

The Impact of Social Structure on Economic Outcomes

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Social structure, especially in the form of social networks, affects economic outcomes for three main reasons. First, social networks affect the flow and the quality of information. Much information is subtle, nuanced and difficult to verify, so actors do not believe impersonal sources and instead rely on people they know. Second, social networks are an important source of reward and punishment, since these are often magnified in their impact when coming from others personally known. Third, trust, by which I mean the confidence that others will do the “right” thing despite a clear balance of incentives to the contrary, emerges, if it does, in the context of a social network.

Economists have recently devoted considerable attention to the impact of social structure and networks on the economy; for example, see the economists’ chapters in Rauch and Casella (2001) (and the illuminating review essay of this volume by Zuckerman, 2003), as well as Dutta and Jackson (2003) and Calvó-Armengol (2004). However, I focus here on sociologists’ contributions. Sociologists have developed core principles about the interactions of social structure, information, ability to punish or reward, and trust that frequently recur in their analyses of political, economic and other institutions. I begin by reviewing some of these principles. Building on these, I then discuss how social structures and social networks can affect economic outcomes like hiring, price, productivity and innovation.

Social Networks and Economic Outcomes: Core Principles

The following four core principles are important, but not meant to be exhaustive or, in any sense, an axiomatic treatment.

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1) *Norms and Network Density*. Norms—shared ideas about the proper way to behave—are clearer, more firmly held and easier to enforce the more dense a social network. (If a social network consists of n “nodes,” people, firms or other social units, “density” is the proportion of the possible $n(n - 1)/2$ connections among these nodes that are actually present.)¹ This argument is one of the oldest in social psychology; for instance, see the classic account of Festinger, Schachter and Back (1948). It rests on the fact that the denser a network, the more unique paths along which information, ideas and influence can travel between any two nodes. Thus, greater density makes ideas about proper behavior more likely to be encountered repeatedly, discussed and fixed; it also renders deviance from resulting norms harder to hide and, thus, more likely to be punished.

One implication of this perspective is that collective action that depends on overcoming free-rider problems is more likely in groups whose social network is dense and cohesive, since actors in such networks typically internalize norms that discourage free riding and emphasize trust. Note that all else equal, larger groups will have lower network density because people have cognitive, emotional, spatial and temporal limits on how many social ties they can sustain. Thus, the larger the group, the lower its ability to crystallize and enforce norms, including those against free riding. The insight that free-rider behavior is especially unlikely within immediate families is a special case of this argument.

2) *The Strength of Weak Ties*. More novel information flows to individuals through weak than through strong ties. Because our close friends tend to move in the same circles that we do, the information they receive overlaps considerably with what we already know. Acquaintances, by contrast, know people that we do not and, thus, receive more novel information. This outcome arises in part because our acquaintances are typically less similar to us than close friends, and in part because they spend less time with us. Moving in different circles from ours, they connect us to a wider world. They may therefore be better sources when we need to go beyond what our own group knows, as in finding a new job or obtaining a scarce service. This is so even though close friends may be more interested than acquaintances in helping us; social structure can dominate motivation. This is one aspect of what I have called “the strength of weak ties” (Granovetter, 1973, 1983).

This argument has macro level implications. If each person’s close friends know one another, they form a closely knit clique. Individuals are then connected to *other* cliques through their weak rather than their strong ties. Thus, from an “aerial” view of social networks, if cliques are connected to one another, it is mainly by weak ties. This implies that such ties determine the extent of information diffusion in large-scale social structures. One outcome is that in scientific fields, new information and ideas are more efficiently diffused through weak ties (Granovetter, 1983).

There are many more weak ties in social networks than strong ones, and most such ties may carry information of little significance. But the important point here

¹ For detailed technical exposition of social network analysis, see Wasserman and Faust (1994).

is that such ties are much more likely than strong ones to play the role of transmitting unique and nonredundant information across otherwise largely disconnected segments of social networks.²

3) *The Importance of "Structural Holes."* Burt (1992) extended and reformulated the "weak ties" argument by emphasizing that what is of central importance is not the quality of any particular tie but rather the way different parts of networks are bridged. He emphasizes the strategic advantage that may be enjoyed by individuals with ties into multiple networks that are largely separated from one another. Insofar as they constitute the only route through which information or other resources may flow from one network sector to another, they can be said to exploit "structural holes" in the network.

