The Political Economy of Trust: Institutions and the Sources of Inter-firm Cooperation

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Cooperation between small firms in "industrial districts," where the production process may be radically disintegrated, poses an important challenge to current political science theories of trust and cooperation. Neither the conventional Williamsonian transaction cost approach, nor political culture arguments about the importance of diffuse interpersonal trust, seem capable of explaining them. In this paper, I suggest that the problems posed by these districts – the existence of apparently "irrational" forms of trust in the political economy, and of "high trust" forms of cooperation in societies with low levels of interpersonal trust – may be explained if one adopts a more sophisticated institutional approach. By combining the recent arguments of Russell Hardin and others about trust as "encapsulated interests" with recent rational choice work on institutions and cooperation, I show how institutions may affect trust between economic actors, and thus cooperation. I apply these arguments to two case studies of "industrial districts," mechanical engineering in Bologna in Italy, and Stuttgart in Germany, and show that empirical evidence supports the hypothesis that trust may depend on institutions, and vary with institutional context.

Trust and cooperation have reassumed a central position in debates about the organization of politics and markets.[1] In part, this builds on previous traditions within political science. Scholars in the political culture tradition have emphasized how diffuse interpersonal trust helps explain institutional success, democratic stability and economic growth (Almond and Verba, 1963; Pye, 1965; Inglehart, 1990, 1997, 1999). Yet rational choice scholars (Gambetta, 1985; Levi, 1998; Hardin, 2002) too have advanced arguments about trust, seeing it as rooted in expectations about individual interests. Important puzzles remain; in particular, the relationship between institutions and trust remains, for the most part, unexplored (Knight 1998).

One important source of evidence about trust and cooperation is "industrial districts," geographically concentrated clusters of small firm production. Surprisingly, they have received little attention in political science and political economy. With the exception of a few political scientists interested in "flexible specialization," (Herrigel, 1996a; Piore and Sabel, 1984) and scholars interested in Italy (Putnam, 1993; Locke, 1995) they have been left to economic sociologists and geographers. This is in spite of the fact that they offer relevant insights about the sources of trust and cooperation. Industrial districts involve an extraordinary level of disintegration of the production process, so that tasks which are usually undertaken within firm hierarchy are carried out through cooperation between small independent producers. Despite the economic efficiencies of this form of production, it is exceedingly rare in advanced industrial democracies (Miller, 1992).

It is difficult for dominant political science theories of trust and/or cooperation to explain industrial districts. While vertical integration is the "canonical problem" of the new institutional economics (Williamson, 2000), the extraordinary level of disintegration found in classical industrial districts is a reproach to transaction cost economists, who would argue

that highly sensitive transactions should take place within the firm rather than between firms, because of the risk of opportunism (Williamson, 1985).

However, "political culture," the other dominant approach to trust and cooperation within political science hardly fares better. Some scholars have suggested that industrial districts support the argument that culture has an important effect in determining political success and economic outcomes. Robert Putnam (1993), in his arguments about trust and social capital, argues that "civic" factors are key to economic success. He uses the industrial districts of north-eastern and central Italy as the main example at the "micro" level of the "macro" links between civics and economics that he claims to have identified. He concludes:

> What is crucial about these small-firm industrial districts, conclude most observers, is mutual trust, social cooperation, and a well-developed sense of civic duty ... It is no surprise to learn that these ... industrial districts are concentrated in those very regions of north-central Italy that we have highlighted as centers of civic traditions. (Putnam, 1993, p.161)

While Putnam's general findings about the relationship between economic and cultural factors have been claimed as evidence in favor of political culture (Inglehart, 1990, 1997), industrial districts in fact pose an extremely perplexing puzzle to this perspective. The *loci classici* of the phenomenon are located in Italy: they appear to be rare in other advanced industrial democracies. Yet scholars of political culture, ever since Almond and Verba, have depicted Italy as a prime example of low interpersonal trust (Almond and Verba, 1963; LaPalombara, 1965; Inglehart, 1990). Survey data suggests that Italy has had lower levels of interpersonal trust among its citizens than any other European country (Inglehart, 1990). Nor do regional differences within Italy affect its relative ranking; the "civic" North still ranks below all other EU countries, according to Eurobarometer survey research.[2] On the one hand, Italy, including Northern Italy, appears to have lower levels of generalized interpersonal trust than other European countries. On the other, it has enjoyed considerable economic benefits

from a form of production which involves extensive trust and cooperation among firms, and which "high trust" countries seem unable to replicate (Locke, 1995, Sforzi, 1996). These findings seem hard to reconcile with each other.

