

## MISESIAN OWNERSHIP AND COASIAN AUTHORITY IN HAYEKIAN SETTINGS: THE CASE OF THE KNOWLEDGE ECONOMY

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The present article is taken up with the dynamics of economic organization. In particular, it critically discusses much recent work which has asserted that economic organization—notably, the boundaries of firms, internal organization, and corporate governance—will undergo major transformative changes as a result of the emergence of the so-called “knowledge economy,” a term much fancied by business administration and management scholars (Prusak 1997; Neef 1998). An Austrian perspective is a particularly fitting starting point for such an exercise. Surely, Austrian economists—who have always been occupied with analyzing the discovery, dispersion, and use of knowledge—will not be surprised to learn that we live in a knowledge economy. To Austrians, all economies are, in a broad sense, “knowledge economies.” This calls for clarification of the concept. However, like its (somewhat overlapping, but nonidentical) “new economy” counterpart in economics, the knowledge economy notion covers many different phenomena,<sup>1</sup> and as in the case of the new economy, the evidence for these phenomena is somewhat scant, perhaps contrary to the impression provided by the considerable media (and some academic) hype. Recent research has established that some of the changes usually packed into the notion, notably

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<sup>1</sup>These include, on the organization side, a shrinking of corporate boundaries and new ways of structuring these, falling firm sizes, and a flattening of internal organization (for example, Mendelson and Pillai 1999; Helper, MacDuffie, and Sabel 2000); increased differentiation of tastes on the demand side (for example, Milgrom and Roberts 1990); acceleration of innovation and technological development on the supply side (D’Aveni 1994); and changes in the composition of labor on the input side (Tomlinson 1999).

changes in the composition of the labor force (for example, Tomlinson 1999) and some kinds of organizational changes (for example, Ichniowski et al. 1996; Laursen and Foss 2002), appear to be very real ones, while evidence for other kinds of changes is perhaps less convincing.

However, the present article is agnostic on the descriptive accuracy and significance of the *full* notion of the knowledge economy. The aim of the article is to discuss, from an Austrian point of view, economic organization in settings where rapid changes in the external environment necessitate a high degree of organizational decentralization and “empowerment” of employees, where relations to outside knowledge sources (other firms, universities, etc.) are paramount, and where “knowledge assets” account for a large (and increasing) part of value added to production. While such settings have no doubt existed in some industries for a long time, they are not exactly the dominant mode of production that characterizes, say, American business history for a large part of the twentieth century (for example, Chandler 1962; Langlois 2001). However, proponents of the knowledge economy notion assert that these settings are becoming increasingly prevalent in today’s business landscape, in the sense that an increasing fraction of firms experiment with decentralizing their internal structures, build relations to external knowledge sources, etc. For the sake of argument, these parts of the knowledge economy notion will be accepted here. The question then is what drives such changes.

In order to understand this, many of those who have addressed economic organization in the knowledge economy have explicitly drawn upon Austrian—more precisely, Hayekian—ideas on the need for decentralization fostered by the presence of dispersed knowledge.<sup>2</sup> They have used such Austrian ideas to argue that hierarchy and planning methods are as problematic inside firms as they have proved to be outside firms; that firms need to harness the ability of markets to utilize, exchange, and build information rapidly in response to changing contingencies; and that extensive delegation of decision rights and the use of high-powered incentives to support this are imperative. Fundamental changes with respect to information technology innovations, internationalization, deregulation, increasing emphasis on shareholder value maximization, changes in the composition of the labor force, etc., have arguably made these Austrian principles of organizational design increasingly pressing. Perhaps not surprisingly, in many recent writings on all this, there is a strong and marked opposition to the central analytical dichotomy between planned firms and unplanned markets that is present not only in

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<sup>2</sup>Examples include Ellig (1993, 1997), Ellig and Gable (1993), Cowen and Parker (1997), N. Foss (1999, 2000), Ghoshal, Moran, and Almeida-Costa (1995), Grant (1996), Jensen and Meckling (1992), Jensen and Wruck (1994), Hodgson (1998), and Nonaka and Takeuchi (1995).

Coase (1937) and Williamson (1996), but also in central Austrian contributions such as Mises (1936, 1944, 1949) and Hayek (1973).<sup>3</sup> Thus, it is argued that only those firms that emulate markets inside their internal organization to the largest possible extent will survive and prosper in the knowledge economy (Cowen and Parker 1997). The “Coasian firm,” characterized by well-defined boundaries, authority, etc., will, in contrast, wither.

