

Networks and Regional Competitiveness: Towards a Transaction Cost Approach of Small-Scale Cooperation

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ABSTRACT:

A preoccupation with competition often dominates the study of governance. A focus on competition often unnecessarily precludes the possibility that regional institutions can suspend competition in certain areas and facilitate cooperation among potential rivals, thereby potentially contributing to their mutual success. In many ways companies cooperating through these types of networks have a greater degree of flexibility than firms which are forced to rely solely on hierarchies or markets for solutions to their problems. In order to fully understand how such networks work, this article first parses out differences in definitions of networks in order to understand how the type of network mentioned above actually differs from other uses of this term. Then it develops a theory of governance that goes beyond hierarchies and markets by demonstrating how this type of network can lead to reductions in transaction costs. This claim is illustrated on hand from examples of alternative forms of organization in Germany and Italy.

Keywords: *networks, transaction costs, governance, alternative forms of production, competition, flexibility, markets, hierarchies*

RESUMEN

Los estudios de Gobierno Corporativo normalmente son dominados por la preocupación con respecto a la competencia. Enfocarse en la competencia imposibilita de manera innecesaria la posibilidad que tienen las instituciones de suspender su competencia en ciertas áreas y facilitar una cooperación entre rivales potenciales, de tal forma que, de manera potencial, se contribuya al éxito mutuo. De muchas maneras las compañías que cooperan en este tipo de redes presentan mayor grado de flexibilidad que las firmas que son forzadas a depender exclusivamente de las jerarquías o de los mercados para la solución de sus problemas. Para poder entender la forma en la cual trabajan la redes de trabajo, este artículo, primero, analizará las diferencias en las

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definiciones de redes, para comprender cómo el tipo de redes mencionadas anteriormente se diferencian de manera real de otras aplicaciones que se le dan a este término. Luego, desarrolla una teoría de gobernabilidad que sobrepasa las jerarquías y los mercados, demostrando cómo este tipo de redes conllevan a la reducción de costos de transacción. Esta afirmación se ilustra a partir de ejemplos de formas de organización alternativas en Alemania e Italia.

Palabras clave: Redes, costos de transacción, gobernabilidad, formas alternativas de producción, competencia, flexibilidad, mercados, jerarquías.

INTRODUCTION

The development of hierarchies as means for organizing production through the internalization of activities instead of the purchasing of products and services on markets is inherently linked to the development of mass markets (Chandler 1977; 1981). Although Adam Smith used the example of a pin factory, a rather simple type of production, to explain the benefits of mass production, the real advantage of this form of production is derived from the simplification of complex tasks for producing complex products. According to Coase (1937) and Williamson (1981a; 1981b) hierarchies are more efficient than the market in performing transactions when they are sufficiently complex and perpetually changing. Clearly an automobile is more complicated to produce than a horse carriage. The emergence of mass standardized production alongside the development of mass markets and hierarchies in the late 19th century is clearly not a coincidence. Hierarchies emerged as a mechanism to deal with complex-

ity in production and distribution. As Chandler (1977; 1981) has shown mass production and mass production arose to meet the organizational demands of mass markets.

When production was simple markets could easily serve to coordinate productive activities. After all the development of cottage industries served as a market-based form of production to undermine the monopolies of the guilds. Arguably, the putting-out system of production emerged as a means for dealing with the growing complexity of organizing production. Quality was a problem even 300 years ago. Douglas North (1981) contends that the putting-out system really represented a “primitive firm” because of the control which merchants gained in enforcing quality standards in each stage of the production process. It can also be considered a primitive firm because it replaced market relations between producers and merchants with an employment relationship in which workers were tied to producing for one merchant.

As capitalism progressed, merchants found it beneficial to consolidate production activities in one location as a means for limiting the opportunistic behavior of workers in the putting-out system; workers in the putting-out system would often produce products for a variety of merchants even though their contract with the merchant who supplied them their equipment and raw materials forbid them for doing so. The advantages of the manufactory system derived from improvements in the ability of merchants to police and monitor their workers. In essence, this system reduced opportunism through improvements in policing and monitoring, thereby leading to a reduction in transaction costs.

Nevertheless, as we will see in this article, hierarchies are not the only mechanisms for limiting such behavior. Networks, usually supported by specific institutions, can also serve to limit such behavior while also providing firms with the means for dealing with increasing complexity. In this context it is necessary for scholars to reconsider the widely accepted proposition that hierarchies are the best mechanism for dealing with opportunism. Historically networks have proven particularly effective in coordinating relatively complex forms of production in north-central Italy as well as central and southwestern Germany. Although these networks do not fully supplant hierarchical forms of coordination, they do en-

able firms to lessen the degree to which they have to rely on hierarchies as mechanisms for reducing complexity and opportunism.