In this paper, I wish to suggest that these two puzzles posed by industrial districts - the existence of apparently economically "irrational" forms of trust in the political economy,[3] and the failure of political culture theory to explain why high trust forms of production can be found in a low-trust country - can be explained by institutions.[4] The rational choice literature on institutions and cooperation between actors,[5] parallels, but has not been comprehensively applied to, the study of trust. Yet, as Knight puts it,

> the concern with such issues as social capital, trust and civilty basically involves an analysis of the types of informal institutions that exist in a society ... to understand the emergence and maintenance of social capital, trust and community in a society, we must understand the evolution of these informal rules. (Knight, 1998, 754)

This article develops Knight's suggestion that trust can be analyzed as an *effect* of institutions. Furthermore, it provides a *comparative* analysis of the effects of institutions on trust. If institutions have important independent effects on trust, and thus on cooperation, variation in institutions will be associated with variations in trust between actors.

The article begins by seeking to combine the previously mentioned literature on institutions with the "encapsulated interest" account of trust developed by Russell Hardin and Margaret Levi (Hardin, 2002; Levi, 1998). It then examines two case studies of cooperation between firms in industrial districts, one in Stuttgart, the capital of the German *Land* of Baden-Württemberg, and the other in Bologna, capital of the Italian region of Emilia-Romagna.

The article shows that the evidence supports the hypothesis that variation in trust between the two cases is in large part the result of variation in institutions, and suggests that a

rational choice institutionalist approach may provide a good explanation of observed patterns of cooperation in the two case studies.

Trust, Cooperation and Institutions

Trust is frequently invoked as an explanation by social scientists, without any attempt properly to define it. In the last number of years, however, Russell Hardin, together with others, has developed a so-called "encapsulated interest" account of trust, which seeks to define more precisely the relationship between trust, trustworthiness and co-operation.[6] Trust, as Hardin defines it, is a three-part phenomenon; *x* trusts *y* with regard to matter *z*. Trust can vary in each of these dimensions: the person trusting, the person being trusted, and the matter at issue in the trust relationship. I trust you, for example, with regard to the ten dollars which I lent you at lunch-time yesterday; I may not trust you with my life savings. I may not trust another friend enough to lend him ten dollars for lunch; you, in contrast might. In Hardin's account, trust involves beliefs concerning interest, as broadly defined. I trust you about a certain matter to the extent that I believe that your interest encapsulates mine with regard to that matter. Finally, where the interests of two parties are consonant for reasons that have nothing to do with their particular relationship, it is difficult to see how trust meaningfully applies.

While this account is compatible with the standard rational actor model, it is not limited to it; trustworthiness may turn on emotional or normative commitments. There is a clear distinction between trustworthiness and trust; I trust you because I believe you to be trustworthy, although I may be wrong. For Hardin, trust is a belief or expectation: it can be distinguished from cooperation, which is a form of action, perhaps taken on the basis of trust.

Hardin's account is difficult to reconcile with political culture theories of trust, which have tended to focus on diffuse, interpersonal trust. In the words of Lucian Pye,

> Political cultures are built either upon the fundamental faith that it is possible to trust and work with fellowmen or upon the expectation that most people are to be distrusted and that strangers in particular are likely to be dangerous (Pye, 1965, 22)

Hardin, in contrast, focuses relentlessly on the particular - whether I can trust you, or you can trust me, with regard to a particular matter or set of matters. The encapsulated interest account sees trust as an expectation or belief, rather than a diffuse cultural orientation that results from socialization (Inglehart 1990).

The encapsulated interest account is reconcilable with recent rational choice work on institutions. Following Douglass North (1990) and Jack Knight (1992), I treat institutions as sets of rules, distinguishing them from organizations, which are actors. Institutions may act as mechanisms of equilibrium selection. Folk-theorem results "state, in effect, that nearly any reasonable outcome can be sustained by some equilibrium of individual strategies," (Ordeshook, 1990, 29) implying an enormous variety of possible outcomes in a repeated social situation. Institutions may lead actors to converge on a particular equilibrium by providing actors with information as to the likely strategies of others, which is not to imply that their origin or evolution can be explained in terms of their functional consequences.[7]

What precise effects are institutions likely to have on trust relations? In this article, I suggest that both formal and informal institutions may support trust, but that they are likely to be associated with quite different outcomes in terms of trust relations among individuals. Formal institutions involve written rules that are typically enforced by a third party such as the state; informal institutions involve unwritten rules that are typically enforced through bilateral relationships within a given community of actors. Formal institutions, such as laws or legally enforceable contracts, are usually relatively specific; they thus may induce clear

ex-ante expectations about actors' likely strategies under circumstances that are foreseen and addressed by the institution. By the same token, they are likely to provide weak or non-existent guidance when unanticipated circumstances arise. Informal institutions, in contrast, are diffuse unwritten understandings; while they may provide less precise *ex-ante* expectations about actors' strategies, they are by the same token more easily adapted to previously unforeseen contingencies.