It is these ideas that the present article critically takes issue with. In particular (but not exclusively), I focus on internal organization issues. Like a number of recent contributors, I discuss the implications for internal organization of the Hayekian notion that the dispersed and subjective character of relevant knowledge is a strongly binding constraint on the use of planned coordination. However, I argue that it does *not* follow that firms should emulate markets as far as possible. In his critique of market socialism, Mises (1949) pointed to the folly of “playing markets,” and I draw on his overall argument that bringing coordination mechanisms characteristic of market organization into a planned organization is inherently problematic. I also draw on Mises’s related insight that the mixed economy is fundamentally unstable, as well as on his insights on property rights and ownership (Mises 1936, 1949; N. Foss 1994a). Mises argued that the economic institutions of capitalism are strongly complementary in the sense that (unhampered) capitalism is a stable system, consisting of interlocking elements, where changes away from pure capitalism will result in serious inefficiencies. I use this fundamental notion to argue that firms are also systems of complementary elements and that this fact places constraints on the extent to which firms may be made “market-like.” In particular, I agree with Mises that “[t]he function of the entrepreneur cannot be separated from the direction of the employment of factors of production for the accomplishment of definite tasks. The entrepreneur controls the factors of production” (Mises 1949, p. 306). The “direction” and “control” undertaken by “the entrepreneur” is qualitatively different from allocation by means of the price mechanism, since it relies on authority that is backed up by the entrepreneur’s ownership of the alienable (nonhuman) means of production. In other words, Misesian arguments are used to criticize arguments derived from Hayekian insights that firms should emulate markets to the largest possible extent. In a sense, Misesian arguments resurrect the Austrian and Coasian notion that markets and hierarchies are indeed different mechanisms for resource allocation; hence, the title of this article.<sup>4</sup>

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<sup>3</sup>Cowen and Parker (1997) and Matthews (1998) are particularly outspoken critics of the dichotomy.

<sup>4</sup>N. Foss (1994b) argued that in many important respects, the Austrians anticipated ideas that have become prominent in the modern economics of organization. The arguments

ECONOMIC ORGANIZATION IN THE KNOWLEDGE ECONOMY:  
INTERPRETING RECENT ARGUMENTS

*Economic Organization in the Knowledge Economy:  
Some Recent Arguments*

To repeat, the notion of the knowledge economy is used (and accepted) here to cover ongoing changes in the business landscape, such as the increase in the relative numbers of firms experimenting with decentralizing their internal structures (Ichniowski et al. 1996) and building relations to external knowledge sources (Liebeskind et al. 1995; Matusik and Hill 1998), the tendency of knowledge assets to account for an increasing share of value-added and physical assets for a decreasing share, and the changing skill composition of the workforce (Tomlinson 1999). Numerous writers have argued that tasks and activities in the knowledge economy need to be coordinated in a manner that is very different from the management of traditional manufacturing activities (as portrayed in, for example, Chandler 1962). This has profound transforming implications for the authority relation and the internal organization and boundaries of firms. Cowen and Parker (1997, p. 28) explain with respect to internal organization that

Market changes are moving manufacturing farther and farther away from steady-state, low variety, long-batch production runs, relevant to Taylorist methods, to high variety and small runs. . . . Organizations are adopting new forms of decentralization to cope with the instability, uncertainty, and pace of change of the market-place. . . . In cluster or network working, employees of undifferentiated rank may operate temporarily on a certain task or tasks in teams. The clusters are largely autonomous and engage in decentralized decision-making and planning. . . . They are conducive to individual initiative (intrapreneurship) and faster decision-taking. They facilitate organizational flexibility.

A number of writers also argue that firm *boundaries* will be profoundly affected by the emerging knowledge economy. Specifically, because of the growing importance of being able to access knowledge from multiple sources, knowledge-based networks (Harryson 2000) increasingly become the relevant dimension for understanding the organization of economic activities. Such networks often cut across the legal boundaries of the firm.<sup>5</sup>

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developed here go beyond those in N. Foss (1994b) by putting more stress on Misesian arguments. N. Foss (1993) argued that Coasian insights were largely consistent with an Austrian perspective, contrary to Boudreaux and Holcombe (1989). Klein (1996) is an application of the Misesian calculation argument to the issue of the boundaries of the firm, and Klein and Klein (2001) treat corporate governance issues in a Misesian manner.

<sup>5</sup>The underlying comparative-institutional argument is that networks are particularly useful organizational arrangements for sourcing and transferring knowledge because the costs of pricing knowledge (in a market) or transferring it (in a hierarchy) often exceed the costs of transmitting knowledge within an informal network (Powell 1990, p. 304; Liebeskind et al. 1995, p. 7).

This increased reliance on knowledge networks tends to erode authority-based definitions of the boundaries of the firm, because *authority* increasingly shifts to expert individuals who control crucial information resources and may not be employees of the firm. As Zucker (1991, p. 164) argues:

While bureaucratic authority is by definition located within the firm's boundaries, expert authority depends on the information resources available to an individual, and not on the authority of office. Thus, authority may be located within the organization . . . but when an external authority market can provide information that leads to greater effectiveness, then authority tends to migrate into the market.

To the extent that important knowledge assets are increasingly controlled by employees ("knowledge workers") themselves, traditional authority relations are fading into insignificance. This is partly a result of the increased bargaining power on the part of knowledge workers (stemming from the control over critical knowledge assets), and partly a result of the increasingly specialist nature of knowledge work (Hodgson 1998), which makes principals-employees ignorant about (some of) the actions that are open to agents-employees.