Paradoxically a transaction cost analysis can enable scholars to understand how networks can come to supplant a portion of hierarchical control. Customarily the transaction cost literature has only been used to explain why firms chose hierarchies or markets as a form of coordination. However, this article seeks to demonstrate that networks can prove effective in lowering transaction costs by increasing levels of trust and thereby eliminating the costly need to monitor contracts with outside suppliers. Although Douglas North (1990a) argued that national institutions can lead to improvements in trust and thereby reductions in transaction costs, it is important to note that he was examining institutions that impacted trust on a national level. This article examines focuses on how regional institutions can foster trust amongst a limited group and lead to a reduction in transaction costs for participants in networks which benefit from these institutions. Relations between firms within a network should not be mistaken for market relations as the extent of the relations between firms in a network goes far beyond merely establishing prices and terms of delivery. Such networks can even go as far as dividing up stages in a production process between a multiple of independent firms. Such

activities are done within a closed group rather than through the market or a hierarchy. Under the right circumstances networks can prove to be a viable alternative to hierarchies as they are able to suspend competition much like what occurs within traditional hierarchies.

Markets and hierarchies require only a relatively limited level of support from the institutional setting in which transactions are completed. In stark contrast, networks would seem to require an relatively extensive degree of institutional support, ranging from training to research and development institutions. This article seeks to shed light on the importance of such institutions by examining how they support networks in the regions of Germany and Italy mentioned above. In doing so this article seeks to spark a larger debate about the importance of institutions in shaping the behavior of firms in general.¹ Such an endeavor builds on Coase's (1998) desire to see research undertaken to probe the interrelationships between transaction costs and institutions.

First this article seeks to establish a definition of governance that goes beyond viewing firms as atomistic

actors operating without environmental limitations or assistance. Such a definition is necessary if scholars are to fully appreciate how institutions can actually impact the behavior of firms. Next this article examines core works in the area of transaction costs to probe an understanding of how transaction costs can be reduced in networks. Next this article parses out different definitions of networks in order to specify exactly what types of networks are being addressed here and promote a clarification of what this term is actually used to describe. Finally, this article illustrates how networks, supported by a variety of extra-firm institutions, function in present-day north-central Italy. It also demonstrates how such networks functioned until the beginning of World War II in southwestern and central Germany, while also showing how they influence the behavior of firms today.

WHAT IS GOVERNANCE

In order to understand how networks can function as a mechanism for coordinating activities between firms, it is necessary to have a definition of governance which goes beyond merely focusing on ownership and control. Surely public companies with boards of directors act differently than privately held firms directed by an individual or a small group of private investors. However, such definitions

¹ This author's dissertation examines how labor laws, training systems and relations with unions in Germany and the United States impacted the ability of a German conglomerate to implement the same lean production program in the United States and Germany. See Friel (2003).

of governance fail to take into account how a firm's environment actually affects its behavior. Differences in strategies pursued by firms can not be explained simply by ownership structure. At the same time, such differences can not solely be explained by the nature of markets or technological factors in a particular national context (Herrigel 1994). Institutional arrangements and legal frameworks also shape economic behavior. Such factors limit the maneuverability of firms much like technologies and markets but regrettably too little attention has been paid to them.²

Only in the idealized world of deregulated markets, which is the primary focus of the majority of economists, do such institutions not matter. In such accounts states only provide the minimal conditions for firms and markets to operate (Hollingsworth/ Streeck 1994; DiMaggio/Powell 1983). Without contract law and the force to back it up firms would run into incredibly high transaction costs in enforcing contracts. Consequently states are only needed to act like a Leviathan ready to punish those who do not live up to their contracts. Clearly, the actions of states in regulating corporate behavior go far be-

yond merely creating a relatively efficient basis for contracts. It is hard to imagine any state that does nothing else but punish opportunistic actors. Furthermore, scholars should not simply assume that any involvement of states in their economies beyond the mere enforcement of contracts is undesirable. Indeed, the role of states in shaping corporate activity across sectors and nations is an important issue for research in the area of governance (Hollingsworth/ Streeck 1994).