4) *The Interpenetration of Economic and Non-Economic Action.* Much social life revolves around a non-economic focus. Therefore, when economic and non-economic activity are intermixed, non-economic activity affects the costs and the available techniques for economic activity. **This mixing of activities is what I have called "social embeddedness" of the economy** (Granovetter, 1985)—the extent to which economic action is linked to or depends on action or institutions that are non-economic in content, goals or processes. Among the kinds of embeddedness that sociologists have discussed are embeddedness of economic action in social networks, culture, politics and religion.³

One common example is that a culture of corruption may impose high economic costs and require many off-the-books transactions to carry on normal production of goods and services. Such negative aspects of social embeddedness receive the lion's share of attention, especially when characterized pejoratively as "rent seeking." Less often noted, but probably more important, are savings achieved when actors pursue economic goals through non-economic institutions and practices to whose costs they made little or no contribution. For example, employers who recruit through social networks need not—and probably could not—pay to create the trust and obligations that motivate friends and relatives to help one another find employment. **Such trust and obligations arise from the way a society's institutions pattern kin and friendship ties, and any economic efficiency gains resulting from them are a byproduct, typically unintended, of actions and patterns enacted by individuals with noneconomic motivations.**

The notion that people often deploy resources from outside the economy to enjoy cost advantages in producing goods and services raises important questions, usually sidestepped in social theory, about how the economy interacts with other social institutions. Such deployment resembles arbitrage in using resources acquired cheaply in one setting for profit in another. As with classic arbitrage, it need not create economic profits for any particular actor, since if all are able to make the

² This argument plays a significant role in the recent interdisciplinary literature on complex networks. See Barabasi (2002), Buchanan (2002) and Watts (2003).

³ The subfield of "economic sociology" is partly built on analysis of these types of embeddedness. For a representative collection of classic and modern items, with notes and commentary, see Granovetter and Swedberg (2001).

same use of non-economic resources, none has any cost advantage over any other. Yet overall efficiency may be improved by reducing everyone's costs and freeing some resources for other uses.

But whereas true arbitrage connects previously separated markets that may then become indistinguishable, the use of extra-economic resources to increase economic efficiency need not close the gap between the economy and other social activity, because separate institutional sectors draw their energy from different sources and consist of distinctly different activities. Many authors have argued that economic activity penetrates and transforms other parts of social life. Thus, Karl Marx asserted (for example, in chapter 1 of *The Communist Manifesto*) that family and friendship ties would be fully subordinated under modern capitalism to the "cash nexus." But despite intimate connections between social networks and the modern economy, the two have not merged or become identical. Indeed, norms often develop that limit the merger of sectors. For example, when economic actors buy and sell political influence, threatening to merge political and economic institutions, this is condemned as "corruption." Such condemnation invokes the norm that political officials are responsible to their constituents rather than to the highest bidder and that the goals and procedures of the polity are and should be different and separate from those of the economy.

In what follows, in part with the help of these core principles, I will trace out the impact of social structure on a series of important economic outcomes. I begin with the allocation of labor.

Social Structure and Labor Markets

Economic models typically assume that workers and jobs are matched through a search whose costs and benefits are equalized at the margin (Granovetter, 1995b, pp. 141–146). But in most real labor markets, social networks play a key role. Prospective employers and employees prefer to learn about one another from personal sources whose information they trust. This is an example of what has been called "social capital" (Lin, 2001). It has obvious links to theories of asymmetric information (for example, Montgomery, 1991), with the difference that unlike in most such models, there is what one might call bilateral asymmetry—both employer and employee have information about their own "quality" that the other needs. In the classic "lemons" model of Akerlof (1970), by contrast, the seller of a used car considers all buyers interchangeable and does not require subtle information about them.

Because all social interaction unavoidably transmits information, details about employers, employees and jobs flow continuously through social networks that people maintain in large part for non-economic reasons. Since individuals use social contacts and networks already in place, and need not invest in constructing them, the cost is less than that of more formal search intermediaries. Because pre-existing networks are unevenly distributed across individuals, whatever social processes led to these networks will create an uneven playing field in the labor

market without any actor necessarily having intended to do so (Granovetter, 1995b, pp. 169–177).

Economic job search models can obscure how commonly individuals learn about new jobs in social settings, without having expended resources earmarked for job search, since survey respondents who deny searching for their present job are often excluded from further analysis. The proportion of job finders who are nonsearchers varies from 30 to 60 percent depending on the time and place surveyed. In the few cases where nonsearchers were carefully scrutinized, the large majority had found jobs through personal contacts (Granovetter, 1995b, pp. 140–146).