The combined effect of all this is to wreck the traditional economist's criterion of what distinguishes market transactions from hierarchical transactions (Zingales 2000). Thus, whether direction by means of order giving (Coase 1937; Simon 1951; Williamson 1985; Demsetz 1991) and backed up by the ownership of alienable assets (Hart and Moore 1990) obtains or not is increasingly *irrelevant* for understanding the organization of economic activities in a knowledge economy (compare Grandori 2001). It is therefore not surprising that a number of writers are quite explicit that the advent of the knowledge economy increasingly questions the relevance of Coasian organizational economics (for example, Boisot 1998; Helper, MacDuffie, and Sabel 2000). Thus, Cowen and Parker (1997, p. 15; emphasis in original) argue that

firms and markets are not exactly the same, but rather they differ in empirical terms. They refer to different means of organizing economic activity, albeit means that *do not differ substantially in kind*. . . . This . . . view does not seek to find a clear-cut distinction between firms and markets. Rather the difference between the firm and the market as a resource allocator involves what might more usefully be viewed as subtle differences relating to the form of contracting.<sup>6</sup>

It is easy to see that the above arguments go right to the heart of the crucial and perennial issues in the theory of economic organization. However, before it is possible to provide a response, it is necessary to understand on what

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<sup>6</sup>This quotation echoes earlier statements by Alchian and Demsetz (1972) and Cheung (1983), reinforced by Hayekian considerations.

basis one may put forward such arguments. Austrian economics is a particularly fitting starting point for such an exercise.

*Economic Organization in Hayekian Settings*

It is no coincidence that so many of those who write on economic organization in the emerging knowledge economy cite Hayek's work, particularly his 1945 paper, "The Use of Knowledge in Society"; indeed, much of what these writers are up to may be understood as an attempt to examine the implications of that particular paper for the theory of the firm (see, for example, Ghoshal, Moran, and Costa-Almeida 1995; Nonaka and Takeuchi 1995). In particular, writers inspired by Austrian economics have analyzed the implications of the knowledge economy for firm organization in terms of the planning problems posed by Hayekian dispersed knowledge becoming increasingly pressing for firms (Cowen and Parker 1997). Coping with the problem posed by Hayekian distributed knowledge has moved from being a problem for socialist managers and *dirigiste* bureaucrats to also being a problem confronted by managers of (at least large) firms in capitalist economies.

Two key claims (or "stylized facts")—which may both be characterized as Hayekian in spirit—are present in recent work on economic organization in the knowledge economy. *The first claim* is that because of the increased need for firms to be source diverse, specialized knowledge in production, knowledge, as seen from the point of view of a manager, is becoming increasingly dispersed in the sense of Hayek (1948). In other words, when such knowledge is not possessed by any single mind, it is still necessary to somehow mobilize it for the carrying out of a productive task or a number of such tasks.<sup>7</sup> *The second claim* is that because of the increased importance of sourcing specialist knowledge, knowledge assets controlled by individual agents ("knowledge workers") are becoming increasingly important in production (for example, Boisot 1998; Hodgson 1998) in the sense of accounting for a greater part of the value added to goods. In the following, I refer to situations in which these two claims are descriptively adequate as "Hayekian settings."

One possible interpretation of the recent literature on economic organization in the knowledge economy is that as Hayekian settings become increasingly prevalent, traditional authority relations vanish (Zucker 1991; Hodgson 1998); the boundaries of firms blur because of the increasing importance of knowledge networks that transcend those boundaries; and coordination mechanisms (that is, authority, norms, teams, prices, etc.) will increasingly be combined in new, innovative ways—resulting in what is often referred to as "new organizational forms," and substituting for traditional relations of

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<sup>7</sup>This argument is made explicitly by, Ghoshal, Moran, and Almeida-Costa (1995), Hodgson (1998), and Coombs and Metcalfe (2000).

authority. This final claim implies that organizational forms do not cluster in a few rigid, discrete forms, but, on the contrary, that coordination mechanisms are highly malleable (for example, Grandori 1997; Helper, MacDuffie, and Sabel 2000). In particular, firms may adopt coordination mechanisms that we normally think of as characteristic of the market rather than of planned coordination, in particular pricing, entrepreneurial control over resources, and high-powered incentives (Miles et al. 1997). In the following, I interpret and discuss some of these arguments. It is convenient to begin with a discussion of the meaning of authority.

### *The Hayekian Challenge to Economic Organization*

To most economists, Coase's (1937) discussion, supplemented with a later contribution by Simon (1951), still provides the working definition of authority. In Coase (1937, p. 242), the employment contract is explained as

one whereby the factor, for a certain remuneration (which may be fixed or fluctuating) agrees to obey the directions of an entrepreneur *within certain limits*. The essence of the power is that it should only state the limits to the powers of the entrepreneur. Within these limits, he can therefore direct the other factors of production.

This contractually agreed upon right to "direct the other factors of production" is, of course, authority. Much debate in economics has concerned the sources of authority (for example, Alchian and Demsetz 1972; Cheung 1983; Hart 1995). In other words, why exactly is it that the employee agrees to be directed when human capital cannot be traded?<sup>8</sup> However, in Hayekian settings, other questions—which have been much less discussed—are just as pertinent. Thus, if in Hayekian settings, the employer does not possess full knowledge of the employee's action set (that is, the actions that he can take when uncertainty is involved), or if the employee is better informed than the employer with respect to how certain tasks should (optimally) be carried out, or if employees control knowledge assets that are "within their heads" and which may give them substantial bargaining power, what happens to the Coasian notion of authority as direction? It is easy to conclude that under these circumstances, authority simply is not a workable mechanism for allocating resources (and some writers appear to have explicitly adopted this position, for example, Grandori 1997), for the basic reason that the notion of

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<sup>8</sup>Thus, to writers such as Alchian and Demsetz (1972) and Cheung (1983), it is not meaningful to assume that an employer can force an employee to do what the employer wants in the absence of coercion. As Alchian and Demsetz argue, an implication of this view is that the distinction between the authority-based and the price-based modes of allocation emphasized by Coase (1937) is superficial. Note that this "nexus of contracts" position is remarkably close to the position that in a knowledge-based economy, the firm-market boundary is unclear and the notion of authority elusive at best.