The activities of *all* states over time help to form the general historical context in which firms operate. Herrigel (1994) uses the term industrial order to highlight the impact of history on the behavior of firms. "An industrial order is the peculiar social, political, and legal framework constructed over the course of the industrialization process that shapes the way that producers serving given product markets collectively define the legitimate boundaries of industrial practice" (97). It is a politically and socially created framework that provides an understanding of the basic factors that shape how corporations make decisions. An industrial order constitutes and validates general kinds of shared beliefs in a "community of producers". These ideas are not written down but nonetheless form the "collective conceptualization" that shape corporate actions. North (1990a; 1990b) calls the collective norms and values un-

² For example, this author's dissertation examines how labor laws in Germany cause firms to be more likely to pursue strategies focused on utilizing their existing workforce rather than on relying on external labor markets. See Friel (2003).

derlying such conceptualizations of informal institutions. He separates their influence from the study of formal institutions such as labor laws. As with Herrigel, North contends that such institutions limit and define the sets of choices individuals face by providing a stable structure for human interaction. In considering institutions in this manner, the following definition offered by Hollingsworth et al. (1994) would seem to be appropriate for the study of governance. They define governance as “the totality of institutional arrangements – including rules and rule-making agents – that regulate transactions inside and across the boundaries of an economic system” (5). In the end an industrial order, or what this author refers to as a system of governance, excludes certain types of behavior while making other types possible.

Informal institutions can not be separated from formal ones. Arguably all informal institutions were created, or at least influenced, by concrete historical events or even concrete laws which may no longer even exist. History matters because it provides the general context for understanding how informal institutions emerge.³ Informal networks and communities, such as those found in certain regions of Italy and parts of Germany

have a profound impact on the behavior of firms even if the historical events that provided the conditions for their emergence happened centuries before. Indeed informal institutions are difficult to study because they are neither directly observable nor easily quantifiable in any meaningful sense.

THE IMPORTANCE OF TRANSACTION COSTS

Chandler (1977) contends that the concentration of activities within a firm proves more efficient as markets grow larger and products become more complex. In a similar vein Williamson (1981a; 1981b; 1985) contends that the greater the uncertainty of outcome and asset specificity required, the more likely firms will internalize activities rather than rely on markets. On the other hand, North (1990a; 1990b) pointed out that political institutions reduce uncertainty by creating a stable exchange structure.⁴ Thus, *ceteris paribus*, such institutions will increase the likelihood that firms will rely on markets rather than hierarchies as the latter are created to deal with uncertainty according to Williamson (1981a; 1981b; 1985). Although North does not address the issues of hierarchies or markets directly, the

³ I am thankful to Carlos Acuña at the Universidad de San Andres in Buenos Aires, Argentina for helping me to clarify this particular point.

⁴ North specifically contends that we should not imply an efficient outcome from the existence of such institutions.

focus of Chander and Williamson solely on these two alternatives leaves open the need for studies which examine the effect of institutions on networks as means for providing coordination between independent firms. We need to consider the possibility the possibility that certain formal and informal institutions at the regional level may actually provide firms the means for reducing transaction costs through networks rather than simply through markets or hierarchies. Under such conditions networks may actually prove to have lower transaction costs than markets or hierarchies.

The policing and monitoring of contracts on the open market needs to occur to ensure that mutual expectations are fulfilled. At the same time, employment contracts have to be policed and monitored as well. Managers in hierarchies perform both of these tasks. Policing and monitoring also occurs in networks. However, this form of control is beyond the reach of an individual firm. Instead, it occurs through interactions between individual firms that belong to a particular network. Although the transaction costs of such activities have been widely discussed for markets and hierarchies, up to this point no one has tackled the issue of transaction costs in networks. North (1999a; 1990b) has argued that institutions that facilitate trust can lead to reductions in transaction costs. Thus, if it can be demonstrated that

networks create institutions that improve levels of trust, it is logical to infer that they can also reduce transaction costs.

DIFFERENTIATING BETWEEN DIFFERENT TYPES OF NETWORKS

Although Porter (1990) drew attention to the importance of “clustering”, namely the existence of companies in the same industry and region, he did not adequately probe the extent of connections between firms. One of the goals of this article is to probe differences in regional networks in an attempt to provide an overview of the extent of cooperation which can exist between firms in this type of environment. Although clustering clearly presents firms opportunities to cooperate with one another on a variety of levels, the mere fact that firms are located in the same region tells us nothing about whether or how they actually cooperate. Naturally, firms can be located in the same region without cooperating at all. Saxenian (1996) has shown that the industrial district around route 128 in Boston is merely a grouping of firms. It does not exhibit the type of cooperation and joint coordination in Germany or Italy as described below. Quite often the term network is used to describe any type of close relationship between firms. However, using this term in that manner reduces its utility as it can refer to

almost any situation in which relations between companies go beyond standard textbook descriptions of arms-length contracting. Hence, now this article will seek to parse out differences between different ways in which this term is used.