Because novel information flows are more likely through weak ties than strong, acquaintances developed over the span of an entire career play a special role, though this varies across national and other settings (Granovetter, 1995b, pp. 160–162; Montgomery, 1994; Bian, 1997). Whether the use of weak or other ties in finding jobs significantly affects wages, wage growth, job satisfaction and productivity has been debated but not resolved. Large aggregated data sets sometimes do not show clear effects (as in Mouw, 2003), but more focused and specialized samples often do. Because so much of the hiring action in labor markets occurs through social networks of very different kinds in a wide variety of circumstances, it would be surprising if outcomes were uniform. The resources held by individuals' networks, the intentions of employers and macroeconomic conditions are only three of the important sources of variation in outcomes when networks route people to jobs (Granovetter, 1995b, pp. 146–162).

The interdependence among careers and networks of different individuals leads to interesting modeling possibilities. For example, characterize those who constitute one's social network as balls in an urn. Let contacts with useful job information be red balls and others white. A model of pure heterogeneity suggests that urn composition is constant, and better connected individuals are those with a larger proportion of red balls in their urn. But a state dependence model would suggest that when a person finds a new job through her network, she makes new connections, so that at the next draw, there would be a larger proportion of red balls in her urn. What empirical data suggest really happens is more complex still: that this proportion also depends on whether the people you know have *themselves* changed their own urn's proportions, by moving around from job to job and improving their own networks, which makes them a better source of information. So the composition of one's own urn depends on changes in the urns of those one is connected to, requiring a more elaborate iterative model that takes account of the network's overall structure (Granovetter, 1988, p. 194). The point is that when mobility results from network connections, it changes network structure that then feeds back into future mobility patterns. Thus, network structure can be partially endogenized in labor market analysis.

One implication is that where rates of interfirm mobility are quite low, as in Japan during the 1970s and 1980s, few workers will ever have worked with others who are now at different firms. Then, if mobility to a new firm relies heavily on certification to employers of one's ability by someone already in that firm, a lack of

mobility between firms will be self-perpetuating, and conversely, when interfirm mobility is high, that greater mobility may also reproduce itself, as in Silicon Valley labor markets (Saxenian, 1994).

Social Structure and Prices

When people trade with others they know, the impact of knowing each other on the price varies with their relationship, the cost of shifting to different partners and the market situation. To understand how deviations from competitive equilibrium price may occur requires analysis of both the economics and the sociology of the situation. The theoretical issue is often not one of economic and sociological arguments conflicting, but rather of the weakness of both in understanding how actors with simultaneous economic and non-economic motives will act. Since there are many dimensions along which to classify cases, and insufficient space for a fully systematic account, I offer a few illustrative examples.

The anthropologist Sahlins (1972) reviews literature on tribal economies showing that it is typical to trade only with designated others in foreign groups, in part for protection in distant settings. He suggests that such continuing relations make prices sticky when supply and demand shift, and revisions that would clear the market require breaking old relations and forming new ones. A shift of trading partners is more or less difficult under different circumstances, and depends on the economic and noneconomic costs of severing a long-time tie and the available social alternatives. Thus, the “economic flexibility of the system depends on the social structure of the trade relation” (p. 313) and cannot be predicted without knowing that social structure.

Studies of peasant markets often suggest that “clientelization,” defined as dealing exclusively with known buyers and sellers, raises prices above their competitive level (for example, Belshaw, 1965, p. 78; Davis, 1973). This result suggests an information asymmetry advantage of sellers over buyers, which may result from buyers having more trouble in gauging quality of goods than sellers do in gauging creditworthiness of customers (Geertz, 1978). The balance of advantage in bilateral information asymmetry should determine its impact on price.

Where it is more complex to assess creditworthiness, sellers may lower their price to achieve the greater certainty that comes with more complex and subtle information resulting from continuing relations. Thus Uzzi’s (1999) study of midmarket banking shows that Chicago firms with personal contacts to bankers pay lower interest rates on loans and that banks cultivate such contacts as a business strategy. Ferrary (2003) presents comparable results from a broad study of French banks. Other seller costs beside credit risk may be reduced by detailed personal knowledge of clients. Thus, Uzzi and Lancaster (2003) show that all else equal, prices are lower for corporate clients with continuing ties to law firms because the trust developed over time, and norms of reciprocity, allow the firm and its client to reach agreement on potentially contentious issues such as what to charge for knowledge developed for previous clients and applied to the present case. To say

that banks and law firms avoid adverse selection (compare Waldman, 2003, pp. 136–137) and the costs of complex contracting through continuing personal contacts is broadly consistent with standard economic arguments, but shows that such arguments may apply only because actors leverage social relations for economic purposes. It is often not straightforward or feasible to do so, and then actors with the insight or capacity to manage such relations will accrue advantages.