authority seems to assume that a directing employer is at least as knowledgeable about the relevant tasks as the employee being directed.<sup>9</sup>

It has recently been argued, in response to Alchian and Demsetz (1972), that ultimately the source of authority is ownership of assets (Hart 1995). If an employer has the power to deprive a worker of access to assets (to which he may have become specialized), the employer obtains bargaining power that forms the backbone of the authority he can exercise over the employee. At the same time, this provides a theory of the boundaries of the firm, since these may be defined in terms of ownership of assets. The assets that in this line of thought confer authority are alienable assets. However, as numerous writers have emphasized, an important aspect of the knowledge economy is precisely that physical assets are of strongly waning importance (for example, Boisot 1998). Of course, the implication is that ownership over such assets is an increasingly ineffective source of bargaining power and that, therefore, authority must wane as bargaining power increasingly becomes more symmetrically distributed over the owners of knowledge assets. Since the boundaries of the firm are (also) defined in terms of legally recognized ownership to the firm's alienable, primarily physical, assets, and since such assets are of declining economic and commercial importance, it is obvious that the very notion of the firm's boundaries is becoming increasingly fuzzy, and perhaps even irrelevant.

Finally, because authority declines in importance as knowledge becomes distributed and knowledge inputs increase in importance, resort to other coordination mechanisms is necessary. Thus, firms increasingly rely on high-powered incentives, implement employee stock-ownership programs, invest in building "corporate cultures," try to price corporate resources to the largest possible extent, etc. This outcome is the emergence of "new organizational forms." The theoretical implication is that various mechanisms for coordinating resources are combined to a much larger extent than hitherto assumed in, for example, organizational economics, where economic activities are normally assumed to be organized across three discrete governance structures: firms, markets, and hybrids (for example, Williamson 1996).

In sum, arguments can be made that Hayekian settings, where knowledge is distributed and knowledge inputs are more important than physical capital inputs, present real problems for the exercise of authority in firms, make the boundaries of firms blur, and remove many of the constraints on the malleability of coordination mechanisms. The following section discusses the reach of these arguments.

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<sup>9</sup>This does not appear to have been Coase's (1937) position. Simon (1951) is a more likely source for this interpretation of authority. He later (Simon 1991, p. 31) pointed out that authority in organizations "is not used exclusively, or even mainly, to command specific actions. Most often, the command takes the form of a result to be produced . . . or a principle to be applied . . . or goal constraints." This was also the view of authority that Mises (1949) held.

### AUTHORITY, FIRM BOUNDARIES, AND COMPLEMENTARY COORDINATION MECHANISMS IN HAYEKIAN SETTINGS

In this section, I assume that Hayekian settings obtain and discuss the implications of such settings for the Coasian themes of authority, the boundaries of the firm, and the combinability of coordination mechanisms. The underlying perspective is Misesian, in the sense that I shall throughout assume the existence of a speculating entrepreneur. The entrepreneur is ultimately in charge of the business venture in the sense that he determines “the general plan for the utilization of resources” (Mises 1949, p. 303), hires the managers and “technicians, that is, people who have the ability and skill to perform definite kinds and quantities of work,” determines “the expansion and contraction of the size of the business and its main sections,” as well as “the enterprise’s financial structure” (p. 307), and acquires ownership of the firm’s alienable assets. Nobody denies that in the emerging knowledge economy, there will still be a need for such enterprising agents. On the contrary, many recent writings on the knowledge economy very strongly stress entrepreneurship (for example, Miles et al. 1997). What is being claimed is rather, as we have seen, that the entrepreneur will no longer be able to exercise much authority, that the boundaries of his venture will become ill-defined (if not in a formal, legal sense, then in an economic and commercial one), and that his venture can rely on all sorts of combinations of coordination mechanisms, in particular that he can offer employees incentives that in terms of their strength (that is, the way in which they link effort and rewards-punishment) are very close to the incentives provided under market contracting, effectively mimicking the effects of market pricing. I discuss the three issues of authority, boundaries, and malleability of coordination mechanisms *seriatim*.

#### *Authority in Hayekian Settings*

In this section, the strategy is to examine the role of authority in Hayekian settings. Since I later discuss the importance for economic organization of the distinction between physical and knowledge assets, I here only concentrate on the dispersed knowledge aspect of Hayekian settings. One way of doing this is to focus on “hidden knowledge” (Minkler 1993) in relations between a principal (for example, the Misesian entrepreneur) and an agent (for example, a hired manager). That is, it will be assumed that the problem facing a principal is not just that he is uninformed about what state of nature has been revealed or of the realization of the agent’s effort (that is, hidden information), as in the usual agency model (Holmström 1979), but that the agent’s knowledge is superior to that of the principal with respect to certain production possibilities (that is, hidden knowledge). The principal may be ignorant about some members of the set of possible actions open to the

agent, or the agent may be better informed than the employer with respect to how certain tasks should (optimally) be carried out, or both. As I shall argue, it is possible to explain the presence of authority in such a setting, in the sense of it being rational to give one agent decisionmaking power over another one. I discuss the rationales for this under the headings of “the need for urgent coordination,” “decisive information,” “economies of scale in decision making,” and “defining incentive systems.”

