

**THE INNOVATIVE ENTERPRISE AND
CORPORATE GOVERNANCE**

by

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Abstract

The centrality of corporate enterprises for allocating resources in the economy has sparked the recent debate among economists about the manner in which corporations should be governed to enhance economic performance. This article demonstrates the implications of innovation for corporate governance. To deal with the economics of innovation, a theory of corporate governance must come to terms with the developmental, organisational, and strategic dimensions of innovative resource allocation. The leading theories of corporate governance – the shareholder and stakeholder theories – do not, however, incorporate a systematic analysis of innovation in their analytical frameworks. I show that both of these perspectives, in relying on concepts of resource allocation as individual and optimal, contradict what we know about the innovation process.

1. Introduction

Innovation is the process through which productive resources are developed and utilised to generate higher quality and/ or lower cost products than had previously been available. It is central to the dynamic through which successful economies improve their performance over time as well as relative to each other. As it provides a foundation on which wealth can be accumulated by more and more people over a prolonged period of time, innovation can mitigate conflicts among different interest groups over the allocation of resources and returns: an increase in the living standards of one interest group does not have to come at the expense of another. A relevant theory of resource allocation must therefore incorporate an understanding of the central characteristics of the innovation process.

In studying the economics of the process through which resources are developed and utilised, the enterprise is the central unit of analysis. Historical research on innovation in all of the advanced industrial nations has highlighted the importance, as loci of innovation, of corporate enterprises that compete for markets to survive. An economy's capacity to develop is thus importantly related to the process through which corporate revenues are allocated. Retained earnings – undistributed profits and capital consumption allowances – have always provided, and continue to provide, the financial resources that are the foundations of investments in productive capabilities that can make innovation and economic development possible.¹ How major corporations allocate their vast revenues is a matter of strategic choice,

and the strategic choices of corporate decision makers can have profound effects on the performance of the economy as a whole.

The recognition of the centrality of corporate enterprises for allocating resources in the economy has sparked the recent debate among economists about the manner in which corporations should be governed to enhance economic performance. In this article I demonstrate the implications of innovation for a theory of corporate governance. On the basis of the extensive literature on the subject, I characterise innovation as cumulative, collective, and uncertain. These characteristics, in turn, imply that the process through which resources are allocated to innovation is 1) developmental – resources must be committed to irreversible investments with uncertain returns; 2) organisational – returns are generated through the integration of human and physical resources; and 3) strategic – resources are allocated to overcome market and technological conditions that other firms take as given.

To deal with the economics of innovation, a theory of corporate governance must come to terms with these dimensions of the resource allocation process. The leading theories of corporate governance – the shareholder and stakeholder theories – do not, however, incorporate a systematic analysis of innovation in their analytical frameworks. Indeed, I show that proponents of both of these perspectives, in relying on concepts of resource allocation as individual and optimal, contradict what we know about the innovation process.

In Section 2 I draw on the theoretical and empirical research on the economics of innovation to identify the key stylized facts of the process through which resources are developed and utilised in the economy. Section 3 argues that these characteristics have a number of implications for the process of resource allocation – who makes investment decisions, what types of investments they make, and how returns from successful investments are distributed – in corporate enterprises. In Section 4 I show how the implications of innovative resource allocation for the economics of corporate governance are ignored, or underdeveloped, in the leading Anglo-American perspectives on corporate governance. In the conclusion, I emphasise the need to develop a theoretical framework that explicitly links the analysis of corporate governance with the economics of innovation and suggest some

possible future directions in which research on the economics of corporate governance should go.

2. Characterising Innovation

There have long been economists who have recognised that innovation is central to the dynamic process through which economies develop but it is only in recent decades that the economics of innovation has attracted widespread academic attention. There is now an extensive body of theoretical and empirical research on innovation from which we can glean an understanding of the defining features of the process. What follows is not a comprehensive review of the innovation literature. Rather, it is a stylised characterisation of innovation, based upon that literature, as a process that is collective, cumulative and uncertain.

2.1 Cumulative

By definition, underlying the innovation process is a learning process; if we already knew how to generate higher quality, lower cost products then the act of doing so would not require innovation. How the economist conceives of knowledge, the way it is acquired through learning, and its use in the decisions that shape the learning process has an important influence on his understanding of the economics of innovation. A central finding of the literature on innovation is that the learning that generates higher quality and/ or lower cost products occurs through a process that is cumulative.

Thorstein Veblen eloquently described the phenomenon of cumulative learning almost a century ago; through the experience of innovating, he argued, the learning collectivity accumulates a “common stock” of knowledge.

The complement of technological knowledge... held, used, and transmitted in the life of the community is, of course, made up out of the experience of individuals. Experience, experimentation, habit, knowledge, initiative, are phenomena of individual life, and it is necessarily from this source that the community's common stock is all derived. The possibility of its growth lies in the feasibility of accumulating knowledge gained by individual experience and initiative, and therefore it lies in the

feasibility of one individual's learning from the experience of another. But the initiative and technological enterprise of individuals, such for example as shows itself in inventions and discoveries of more and better ways and means, proceeds on and enlarges the accumulated wisdom of the past. Individual initiative has no chance except on the ground afforded by the common stock, and the achievements of such initiative are of no effect except as accretions to the common stock. And the invention or discovery so achieved always embodies so much of what is already given that the creative contribution of the inventor or discoverer is trivial by comparison. (Veblen, 1904, p. 328)

When the learning process is cumulative, through innovation – through the process of generating higher quality and/ or lower cost products – new innovative opportunities become apparent that are not readily identifiable nor exploitable by those who do not have access to the “common stock of knowledge”.

The cumulative nature of innovation is prominent in evolutionary economics, a literature that is greatly influenced by the work of Richard Nelson and Sidney Winter (Nelson and Winter, 1977, 1982). In an article entitled “In Search of Useful Theory of Innovation”, Nelson and Winter (1977) introduced the concepts of “technological regimes”, and “natural trajectories” that are specific to these regimes, to capture the cumulative dimension of the innovation process. Building upon these ideas, and drawing on the language of the history of science (especially the work of Thomas Kuhn (1962)), Giovanni Dosi (1982) defined a “technological paradigm” as “a ‘pattern’ of solution of *selected* technological problems, based on *selected* principles derived from natural sciences and on *selected* material technologies”. Such a paradigm embodies strong prescriptions on the directions of technical change to pursue and those to neglect; he described as a “technological trajectory” the pattern of ‘normal’ problem-solving activity” that occurs within any particular technological paradigm (Dosi, 1982, p. 152). Dosi contended that it is “the paradigmatic cumulative nature of technological knowledge that accounts for the relatively ordered nature of the observed patterns of technological change” (Dosi, 1988, p. 1129).

Another branch of the literature on technological change attributes the cumulative dimension of that process to the social relations in which it is embedded. William Lazonick, for

example, in his research on the cotton industry and on the comparative development of the economies of Britain, the United States and Japan, contended that the development and loss of the competitive advantage of enterprises and nations can only be understood by analysing the cumulative effects of social organisation on the innovation process (Lazonick, 1979, 1991A; Lazonick and Elbaum, 1986; see also Sorge and Streeck, 1988; Thomas, 1994; Wilkinson, 1983). There is also a rich historical sociology literature on the social foundations of technological change in which the economics of the process is currently attracting growing interest (see, for example, MacKenzie, 1990, 1992).

2.2 Collective

The collective dimension of the process of innovation is also emphasised in the theoretical and empirical literature on innovation. What distinguishes collective learning from individual learning are the ways in which learning by individuals in the collective process is affected by the concomitant learning of others and integrated as new, collective, knowledge. The vitality of a collective learning process is critically dependent on the creativity and experience of the individuals who participate in it. But through their integration into a process of collective learning, individual learners have possibilities for learning that are not available to outsiders to that process. Relations among people open up new opportunities for learning beyond the individual's direct experience of work and personal creativity. These social relations permit the transmission of the knowledge of individual learners – their creativity and experience – but also its transformation through the conveyor's interaction with the learning of another. Knowledge is thus shared and transformed through collective learning.

The way work is organised – how it is divided and integrated – within an economy shapes the extent to which, and the manner in which, knowledge is generated within it. Learning is influenced by what a person does – his experience – as well as the creativity with which that experience is shaped through the specification of the problems that he attempts to solve. How work is divided influences the scope that individuals have to learn because it shapes what they do and the autonomy they have in doing it. How work is integrated shapes the way in which people interact in the performance of their work and the working relationships

that they establish with each other. Thus it shapes the opportunities for the transmission and transformation of knowledge in a process of collective learning (Maurice, Sellier, and Silvestre, 1986; Lane, 1989; Clark and Fujimoto, 1991; Jorde and Teece, 1990; Best 1990; Lazonick, 1991B; Lundvall, 1992; Funk, 1992; Susman, 1992, Penrose, 1995; Edquist 1997).

In an economy characterised by collective learning, innovation and hence economic development, cannot occur without social organisation, that is, without individuals interacting with each other in social groups to achieve common goals. In contrast, when learning relevant to innovation is an individual act, it can be done external to organisations by the individuals themselves. The individual can then sell the improved skills, machines, or materials at the going market price (which may include what economists, following Alfred Marshall, call "quasi-rents"). As distinct from individuals from whom developed productive resources are purchased, business enterprises utilise, but do not develop, productive resources. Under these conditions, the business enterprise cannot influence its competitive (technological and market) environment, and hence (as posited by neoclassical theory) cannot gain competitive advantage over any other enterprise.

There is now an extensive body of empirical literature that documents the role of collective learning processes in the development and utilisation of new technology. Some of this research comes from economics but important strands of the innovation literature emanate from the history of technology, the sociology of scientific knowledge, economic geography, and other disciplinary bases (for a review, see Williams and Edge, 1996). The diversity of the innovation literature, to a large extent, reflects analysts' concerns with a variety of units of analysis including the business enterprise, the industrial district and the nation. Yet, however diverse the literature on innovation, a consistent and central message from it is that technologies are developed and utilised through the integration of groups of people into processes of collective learning.