Few systematic data exist on buyer-seller attachments, but economist Arthur Okun (1981, p. 148) observed that most markets with repeated purchases are “customer markets” rather than auction markets, since customers “avoid shopping costs by sticking with their supplier.” In such markets, prices “rarely, if ever, equal marginal costs. . .and generally exceed them by a significant margin.” Arguing that customers pay to economize on search costs is consistent with a range of relationships between customer and supplier, from strong ties of personal friendship to more impersonal situations where customers pay premiums to well-known firms for their products, in return for hoped-for guarantees of quality (Klein and Leffler, 1981).

Exactly where buyer-seller relations fall in this range may result in part from how easy it is to assess quality of goods through brand names or other impersonal standards. Thus, the 1996 General Social Survey shows that for goods where assessment is difficult, such as used cars, legal advice and home repairs, one-quarter to one-half of purchases in the United States are made through personal networks. Survey respondents reported greater satisfaction with such purchases, and believed that people receive better prices from personally known sellers (DiMaggio and Louch, 1998). Since no direct data were collected on prices paid, we cannot be sure their judgment is correct. If sellers do in fact offer friends and relatives lower prices than they could get from strangers, this could be one measure of the cost of obligations they feel in these personal relationships. Elsewhere, I have observed that some businesses in developing countries may face significantly higher operating costs as the result of such obligations (Granovetter, 1995a).

The discussion thus far concerns only particular buyers and sellers. But larger-scale collusion may affect price, and success or failure in such collusion may also depend on personal relationships. Cartels, for example, may raise prices above their competitive level, but are liable to defection. To succeed, they must penalize defectors. One possible penalty is loss of social status in the group, but this penalty is effective only if a member cares about such status. Cartels may fail when members socially distant from the dominant group defect. Although some historians have attributed the demise of American cartels to the sanctions of the Sherman Act in 1890 (Chandler, 1977, chapters 4–5), in practice such cartels had great difficulty in the United States even before the Sherman Act had much effect (in roughly 1910). Lamoreaux (1985, p. 188) suggests that the great merger wave from 1895–1904 in part responded to the failure of cartels to restrain prices. I suggest that the failure of many cartels in the later decades of the nineteenth century occurred in part because of defection by renegade speculators like Jay Gould who were outside the social and moral compass of other cartel members. Little is known of the social organization of cartels, but some evidence suggests that countries whose cartels

were more successful, such as Germany, had more socially homogeneous cartel membership (Maschke, 1969).

An interesting bit of evidence comes from Podolny and Scott-Morton (1999), who studied British shipping cartels from 1879 to 1929. They find that when considering how to deal with industry newcomers, participants assessed whether they would fit well into the moral community that sustained going rates and practices. They took social status as a good proxy for this probability, assuming that those with high status matching their own were more likely to comply. Consequently, high-status entrants were substantially less likely to face a price war initiated by existing cartel members. Even in the absence of formal cartels, social friendship among competitors may impact price and performance. Ingram and Roberts (2000) studied hotels in Sydney, Australia, and found that friendships among managers had a clear positive net impact on performance and made it easier to resist price wars. They also found that these effects were stronger, the more cohesive the network of friends among hotel managers.

These considerations do not dispute the usual arguments about cartels, but suggest that these arguments may underdetermine outcomes. Formal or informal cartels use a mixture of market and nonmarket punishments and incentives to enforce member cooperation, because members have both economic and non-economic (for example, friendship and status) goals that they pursue simultaneously. Where important nonmarket forces that affect the success of cartels (or other forms of economic cooperation) operate through social networks we need explicit study of these social foundations to help explain outcomes. These cases illustrate that norms are more easily enforced in dense social networks and also that pre-existing social institutions impose costs and benefits on economic processes that build on them.

That people trade with known others may fragment markets and inhibit formation of a single equilibrium price. Carruthers (1996) studied equity trades in London during 1712 and found that while many trades were impersonal, this was not so for shares of the politically charged East India Company, where Whigs and Tories often preferred trading only with fellow party members to keep shares from opponents. The majority traded preferentially, but active professional traders did not and, thus, could profit from discrepancies by arbitrage. This research is broadly consistent with “noise trader” models as an alternative to the efficient markets hypothesis (Shleifer and Summers, 1990), but it points to systematic and rational but non-economic (here political) reasons for traders to deviate from the standard model.