First we need to distinguish a cluster from a network. A cluster could be defined merely as a group of firms located in the same region whereas a network would involve some type of cooperation between firms. Hence, a cluster may be a network but by definition it does not have to be one. A network also does not have to be a cluster as some definitions of networks examine long-term relations between firms and their suppliers. Of course, such suppliers are not necessarily located in the same region as the firm for which they are working. The best example of this type of network is the type of relations that exist between firms and suppliers in Japan. Although suppliers are often integrated into research and development teams of large companies, they are still dependent, and subordinate to, the larger company (Kester 1996). Clearly such relations go far beyond the standard market relations between a firm and its supplier. Locke (1995) contends that firms embedded in such networks will be better able to share information, create alliances and build trust than firms operating in more hierarchical or fragmented networks. This article argues that this

is just one type of network. I will use the term *quasi-hierarchical network* to describe this type of relationship as we have to remember that the supplier is heavily dependent for its livelihood on the larger firm with which it is cooperating.

I will term the second type of network often confronted in the literature as *sociological networks*. Some scholars working on networks merely use this term to describe close social relations between business partners. It is termed sociological networks largely because it is used most widely in the field of sociology. Scholars such as Granovetter (1985) demonstrate how social relations, instead of the market, regulate behavior and economic activity. In essence, these authors emphasize the role of what North (1990a, 1990b) has termed informal institutions. However, unlike North these scholars look at the role which such institutions play within groups of people instead of within a society as a whole.

The third type of network often examined under the general rubric of this term I will define as *institutionalized networks*. This author suggests the following working definition of such networks: groups of firms, associations, and occasionally government agencies that cooperate to realize functions normally performed by a single firm. It focuses on coordination between firms instead of in hierarchies or markets. As Best

(1990) points out networks can even replace the role played by hierarchies in coordinating activities in the production of products. Such networks are indeed exclusive as membership is required. Furthermore, firms tend to share functions extensively with each other in such networks. Some of them actually share research institutes and/or sales and marketing activities. Formal institutions outside of the control of any single firm keep the network, and each individual firm, functioning. Quite often such institutions are either supported or even funded by regional governments.

Hollingsworth and Streeck (1994) claim that governments in Germany and Japan facilitate, and even sometimes compel, sectoral groups to organize and govern themselves in distinct ways. In the end these states provide sectors with *additional facilities* to govern transactions. They point out that the existence of associations can lead to the preservation of small companies which would otherwise fail. The absence of employer associations in the tool making sector in the United States may be one of the reasons why there are few small producers in this sector. These authors conclude “empirical research is therefore more likely to find networks to be present and effective where there is also a facilitating state or association” (276). These authors even suggest that firms located in “institutionally rich” settings may override or supplement the logic

of hierarchies and markets and enable firms to prevail in international competition with firms operating in a more standard neoclassical governance system dominated by hierarchies and markets.

Nevertheless, institutionally rich settings do not have to be either created or fostered by national governments. Herrigel (1996) and Locke (1995) suggest in separate works that such environments can be created by regional governments. Herrigel (1996) emphasizes the important role of local governments in helping to establish and then subsidize training institutes for local firms. He also highlights their important role in sanctioning the creation of cooperative banks. Local governments in the middle of the 19th century often fostered the development of such banks as an explicit means for preventing the development of the type of poor proletariat common in many English cities. Locke (1995) contends that the lack of strong, centralized institutions in Italy did not simply lead to the type of laissez-faire capitalism common in Anglo-Saxon countries. Instead, a dense network of regulation and order emerged in Italy on the regional level. In practice, national Italian politics actually came to accommodate, if not encourage, regional differentiation. The dominance of one form of governance over another is usually related not simply to historical circumstances but rather to concrete political actions

undertaken by governments at national and state levels (Locke 1995 Piore/Sable 1984; Sabel/Zeitlin 1985 and 1997; Hollingsworth et. al. 1994).

The focus on politics instead of history leaves open the possibility that some countries may deliberately chose to create the conditions for networks to emerge. If differences in systems of governance are understood in terms of history, there is a tendency just to provide thick descriptions of such differences and attribute these differences to some type of “path-dependency”. In this context it is important to remember that history teaches us that paths can and do change. Yet, such changes occur through concrete political action, not merely through passive adjustments to either existing cultural traits or some predetermined path for capitalist development.⁵

THE DIVERSITY OF INSTITUTIONS UNDERLYING NETWORKS

This section of the article provides a brief overview of the differing de-

grees of cooperation between firms in institutionalized networks outlined above before moving on to a discussion of the cases of Germany and Italy. It pays particular attention to the institutions which underlie such networks. The goal of this section is to demonstrate how under the right conditions institutionalized networks can replace hierarchies in helping firms coordinate the production and sales of their goods.