2.3 Uncertain

The final stylised characteristic of the innovation process is its inherent uncertainty. To innovate is to perform to confront uncertainty (Schumpeter, 1996, p. 85; Kline and Rosenberg, 1986). As G.L.S. Shackle put it:

... the businessman is not merely the helpless victim of uncertainty. He is at all times actively promoting it. For he hopes to discover and apply new knowledge, knowledge of natural principles or market possibilities, and in so far as knowledge is genuinely new it must subvert in some degree what has been accepted as knowledge hitherto. New knowledge is in part destructive of old knowledge. The businessman desires, and strives, to gain advantage over his rivals by innovation, by novelty in products or technology. The fact that a field for such innovation exists is itself a proof that business uncertainty is inescapable. Businessmen compete with each other largely by policies which directly create uncertainty. Innovation is the chief means of business success. There is in consequence a compulsion upon businessmen to search for possibilities of innovation and thus to bring about the evolution of society's productive system as a whole. (Shackle, 1970, pp. 21-22)

Given macroeconomic conditions, an enterprise that attempts to innovate confronts two types of uncertainty: productive uncertainty and competitive uncertainty. Productive uncertainty exists because business enterprises that undertake innovative strategies have to develop the productive capabilities of the resources in which they have invested before these resources can generate returns. The learning process may not be successful. Competitive uncertainty exists because even when a business enterprise is successful in generating a product that is higher quality and/or lower cost than it had previously been capable of producing, it may not gain competitive advantage and generate returns because a competitor, pursuing an alternative approach to innovation, is even more successful at doing so.²

The uncertainty inherent in the innovation process unfolds over time. As Gerard O'Donnell and Mario Rizzo (1985) put it in their analysis of The Economics of Time and Ignorance,

The dynamic conception of time... is time perceived as a flow of events. Implicit in this idea of a flow is that of novelty or true surprise. The individual's experience of today's events makes tomorrow's perceptions of events different than it otherwise would be. As an individual adds to the stock of his experience, his perspective changes and so both the present and the future are affected by the past flow of events. Flows, however, are continuous, and hence the individual's perspective changes right up to the moment of any experience. This renders perfect prediction of the experience impossible... Choices made in real time are thus never made with complete knowledge (either deterministic or stochastic) of their consequences. (O'Driscoll and Rizzo, 1985, p. 3)

To assume that the environment in which economic decisions are made can be characterised as a set of mutually exclusive but collectively exhaustive possible states of the world (Arrow and Debreu, 1954; Arrow, 1974) – an environment that is closed and deterministic – is to obscure how, through the process of innovation, new states of the world are revealed.³ Kline and Rosenberg describe the innovation process as follows:

When one does innovation... [o]ne starts with problem A. It looks initially as if solving problem A will get the job done. But when one finds a solution for A, it is only to discover that problem B lies hidden behind A. Moreover, behind B lies C, and so on. In many innovation projects, one must solve an unknown number of problems each only a step toward the final workable design -- each only a shoulder that blocks the view of further ascent. The true summit, the end of the task, when the device meets all the specified criteria, is seldom visible long in advance. (Kline and Rosenberg, 1986, pp. 297-8)

From this perspective, the future state of the world cannot be defined until it is discovered through the process of innovation (Rosenberg, 1994, pp. 53-4). Once it can be defined, its definition is no longer important to the success of the innovation effort.

3. Innovation and Resource Allocation

The stylised characterisation of innovation as cumulative, collective, and uncertain that I have outlined above may be challenged on the basis of future theoretical and empirical research. Yet, to the extent that it represents an accurate summary of our current understanding of the innovation process, it is worthwhile considering the implications of this characterisation for the process of resource allocation. The decisions that influence the extent to which innovation occurs in an economy are decisions about the allocation of resources. To permit an individual or group to learn, resources must be expended to make available the materials and machines with which they work. Investments must also be made in the development of their knowledge and abilities. Finally, resources are required to give learners incentives to devote their effort, experience and creativity to the learning process. That innovation is collective, cumulative and uncertain implies that the process through which resources are allocated to innovation is developmental, organisational, and strategic.

3.1 Developmental

That innovative resource allocation is a developmental process means that it involves irreversible commitments of resources for uncertain returns. To commit resources to innovation means foregoing their exchange while the learning process is underway. What one learns changes how one conceives of the problem to be addressed, the possibilities for its solution, and the appropriate direction for further learning. The withdrawal of some of the learners or physical resources from the learning process before it is complete may endanger the success of the entire undertaking. That the learning process is cumulative means that the scale of innovative investment depends not only on the size of the investment in productive resources and in the abilities and incentives of learners, but also on the duration of the investment necessary to sustain that process over the period during which learning occurs (Freeman, 1974; Kline and Rosenberg, 1986, pp. 298-300; Teece, 1986; Lazonick and O'Sullivan, 1996; Freeman and Soete, 1997, ch. 10 and 11).

The need to engage in a learning process renders the returns to these innovative investments highly uncertain. The investments that will result in the development of higher

quality and/ or lower cost products cannot be known in advance given the inherent uncertainty of the innovation process. Learning is a process of discovery, and may not succeed in generating knowledge that can be used as the basis for innovation. Moreover, a failure to generate returns at any point in time may be a manifestation not of a failed innovative strategy, but of the need to commit even more resources to an ongoing learning process. Even when the learning process is successful, the knowledge that it generates may not be sufficient to meet the challenges of more innovative learning collectivities (Freeman, 1974; Kline and Rosenberg, 1986, pp. 294-298; Dosi, 1988, pp. 1139-1140; Lazonick and O'Sullivan, 1996).

3.2 Organisational

The collective and cumulative nature of the innovation process creates a developmental role for social organisation in the operation and performance of the economy. Through their participation in a collective process of learning the insiders acquire knowledge that is specific to the social process that generates it. This observation was central to Edith Penrose's research on The Theory of the Growth of the Firm in which she emphasised how managers learn collectively in business enterprises. She contended that experience acquired through managerial teamwork was specific to that managerial collectivity; it could not, therefore, be readily used by an individual manager in a different social context.

Much of the experience of businessmen is frequently so closely associated with a particular set of external circumstances that a large part of a man's most valuable services may be available only under these circumstances. A man whose past productive activity has been spent within a particular firm, for example, can, because of his intimate knowledge of the resources, structure, history, operations, and personnel of the firm render services to that firm which he could give to no other firm without acquiring additional experience. (Penrose, 1995, p. 54)

Other scholars, like Michael Best and William Lazonick, have followed Penrose's lead in emphasising the embeddedness of collective learning in the social relations of production, but

have extended their analysis to cover participants in the enterprise besides managers (Best, 1990; Lazonick 1991A).

When collective learning is based on and embedded in the social relations among its participants, it is neither reducible to the knowledge of the individuals or insiders that generated it nor easily replicable by other collectivities. Therefore, to the extent that an enterprise successfully innovates – generates new knowledge through learning that allows it to deliver products to customers at prices that they are willing to pay – it can build and sustain a competitive advantage. Rivals cannot secure the same level of productivity from resources as can the advantaged organisation unless they replicate or surpass the capabilities that it has developed. Nor can rivals, without equivalent productivity, afford to reward these resources to the same extent (Penrose, 1995; Teece, Pisano, and Shuen, 1997, pp. 524-6; Lazonick and O'Sullivan, 1996).

To the extent that they successfully learn to innovate, business organisations can thus develop integrated structures of abilities and incentives for their participants that cannot be replicated through the market coordination of economic activity. If a competing organisation commits resources to replicating the advantages that the incumbent has already accumulated – a time-consuming and expensive process – it will not secure privileged access to specific organisational knowledge. To innovate, the competitor must shape a process of organisational learning that renders obsolete, as a basis for competition, the incumbent's cumulative history of collective learning. One can certainly find examples of innovative strategies that engender radical shifts in product and/ or process technologies and render outmoded the previous learning trajectory in that industry. These shifts are, however, rare and are seldom attributable to the efforts of a single enterprise.⁴

That the process of resource allocation is organisational means that there is substantial ambiguity in the relationship between innovative investments and returns. Firstly, given the collective nature of the innovation process, it is not possible to closely link individual contributions to a joint outcome (Teece, Pisano, and Shuen, 1997; Alchian and Demsetz, 1972). Secondly, the cumulative dimension implies ambiguity in the relationship between investments and returns over time. If a return is generated in period 10 it will not be clear to

what degree it is because of contributions made by participants in period 10, period 9, or even period 1.

3.3 Strategic

The innovative resource allocation process is also strategic; that is, it attempts to overcome market and technological conditions that other firms take as given through the generation of new knowledge (Schumpeter, 1947). Thus, it can be contrasted with a resource allocation process in which economic agents optimise their objectives subject to technological and market constraints that are imposed on all agents in the economy. In contrast to optimal resource allocation, strategic decisions are a creative response to existing conditions. There are no objective guidelines for making these decisions, nor for resolving disputes, about the allocation of resources to the learning process. As Joseph Schumpeter put it:

the assumption that business behavior is ideally rational and prompt, and also that in principle it is the same with all firms, works tolerably well only within the precincts of tried experience and familiar motive. It breaks down as soon as we leave those precincts and allow the business community under study to be faced by -- not simply new situations, which also occur as soon as external factors unexpectedly intrude but by -- new possibilities of business action which are as yet untried and about which the most complete command of routine teaches nothing. (Schumpeter, 1939, pp. 98-9)

To strategically shape the organisation of work in an innovative way requires the visualisation of a range of potentialities that were previously hidden and that are now believed to be accessible. Thus, innovative strategy is, in its essence, interpretative and therefore subjective, rather than "rational" and objective. In The Theory of Economic Development Schumpeter described it in the following terms:

As military action must be taken in a given strategic position even if all the data potentially procurable are not available, so also in economic life action must be taken without working out all the details of what is to be done. Here the success of everything depends upon intuition, the capacity of seeing things

in a way which afterwards proves to be true, even though it cannot be established at the moment, and of grasping the essential fact, discarding the unessential, even though one can give no account of the principles by which this is done. Thorough preparatory work, and special logical analysis, may under certain circumstances be sources of failure. (Schumpeter, 1996, pp. 85-6)

Innovative strategy involves more than one decision based on an interpretation of a particular set of conditions at a given point in time. It is a process of decision making that occurs as the uncertainty inherent in the innovation process unfolds over time. It is, as a consequence, experiential as well as interpretative. The basis for strategic decision making shifts as the decision maker learns through the process of innovating. The fruits of learning may, for example, render the problem that the learning process is designed to solve unattainable and necessitate a restructuring and redirection of the learning process if failure is to be avoided. Learning may make possible, through the discovery of new means, the attainment of ends that were previously considered impossible.