Personalized trading may fragment markets, however, even when goals are purely economic. Baker (1984) studied stock options trading on the floor of a major securities exchange. Prices did not stabilize as numbers of traders increased (as standard theory predicts); instead, Baker observed that options traded by more participants exhibited substantially greater price volatility. The reason was that, seeking trust and social control, each trader dealt with a limited number of known counterparts. That number is limited by bounds on cognition and physical space and was not larger for widely traded options. Thus, when the number of traders on

the floor was significantly larger than the number of trading relationships individuals could sustain, communication became difficult and at times, the group broke into cliques. Prices in very large trading groups were more volatile than in small ones, because of the communication problems cited, and proliferation of cliques resulted in additional overall volatility. A more purely economic explanation for the association between size of crowd and volatility is that greater price volatility presents more opportunities for trading profits, which attracts more traders. Baker's data and statistical model show that both causal directions operate in his setting. As in many situations, social and economic forces feed into one another.

Social Structure, Productivity and Compliance

Social relations are also closely linked to productivity. Economic models attribute productivity to personal traits, modifiable by learning. But one's position in a social group can also be a central influence on productivity, for several reasons. One is that many tasks cannot be accomplished without serious cooperation from others; another is that many tasks are too complex and subtle to be done "by the book" (which is why the "rulebook slowdown" is a potent labor weapon) and require the exercise of "tacit knowledge" appropriable only through interaction with knowledgeable others. This makes deviance risky. It has been well known since the 1930s that groups of workers arrive at "quotas" for what is an appropriate amount to produce and that "rate-busters" risk being ostracized (Homans, 1950). Groups can severely penalize unwelcome newcomers by failing to convey to them the vital subtleties of work practices normally learned through interaction (Dalton, 1959, pp. 128–129), and workers with low group status will appear less skillful for lack of assistance from others. On the other hand, in some settings, assistance can be gotten in exchange for status deference, so that those willing to kowtow to experienced workers may improve their performance (Blau, 1963). This is the dark side of "mentoring."

Because good relations with others are key, those entering a firm through personal contacts have a head start in appearing and being more productive and avoiding errors that might set back outsiders. Thus, many studies show that quit rates are lower for those who enter through social networks, even net of ability or quality of worker (for example, Fernandez, Castilla and Moore, 2000). Because of measurement difficulties, there are few studies of productivity in relation to entry route, but see Castilla (2002) for evidence that even in the routinized work of call centers, there are clear effects of this kind.

Group norms and cultures also shape skill and productivity. Where groups attach great value to skill, it can become an eagerly sought-after status currency. Sabel (1982, p. 84) suggests that in the tightly knit social world of craftsmen, social mobility is far less valued than "technical prowess. . . . Titles are not important, *savoir faire* is." Burawoy (1979, p. 64) notes that in the Chicago machine-shop where he worked, skill with the machines was the key to group status: "Until I was able to strut around the floor like an experienced operator, as if I had all the time in the

world and could still make out [produce the quota], few but the greenest would condescend to engage me in conversation.” Burawoy, a Marxist, laments that this status system leads workers to cooperate “with management in the production of greater surplus value”; employers might instead view this as a fortunate leveraging of social arrangements they did not invest in creating. But for work groups to arrive at such cultural agreement requires some social network cohesion and consequent normative consensus. Variations in such settings are little studied, but first principles suggest that high turnover or social fragmentation in work groups would cut against such consensus. Thus, employers would have reason to recruit through social networks, insofar as they feel confident the prevailing culture supports their own goals.⁴

In the case that Burawoy (1979) describes, employers do not seem aware of their good fortune, but employers are often more perceptive. Indeed, their relations to workers rarely approximate the daily struggle that Marxism predicts. Granovetter and Tilly (1988, p. 202) comment that “many workers have opportunities to embezzle, steal, shirk, sabotage and otherwise diminish an enterprise’s profitability. Some of them take these opportunities. But most do not. . . . Why? Systems of control make a difference.”

Some systems of control resemble those featured in principal-agent models of the work relationship—that is, direct surveillance and/or some form of payment by results or piecework. However, there are also a range of alternatives, not commonly included in economic analysis, that work through social groups and create compliance in less intrusive ways. A very important example is what we called “loyalty systems”—attempts to elicit cooperation from workers deriving not only from incentives but also from identification with the firm or with some set of individuals that encourages high standards and productivity. Loyalty systems can build on commitment to a profession. Then, “professional ethics and monitoring provide some guarantee that a professional employee will perform reliably” (Granovetter and Tilly, 1988, p. 202). Recruiting from within homogeneous social categories can be an employer strategy to derive benefit from the loyalty and social control that already exists within such categories and networks, once these come to operate within the firm. Loyalty systems benefit from the “intense socialization, prior screening of their members, membership in groups outside the firm that guarantee and monitor the worker’s behavior, and extensive off-the-job social relations. Thus employers have considerable incentives to homogenize new members of the loyalty system and to recruit them within the same existing social networks” (p. 203).