Employer associations and municipal governments in industrial districts with this type of network serve to balance competition and cooperation, thereby enabling firms to compete with each other based on the innovation of new products rather than simple reductions in labor costs. In effect they police the type of competition in which these firms engage (Piore/Sabel 1984; Sabel/Zeitlin 1985). Best (1990) has shown that the decline of small furniture manufactures in England can largely be traced to the lack of coordination between these firms and the resulting price wars which emerged between them. Paradoxically, the lack of a coordinated policy between these firms lead to the ability of similar German and Italian manufactures, operating in what I have termed institutionalized networks, to take over substantial portions of the English market for furniture.

Firms operating in such networks often have the help of municipal

⁵ Piore and Sabel (1984) point out that both Marxists and economists following the ideas of neoclassical economics first described by Adam Smith agree that mass standardized production pursued by independent firms will naturally come to dominate all other forms of production.

governments in establishing training institutes to provide them with workers who have the types of skills they need. These governments also sometimes work to help the firms jointly establish research institutes to pursue innovations to benefit all firms involved in a particular network. Although some municipal governments support efforts by such networks to establish cooperative banks, other networks solve their credit problems simply by creating institutions that serve as intermediaries between banks and their members (Piore/Sabel 1984; Best 1990). “An individual cannot supply the requisite trust to a banker to obtain working capital, but a financial consortium can” (Best 1990: 238). It is in the interests of such consortiums to provide reliable information so that they can be sure to obtain credit for other members in the future. In the end, such institutions serve to provide these firms with economies of scale for certain services which they would otherwise not be able to afford to do themselves and for which the market will not always work effectively (Best 1990).

Levels of cooperation between firms in such networks can be quite extensive. Sometimes this cooperation extends to coordinating stages of the same production process between firms. In some of these networks a lead firm spreads production across a variety of small shops within the network having each perform the part of production for which they are most

qualified. In such networks different firms usually specialize in different stages of a production process. This specialization enables firms to use their specialized machines more often than would otherwise be the case, thereby enabling them to realize economies of scale, albeit by relying on other firms. Production across firms within a network is not always guided by the same firm. The lead role often shifts between different firms with changes in the marketplace. Hence, firms are not permanent subcontractors in such networks, nor are they permanently lead firms (Piore/Sabel 1984). Governance does not occur within a hierarchy or a market in this case as the network of independent firms acts to coordinate activities within a group of independent firms. They do not open a bidding process nor internalize activities within their own hierarchy (Best 1990). Firms in institutionalized networks are also able to benefit from the knowledge and experience of other firms much in the way that large firms in Japan benefit from close contacts to their suppliers in quasi-hierarchical networks. Such contacts enable firms to help each other in both product and process innovation. In this sense firms are what Best (1990) labels “collectively entrepreneurial”. Learning and adapting to changes in the marketplace are both collective endeavors. These relations are sustained both by concrete institutions and ideas of reciprocity.

Networks in Italy

According to Locke (1995), decisions of corporations in Italy are embedded in local and regional socio-political networks which create different mixes of constraints and resources. These networks can exist in Italy largely because of the inability of the national government to effectively regulate firm behavior on a national basis. In this sense the Italian economy should be viewed “not as a coherent national system but rather an incoherent composite of diverse subnational patterns that coexist (often uneasily) within the same national territory” (x). For Regini (1997) the success of companies in Italy depends on their ability to circumvent national regulations and take advantage of local networks. Yet, their success can depend on the types of institutions sponsored or sanctioned by municipal governments.

Some local governments do more than others in seeking to support the activities of businesses in their region. The municipal governments in north-central Italy take an active role in supporting small businesses by helping them to establish institutionalized networks. The origin of this type of network sometimes rests in concrete political decisions reached by governments in a time of crisis. In the 1950s the economy of Modena, an important city in north-central Italy, was facing severe problems after FIAT’s agricultural equipment divi-

sion, the largest employer at the time, was forced to terminate a large number of employers, thereby contributing to the existing unemployment problem in this city. The municipal government responded by creating industrial parks and establishing the basic institutions for supporting networked-based firms in them. It bought large tracts of land and then leased or sold them to small individual producers. Within three to four years 74 firms had come to settle in the first park they established. The success of this industrial park led the government to establish more (Best 1990). Local governments did more than just facilitate the creation of industrial parks. They also opened vocational schools in regions in which artisan organizations or firms themselves did not establish them on their own. In some regions municipal governments also operated research centers quite similar to ones found in Japan.