That the process of innovative resource allocation is strategic and, therefore, interpretative and experiential, means that who makes investment decisions matters to the success of the innovation process. Firstly, strategists must have control of resources if they are to commit them to a developmental process in accordance with their evaluation of the problems and possibilities of alternative learning strategies. They also require control to keep resources committed to the innovative strategy until the learning process has generated the higher quality, lower cost products that enable the investment strategy to reap returns. Thus, inherent in the process of innovation, in the need to commit resources to undertake it and the uncertainty of returns from innovative investments, is a need for control of resources by the decision makers who shape the innovative process (Schumpeter, 1996; Lazonick and O'Sullivan, 1996).

Secondly, if those who exercise control over resources are to have the abilities and incentives to make innovative investments, they must be integrated with the organisation that generates learning and innovation. Strategists must know what the learning process is generating if, in shaping the learning process, they are to take account of the opportunities for,

and threats to, innovative success that learning reveals. When the basis for the generation and transmission of learning is an organisational process, strategic decision makers must become integrated into the network of relations that underlies it; they must become insiders to the learning process to allow strategy and learning to interact in the process of innovation. To the extent that strategists are members of the learning collectivity, they can become privy to some of the knowledge that the collectivity generates, and can use it as a basis for organising the work that members of the collectivity undertake. The integration of strategy and learning facilitates a developmental interaction of strategy and learning in which strategic decisions actively shape the direction and structure of learning and the knowledge continually generated through learning informs strategy.

That integration enhances not only the abilities of strategists to develop innovative investment strategies but also their incentives to do so. To the extent that strategists are insiders to the learning process that sustains innovation, the value of their learning is specific to the collectivity that generates it. The innovative success of that collectivity therefore enhances the strategists' own success. Since there is no systematic reason to expect that outsiders to the organisational learning process will have the abilities or incentives to promote a sustained process of innovation, to the extent that they exercise strategic control – be they managers within the enterprise, financial shareholders, or other stakeholders – they are likely to pose a threat to the ongoing innovative success of the enterprise.

The resource allocation process that shapes the innovation process can thus be described as one that is developmental, organisational, and strategic. The social institutions that shape the process of resource allocation in corporate enterprises can be described as a system of corporate governance. An understanding of the resource allocation process as developmental, organisational, and strategic has important implications for an economic theory of corporate governance. Unfortunately, in recent debates on governance these implications have been largely ignored.

4. The Limits of the Anglo-American Governance Debates

Corporate governance has, for the last two decades, been widely discussed in the United States and in Britain. To the extent that the subject is now commanding increased, albeit as yet limited, attention on the European Continent and in Japan, the issues are being framed in terms that are largely derivative of the Anglo-American debates. These debates have been dominated by a shareholder theory of corporate governance. Its main challenger has been a stakeholder theory.

Both of these theories of corporate governance recognise the fact that, in practice, "residual returns" that cannot be attributed to the productivity of any individual factor are generated by business enterprises and persist for sustained periods of time. Indeed, it is with the allocation of these resources that they are centrally concerned. The focus of these theories is on who should lay claim to the residual if economic performance is to be enhanced. In contrast, little or no effort has been devoted to understanding how these residuals are generated through the development and utilisation of resources. Furthermore, given that most governance theorists have tended to rely on an understanding of resource allocation as individual and optimal, their theoretical frameworks, in fact, preclude an understanding of the governance of innovation.

4.1 The Shareholder Perspective

Advocates of this view contend that shareholders are the "owners" or "principals" in whose interests the corporation should be run. They recognise, however, that in the actual running of the corporation, shareholders must rely on managers to perform certain functions (Ross, 1973; Jensen and Meckling, 1976; Fama and Jensen, 1983). The proponents of the shareholder theory have argued, often with justification, that strategic managers of industrial corporations are self-serving in the ways in which they allocate corporate resources and returns. As a result, such managers do not adequately "create value for shareholders." To increase the returns to shareholders, the proponents of shareholder value advocate, for example, realigning managerial incentives through the use of stock-based rewards (Murphy, 1985; Baker, Jensen, and Murphy, 1988; Jensen and Murphy, 1990); using the market for

corporate control to enable shareholders to take over companies and replace managers who misallocate corporate resources (Jensen and Ruback, 1983; Jensen, 1986; Scharfstein, 1988; Jensen, 1988; Grossman and Hart, 1988); and, distributing more returns to shareholders so that they can directly reallocate resources in the economy in ways that “maximise shareholder value” (Grossman and Hart, 1982; Shleifer and Vishny, 1989; Jensen, 1989).

When corporations are run to maximise shareholder value, it is argued, the performance of the economic system as a whole, not just the interests of shareholders, can be enhanced. In making this claim advocates of shareholder theory rely on arguments that portray residuals as rewards for critical economic functions that shareholders allegedly perform. In one strand of the shareholder literature on governance, developed by scholars such as Eugene Fama and Michael Jensen (1983), shareholder returns are regarded as incentives for risk bearing and waiting; another perspective, initiated by Armen Alchian and Harold Demsetz (1972), is that they are a reward for monitoring by shareholders.

4.1.1 Shareholder returns as an incentive for risk-bearing and waiting. That shareholders have title to residual claims because they are the residual risk bearers in the corporate enterprise is widely accepted not only in financial economics but among many mainstream economists. As equity investors, it is argued, shareholders are the only economic actors who make investments in the corporation without any contractual guarantee of a return. Shareholders thus bear the risk of the corporation's making a profit or loss; insofar as they secure a return on their investments, it is as “residual claimants”. In contrast, the corporation has a contractual obligation to pay fixed-income claimants a specified remuneration (the market price of their factor inputs) irrespective of the performance of the enterprise as a whole. Unlike fixed-income claimants, shareholders as “residual claimants” to corporate returns are regarded as having an interest in allocating corporate resources to their “best alternative uses” to make the residual as large as possible. Since all other “stakeholders” in the corporation will receive the returns for which they have contracted, the “maximisation of shareholder value” will result in superior economic performance not only for the particular corporation but also for the economy as a whole.

It is regarded as economically efficacious for shareholders to bear the residual risk in the modern corporation because, as a class, they are better equipped to do so than, for example, managers and workers, because they are not tied to the firms in which they hold shares. Consequently, they can diversify their investment portfolios to take advantage of the risk-minimisation possibilities of grouping or consolidating different types of risk. As Fama and Jensen put it: "the least restricted residual claims in common use are the common stocks of large corporations. Stockholders are not required to have any other role in the organization; their residual claims are alienable without restriction; and, because of these provisions, the residual claims allow unrestricted risk sharing among stockholders" (Fama and Jensen, 1983, p. 303). Through their portfolio diversification, shareholders thus participate in a process through which not only their own risk is reduced but also that of the economy as a whole. From this perspective, the critical challenge for the economic system is to structure incentives for "optimal" risk-bearing.

In the modern corporation, the key incentive is the allocation of the residual claim to those who bear the residual risk. The shareholders who bear risk are not required to have any special abilities and, in particular, as Fama and Jensen make clear, they are assumed to have no particular knowledge of the enterprises in which they hold shares. The financial theory of risk-bearing thus hinges on "a separation of decision management and residual risk bearing" in the corporation. That separation permits optimal risk allocation in the corporate economy; indeed, that the corporate form facilitates this allocation is financial economists' key explanation for the growth and persistence of the corporate enterprise with diffuse shareholding.

The risk allocation advantage comes, however, at a cost in terms of incentives within the corporation: "[s]eparation and specialisation of decision management and residual risk bearing leads to agency problems between decision agents and residual claimants. This is the problem of the separation of ownership and control that has long troubled students of the corporation" (Fama and Jensen, 1983, p. 312). The governance problem of the modern corporation, as financial economists conceptualise it, is that those who bear the residual risk — the shareholders or "principals" — have no assurance that the corporate managers or "agents"

who make decisions that affect shareholder wealth will act in shareholder interests. The costs that result from the exercise of managers' discretion to act other than in the best interests of their principals, as well as the expenses of monitoring and disciplining them to prevent the exercise of that discretion, are described as "agency costs".

The central preoccupation of financial economists who work on corporate governance has been the analysis of mechanisms that mitigate the agency problem between shareholders and managers and that, as a result, minimise agency costs. One possibility is to use compensation contracts to create managerial incentives to act in shareholders' interests but this leads to less than optimal risk-sharing. Thus, other mechanisms for governing corporations, including boards of directors, proxy fights, large shareholders, hostile takeovers, and corporate financial structure, have been proposed. There has been much discussion within financial economics about the efficacy of these mechanisms in mitigating agency problems in the corporate economy.⁵ What has been absent from these internal debates, however, is any discussion of the assumptions that underlie the basic framework within which corporate governance issues are analysed by financial economists. Notwithstanding this neglect, serious problems, linked to fundamental questions in economics about the nature of profits and interest, lurk behind the finance model.⁶

The basic foundation for the treatment of resource allocation in financial economics is Irving Fisher's theory of investment, articulated in its most complete form in his book, The Theory of Interest (1930). In Fisher's own words:

The theory of interest bears a close resemblance to the theory of prices, of which, in fact, it is a special aspect. The rate of interest expresses a price in the exchange between present and future goods. Just as, in the ordinary theory of prices, the ratio of exchange of any two articles is based, in part, on a psychological or subjective element -- their comparative marginal desirability -- so, in the theory of interest, the rate of interest, or the premium on the exchange between present and future goods, is based, in part, on a subjective element, a derivative of marginal desirability; namely, the marginal preference for present over future goods. This preference has been called time preference, or *human*

impatience. The chief other part is an objective element, *investment opportunity*. (Fisher, 1930, pp. 61-

2)

For Fisher it was the interaction of these two conditions, human impatience and investment opportunity that determined the rate of interest.