Loyalty and resulting compliance is, broadly speaking, a political issue. Max Weber noted the inordinate expense of conducting civil administration through coercion alone. Instead, he notes the importance of systems where citizens consider orders from civil administrators to be “legitimate”—they comply with an order or a

⁴ Some economic literature suggests that under certain conditions, heterogeneity rather than homogeneity increases productivity in work groups. See, for example, Hamilton, Nickerson and Owan (2003). Since the heterogeneity referred to in this literature is in individual productivity, this need not be correlated with the social homogeneity that I discuss here, and both effects could operate together.

law not only because it is aligned with their incentives, but also because they consider it *appropriate* to do so. (See, for example, the exposition of Weber's ideas in Bendix, 1979, chapter 9.) Loyalty systems instill in employees similar feelings of legitimacy.

In Freeland's (2001) analysis of General Motors from the 1920s to the 1970s, which draws on extensive archival resources, he emphasizes that compliance of division managers with orders from headquarters was consummate rather than perfunctory only when they saw them as legitimate. He writes (p. 31): "[T]he more extensive the firm's division of labor, the more problematic it is to secure consent from subordinates. Increasingly, top executives must justify their decisions in order to secure the consent of subordinates who possess high levels of expertise. . . . The simplest way. . . is to allow subordinates to exercise voice in planning and policy formulation, even if they are not formally responsible for doing so." The vital task of maintaining order, he continues (p. 33), "cannot be understood primarily as an exercise in economizing, for the same arrangements that lead to technical efficiency also disrupt social order in the firm. . . . Governance. . . is an inherently political process in which top executives must be willing to forge a compromise between actors in the firm in order to preserve cooperation and promote consummate performance." Freeland stresses that the issue was not one of disagreement over policies, since division heads resisted even policies acceptable in principle, if they had no part in creating them. Full membership in the social organization of decisions was a prerequisite for perceiving them as legitimate.

For these reasons, the corporate governance question of how the structure of firms will affect productivity and profit cannot be reduced to the argument that division managers should stay out of central management, given their likely opportunism on behalf of their own units, while central management should not meddle in division operating procedures, in which they would have little competency or knowledge, as proposed in Chandler (1962, 1977) and Williamson (1975). Indeed, Freeland (2001) finds that General Motors was most profitable in periods when division heads were fully included in central planning and least when they were excluded. Thus, the firm cannot be viewed simply as a formal organization, but also must be understood as having the essential elements of any social community.

Continuing long-term ties do not always unambiguously improve the productivity and profit of individuals and organizations. Uzzi (1996), for example, studied relations between apparel manufacturers and their subcontractors in the New York City garment district. He distinguished between "arm's length" impersonal ties and "embedded" ties, in which repeated interaction had led to trust and mutual understanding. He found that relations of trust are not always superior: for example, subcontractors with networks of ties to manufacturers that were uniform—that is, predominantly embedded ties or predominantly impersonal ties—had a higher rate of failure than those with a mixture of the two types (pp. 692–693). He argues that embedded ties offer considerable advantages in stable situations, but in periods of change, lock firms into relationships and may inhibit adaptation. Arms' length ties lack the benefits of trusting interaction but permit more flexibility when

change is needed. Thus, some optimal balance exists among types of ties, and firms achieving that balance are more likely to survive over varying market conditions.

Mizruchi and Stearns (2001) tell a related cautionary tale about the virtues and drawbacks of trust. They studied a leading multinational commercial bank at three locations in the United States, focusing on the use of internal networks in closing deals with corporate clients. Bank officers sought out others in the bank for information (about the clients or about the details of a certain type of deal) and for approval. Under conditions of uncertainty about the nature of the deal or the client, these bankers were more likely to consult their strong ties—those in the bank whom they knew well and trusted—for both information and approval. But surprisingly, this strategy appeared counterproductive in leading to deal closure. The reason seems to be that while one's trusted and close colleagues may readily approve deals, which is a necessary condition for deals to close, they are too ingrown a group to provide a wide range of constructive input that will enable a complex deal to be improved in such a way as to meet the needs of the client. Mizruchi and Stearns comment that uncertainty "creates conditions that trigger a desire for the familiar, and bankers respond to this by turning to those with whom they are close. Yet it is this very action that makes it more difficult for the banker to be successful. Not only does this illustrate the simultaneous weakness of strong ties and the strength of weak ties, but it also shows how our social instincts can run counter to our best interests" (p. 667). By contrast, accessing a sparse network by going through weak ties for formal approval is superior in that it generates "a diversity of views and potential criticisms that compel the banker to create a higher quality product" (p. 667), which is then more attractive to the customer.