**THE NEED FOR URGENT COORDINATION.** While Hayek (1948) did much to identify the benefits of the price system in the context of alienable property rights in coping with distributed knowledge and unexpected disturbances, he arguably neglected those situations where efficiency requires that adaptation be “coordinated” rather than “autonomous” (Williamson 1996). Coordinated adaptation or action may be required when actions or activities are complementary (Milgrom and Roberts 1990; K. Foss 2001), when it is important to make *some* urgent choice (possibly highly inefficient), because doing nothing is worse. In such cases, it may be better to have somebody pick a strategy and make everybody play this strategy, if the inefficiencies from picking a bad strategy are smaller than the inefficiencies from delaying a coordinated solution. In the context of a specific model of this trade-off, Bolton and Farrell conclude that “the less important the private information that the planner lacks and the more essential coordination is, the more attractive the central planning solution is” (1990, p. 805). Moreover, the decentralized solution performs poorly if urgency is important. Centralization is assumed to not involve delay and therefore is a good mechanism for dealing with emergencies, a conclusion Bolton and Farrell argue is consistent with the observed tendencies of firms to rely on centralized authority in cases of emergencies.

**DECISIVE INFORMATION.** Even under distributed knowledge, where the centralized decisionmaker per definition does not possess (at least some) local information, he may in many cases still hold the information that is *decisive*. Loosely, information is (strongly) decisive if—in a setting involving many cooperating individuals—a decision can reasonably be made on the basis of this information without involving other pieces of information (Casson 1994). According to Casson (1994), the extent to which a problem involving the knowledge of several individuals has decisiveness features and the cost at which knowledge can be communicated helps to explain the allocation of decision rights. The general principle is that decision rights will tend to be concentrated in the hands of the individual who has access to the decisive information, and particularly so the more costly it is to communicate this information. This provides a further argument for authority under hidden knowledge. If the knowledge possessed by managers is not decisive, if the knowledge possessed by the entrepreneur is decisive, and if it is costly to communicate the entrepreneur’s knowledge, then overall decision rights should

be concentrated in the hands of the entrepreneur; that is, he should assume ultimate authority in the firm.

ECONOMIES OF SCALE IN DECISION MAKING. Demsetz (1988) argues that economies of scale in managing are a neglected factor in the explanation of the existence of firms and the understanding of authority, but he does not explain the underlying reasoning. However, the relevant economies may relate both to managing the internal relations between agents inside the firm and managing relations to outside agents (customers, suppliers, government agencies). Not only may there be scale economies in such activities; there may also be substantial learning economies. Other agents may be happy to let a central agent incur the effort costs of negotiating, learning about potential suppliers, etc., and compensate him accordingly.

DEFINING INCENTIVE SYSTEMS. It is hard to deny too that Hayekian settings pose special problems for the use of monitoring mechanisms and incentive pay (Minkler 1993; Aghion and Tirole 1997; N. Foss 1999). Minkler (1993, p. 23) argues that “if the worker knows more than the entrepreneur, it is pointless for the entrepreneur to monitor the worker,” which implies that to the extent that monitoring is a precondition for the exercise of direction, using the authority mechanism also seems to become “pointless.” However, even under hidden knowledge, there may still be a role for authority. For example, even under hidden knowledge, the principal may be able to form conjectures of the financial results that result from the agent’s activities, and he can check whether these conjectures are actually confirmed using the control systems of the firm. Both Knight (1921), discussing business judgment, and Mises (1949, p. 303), discussing the entrepreneur delegating responsibilities to managers, clearly allowed for this possibility. Neither of them assumed that entrepreneurs would have full knowledge of their managers’ action set; still, they did assume that the entrepreneur can rationally delegate decisions to managers and control these. Hidden knowledge does not imply that subjective performance measurement becomes impossible. In fact, it may be conjectured that the more we depart from simple settings where employees are very easily monitored, and the more complicated the control problem becomes, the more likely it is that the entrepreneur will choose to rely on multiple incentive instruments to influence employee behavior (Holmström and Milgrom 1991). In a dynamic economy, maintaining coherence between such instruments may be a recurrent task. Economies of scale may dictate that this activity be centralized. Moreover, centralization is required to the extent that externalities arise when the instruments are controlled by separate firms and transaction costs hinder the internalization of these externalities. Both arguments point toward the centralization of decision rights.

Thus, the above arguments suggest that it is in fact possible to explain authority in the sense of possessing rights to somehow direct another agent

in the context of Hayekian settings. Admittedly, authority understood narrowly as a relation in which the employer has superior knowledge and can observe all contingencies that require a response by an employee is not consistent with such settings. But firm organization does not at all necessitate this kind of authority relationship. The very fact that firms exist is *prima facie* evidence that they can somehow cope with the problems implied by Hayekian settings.<sup>10</sup> In turn, this suggests economists are well advised to scrap the narrow understanding of authority with which they have typically worked.