In developing Fisher's theory of the market determination of interest rates, economists in the 1950s and 1960s extended it to include an equilibrium analysis of risk. Many economists, including Fisher himself, had long attributed differences in the returns on securities to the differential risk of their income streams. In extending the Fisherian model the objective was to develop an explanation of these differences by analysing how the market "priced" risk. Drawing on the Arrow-Debreu theory of general equilibrium, and the concept of expected utility on which it is based, as well as a host of additional heroic assumptions about preferences and probabilities, it was argued that a linear relationship – the "market line" – should be observed between the return from a financial asset and its risk, as measured by its contribution to the total risk in the return on an efficient market portfolio. From this perspective, the expected return on a risky security was considered to be a combination of a risk-free rate of interest and a risk margin linked to the covariance between the security's returns and the return on the market portfolio (Debreu, 1959; Markowitz, 1959; Arrow, 1964; Hirshleifer, 1965; Sharpe, 1964; Lintner, 1965A, 1965B; Mossin, 1966). In interpreting this relationship, Jan Mossin, one of the key contributors to the extension of the Fisherian model, asserted that "we may think of the rate of return of any asset as separated into two parts: the pure rate of interest representing the 'price for waiting,' and a remainder, a risk margin, representing the 'price of risk' (Mossin, 1966, p. 774). It is this logic that is at the heart of modern finance theory and, as a result, the main branch of the shareholder theory of governance; shareholders' returns are compensation for both waiting and risk-bearing.

"Waiting" was a key element in Fisher's explanation of interest as a return to capital; in responding to socialists who think of "interest as extortion"(Fisher, 1930, pp. 51) he claimed that

...capitalists are not... robbers of labor, but are labor-brokers who buy work at one time and sell its products at another. Their profit or gain on the transaction, if risk be disregarded, is interest, a compensation for waiting during the time elapsing between the payment to labour and the income received by the capitalist from the sale of the product of labor. (Fisher, 1930, p. 52)

For Fisher, that the act of waiting brought forth a return to capital was inherent in the technique or the "objective facts" of production. In his 1930 book, he repeatedly emphasised the importance of productivity in the determination of interest to correct a widespread interpretation of his theory, as one in which impatience was considered as the sole determinant of the rate of interest. In a 1912 article in the American Economic Review, for example, one critic contended that

[t]he most striking fact about this method of presenting his factors is that he [Fisher] dissociates his discussion completely from any account of the production of wealth. From a perusal of his *Rate of Interest* and all but the very last chapters of his *Elementary Principles* (chapters which come after his discussion of the interest problem), the reader might easily get the impression that becoming rich is a purely psychological process. It seems to be assumed that income streams, like mountain brooks, gush spontaneously from nature's hillsides and that the determination of the rate of interest depends entirely upon the mental reactions of those who are so fortunate as to receive them... The whole productive process, without which men would have no income streams to manipulate, is ignored, or, as the author would probably say, taken for granted (Seager, 1912, pp. 835-7).

Fisher railed against this criticism on the grounds that he was not only cognisant of the fact that the "technique of production" entered into the determination of the rate of interest but that it was a central element in his analysis (Fisher, 1913, p. 610). He took pains to distinguish himself from economists who "still seem to cling to the idea that there can be no *objective* determinant of the rate of interest. If subjective impatience, or time preference, is a true principle, they conclude that because of that fact all productivity principles must be false" (Fisher, 1930, p. 181-2). Fisher argued that in ignoring the influence of the technique of

production on the interest rate their proposed solutions were indeterminate. He considered that the rate of interest was determined by an interaction between time preference and investment opportunity. When asked to which school of interest theory he belonged "subjective or objective, time preference or productivity" Fisher thus replied: "To both". In fact, he claimed that "[s]o far as I have anything new to offer, in substance or manner of presentation, it is chiefly on the objective side" (Fisher, 1930, p. 182).

That there is a return to waiting inherent in the techniques of production was not an idea that was original to Fisher. In dedicating the Theory of Interest to John Rae and Eugen von Böhm-Bawerk "who laid the foundations upon which I have endeavored to build" he recognised his most distinguished intellectual antecedents in this matter. Notwithstanding the differences among these scholars in their analysis of resource allocation, what is important for our purposes is that they all recognised that the process through which resources are developed and utilised is one that takes time. From an empirical standpoint, therefore, their treatment is at least comprehensible. However, as the central foundation for a theory that explains why that process can be expected to generate a return, it turned out to be much more problematic.

Böhm-Bawerk preceded Fisher in arguing that it was the interaction between time preference and the physical productivity of investment that gave rise to interest. The former he took to be a general characteristic of the average man. To explain the latter he introduced the concept of the "roundabout process of production". He argued that a given quantity of goods yielded a larger physical product when those goods passed through more stages of production, that is, when they were used first to make intermediate products and then to produce consumer goods. The generation of higher productivity was, from his perspective, inextricably tied to the extension of the time during which an investment was tied up in the production process.⁷

For Böhm-Bawerk the roundaboutness of production was the key element in the explanation of interest and he argued that it would produce interest even in the absence of time preference. Fisher took issue with this assertion as well as with other elements of Böhm-Bawerk's theory although Schumpeter argued that "whatever may be said about Böhm-

Bawerk's technique, there was no real difference between him and Fisher in fundamentals" (Schumpeter, 1951, p. 232).⁸ What is certainly true is that Fisher provided no alternative theory of production to replace that of Böhm-Bawerk. Indeed, he regarded such a theory as unnecessary for his purposes: "it does not seem to me that the theory of interest is called upon to launch itself upon a lengthy discussion of the productive process, division of labour, utilization of land, capital, and scientific management. The problem is confined to discover how production is related to the rate of interest" (Fisher, 1930, p. 473).

But lacking a theory of production, Fisher could not provide an adequate explanation of why, inherent in the technical conditions of production, there might be a return to waiting.⁹ An analysis of production, and specifically one that integrates an analysis of the development and utilisation of resources, reveals that notwithstanding the fact that innovation takes time, it is a mistake to impute the return that the process generates, or is expected to generate, to waiting. It is the process of learning that is the key activity in determining whether or not a return is forthcoming. Only through an analysis of what that process entails, and the conditions under which it succeeds or fails, can we even begin to consider how any returns that it generates should be allocated.

Yet, immanent in Fisher's work is at least the recognition that value creation and value distribution are importantly related. In emphasising the importance of production to resource allocation, his work might well have induced his followers to open the Pandora's box of production. Instead his epigones in financial economics attempted to nail that box shut. At best, their theories of resource allocation disregard the productive sphere as anything more than an extension of neoclassical price theory. At worst, they attempt to further colonise the production by asserting that investment decisions in the productive sphere should be made according to the dictates of financial markets (Fama and Miller, 1972, pp. 108-143). In either case, they impose a concept of resource allocation as individual, reversible, and optimal, on the production process. Thus they have lost even the limited appreciation in Fisher's work of the developmental nature of the resource allocation process.

Modern financial economists are, as a result, truly guilty of that of which Fisher was accused: of providing "an explanation of distribution as completely divorced from the

explanation of production, as though incomes "just grew" (Seager, 1912, p. 837). They analyse why it is that portfolio-investors would demand a return on the securities that they hold without ever posing the question of why such a return might be forthcoming in the economy. Without a theory of why investment can be expected to generate a return to capital in the form of interest, they give the impression "that the determination of the rate of interest depends entirely upon the mental reactions of those who are so fortunate as to receive them" (Seager, 1912, pp. 835-7). And they compound Fisher's problem by adding another stream of capital income to interest – a risk premium – without ever explaining why a return to risk-bearing might be forthcoming in the real economy. Of course, financial economists, like most other people, are aware that there are risks inherent in the process of production. But, to paraphrase what I have said about waiting, to say that the process is one that is uncertain does not imply that bearing risk is the key activity involved in generating a return.¹⁰

How returns to investment are generated within the economy cannot be understood without analysing the process through which resources are developed and utilised within the economy. Financial economists make no attempt to deal with innovation and its implications for resource allocation. Instead, following Fisher, and neoclassical economists in general, they take investment opportunities as given. Then, as proponents of shareholder theory, they try to justify why shareholders are entitled to lay claim to the rewards that these investments generate.

How far the shareholder perspective is from recognizing the centrality of innovative investment to the performance of the economy is demonstrated in a recent presidential address to the American Finance Association by the perspective's foremost proponent, Michael Jensen. In his address, Jensen highlights Joseph Schumpeter's concept of creative destruction as a seminal insight into the importance of "efficient exit" from an industry (Jensen, 1993, p. 833). Yet, of all the economists of the twentieth century, Schumpeter demonstrated the centrality of innovative investments to the process of economic development. When, in Capitalism, Socialism, and Democracy, Schumpeter argued (in a famous passage that Jensen quotes), "the problem that is usually being visualized [by the economist] is how capitalism administers existing structures, whereas the relevant problem is how it creates and destroys

them," his concern was with the role of corporate enterprises in generating the innovation process, not with how (as Jensen would, quite incredibly, have his followers believe) corporate managers withdraw resources from the corporate enterprise (Schumpeter, 1975, p. 183).

In fact, in "Economic Theory and Entrepreneurial History," Schumpeter was explicit about his disagreement with arguments of the kind put forward by financial economists like Jensen: he noted that

[I]t is extremely interesting to observe for a long time and occasionally even now economic theorists have been and are inclined to locate the entrepreneurial function in a corporation with the shareholders... [which is] as true as is the political theory that in a democracy the electorate ultimately decides what is to be done. (Schumpeter, 1949, p. 71)

In the same article he outlined the key theoretical challenge in understanding the dynamics of economic performance as the analysis of how "the entrepreneurial function may be and often is filled co-operatively" since "[w]ith the development of the largest-scale corporations this has evidently become of major importance." Writing in 1949, coming towards the end of his life, this "very interesting field of research" was one into which he did not wish to go, however, "since this problem is in no danger of being forgotten" (Schumpeter, 1949, p. 71). It was, however, to be completely forgotten by financial economists.

