Basil Blackwell, Oxford.

Laird, S., 2000, 'The WTO Agenda and the Developing Countries', Centre for Research in Economic Development and International Trade (CREDIT), University of Nottingham.

Lall, S., 2001a, 'Competitiveness, Technology and Skills', Oxford University Press.

Lall, S., 2001b, 'Competitiveness Indices and Developing Countries: An Evaluation of the Global Competitiveness Report', World Development Vol. 29, No. 9, pp 1501-1525.

Lall, S. and Teubal, M., 1999, 'Market Stimulating Technology Policies in Developing Countries: A Framework with Examples from East Asia', World Development, Vol. 26.

Leibowitz., S.J. and Margolis, S.E., 2000, 'Winners, Losers & Microsoft: Competition and Antitrust in High Technology', Independent Institute.

Lewis, W.A., 1954, **'Economic Development with Unlimited Supplies of Labor", Manchester School, Vol. 22, pp.139-191.**

Loasby, B., 1982, 'The Entrepreneur in Economic Theory', Scottish Journal of Political Economy, Vol. 29, pp. 235-245.

McNulty, P.J., 1967, 'A Note on the History of Perfect Competition', Journal of Political Economy, Vol. 75, pp. 395-399.

Marshall, A., 1920, Principles of Economics, 8th edition, Macmillan, London.

Malerba, F., Edquist, C., Montobbio, F., and Metcalfe, J.S., 2002, 'New Challenges for Sectoral Systems of Innovation in Europe', Paper presented to the Druid Summer Conference 2002, Copenhagen, Denmark.

Mazzacato, M., 2000, Firm Size, Innovation and Market Structure: The Evolution of Market Concentration and Instability, Edward Elgar, Northampton, MA.

Metcalfe, J.S., 1995, 'The Economic Foundations of Technology Policy: Equilibrium and Evolutionary Perspectives', in P. Stoneman, (ed.), Handbook of Economics of Innovation and Technology Change, Oxford: Blackwell.

Metcalfe, J.S., 1998, 'Evolutionary Economics and Creative Destruction', London: Routledge.

Metcalfe, J.S., 2001, 'Technology and Economic Development: A Comparative Perspective', background paper prepared for the World Industrial Development Report, UNIDO.

Meyer-Stamer, J., 1997, Technology, Competitiveness and Radical Policy Change: The case of Brazil, UK, Frank Cass and German D.

Meyer-Stamer, J., 1995, 'Micro-Level Innovations and Competitiveness', World Development, Vol. 23, pp. 143-148.

Morgenstern, O., 1972, 'Thirteen Critical Points in Contemporary Economic Theory', Journal of Economic Literature, Vol. 10, pp. 1163-1189.

Mytelka, L.K., 1999, 'Competition, Innovation and Competitiveness in Developing Countries', Development Centre, Organisation for Economic Co-operation and Development, Paris.

Nelson, R., and Winter, S., 1984, 'An Evolutionary Theory of Economic Change', Belknap,

Harvard.

Nelson, R., and Winter, 2002, 'Evolutionary Theorizing in Economics', Journal of Economic Perspectives, Vol.16, pp.23-46.

Okun, A.M., 1981, Prices and Quantities: A Macro Economic Analysis, Basil Blackwell, Oxford.

Penrose, E.T., 1959, A Theory of the Growth of the Firm, Basil Blackwell, Oxford.

Porter, M., 1996, The Competitive Advantage of Nations, Macmillan, London.

Robinson, J.V., 1954, 'The Impossibility of Competition' in Chamberlin, E.H. (ed.), Monopoly and Competition and their Regulation, Macmillan, London.

Schumpeter, J., 1934, The Theory of Economic Development, Oxford University Press.

Schumpeter, J., 1939, Business Cycles, McGraw Hill, New York.

Schumpeter, J., 1944, Capitalism, Socialism and Democracy, George Allen and Unwin, London.

Shepherd, W.G., 1984, '"Contestability" vs "Competition"', American Economic Review, Vol. 74, pp. 572-586.

Singh, A., 2002, 'Competition and Competition Policy in Emerging Markets: International and Development Dimensions', http://ksghome.harvard.edu/~.drodrik.academic.ksg/G24Singh.pdf

Singh, A. and Dhumale, R., 1999, 'Competition Policy, Development and Developing Countries', Trade Related Agenda Development and Equity (T.R.A.D.E) Working Paper No 7, South Centre.

Stigler, G.J., 1957 (1965) 'Perfect Competition, Historically Contemplated' in G.J. Stigler, 'Essays in the History of Economics', Chicago: University of Chicago Press.

Stiglitz , J. 1998, 'Towards A New Paradigm for Development: Strategies, Policies and Processes', The 1999 Prebish Lecture. Geneva: UNCTAD.

Stoneman, P., 1988, 'The Economic Analysis of Technology Policy', Oxford University Press.

Teubal, M., 1997 'Policies for Promoting Enterprise Restructuring in National System of Innovation: Triggering Cumulative Learning and Generating Systems Effects', in 'New Rationale and Approaches in Technology and Innovation Policy', OECD STI Review, No. 22 special issue.

Roberts, M.J., and Tybout, J.R., 1996, Industrial Evolution in Developing Countries, Oxford University Press.

WEF, 2000. Porter M.E., Sachs, J.D., Warner, A.M. Cornelius, P.K., Levinson, M., and Schwab.K. (eds), The Global Competitiveness Report 2000, New York: Oxford University Press for the World Economic Forum.