*Delegation as a Response to Hayekian Settings*

The reason that firms can thrive even though their internal organization exemplifies Hayekian settings is that they have recourse to delegation.<sup>11</sup> As Mises (1949, p. 303) emphasized, “entrepreneurs are not omnipresent. They cannot themselves attend to the manifold tasks which are incumbent upon them.” Mises (p. 305) clearly recognized that in many firms decision rights are allocated by the entrepreneur (and the board of directors) to lower levels, presumably in order to better cope with distributed knowledge, an insight that is not present in Coase (1937). He perceptively recognized that delegation leads to agency problems, but argued that the system of double-entry book-keeping and other control measures may partly cope with such problems. Mises also understood that delegation of decision rights is circumscribed in an attempt to cope with the control problem that follows from delegation.<sup>12</sup>

In the Misesian scheme, an organizational equilibrium obtains where decision rights are delegated in such a way that the benefits of delegation in terms of better utilizing local knowledge are balanced against the costs of delegation in terms of agency losses (as in Jensen and Meckling 1992). This provides a useful perspective on many of those new organizational forms that are argued to be characteristic of the knowledge economy (see Cowen and Parker 1997), such as team-organization, “molecular forms,” and other manifestations of organizational delegation and decentralization: These are prompted by a market-driven pressure to delegate decision rights (for example, to better serve customer preferences) and structure reward schemes in such a way that optimal

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<sup>10</sup>Of course, there are also offsetting benefits of firm organization, such as the superior ability of firms to organize transactions characterized by high levels of relation-specific investments (Williamson 1985, 1996; Grossman and Hart 1986; Hart and Moore 1990).

<sup>11</sup>An alternative mechanism is to suppress Hayekian settings as much as possible by discouraging local initiative, indoctrinating employees harshly, and operating with rigid routines and operating procedures. In a dynamic economy, however, this is bound to lead to financial disaster.

<sup>12</sup>For example, the right to use an asset in certain ways may be delegated; however, it is understood that that right does not entail the right to use the asset in the service of a competitor firm.

trade-offs are reached. Thus, decision rights are delegated inside firms, but they are delegated as means to an end (Hayek 1973), their use is monitored (Jensen and Meckling 1992), and top management reserves ultimate decision rights for itself (Baker, Gibbons, and Murphy 1999).

This underscores the argument made earlier that authority in the sense of direction and centralized decisionmaking—which, as Mises emphasized, does *not* require detailed knowledge about a subordinate’s knowledge or available actions—may persist in Hayekian settings. By implication, even in “knowledge-based” firms, there may be a need for centralized coordination. As I shall argue next, when there is such a need, it is often efficient to centralize ownership of alienable assets. In turn, this suggests that centralized coordination is a feature of firms rather than markets.

### *Ownership and the Boundaries of Firms*

So far, not much has been said about what backs up authority, although it has been hinted that ownership may play a key role here. The purpose of the present section is to go more into ownership issues and, therefore, the issue of the boundaries of the firm. The argument that will be critically discussed is that as knowledge assets become relatively more important in production, the boundaries of firms will blur, at least to the extent that these are defined in terms of legally recognized ownership of the firm’s alienable assets. The work of Oliver Hart and others (Hart 1995, 1996; Hart and Moore 1990)—called the incomplete-contracts literature—offers a possible approach to this issue. The incomplete-contracts approach is a thoroughly neoclassical approach, not an Austrian one. However, it has some features that make it complementary to a Misesian perspective, notably the emphasis on ownership as backing up authority, the argument that the boundaries of the firm lies where the entrepreneur’s ownership of alienable assets stop, and the implication that the entrepreneur assumes his directing role because his inputs to the venture are those that matter the most for the total monetary surplus.

In the Hart approach, two kinds of assets are distinguished, namely alienable (that is, nonhuman) and nonalienable (that is, human) assets. The basic distinction between an independent contractor and an employee, that is, between an inter-firm and an intra-firm transaction, now turns on who owns the alienable assets that an agent (whether independent or employee) utilizes in his work. An independent contractor owns his tools, etc., while an employee does not. The importance of asset ownership derives from the fact that the willingness of an agent to undertake a *noncontractible* investment (say, exertion of effort or investment in human capital), which is specific to the asset, depends on who owns the asset. The parties to a relationship are seen as being in a bargaining situation, each having an outside option. Given this, the division of the surplus from the relationship will depend on who owns the alienable

assets in the relationship, since the pattern of ownership will influence the parties' outside options.<sup>13</sup> In turn, the expectation of this division feeds back into the investments that the parties are willing to make. Efficiency considerations then suggest that authority (that is, ownership to the alienable assets) should be allocated to the agent who makes the most important (noncontractible) relationship-specific investment.

This kind of reasoning may be utilized to get an understanding of the implications of knowledge assets for the boundaries of the firm. Assume, therefore, a purely "knowledge-based" team, consisting of two agents and two knowledge assets. On this team, the entrepreneur owns a knowledge asset that is "inside his head" (for example, an entrepreneurial idea) and the other agent, the scientist, owns the only other asset in the relationship which we may assume to be a patent. Both assets are necessary to create value in the relationship, and they are (strictly) complementary, so that any asset is of zero value without the other. It is prohibitively costly to communicate the knowledge embodied in the entrepreneurial idea from the entrepreneur to the scientist, so it is effectively nonalienable. Moreover, it is not possible to write a comprehensive contract, governing the use of the assets in all contingencies. Given this, we may ask who should own the (alienable) patent which, in terms of the incomplete-contracts approach, is the same as asking who should own the firm.