Given their theoretical inattention to the innovation process, it is perhaps no surprise that financial economists' analysis of the returns to shareholders is not only theoretically suspect but also empirically questionable. To recapitulate, in calculating the expected returns to shareholders, financial economists include two types of income streams: interest and a risk premium. The economic rationale for their entitlement to interest is that they have financed investment in the productive assets of the enterprises in which they hold shares. Their entitlement to the residual is based on the premise that they bear risk commensurate with that return. Both of these arguments can be called into question on empirical grounds.

That public shareholders invest in productive assets is a notion that actually has little basis in the history of successful industrial development in the United States or any other

advanced industrial economy (Lazonick and O'Sullivan, 1997A, 1997B). Rather these shareholders invested their money in the securities issued by successful enterprises on the basis of investments in productive assets that had already been made. In other words, public shareholders did not "wait" until the developmental investments that these companies made bore fruit but bought shares in these companies after they had paid off. In the US, for example, this is reflected in the fact that the market for industrial securities only came into existence at the turn of the century, due to decisions to 'go public', made by a number of owner-controlled companies that had grown to commanding positions within their respective industries since the 1860s (Navin and Sears, 1955; Chandler, 1977; Lazonick and O'Sullivan, 1997A). Once a business generated a steady stream of revenues – once it had made the transition from new venture to going concern – the most important sources of finance were retained earnings and depreciation allowances, that is retentions. The financing of investment on the basis of retentions, a practice that was and continues to be pervasive in all of the advanced industrial countries, uses a portion of the surplus revenues generated by previous enterprise activities to finance investment in new activities.

The stock market did not, and still does not, serve as an important source of funds for long-term business investment. Rather it enabled original owners of highly successful enterprises – who, in most cases, as active managers had been involved in the learning process that generated this success – to cash out of their firms, while leaving resource allocation under the control of the organisations that had given such ventures their competitive advantages as going concerns. Throughout most of the twentieth century, American public stockholders have made little direct or indirect contribution to decisions regarding the allocation of corporate resources. In historical perspective, their lack of control over industrial corporations' retained earnings was not imposed by corporate managers or government regulators, as some have contended (Grundfest, 1990; Roe, 1994). Public investors were willing to leave control over corporate resource allocation with managers because their "ownership" stakes did not entail any commitment of time, effort or additional funds to ensure the success of companies. Their confidence in doing so stemmed in part from the prior revenue-generating successes of publicly-listed corporations under managerial control, and in

part from the limited liability protection that public stockholders enjoyed. But, more fundamentally, this abdication of control derived from the confidence of public stockholders in their investments being liquid and therefore saleable on the market at any time so that they would never have to "wait" for their return. The attraction of financial markets for portfolio investors was that, in the financial sphere, the process of resource allocation was reversible rather than developmental as it was in the real economy (Lazonick and O'Sullivan, 1997A).

In permitting the separation of asset ownership and managerial control, the stock market, and the portfolio investors who participated in it, clearly played a critical role in the development of the corporate economy but it was not primarily a financing role. The key contribution of a liquid market for industrial securities was that it allowed the link between the preferences of successful entrepreneurs for consumption and saving to be separated from the productive process. That the mechanism of the liquid stock market was the most economically efficient way to achieve this goal should not be taken for granted. More to the point, how shareholders should be compensated for their participation in this process is not at all obvious and can certainly not be explained by appealing to arguments about waiting.

Empirical evidence also calls into question the risk-bearing justification for shareholder returns. That shareholders bear the risk associated with the corporate enterprise is so widely accepted among financial economists that it is often just asserted as if it were a self-evident fact. However, as Margaret Blair (1995), an economist at the Brookings Institution, observed in her recent book, Ownership and Control, it is not at all self-evident. The presence of limited liability and the reality of incomplete contracts for all suppliers of inputs to the corporate enterprise, she argues, renders suspect the assumption that shareholders bear all of the residual risk. As discussed in Section 5.2 below, Blair uses this insight as the starting point for her own theory of stakeholder governance.

But even when financial economists have attempted to evaluate their own theories with reference to empirical evidence, especially their theories of asset pricing, the risk-bearing explanation has proven problematic. The total real return – capital gain plus dividends – on American equities exceeded that on short-term U.S. treasury bills by an average of 6.1 percentage points per annum between 1926 and 1992 (Siegel, 1994). The difference between

the return on stocks and so-called "risk-free" assets like t-bills is often called the "equity risk premium" because it is thought to reflect equity holders' compensation for additional risk associated with stocks. The equity premium has been declared a "puzzle" because the measured risk of equity returns is not high enough to justify premia of the order of six percent without resorting to unreasonable assumptions about risk aversion among portfolio investors (Mehra and Precott, 1985; Kocherlakota, 1996; Siegel and Thaler, 1997). When mean reversion – a characteristic of the real returns on stocks but not of fixed income assets – is considered the puzzle deepens. Although the annual standard deviation of real t-bill rates of returns is approximately 6.14 per cent compared with 18.15 per cent for real equity returns, the standard deviation of annual rates of return on t-bills over 20 year periods is 2.86 per cent which is greater than the comparable figure of 2.76 per cent for stocks. As Siegel and Thaler observe in their recent review of the equity premium literature:

This analysis suggests that the equity premium is even a bigger puzzle than has previously been thought. It is not that the risk of equities is not great enough to explain their high rate of return; rather, for long-term investors, fixed income securities have been riskier in real terms. By this reasoning, the equity premium should be negative! (Siegel and Thaler, 1997, p. 195)

Financial economists have encountered similar puzzles and anomalies in their attempts to use the risk calculus to account for differential returns among stocks. Expected returns are most commonly estimated on the basis of the capital asset pricing model (CAPM). The CAPM estimates the expected returns on securities as a positive linear function of risk as measured by their market β (the slope in the regression of a security's return on the return from the market portfolio) (Sharpe, 1964; Lintner, 1965A, 1965B). There is, however, little empirical support for the CAPM model. Market betas have been found to have little explanatory power in analyses of cross-sections of realised average returns on U.S. common stocks (Banz, 1981; Reinganum, 1981; Breeden, Gibbons, and Litzenberger, 1989; Fama and French, 1992). The response to this "anomaly" by some financial economists has been to search for other factors that have more power in these regressions. The list of identified variables is now

extensive, and includes size, book-to-market equity, earnings/price, cash flow/price, and previous sales growth (see, for example, Fama and French, 1996). These factors have been generated by mining the data for correlations and so-called multifactor models of asset pricing based upon the relationships that have emerged from this analysis have been criticised, even within financial economics, as essentially atheoretical because none of the identified factors are linked to existing economic explanations of asset pricing.

There are, of course, ongoing attempts to explain all of these empirical anomalies in asset pricing within the framework of financial theory. Yet, lacking as it does any concept of innovation and its implications for resource allocation, not to mention the politics of the process of development, it is difficult to see how such a theory could ever explain the high returns to shareholders that have been sustained for almost a century. More than half of the real returns on equities were realised by shareholders in the form of dividends,¹¹ paid out by corporations during a period in which wages continually increased and output prices fell. Without an understanding of how the pie was being expanded in the real economy, financial economists' puzzles (or blindspots?) are unlikely to disappear. Nevertheless, the logic of the productive process holds little interest for most proponents of shareholder theory.

The one influential exception to this general rule is an article entitled "Production, Information Costs, and Economic Organization" in which Armen Alchian and Harold Demsetz (1972) articulated a shareholder theory of governance based on an analysis of production. Unfortunately, their concept of production was so underdeveloped that it precluded them from confronting the developmental, organisational, and strategic nature of innovative resource allocation. Instead, and notwithstanding their premise that the firm can be understood as a vehicle for collective methods of production, they too held fast to the idea of resource allocation as individual, reversible, and optimal.

4.1.2 Residual as a return to monitoring. Alchian and Demsetz (1972) argued that the creation of firms is induced by the emergence of team methods of production that are more productive than non-team methods.¹² Team production makes it difficult to "meter" the efforts of individual workers solely by observing the total output produced by the team. These metering problems,

they argue, jeopardise the relationship between productivity and rewards that is the basis for the economic efficiency of decentralised market exchange in neoclassical theory. Given the difficulty of identifying his resource's contribution to the team output, as well as the standard neoclassical assumption that work effort decreases the utility of economic agents, each resource owner has an incentive to shirk.

Alchian and Demsetz argue that the solution to the metering problems of team production is for the cooperating inputs – who *ex ante* all want to be paid fairly – to hire a specialised monitor. The monitor examines the input performance of team members to detect the marginal productivity of individual inputs to the team's output and apportions rewards to input owners on the basis of these estimates. The monitoring problem is not, however, completely solved in this way because the monitor has the same incentives to shirk as the team members. The solution that Alchian and Demsetz propose is that the cooperating inputs make the monitor the residual claimant; if they give him title to the earnings of the team, net of payments to other inputs, they can ensure that he has an incentive not to shirk. Team members who seek to increase their productivity will also assign to the monitor the right to renegotiate any input's contract independently of contracts with other input owners so that he will have a basis on which he can discipline individual shirkers in the team without having to dissolve the entire collectivity. Alchian and Demsetz contend that

[i]t is this entire bundle of rights: 1) to be a residual claimant; 2) to observe input behaviour; 3) to be the central party common to all contracts with inputs; 4) to alter the membership of the team; and 5) to sell these rights, that defines the *ownership* (or the employer) of the *classical* (capitalist, free-enterprise) firm. The coalescing of these rights has arisen, our analysis asserts, because it resolves the shirking-information problem of team production better than does the noncentralised contractual arrangement. (Alchian and Demsetz, 1972, p. 783)

Two conditions are necessary for the emergence of the firm in the theory proposed by Alchian and Demsetz: it must be possible 1) to increase productivity through team-oriented production and 2) to estimate marginal productivity by observing or specifying input behaviour.