Social Structure and Innovation

Many studies, comprehensively reviewed in Rogers (2003), show the powerful impact of social structure and networks on the extent and source of innovation and its diffusion. Here, I focus on innovations especially relevant to markets.

One example is innovation in what is considered a marketable commodity. Contrary to Marxist assumptions, the market does not commodify every aspect of human life. But items proscribed at one point in time can later become routine commodities. Zelizer (1978) traces the case of life insurance, which early nineteenth-century Americans saw as sacrilege, or at best gambling, but which by the late 1800s had established itself as a breadwinner's obligation. She notes that the insurance industry, to achieve this transformation, made use of religious language and secured the support of clergy who urged on their flocks the necessity of providing for family after death, making this a sacred duty. This personal connection seemed indispensable in attaching ritual and symbolic significance to this otherwise rather bloodless commodity.

Because participants in such discussions were no longer living, Zelizer (1978) relied on pamphlets, diaries and other documentary evidence to understand the normative changes that transformed insurance from profane gambling to sacred

obligation. MacKenzie and Millo (2003) studied the more recent emergence of financial derivatives as a legitimate product. Through interviews, they reconstructed in detail the social network process by which the perception of options changed from that of dubious gamble to respected financial instrument. They note that while in 1970, financial derivatives were so unimportant that no reliable figures could be found for market size, by 2000, the notional value of such contracts worldwide was in excess of \$100 trillion.

They traced the origins of the Chicago Board of Options Exchange, interviewing the leading participants and options theorists. The CBOE had its origins in the Chicago Board of Trade (CBT), which had traded commodity futures since the mid-nineteenth century. Stock options and futures had also been traded in the nineteenth and early twentieth centuries, but lost legitimacy after the 1929 crash and the Great Depression. When members of CBT approached the Securities and Exchange Commission in the late 1960s about a market for options trading, they met considerable hostility, based on the idea that financial options were mere gambling. But members of the CBT mounted an intensive lobbying campaign, assisted by new economic theory emerging in the 1960s on the valuation of options and other derivatives. MacKenzie and Millo (2003) trace this lobbying activity, arguing that it was difficult, time consuming and not in the self-interest of those who organized and led it. Some will suspect that those who lobbied in this way profited from the innovation, so that simple economic incentives would be sufficient to explain their activity. But Mackenzie and Millo provide evidence that the key individuals in the effort incurred large unremunerated expenses, and substantial opportunity costs from foregone trading profits, with no obvious prospect of ever recovering these (pp. 115–116). In explaining this activity, they emphasize that the Chicago exchanges were highly personalized settings, with clear demarcation between insiders and outsiders, where intensive interaction among insiders led to social control and the potential for collective action that transcended economic incentives. Thus, socially cohesive and prominent insiders, allied with economic theorists and mainstream political figures, achieved the institutionalization of this economic innovation.

But not all innovations arise from the social inner circle. Indeed, the socially marginal may at times be best placed to break away from established practice (Granovetter, 1973, pp. 1366–1368), as they are not involved in dense, cohesive social networks of strong ties that create a high level of consensus on such practice. Thus, studies indicate that the lower an innovation's champion in a corporate hierarchy, the more radical the innovation (Day, 1994).

A striking case is that of "junk bonds." Around 1970, young trader Michael Milken became fascinated by the profit potential of low-rated bonds. At first, his employer, Drexel Firestone, reluctantly tolerated his activity. But when Milken succeeded dramatically, Drexel increased his capital and autonomy. He built a substantial clientele while his firm was the only one willing to make markets in such bonds (Abolafia, 1996). When traditional firms became interested, Milken "antagonized them by refusing to share initial offerings with a syndicate" (p. 158). He

made junk bonds into a cause, asserting that they provided capital otherwise denied by the financial establishment to mid-sized companies outside the corporate elite.

Resistance to Milken resulted from the 1980s use of junk bonds for hostile takeovers that enabled small companies, led by non-elite raiders such as Saul Steinberg and T. Boone Pickens, to launch takeover attempts against large and prominent corporations. Target firms mobilized their considerable political allies. In 1985, the Federal Reserve curbed the use of junk bonds in acquisitions, and by 1987, 37 states had passed legislation restricting takeover activity. With the role of junk bonds in takeovers curbed, other uses could flourish, and the junk bond market has become a fixed-income staple. But Milken himself was prosecuted vigorously and barred from the securities business for life. His marginal location in key social networks made this outcome more likely. The larger point is that junk-bond-driven takeovers threatened elite social networks that mobilized political support in ways that social outsiders could not overcome.