In this setting, if the entrepreneur makes an effort investment, that is, elaborates on his idea and creates extra value, the scientist can effect a holdup on the entrepreneur, since the latter needs access to the patent to create value (and the contract is incomplete). Of course, the reverse also holds, so that if the scientist makes an effort investment, makes a spin-off patent, the entrepreneur can holdup the scientist by threatening to withdraw from the relation. One can show (details in Hart and Moore 1990; Brynjolfsson 1994) that because of the externality problem that the hold-up threat creates, every agent invests too little; specifically, each party invests to the point where the marginal cost of effort investment equals one-half of the marginal value (because they are assumed to split the extra surplus fifty-fifty). Suppose now that the entrepreneur owns *both* the patent and the entrepreneurial idea. This will strengthen the entrepreneur's incentives (the scientist cannot hold him up anymore), and it will leave the scientist's incentives unaffected. Rational agents will choose this arrangement.

The conclusion is that it *is* possible to speak of the boundaries of the firm in terms of ownership—even in a situation where all relevant productive assets are knowledge assets. However, this does not yet demonstrate the point made

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<sup>13</sup>For example, if the employer owns all the alienable assets, the employee can still quit if he dislikes the employer's orders (as in Alchian and Demsetz 1972), but he cannot take the assets with him, and the employer can ensure that if the employee leaves, somebody else can take over the job.

earlier, namely that authority and ownership somehow go together. This issue can be addressed, however, by assuming that one of the agents, the entrepreneur, has decisive information (in the sense discussed earlier). While it was argued earlier that it would be rational to give this agent decision rights amounting to authority, should he also be an owner? Consider a bigger “knowledge-based” firm where there is a group of  $n$  scientists ( $n > 1$ ) each of whom owns a patent. The entrepreneur, who again comes equipped with a nonalienable entrepreneurial idea, aggregates information from the messages of the scientists and directs their efforts. His knowledge is decisive in the sense that without it, all actions of the other agents produce zero value. The entrepreneur may improve on this decisive knowledge. Each agent needs access to his own patent and to the entrepreneur’s direction in order to be productive. Given these assumptions, the holdup problem is still present: Any one of the scientists can hold up the entrepreneur on his investment, leading the entrepreneur to choose inefficient investment levels. However, if the entrepreneur is given ownership to the alienable assets, that is, the patents, the holdup problem disappears. Rational agents will choose this arrangement.

*Are Coordination Mechanisms Malleable? A Misesian Perspective*

Thus far, it has been argued that it is possible to provide rational reasons for authority, for ownership-based notions of the boundaries of the firm, and for authority and ownership being linked, even in Hayekian settings. This prompts the question of whether there are other necessary “links” between organizational elements. Here it is pertinent to turn once more to Mises’s work, in particular his work on political economy and comparative systems.

As Mises (1949, p. 709) explained, there are inherent contradictions involved in “playing market,” which we may broadly interpret as the introduction of pricing in the context of hierarchy. With reference to various socialist schemes of his day that tried to preserve some market relations while eliminating capital and financial markets, Mises argued that these schemes would be unworkable. To an important extent this is a matter of the sheer impossibility of rational calculation when asset markets are eliminated. But Mises also placed much emphasis on property rights and ownership issues (particularly Mises 1936). Thus, he was aware that the concentration of ultimate decision-making rights—that is, ownership—in the hands of a central planning board would dilute the incentives of socialist managers. While planning authorities could (and, according to the more “sophisticated” schemes of the day, should) delegate rights to make production and investment decisions to managers, these rights could not be used in a rational manner. First, since managers could not be sure that they would not be overruled by the planning authorities, they were not likely to take a long view, notably in their investment decisions. Moreover, since managers were not the ultimate owners, they were not the full residual claimants of their decisions and, hence, would not

make efficient decisions. Thus, in addition to his pure calculation argument, Mises also put forward property rights arguments for why the attempt to “play market” under socialism would not be workable.

Firms have the great advantage relative to socialist planning boards in that they may to a much larger extent rely on the prices of outside markets. Thus, the Misesian calculation problem, while helping to explain the sizes of firms (Klein 1996), does not imply that firm organization is “impossible.” However, some of the property-rights insights into socialism also apply to firms. In particular, a good deal of recent analytical energies have been devoted to the commitment problems of delegation in firms (for example, Williamson 1985; Miller 1992; Baker, Gibbons, and Murphy 1999). Transaction-cost-economist Oliver Williamson (1996) has referred to these kinds of problems with his concept of the “impossibility of (efficient) selective intervention.” The main problem is that incentives are diluted. This is because the option to intervene “can be exercised both for good cause (to support expected net gains) and for bad (to support the subgoals of the intervenor)” (Williamson 1996, pp. 150–51). Promises to only intervene for good cause can never be credible, Williamson argues, because they are not enforceable. Although Williamson may be going too far, a main conclusion in this literature is indeed that credible delegation may be very hard to accomplish, since reneging on a promise to delegate will in many cases be very tempting, and those to whom rights are delegated anticipate this.<sup>14</sup> An immediate implication of this kind of reasoning is that emulating market organization inside firms, by radically decentralizing the firm and allocating far-reaching decision rights to employees may be hard to accomplish in a successful manner. Unlike independent agents in