They do not, however, explain why, and under what circumstances, both of these conditions might be satisfied. Firstly, they do not provide any theory that explains why team production might be more productive than non-team methods. This is an important omission given that it is with the source of the gain above "separable production" that they are centrally concerned in their paper. They simply assert that "there is a source of gain from cooperative activity involving working as a *team*, wherein individual cooperating inputs do not yield identifiable, separate products which can be *summed* to measure the total output" (Alchian and Demsetz, 1972, p. 779).

They thus treat technology as a given; team production is just another blueprint from the production possibility set from which economic agents can select. The empirical literature on the development and utilisation of technology suggests, however, that contrary to the views of Alchian and Demsetz, teamwork has not proven to be of great significance when technologies are so developed that their utilisation can be approximated by this metaphor. Rather it has found its most widespread applications in the development of technology. The tasks that teams undertake, therefore, would seem to be much more complex than those suggested by the blueprints metaphor.

Task complexity in team production calls into question Alchian and Demsetz's discussion of team monitoring. They do not specify with any precision why and when their monitoring conditions are likely to hold. They observe, however, that

the cost of managing team inputs increases if the productivity of a team member is difficult to correlate with his behavior. In "artistic" or "professional" work, watching a man's activities is not a good clue to what he is actually thinking or doing with his mind. While it is relatively easy to manage or direct the loading of trucks by a team of dock workers where input activity is so highly related in an obvious way to output, it is more difficult to manage and direct a lawyer in the preparation and presentation of a case. (Alchian and Demsetz, 1972, p. 786)

But it is, in fact, rather difficult to think of real world examples of team work in which the productivity of a team member can be readily correlated with his behaviour. Perhaps this

explains the extent to which Alchian and Demsetz rely on the example of dock workers to illustrate their argument. Yet, is it plausible that the logic of loading heavy cargo into trucks is representative of productive activity in general? If, indeed, teamwork is most important in the development of technology, the complexity of the process in which team members engage would seem to preclude the possibility of Alchian and Demsetz's governance solution through outsider monitoring. The emergence of team methods would, as a general rule, seem to make monitoring by team members more effective than outside monitoring. By corollary, when monitoring by an outsider becomes easier, one would expect to find a reduced rather than an increased reliance on team methods.

This is precisely what we find, contrary to the interpretation of Alchian and Demsetz, in the two empirical examples that they adduce as support for their argument: the transition from "putting-out" to the factory system in the cotton industry and the emergence of the modern assembly line. They trace the transition from putting out to factory to the development of efficient central sources of power for the cotton industry which, they contend, made it economical "to perform weaving in proximity to the power source and to engage in team production":

Now team production in the joint use of equipment became more important. The measurement of marginal productivity, which now involved interactions between workers, especially through their joint use of machines, became more difficult though contract negotiating cost was reduced, while managing the *behaviour* of inputs became easier because of the increased centralization of activity. The firm as an organization expanded even though the cost of transactions was reduced by the advent of centralized power. (Alchian and Demsetz, 1972, p. 784)

They contend that "[t]he same could be said for modern assembly lines. Hence the emergence of central power sources expanded the scope of productive activity in which the firm enjoyed a comparative advantage as an organizational form."

Unfortunately, economic history furnishes little evidence to support either of these interpretations, as Lazonick (1991B, p. 181-8) has pointed out in his critique of Alchian and

Demsetz. Lazonick observes that in both of these cases the measurement of marginal productivity did not become more difficult in the organisational transition. With regard to the assembly line, for example, he argues that

[i]f anything, team production and the problem of assessing individual output was *greater* before the introduction of the assembly line than after. The effect of the assembly line, as introduced, for example, in the automobile industry, and indeed one of its great advantages from the point of view of management, was that it confined individual workers not only to a single repetitive task but also to a single position on the shop floor... whereas before the introduction of the assembly line the *team worker* might appropriate "on-the-job" leisure by taking his or her time in moving between tasks or in fetching materials, the *assembly line worker*, confined as he or she was to a particular task and post, had no such opportunity. (Lazonick, 1991B, p. 188)

History would seem to confront Alchian and Demsetz's theory of the firm. Indeed, *if one takes technology as given*, as is their wont, "[a]t least in weaving, it is the dependency relation between the employer and employed rather than (apparently nonexistent) monitoring problems inherent in team production that, given technology, is the key to understanding productivity growth as well as the relation between output and rewards" (Lazonick, 1991B, p. 187; see also Marglin, 1974). A similar interpretation of the role of the assembly line is now commonplace in the extensive literature on "Fordist production" methods.

Such an interpretation, like that of Alchian and Demsetz, does not, however, explain productivity growth in the long run, precisely because it takes technology as given. In both the cotton and the automobile industries, technologies were being rapidly developed during the periods that they discuss, and the organisations that emerged in these industries were centrally involved in the innovation process. To understand the complex relationship between organisation and technology, it is necessary to study how the development as well as the utilisation of technology were organised as well as how these organisational processes were integrated with each other.

The empirical material already available provides little evidence in support of Alchian and Demsetz's hypothesis about the relationship between teamwork and monitoring. The evidence shows not only that they underrate the complexity of the tasks that teams undertake in production; it also highlights their neglect of the uncertain and cumulative dimensions of their activities. Alchian and Demsetz are straightforward in their assertion that "[r]isk averseness and uncertainty *with regard to the firm's fortunes* have little, if anything to do with our explanation" (Alchian and Demsetz, 1972, p. 784). In contrast, they are led by their own logic to suggest the possibility of cumulative learning, albeit as "a highly conjectural but possibly significant interpretation" (Alchian and Demsetz, 1972, p. 794-5): "[t]he employer, by virtue of monitoring many inputs, acquires special superior information about their productive talents. This aids his *directive* (i.e. market hiring) efficiency" (Alchian and Demsetz, 1972, p. 793). Alchian and Demsetz contend that, as a result,

opportunities for profitable team production by inputs already within the firm may be ascertained more economically and accurately than for resources outside the firm. Superior combinations of inputs can be more economically identified and formed from resources already used in the organization than by obtaining new resources (and knowledge of them) from outside. (Alchian and Demsetz, 1972, p. 793)

These words are reminiscent of Edith Penrose's argument in her research on the growth of the firm but with one crucial difference. Whereas Penrose was dealing with the cumulative dimension of a process of collective learning, Alchian and Demsetz are concerned only with individual learning. They regard the monitor as the only one in the firm with the capacity to learn. Their bias in this regard seems inconsistent with the central thrust of their paper; if production can occur in teams, then why not learning?

Of course, a recognition of the collective, cumulative and uncertain dimensions of the innovation process would have demanded that they abandon the idea that, absent the metering problem, team production could be organised through market exchange: "teams of productive inputs, like business units, would evolve in apparent spontaneity in the market – without any central organizing agent, team manager, or boss" (Alchian and Demsetz, 1972, p.

781). More generally, they would have had to abandon their concept of resource allocation as individual, reversible, and optimal as exemplified by their assertion that "the firm serves as a highly specialized surrogate market" (Alchian and Demsetz, 1972, p. 793). Their unwillingness or inability to do so renders their theory of the firm unsatisfactory as the conceptual foundation for an understanding of corporate governance. To take on the complexity of the resource allocation process in dynamic economies and firms would have shown the implausibility of a governance solution based on outside monitoring even for the case of the proprietary firm.

The problems with Alchian and Demsetz's analysis are substantially compounded when they attempt to adapt their framework to deal with the publicly-held corporation. They invoke arguments about proxy voting and share purchases as monitoring mechanisms in an attempt to explain how "modifications in the relationship among corporate inputs are required to cope with the shirking problem that arises with profit sharing among large numbers of corporate stakeholders" (Alchian and Demsetz, 1972, p. 787-8). But ultimately, the clearcut weakness of shareholders' abilities and incentives to monitor – directly or through capital market mechanisms – leave Alchian and Demsetz without any robust economic explanation of portfolio shareholders' claim to a residual that is, in their model, generated through a process of team production in which shareholders have no involvement.

Given the difficulties encountered in providing plausible economic explanations for the returns that shareholders have historically received, it is hard to see what grounds there would be for demanding even higher shareholder returns in the future. Yet, in their guise as proponents of shareholder theory, this is precisely what many financial economists have been arguing. And, since the 1980s, the ability of shareholders to extract higher yields on the stocks that they hold in U.S. and British corporations has been greatly enhanced. With the increased power of shareholders to extract returns from corporations, some economists and politicians have contended that there are other corporate "stakeholders", besides shareholders, who have a claim to corporate returns. Stakeholder arguments have attracted some support in the United States but have proven especially appealing in Britain where they have been taken up, at least rhetorically, by Tony Blair's New Labour party.

4.2 The Stakeholder Perspective

The stakeholder perspective is more often expositied as a political position than as an economic theory of governance. Indeed, many of its proponents rely on sweeping and unsubstantiated assumptions about the foundations of economic success. For example, in their recent edited volume of essays on "stakeholder capitalism", Gavin Kelly, Dominic Kelly, and Andrew Gamble identify the key challenge for proponents of stakeholder governance as reconciling in practice the competing claims of economic efficiency and social justice; they take it as given that "[i]ndividuals well endowed with economic and social capabilities will be more productive; companies which draw on the experience of all of their stakeholders will be more efficient; while social cohesion within a nation is increasingly seen as a requirement for international competitiveness" (Kelly, Kelly, and Gamble, 1997, p. 244).

It is rare in this literature to find someone who has gone beyond such (rather hopeful) statements to analyse how the allocation of returns to different stakeholders affects economic performance. An important exception is the recent work by Margaret Blair (1995). I focus on her arguments in my analysis of stakeholder theories of governance because she has attempted to embed them in a framework of economic analysis. To do so is not to devalue the importance of the politics of corporate governance but to emphasise the importance of a cogent economic theory of governance as a foundation for an understanding of its politics.