More generally, innovation means breaking away from established routines. Schumpeter defined entrepreneurship as the creation of new opportunities by pulling together previously unconnected resources for a new economic purpose. One reason resources may be unconnected is that they reside in separated networks of individuals or transactions. Thus, the actor who sits astride structural holes in networks (as described in Burt, 1992) is well placed to innovate. The Norwegian anthropologist Fredrik Barth (1967) paid special attention to situations where goods traded against one another only in restricted circuits of exchange. He defined “entrepreneurship” as the ability to derive profit from breaching such previously separated spheres of exchange. The Fur of the Sudan, for example, considered wage labor shameful, and in this group, labor and money traded in separate spheres. Certain products, such as millet and beer, did not trade for money, but were produced only for exchange in communal labor, such as mutual help with house building. In a separate circuit, food, tools and other commodities were exchanged for money. Barth reports the arrival of outsider Arab merchants who, not bound by the norms specifying the separation of spheres, paid local workers with beer, to grow tomatoes, a cash crop. Unaware of the cash value of beer or labor, the workers produced a crop worth far more than the beer with which they were paid, making the traders wealthy (see also Granovetter, 2002, pp. 44–46).

Deployment of resources outside of their usual spheres may often be a source of profit, and new institutional forms can facilitate such deployment. The origins of “venture capital” in Silicon Valley is an example. Before the 1960s, high technology was funded by financiers largely decoupled from the industry’s social or professional networks, who were not fully conversant with the technical detail. But the usual financial tools could not evaluate innovations during a time of rapid technical change. A new model emerged: engineers and marketing specialists from industry, who had accrued enormous profits, used these to become a new breed of financier: the “venture capitalist.” Their technical knowledge and extensive personal networks allowed them to assess new ideas more adeptly than traditional bankers. Given their skills, they were also more inclined to sit on boards of directors, and take active management roles, supporting the substantial equity positions their

firms took in startups (Kaplan, 1999, chapters 6–7). Taking their financial resources from the industrial and family spheres where they were accumulated, and deploying them in the newly created institutional setting of venture capital, made the early innovators fabulously wealthy. Their early success helped them draw a huge new inflow of funds from such limited partners as pension funds and wealthy individuals, who stood well apart from technical circles, just as early nineteenth-century business families founded New England banks to fund expansion of industries by drawing in non-family funds (Lamoreaux, 1994).

Can we explain this outcome by a standard efficiency argument, in which environmental changes made new financial practices more profitable? The problem for such an account is that these practices did not emerge uniformly where profits were available. Saxenian (1994, pp. 64–65 and elsewhere) argues that because of differences in culture and social networks between Silicon Valley and the high-technology industry region in the Boston area, finance in the latter region retained its traditional dominance by individuals without technical backgrounds, who could not move quickly to spot and finance new trends, putting the region at considerable long-term disadvantage. To the extent her argument is correct, Boston and other regions will have difficulty emulating the Silicon Valley model, even in the long run. Further empirical study will provide interesting clarification of this clash between economic logic and social constraint.

Conclusion

Social structure affects many important economic outcomes other than those addressed here, such as choice of alliance partners (for example, Gulati and Gargiulo, 1999), decisions to acquire other firms and strategies used to do so (Haunschild, 1994), the diffusion of corporate governance techniques (Davis and Greve, 1999) and the persistence of large family and ethnically oriented business groups in advanced economies (Granovetter, 2004), among others. In this paper, I have chosen a few examples to illustrate strategies, approaches and principles.

While economic models can be simpler if the interaction of the economy with non-economic aspects of social life remains inside a black box, this strategy abstracts from many social phenomena that strongly affect costs and available techniques for economic action. Excluding such phenomena is risky if prediction is the goal. When the black box is opened, it is often with the goal of making networks, norms, institutions, history and culture fully endogenous to economic models, implicitly assuming that otherwise no systematic argument can be made. But pursuing this daunting agenda makes poor use of economists' comparative advantage. The disciplines that neighbor economics have made considerable progress in unpacking the dynamics of social phenomena, and a more efficient strategy would be to engage in interdisciplinary cooperation of the sort that trade theory commends to nations. My goal here has been to suggest some such linkages, which remain largely unexplored, and pose one of the greatest intellectual challenges to the social sciences.

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