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<sup>14</sup>In a recent treatment, the problem is stated in the following way (see Baker, Gibbons, and Murphy 1999): Assume that a subordinate initiates a project, where a “project” may refer to many different types of decisions or clusters of decisions. Assume further that the manager has information that is necessary to perform an assessment of the project, but that he decides up front to ratify *any* project that the subordinate proposes. Effectively, this amounts to full informal delegation of the rights to initiate and ratify projects—“informal,” because the formal right to ratify is still in the hands of the manager and because that right cannot be allocated to the subordinate through a court-enforceable contract (see Williamson 1996). Because the subordinate values being given freedom, this will induce more effort in searching for new projects (Aghion and Tirole 1997). The expected benefits of these increased efforts may overwhelm the expected costs from bad projects that the manager has to ratify. However, the problem is that because the manager has information about the state of a project (“bad” or “good”), he may be tempted to renege on a promise to delegate decision authority, that is, intervene in a “selective” manner. But if he overrules the subordinate, the latter will lose trust in him, holding back on effort. Clearly, in this game a number of equilibria are feasible. The particular equilibrium that emerges will be determined by the discount rate of the manager, the specific trigger strategy followed by the subordinate (for example, will he lose trust in the manager for all future periods if he is overruled?), and how much the manager values his reputation for not reneging relative to the benefits of reneging on a bad project. (For details and extensions, see Baker, Gibbons, and Murphy 1999.)

markets, corporate employees never possess ultimate decision rights. They are not full owners. This means that those who possess ultimate decision rights can always overrule employees. Thus, there are incentive limits to the extent to which market mechanisms can be applied inside firms, and delegation, while not exactly a rare flower, is certainly a very delicate one.

Other means of introducing market mechanisms inside firms are also problematic, if for somewhat different reasons. Thus, multi-task agency theory suggests that there are quite rational reasons for the “low-powered” incentives one typically observes inside firms (in contrast to the “high-powered” incentives of the marketplace) (Holmström and Milgrom 1991). This is because managers wish employees to undertake multiple tasks, some of which may be very costly to observe and measure, but which may nevertheless be vital to the firm (for example, sharing knowledge with colleagues, handling calling customers in a polite manner, etc.). Providing incentives that are only tied to those tasks that can be measured (at low cost) risks twisting efforts away from the costly-to-measure tasks. These problems would appear to be particularly acute in Hayekian settings, because of dispersed knowledge.

Taken together the reasoning above suggests that coordination mechanisms are not simply combinable in an arbitrary fashion, contrary to the thrust of many recent writings on economic organization in the knowledge economy. Ultimately, this is because authority and ownership will continue to be important in the knowledge economy, as argued earlier. First, it has been argued that there is an inherent tension between ownership and delegated rights. Second, in Hayekian settings, delegation is necessary. Delegation often needs to be backed up by a strengthening of incentives because of the agency problem. However, under multi-tasking, there are limits to how much incentives can be strengthened. Thus, rather than being combinable at will, coordination mechanisms, such as authority, delegation, pricing, etc., tend to cluster in predictable ways. This is an application of sorts on the level of the firm of Mises’s demonstration that the various elements that make up the capitalist market economy are complementary ones; one cannot simply take a subset of these away, say, unhampered capital markets, and substitute them with elements that are characteristic of a different system.<sup>15</sup> In a similar manner, concentrated ownership, authority, circumscribed decision rights, and incentives that are less “powered” than those of the marketplace are all complementary elements of a system, namely, the firm, and they will continue to be so, even in the knowledge economy. Thus, Misesian arguments help to demonstrate the continued viability of the “Coasian firm,” as against those critics who have argued that it will wither under the impact of the increasing prevalence of Hayekian settings.

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<sup>15</sup>See also Milgrom and Roberts (1990) for an important discussion of complementarities.

## CONCLUSION

The understanding of the dynamics of economic organization, such as what will happen to authority relations, the boundaries of firms, and firms' use of distinct coordination mechanisms, is a task of almost forbidding complexity. Yet, a combination of organizational economics and Austrian insights, primarily represented by the works of Hayek and Mises, provides useful insights. The approach of this article has been to try to distill some key assumptions and propositions that characterize much of this literature, and examine these in the light of organizational economics and Austrian economics.

Thus, it has been argued that much of the recent discussion of economic organization in the knowledge economy may be distilled into a basic assertion that the kind of knowledge that Hayek (1948) talked about represents an increasingly binding constraint on the exercise of authority, makes the boundaries of firms blur, and necessitates the use of multiple coordination instruments to efficiently utilize this knowledge. To the extent that increasingly firm hierarchies do flatten, functions are spun off in an attempt to improve incentives, delegation increases, etc., much of this may be interpreted using insights originally put forward by Hayek, as a number of writers have pointed out already (Ellig 1993; Gable and Ellig 1993; Ghoshal, Moran, and Almeida-Costa 1997; Cowen and Parker 1997; N. Foss 1999).

On the other hand, Austrian insights are useful for not only interpreting recent claims, but also for understanding their reach. In particular, Misesian insights are helpful here, and it may be argued that there is a certain imbalance in the above writings because of their neglect of these insights. Thus, I have argued that Mises's insights in entrepreneurship, property rights, and the complementarity of elements in economic systems are useful ones for claiming a role for authority and the boundaries of firms, as well as for helping to uphold the notion that there are discrete organizational forms (for example, firms, markets, and hybrids), and that coordination mechanisms cannot be combined arbitrarily. This strongly suggests that Austrian economics (still) has an important contribution to make to the study of economic organization; in particular, that important principles of efficient organization design can be derived from Misesian foundations.

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