Blair does not challenge the claims of the shareholder perspective that shareholders are "principals"; she accepts that shareholders have "residual claimant" status because they invest in the productive assets of the enterprise and bear some of the risk of its success. But she argues that the physical assets in which shareholders allegedly invest are not the only assets that create value in the corporation. Human assets create value as well. Individuals invest in their own "human capital" and to some extent their skills are specific to the firm for which they work. As a result, they bear some of the risk associated with the enterprise:

... in most corporations, some of the residual risk is borne by long-tenured employees, who, over the years, build up firm-specific skills that are an important part of the firm's valuable assets, but which the employees cannot market elsewhere, precisely because they are specific to the firm. These employees

have contributed capital to the firm, and that capital is at risk to the extent that the employees' productivity and the wages they could command at other firms are significantly lower than what they earn in that specific firm. (Blair, 1995, p. 15)

Because employees with firm-specific skills have a "stake" that is at risk in the company, Blair argues that they should be accorded "residual claimant" status alongside shareholders (Blair, 1995, p. 238). In other words, in allocating corporate returns, the governance of corporations should recognize the central importance of individuals' investments in human assets to the success of the enterprise and the prosperity of the economy.

Blair's concept of resource allocation is based on human capital theory. In particular, her analysis of firm-specific skills owes much to Gary Becker's theory of investments in on-the-job training. Becker contended that many workers increase their productivity by learning new skills and perfecting old ones on the job, that on-the-job training is costly, and that the nature of training – and, in particular, its relationship with the activities of the firm that undertakes it – has an important influence on the process through which resources are allocated to training (Becker, 1975).

Specifically, he argued that the costs of "general training" – training useful in many firms besides those providing it – and the profit from its return will be borne, not by the firms providing it, but, by the trainees themselves. Becker contends that, in contrast, it is plausible, at least as a first approximation, that the costs of "specific training" – training that increases productivity more in the firms providing it – and the returns that it generates will tend to be borne by employers because "no rational employee would pay for training that did not benefit him" (Becker, 1975, p. 28). The analysis of specific training is complicated, however, by the potential for a "hold-up problem" between employer and employee.

Becker reasoned that:

[i]f a firm had paid for the specific training of a worker who quit to take another job, its capital expenditure would be partly wasted, for no further return could be collected. Likewise, a worker fired

after he had paid for specific training would be unable to collect any further return and would also suffer a capital loss. (Becker, 1975, p. 29)

To overcome this problem, Becker contended, the costs of, and returns to, specific training would be shared between employer and employee, the balance being largely determined by the likelihood of labour turnover. Based on his analysis of workers' incentives to quit and firms' incentives to layoff, Becker concluded that "rational firms pay generally trained employees the same wage and specifically trained employees a higher wage than they could get elsewhere" because "[f]irms are concerned about the turnover of employees with specific training, and a premium is offered to reduce their turnover because firms pay part of their training costs" (Becker, 1975, p. 31). To the extent that employees pay a share of the costs of specific training, he argued, the wage effects would be similar to those for general training: employees would pay for this training by receiving wages below their current (opportunity) productivity during the training period and higher wages¹³ at later ages when the return was collected (Becker, 1975, pp. 31-2).

Central to the arguments advanced by Becker and Blair, is a concept of resource allocation as an individual process.¹⁴ Investments in, and returns from, productive resources attach to individuals, even when these factors of production are combined in firms. In assuming that training can be specific, in that it increases productivity by more in the firm providing the training than in other firms, Becker implicitly recognises that firms differ. He does not, however, provide any explanation of the sources of these differences nor, as a result, any explanation of why investments and returns should be specific to a particular company. Blair also sees returns as attaching to specific human and physical assets, and views the claims to these assets as being based on the investments that individual shareholders and employees make. Although she occasionally uses terms such as "organizational capabilities" and "organisational routines" she lacks any theory of the firm other than as a combination of physical and human assets that for some reason – labeled "firm-specificity" -- happen to be gathered together in a particular company.

The human capital approach thus precludes an understanding of the organisational character of corporate investment and corporate returns. In the innovation process, returns are generated, not by investments in individual human and physical resources *per se*, but by the development and integration of these resources in an organisational learning process. In neglecting the organisational nature of the process that generates wealth in the economy, the human-capital approach also fails to provide any analysis of the source of returns to firm-specific skills. Becker argues that investments in training will be undertaken when investors, be they firms or employees, expect them to generate a return. But he treats the characteristics of different training options – the degree to which they are general or specific – as well as their expected returns as factors exogenous to the economic process with which he is concerned (for a critique, see Eckaus, 1963). Blair, at least, recognizes the need for an analysis of what she calls “wealth creation” (Blair, 1995, pp. 232-4, 240ff, 327-328), in order to make the case for a corporate governance process that allocates returns to “firm-specific” human assets, but she provides no theory of the process that generates higher quality and/ or lower cost products. She merely asserts that investment in “firm-specific” assets can generate “residuals” without specifying under what conditions (technological, organizational, and competitive) such increased returns are generated.

An analysis of innovation reveals the characteristic of firm-specificity to be an outcome of the process through which resources are developed and utilised in the economy. The organisational requirements of innovative investment strategies differ over time as learning within and outside the enterprise develops. Thus the firm-specific skills that result from vibrant organisational learning processes are constantly evolving. Firm-specific skills that were at one time part of a process that enhanced economic performance may fail to do so in another era and may even retard it. To focus on firm-specific skills as the critical dimension of the process of wealth creation is to ignore the dynamics of the innovation process. Linked to a theory of governance, such a perspective is likely to encourage the entrenchment of the claims of economic actors who have participated in and benefitted from wealth creation in the past, even when the integration of their skills is no longer a viable basis on which the economy can

generate the returns to meet these claims. That is, the stakeholder theory risks becoming a *de facto* theory of corporate welfare.

To understand the role of "firm-specific" assets in the economy, we must understand the investments in organisational learning that make assets specific to a particular collectivity and how those investments change over time in response to evolving opportunities and threats within an organisation and in its competitive environment. To what extent resources are continually channelled into innovative activities in a dynamic process of investment depends on the abilities and incentives of those who exercise strategic control over corporate resources.

Their concept of resource allocation as individual and optimal precludes both Becker and Blair from analysing these issues. They have no conception of strategic control primarily because they have no theory of the firm other than as a combination of specific assets that happen to be gathered together in a particular company. Their assumption is that both investments in, and returns from, productive resources attach to individuals, even when these factors of production are combined in firms. All economic agents, are assumed to optimise their objectives subject to market and technological constraints that shape the specificity of investments and the returns that they generate; they do not act strategically to shape the environment in which they operate. The returns to all participants (productive factors) in the enterprise – in such forms as wages, rent, and interest – are thus strictly determined by technological and market forces that are external to the operation of the enterprise itself. The role of economic governance is to get factor returns "right", so that the individual actors are induced to make the "firm-specific" investments that the enterprise requires.

For Becker, optimal resource allocation takes place through the market; he argues that the appropriate incentives for investments in training, whether it is general or specific, will be provided through wage adjustments in competitive labour markets. Blair, in contrast, claims that when investments are firm-specific, "competitive markets are of little use in determining how to allocate the rents and risk associated with those investments" (Blair, 1995, p. 267). She argues that there is a need to supplement the market with mechanisms that govern how corporations allocate their returns to provide incentives for individuals to commit resources to

investments in firm-specific assets. She advocates employee ownership of corporate equity as one such governance arrangement although she stresses that it is not the only way to promote firm-specific investment:

The logic of these allocative mechanisms is, however, contradicted by a resource allocation process that is organisational and strategic. Firstly, that there is no basis on which to establish an unambiguous relationship between inputs to and outcomes from the innovation process at any given time or over time, and that there is no assurance that there will be gains to innovation, means that there is no objective basis on which to govern the allocation of corporate returns. Furthermore, how these allocations are made has a critical influence on the dynamics of the developmental process; the resource allocation process influences the incentives of participants in innovation and the reinvestment of resources that regenerates the dynamic of innovation. Thus corporate governance, if it is to enhance innovation, should not be based on private rights or claims to returns that are enforceable by agencies removed from the innovation process, even if that were possible. There is a danger that different groups who can lay claim to shares of corporate revenues will, as has increasingly been the case with shareholders, extract corporate revenues whether or not their contributions to the generation of these revenues make these returns possible on a sustainable basis. The result of the creation of a "stakeholder society" might be to increase the propensity for major industrial enterprises and the economy in which they operate to live off the past rather than invest for the future.

Secondly, to ignore the centrality of strategic control to the process of innovation is to cede the foundations of systematic critique of where that control resides and how it is exercised. Those who exercise control over corporate resources shape who is included in a process that generates wealth in the economy as well as the manner in which they contribute to that process. In other words, corporate strategists control who the stakeholders are in an economy and how much of a stake they are permitted to have. Individuals may well make investments in firm-specific skills but when they do so it is as part of a process in which other people control the nature of the investment opportunities that are available to them as well as the returns that they can reap from them. Even if strategists are willing and able to commit

resources to innovative activities, there is no assurance that they will do so in a way that maximises the breadth and depth of the skill base that is integrated to a process of organisational learning. Innovation may be based on an exclusive learning process – the strategic development of the abilities and incentives of a narrow collectivity of insiders – or an inclusive learning process – strategic investments in the abilities and incentives of a broad-based group of insiders.

How corporate control is vested and exercised thus influences patterns of social inclusion and exclusion in the economy, but it does so because of the economic role that it plays. That the innovation process is organisational means that investments in the development and utilisation of resources have to be coherent or integrated if they are to have any chance of success. There is no assurance that this would be the case if enterprises were to rely on individuals to make these strategic investments. The significance of retained earnings as the predominant ongoing source of finance for corporate investment was that it afforded successful learning collectivities increasing independence from outside sources of finance. Members of the organisation, rather than outsiders, thus secured control over the strategic direction of future innovation. To develop a process of innovation those who allocated resources in corporations had to invest in the cumulative and collective development of the skills of others although they made these decisions in ways that reflected the strengths and limitations of their own abilities and incentives. This empirical reality challenges the ideology – central to the shareholder and the stakeholder theories – that shareholders should get returns because, in fact, they were not the ones who made or funded innovative investments.

Nor is there concrete empirical support for the other element in Blair's stakeholder argument that employees are entitled to a return on the grounds that they made investments in their own human capital. Blair points to evidence from the U.S. labour market that shows "that employees accumulate valuable firm-specific skills if they stay with the same employer for an extended period" (Blair, 1995, p. 263).