Other institutions in Italy are particularly supportive of small businesses. The National Confederation of Artisans, *Confederazione Nazionale dell’Artigianato* (CNA) created in 1946 is a rare blend of governmental agency and trade association. To qualify to be member of this association a firm has to employ fewer than 19 people and qualify to be classified as an artisan firm, defined by statute as having an owner actively engaged in the production process. Membership in the CNA costs roughly \$6,000 per year. Firms are interested in join-

ing this association because of the wide variety of benefits it offers. The assistance this organization offers such firms can be broken down into four different types of services, namely financial assistance, the formation of common business centers, help with sales and marketing, including helping firms to sell their products abroad as well as assistance in establishing purchasing cooperatives (Best 1990). Each is discussed in turn below.

The CNA provides banks with detailed financial reports on any company seeking a loan. This association first evaluates the prospects for a loan before passing the request on to a bank. In essence, it acts as a clearinghouse vouching for the viability of the company and its prospects. Banks are usually reluctant to provide loans to small businesses simply because the costs of evaluating the credit worthiness of such borrowers is simply too high (Best 1990). In the end, the CNA covers this cost, thereby reducing the transaction costs of the lender. Thus, this institution acts to ensure that smaller companies will be able to get loans even when the transaction costs on the open market customarily associated with such loans are prohibitively high.

The CNA also assists member firms in creating business centers to serve its members in industrial parks. Such centers provide members of this association assistance in marketing,

technological concerns, accounting services and teaching facilities. Although these services are not contained within the actual hierarchy of any single member firm, and therefore not within the direct control of any particular firm, such services are not simply contracted through market mechanisms. A firm has to be a member of the CNA in order to have access to these business centers (Best 1990).

The CNA also offers firms direct help in selling their products abroad. Such assistance ranges from sales missions overseas to providing contacts to governmental bodies that promote trade. The export office of the CNA also offers translation facilities to help companies promote their products abroad. Finally the CNA provides assistance for firms in establishing purchasing cooperatives enabling firms to substantively reduce the costs they pay for raw materials. In the end the links between firms within the CNA are quite extensive. However, each firm remains autonomous in how they reach decisions and chose to finance their operations (Best 1990). Now this article turns to the development of networks in Germany and attempts to demonstrate how they have evolved and how they offer distinct means for reducing transaction costs and increasing cooperation between firms in institutionalized networks.

Networks in Germany

Garry Herrigel (1996) suggests that regional institutions in southwestern and central Germany enabled a more decentralized form of production to develop alongside a more traditional standardized form of mass production. He contends that the decentralized form of production was dynamic, competitive and capable of continuous improvement from the 17th through the mid 20th century. Despite this contention, this article argues institutionalized networks persisted in Germany albeit in a form slightly different from its predecessor. This section of the article actually uses Herrigel's description of the organization of current machine tool producers in Germany as a means for arguing that such networks remain important for corporations in this country. First this author summarizes Herrigel's description of institutions and the networks they supported in decentralized production before moving onto his discussion of the case of machine tool producers.

Decentralized production in Germany developed and grew within an industrial order that was not firm-centered. Organizational development and growth occurred "within inter- and extra-firm regional systems of production that constitute and shape the behavior of various producer units, governance mecha-

nisms, and sectors within them" (Herrigel 1996: 33). This form of production first emerged with the development of the putting-out system in the 17th century. It emerged in areas in which peasants owned plots of land and remained active in agricultural production. In contrast mass production emerged in areas in which workers did not own parcels of land and therefore were not active in agriculture.

Regional governments in southwestern and central Germany worked to promote a decentralized form of production because they wanted to prevent the emergence of industrial class that would fight for political power. The desire of municipal governments to protect small producers grew with the emergence of industrialization in England. At this time, these governments supported small producers as a means for avoiding the social problems associated with the development of a proletariat tied to mass production. In order to protect local production, governments would often resort to tariffs, monopolies and direct subsidies. Some government passed laws that simply prevented merchants from forming larger companies (Herrigel 1996).