Firstly, wages typically rise with job tenure by more than they would be expected to rise solely as a result of the employee's increased general experience. These higher wages are generally taken as

evidence that the employee becomes more productive as he accumulates firm-specific human capital. Second, job turnover rates (both layoffs and quits) typically fall with job tenure. This is also construed as evidence that employees accumulate firm-specific human capital that makes them more valuable to the firm and the jobs more valuable to the workers... The third piece of evidence is the fact that the costs of being laid off are typically larger for workers with more tenure. If workers had only generic skills that they could easily take with them to the next job, labor markets would not be expected to exhibit any of these three features. (Blair, 1995, pp. 263-5)

Then, she claims that

... because employees are promised a share in the rents, most economists believe that employees also share in the costs of firm-specific training, perhaps by accepting wages that are below what they might earn elsewhere during the early months and years that they work for a given employer and perhaps only by sacrificing the opportunity to learn special skills and share in the rents in some other enterprise. (Blair, 1995, p. 255)

That higher returns can be attributed to firm-specific capital is, to use Blair's term, construed from the fact that high returns seem to be positively correlated with employment tenure. That employees make the investments that allegedly generate these returns requires an even greater leap of faith; we must rely on the belief of "most economists" that because employees were rewarded, they must have made the investments that generated these rewards. In fact, the evidence is just as consistent with the view that firms made these investments: Becker's model predicted that rational employers would pay workers a premium over the market wage precisely to reduce their turnover. He also argued that firms would be reluctant to lay off workers with specific skills unless there was a permanent decline in demand which would be consistent with workers with long-tenure incurring high costs of layoff.

To go beyond the evidence on the U.S. labour market that Blair presents is to find even less support for her interpretation. Her argument seems particularly implausible as applied to U.S. blue collar workers. The notion that they reaped supernormal returns on the basis of

investments that they made in their own firm-specific human capital confronts everything that we know about the jobs that these workers did in the companies in which they were employed. Labour historians have provided extensive documentation of the process, that evolved over more than a century, through which the blue-collar workforce was systematically excluded from any meaningful role in the productive process in all of the leading sectors of American industry (Montgomery, 1987; Brody, 1993; see also, Gordon, Edwards, and Reich, 1982; Lazonick, 1991A). Increasingly, as the century unfolded, and certainly in the post-war period, managers were the ones who were given opportunities to participate in organisational learning processes through which they could develop firm-specific skills (Chandler, 1977).

It was on the basis of managerial learning that corporations developed and utilised productive resources and generated the returns that allowed them to pay wages to blue-collar workers that were, during certain periods, above their productivity. Corporate managers were willing to pay this premium; not to reduce the mobility of blue-collar workers with firm-specific skills, but to ensure that unions did not challenge their strategic control over corporate resources; the "stake" in corporate returns that they paid blue-collar workers was the price of managers' "right to manage" (Harris, 1982). As long as managerial learning was a sufficient basis for ongoing innovation by these corporations, and unions remained politically strong, this arrangement for sharing the gains to innovation could be sustained. However, when new competition challenged American corporations on the basis of a different organisational learning process and when, not unrelatedly, American unions found their political power undermined, the allocation of resources and returns was increasingly contested.

The stakeholder theory of governance provides no scope for dealing with this reality. It provides no basis on which to understand the economics of the process through which workers were excluded from learning in American corporations. Nor does it concern itself with the abilities and incentives of strategic decision makers to transform the organisation of the enterprises that they control to generate innovation in the future. In failing to analyse the economic role of control by one group of people over the learning opportunities of others, the stakeholder theory cedes the foundations of a systematic critique of the way in which that control is exercised.

5. Conclusion

To deal with the economics of innovation, a theory of corporate governance must come to terms with the reality of a resource allocation process that is developmental, organisational, and strategic. Thus it must explain how, at any point in time, a system of corporate governance generates institutional conditions that support 1) the commitment of resources to irreversible investments with uncertain returns; 2) the integration of human and physical resources into an organisational process to develop and utilise technology; and 3) the vesting of strategic control within corporations in the hands of those with the incentives and abilities to allocate resources to innovative investments. It must also provide a framework in which to analyse how institutions of governance are transformed and the implications of these changes for economic performance (see, for example, O'Sullivan, forthcoming).

To date, research on the relationship between the process of innovation and corporate governance has been limited because the leading theories of corporate governance do not systematically integrate an analysis of the economics of innovation. Instead, they cling to a concept of resource allocation that is at variance with what we know about the allocation of resources in innovative enterprises. The limitations of the shareholder and the stakeholder arguments in this regard can be traced to their reliance on neoclassical theory for an understanding of economic performance. The analytical limitations of neoclassical economics are extremely confining for students of the corporate allocation of resources. The participants in contemporary debates are centrally concerned with the allocation of the persistent profits of dominant enterprises but neoclassical economics provides no direct guidance on this issue. Since the 1920s, if not before, the very existence of the corporation as a central and enduring entity in the advanced economies has prompted a number of economists to question the relevance of neoclassical theory to an understanding of the most successful economies of the twentieth century (Veblen, 1923; Berle and Means, 1932; Schumpeter, 1975; Galbraith, 1967). Neoclassical economics lacks any concept of the investment process that by developing and utilising productive resources can, if successful, yield residual returns. In particular, it has no

theory of the business enterprise that generates returns that are not market determined nor a theory of the distribution of these returns.

Proponents of shareholder and stakeholder governance alike have thus had to improvise substantially within the neoclassical framework to develop their theories of corporate governance. They have focussed, in particular, on developing "explanations" for the claims of different interest groups to the residual but they have not provided plausible explanations of how residuals are generated. Given the *ad hoc* nature of this project it is not surprising that it suffers from major problems of internal consistency which explains how there can be such a vigorous debate between perspectives rooted in the same basic theory. What is worse, however, is that in improvising in this fashion, both the shareholder and the stakeholder perspectives have failed to go beyond the exclusive concern of neoclassical economics with the allocation of resources given individual preferences and technological opportunities.

A theory of corporate governance should not be exclusively concerned with innovative economic behaviour. The process of adaptation through which firms live off the resources that they have developed in the past is a necessary and important dimension of the economic behaviour of all successful enterprises and economies. But the capacity of an enterprise to survive in a world in which other firms can innovate depends on what they have to live off from their innovative activities in the past. Thus it is only from a theoretical perspective that can comprehend the innovation process that we can understand whether a firm has a past that it can live off and why it might choose to adapt rather than innovate in the future. In other words to analyse the opportunities and incentives for adaptation, as well as those for innovation, we need a theory that systematically incorporates both possibilities. Given the centrality of the process of innovation to the performance of dynamic economies, therefore, the types of corporate governance that will promote economic performance can only be determined within a conceptual framework that integrates an analysis of the economics of innovation.

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Footnotes

1. The contribution of internal funds to net sources of finance of non-financial enterprises during the period 1970-1989 has recently been estimated as 80.6% for Germany, 69.3% for Japan, 97.3% for the UK, and 91.3% for the USA (Corbett and Jenkinson, 1996).
2. The terminology of "productive" and "competitive" uncertainty comes from Lazonick (1991B, pp. 199-202). A similar distinction, between technological and market uncertainty, is made in Freeman (1974).
3. The stochastic characterisation of uncertainty has been extensively criticised, not only by students of innovation, but also by post-Keynesian and Austrian economists (for example, Shackle, 1992; Loasby, 1976; Langlois, 1986).
4. For a debate on radical and continuous change, see Tushman and Anderson, 1988; Pavitt, 1988. For empirical studies, see Miyazaki, 1995; McKelvey, 1996.
5. For a review of the corporate governance literature in financial economics, and an internal critique of the various mechanisms of governance, see Hart, 1995; Shleifer and Vishny, 1997.
6. In the interests of brevity, I focus only on these issues as they are manifested in the finance literature. They have, however, been the subject of repeated "capital controversies" in mainstream economics since the late nineteenth century although they have not, as yet, been resolved. For an introduction to these debates, see Harcourt, 1972.
7. For an introduction to the writings of Böhm-Bawerk, see "Eugen von Böhm-Bawerk," in Schumpeter, 1951, pp. 143-190.
8. In a discussion of Fisher, 1930, Joseph Schumpeter noted that most of it was "splendid wheat... with very little chaff in between". However, he went on to say that "[t]he criticism of Böhm-Bawerk's teaching on the 'technical superiority of present goods' in § 6 of chapter XX must, I fear, be classed with the chaff. By that time it should have been clear that, whatever may be said about Böhm-Bawerk's technique, there was no real difference between him and Fisher in fundamentals": see "Irving Fisher's Econometrics," in Schumpeter, 1951, p. 232.
9. It is surely for this reason, and notwithstanding his distaste for "naïve productivity theories" that consider interest to express the physical productivity of land, or nature, or of man, that

Fisher ended up relying to a great extent on examples of natural production to illustrate his theory.

10. Indeed, an analysis of innovation shows that the uncertainty inherent in it does not correspond to the diversifiable risk of financial economics. It cannot be reduced through consolidation or grouping but is, in its essence, non-insurable (Knight, 1971, pp. 197-232).

11. For the period 1921-95 U.S. stocks earned a real compound return of 8.22% of which 4.84% can be attributed to dividend payments (Goetzmann and Jorion, 1997, p. 23).

12. Alchian and Demsetz (1972) define "team production" as production in which 1) several types of resources are used; 2) the product is not a sum of separable outputs of each cooperating resource; 3) not all resources used in team production belong to one person.

13. Not higher than their marginal productivity at that time but higher than what they received during the training period. Also higher than the wages of those without this training because their marginal productivity is higher.

14. It is this assumption that allows it to link up with an individualistic leftist political ideology. Kelly and Gamble, for example, argue that stakeholding "contains the seeds of a post-Thatcher, post-Labourist project for the left which has a strong individualist dimension with its emphasis upon autonomy, rights and obligations, as well as a radical critique of the institutional obstacles to the creation of a more meritocratic and just society and an efficient economy. It is the potential of stakeholding to combine an individualist agenda with an active state which makes it a novel and dynamic idea and one appropriate for the times" (Kelly, Kelly, and Gamble, 1997, p. 239).