By the 1800s the labor force in this region still possessed land and many laborers continued to produce in a decentralized form of production. Local producers responded to the challenge from mass standardized

producers in England by specializing in the production of goods that the British did not produce or by moving into markets in which the British were not competing. This strategy enabled producers to simply bypass the need to centralize and create larger companies. Some producers in the decentralized form of production concentrated on customizing goods rather than producing homogeneous ones. Those companies that competed directly with the British were adept at quickly changing their production processes to shift to the production of different varieties of goods. While some small producers basically became suppliers to emerging larger firms, others formed loose associations which facilitated cooperation between these small shops. Like in Italy, the relationships between these different firms was rather fluid. Sometimes a firm would act as a lead contractor on a particular project and at other times the firm would simply be a subcontractor working for other firms in their region. In essence firms came to rely on each other for intermediate goods rather than relying on the market and “outside” merchants.

Each firm within the network was well aware of the specialties of the other firms and would tap into them when the particular product it was producing required it. In the end these producers developed a mutual understanding of common ends maintained and monitored by common ties of

loyalty and honor which together generate a feeling of mutual dependence and respect (Herrigel 1996). Although Herrigel does not comment on the ramification of these characteristics for transaction costs, it is clear from the transaction cost literature that such costs are lower when there is a high degree of trust. Consequently, these firms did not have to increase the scope of their activities and integrate horizontally or vertically simply because they had another mechanism for reducing transaction costs as their operations grew more complex.

These firms actually jointly undertook many of the activities which larger companies customarily do by themselves, thereby enabling these firms to remain small producers simply by pooling their resources. First of all these firms created joint research institutes which enabled them to share the costs of developing new technologies. Besides conducting research these institutes also experimented with materials, trained technicians and help these firms to actually develop new products. These firms also created institutions to train their workers in the skills required by a particular set of firms. These training institutes were sometimes subsidized by local governments.

Earlier in the 19th century some local governments sanctioned the creation of cooperative banks out of a fear of proletarianization. Such banks were created simply because small firms

could not easily obtain credit due their limited resources. Small companies in these institutionalized networks had recognized the benefit of creating banks from which all companies within the network could borrow. In this context it is important to note that these banks formed a closed money system to which firms and individuals outside of a particular production network were denied access. In this sense, the experience of these German firms differed from firms in the north-central Italy which as mentioned above almost a century later found a different mechanism for securing loans through existing banks.

During the interwar period in the 20th century some small firms banded together to jointly market their goods sometimes forming independent sales companies. Some firms joined together to form raw material cooperatives as a means for reducing their costs and remaining competitive. A few firms actually formed associations which pooled the profits of what was considered a group of financially independent companies. Nevertheless, many networks of small firms were practically eliminated in Germany during the interwar period when the Weimar government took over many forms of taxation which had formerly been levied by local governments, thereby denying local governments the need funds which some had used to support local networks. The Weimar government undertook this measure as a method

to reparations imposed upon the allied powers after the World War I (Herrigel 1996). Hence, this decentralized form of production was not undermined by the natural progression of history but rather by a concrete historical event and the politics that surrounded it.

Although this decentralized production practically disappeared in Germany after the Weimar period, many German firms nevertheless would continue to rely on institutionalized networks as a means for organizing work and addressing problems, albeit without the extensive decentralization which existed in the former type of production. Herrigel (1994) contends that production in the machine tool producing industry in Germany after World War II “is governed by a complex network of public and private institutions (including firms) in which mechanisms of price, authority and trust interact in complex, yet highly flexible ways (97).

Herrigel (1994) demonstrates how these institutions served to shape the actions of producers in the machine tool industry in Germany by comparing it to how companies in the same industry in the United State reacted to changing circumstances. In general production in this industry in Germany tended to be more flexible than their competitors in the United States because the political, legal, social and economic legacy of Ger-

many was not as favorable to the creation of large-scale production. The legacy of craft-style production in this industry in Germany caused German firms to be more willing to rely on each other and other institutions in society as mechanisms for addressing problems. The reliance of firms on each other enabled firms to specialize and customize without fully centralizing. Firms simply avoided internalizing more activities or employing more workers when markets grew by relying on each other's capacity. They avoided such strategies because they wanted to avoid the need of terminating workers once markets turned sour (Herrigel 1994).

The best organizational means to adapt to changes in the market in Germany was for firms simply to buy parts from other suppliers and rely on subcontracting as a means for increasing productive capacity. Much like in north-central Italy firms would sometimes hire subcontractors while other times they would take jobs as a subcontractor. Thus, the firms did not view themselves as independent entities as was the case with firms in the United States. They saw themselves more as a community of producers. This orientation enabled these firms to socialize many of their costs by constructing a broad infrastructure of institutions to provide services to all producers within this network. As Herrigel (1994) shows, the institutions these producers created to support each other were extensive.

Four institutions were of particular importance: vocational education, where artisan producers could oversee and organize education, the development of national research institutes, technical universities dedicated to disseminating information amongst all producers., a cooperative banking system, to improve access to capital and a trade association (116 –117).

Firms in such networks also formed specialized finishing associations in which firms agreed to specialize in particular areas, ceding other areas to other firms in the group. These firms did not create a hierarchy but instead chose to negotiate with each other about the definition and demarcation of markets. These associations forbid companies from diversifying during economic downturns, thereby forcing companies to remain innovative or leave the association. The association also effectively prevented any type of merger between companies, thereby preventing any particular firm from gaining a disproportionate amount of market power (Herrigel 1994).

This network established between these firms could only be maintained with a high degree of loyalty and trust. This governance system required the preservation of the division of labor between these firms. By the 1970s these firms were able to face international competition by spreading increasing costs across their networks, thereby preventing each individual firm from facing the

type of staggering costs faced by their U.S. competitors. Training costs in particular were absorbed, or communalized through the dual system of training in Germany. Workers coming out of such training already had the types of skills necessary for the new challenges facing companies in this industry at this time. Their U.S. counterparts did not have such an advantage largely because of the diffuse nature of the training system there. At the same time, non-competing firms created common research and development facilities, thereby facilitating the exchange of know-how (Herrigel 1994).

By comparison production in this industry in the United States was largely organized by hierarchies and markets by the 1920s. Nearly all aspects of firm behavior were centralized in hierarchies, including production, vocational training, and product development. Consequently, extra-firm cooperation between different companies in this industry which existed before this consolidation within hierarchies disappeared. Firms in the United States were even reluctant to buy parts from small producers out of a fear that they would provide these smaller companies access to proprietary information which these firms could then use against them. In essence firms tended to draw strict boundaries between themselves and the rest of society. Trust between firms was difficult because of these boundaries (Herrigel 1994).

Since firms in the United States could not cooperate with each other either to produce products or train workers, they faced difficulties in their market in the 80s when customers were demanding customized machines. These firms could not find refuge in the markets for standardized products simply because this market was saturated with a number of different foreign producers. Product life cycles were also declining while the cost of developing new products was increasing. Consequently, many producers in the United States responded to pressures on price by attempting to reduce costs through outsourcing. They could not afford the new training necessary and they could not cooperate and pool their resources. These firms faced difficulties largely because they had organized their activities within hierarchies and markets

CONCLUSION

Clearly we can not compare different mechanisms for organizing economic activity if we can not get beyond simple characterizations such as markets and hierarchies and the general notions of governance derive from these concepts. At the same time, we can not appreciate the great variety of alternatives to markets and hierarchies unless we attempt to parse out differences between alternative definitions of the term network. This article has attempted to

do both while also suggesting how networks in certain circumstances could lead to lower transaction costs which could be found in markets or hierarchies.

Institutionalized networks would seem to exist in an institutional environment that is supported by inter-firm associations and at least tacit government support, if not active participation. Clearly historical legacies can interfere in the ability of countries or regions to create such institutions (Piore/Sabel 84). Nevertheless, this should not blind scholars to the fact that historical precedents are constantly being reshaped and sometimes even destroyed by reactions of politicians to concrete situations requiring action. Clearly areas with historical precedents facilitating the creation of state involvement in business activities or an active associational life may find it easier to create or sustain institutionalized networks. However, it should not lead scholars to believe that such institutions can not be created in regions without such historical precedents.

As we have seen, market coordination can undermine the potential for small businesses to succeed. The success of small firms in north-central Italy would seem to be based on inter-firm cooperation facilitated through a variety of regional and national institutions. These institutions promote cooperation between firms so that they can avoid becoming

larger. In general, firms would seem to increase in size when they can not find other means for facilitating cooperation with their potential competitors. The comparison between the machine tool producers in the United States and Germany would seem to make this point clear.

We still do not know whether transaction costs in particular industries could actually be lower in institutionalized networks than in hierarchies or markets. One hint to the possibility this could be the case at least for some industries is North's (1990a) insight that trust reduces transaction costs. As we have seen in this article institutionalized networks are built at least partially on trust. However, trust alone is not enough. This article has attempted to demonstrate that concrete formal institutions are critical for the type of cooperation which actually occurs in institutionalized networks. In the end, the possibility to reduce transaction costs through such networks seems to depend rather substantively on the nature of the institutional setting in which such networks exist. This article is just a preliminary attempt to survey the terrain, thereby providing the basis for future research.

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