It is important to be clear: trust cannot be reduced to mere institution-induced expectations. Nonetheless, such expectations may serve as an important anchoring point for trusting relationships, insofar as they provide a technology that actors can employ in order to make credible commitments to each other. Formal and informal institutions will have different consequences for expectations, and thus for trust. Formal institutions may allow actors to engage in tightly defined transactions with a wide variety of other actors that are not part of the same community, as long as the latter actors are subject to the appropriate institutions and the same third party enforcer. Informal institutions, in contrast may allow for relationships that involve a wider – and *ex ante* more diffuse - set of issues. However, these trust relations will only possible with members of the same community, which will usually encompass a smaller set of actors. To adapt Hardin's terms, appropriate formal institutions will allow an actor *x* to engage in relations with a wider range of other actors *y* over a pre-defined set of matters *z*; appropriate informal institutions will allow *x* to engage in relations with a narrower range of other actors *y*, but with regard to a broader and more diffuse set of matters *z*.

This suggests that actors who wish to make credible commitments to each other in a setting where there are appropriate informal institutions will be able to do so with regard to a broader set of matters, some of which may not be readily definable *ex ante* (i.e. an unanticipated problem arises after actors have already committed to each other). However,

they will be limited to a smaller community of actors.[8] In contrast, actors in a setting that is dominated by formal institutions will only be able to use these institutions to anchor credible commitments over a narrower set of issues, and will have considerable difficulty in making institution-based commitments regarding matters that cannot be anticipated in advance.

This general set of arguments has particular relevance for "flexibly specialized" modes of industrial production, such as machine production in certain regions of Italy and Germany, which involve significant *ex ante* uncertainty (Piore and Sabel, 1984; Hirst and Zeitlin, 1992). Flexible specialization imposes particular requirements on the vertical organization of production. Firms face difficulties which stem in large part from three factors - variability in demand, the frequent need to change the specifications for orders on the fly, and the need for high quality components compatible with the rest of the machine. Firms in both sectors experience a high degree of variability in demand - lulls in work may be succeeded by rapid spikes of activity in a quite unpredictable manner. Furthermore, producing specialized or customised products often requires that firms change specifications on the fly, to meet the changing needs of customers. In theory, it makes sense for firms to subcontract out the manufacture of components where possible: this provides them with a higher degree of flexibility while allowing them to avoid paying for expensive machinery that would lie idle much of the time. However, if final producers are to rely on subcontractors to produce specialised components for their products, they require that these subcontractors be themselves highly flexible, able to respond rapidly to changing needs, and to work for long hours on short notice. Further, it is important that each subcontractor produce well tooled components which are compatible with the other components of the product, which may be produced by other firms. The buyer firm needs to engage in a process of complex coordination, which is only possible if it is sure that each subcontractor is preparing components to high standards of quality. Again, this requires that firms be highly responsive

to the technical needs of the buyer firm, and be prepared to make changes in the course of the production process.

This involves commitment problems for both parties. The firm putting out work has to be sure that it can rely on the subcontractor to respond flexibly, and with a high degree of attention to technical detail, at short notice. However, this sort of flexibility involves short term costs for the subcontractor, which may find itself unexpectedly having to commit its staff to work overtime, or over weekends and holidays, so as to meet a particularly urgent order from the buyer firm. In the absence of some substantial arrangement between the two parties, it will often not be in the interests of the subcontractor to respond to the needs of the ordering firm; working over a weekend or during the holiday period may cost more than it is worth. On the other hand, when demand is slack, the subcontractor may find itself faced with long periods of inactivity and no guaranteed income. Furthermore, the buyer firm needs to be sure that the subcontractor does not skimp on quality. If the subcontractor behaves opportunistically, and supplies substandard components, this can have an enormous impact on the overall quality of the product, which will sometimes not emerge for some time, causing serious (and potentially expensive) delays, even if the faulty component can be returned for re-working. Finally, buyer firms may face a "hold up" problem from their subcontractors: if a final firm must rely on a subcontractor to produce a part that is vital to the production process, the subcontractor may use its position of power to extort rents from the final firm.

The most obvious solution to this problem is a long term relationship between the final producer and the subcontractor, in which the producer is prepared to pay a premium over the longer run to reward the subcontractor's commitment. In such a relationship, the subcontractor's short term costs may be counterbalanced by longer term profits deriving from the relationship, and the subcontractor furthermore has an incentive not to behave

opportunistically insofar as the relationship will at some stage be opened for renegotiation. Such a relationship may permit some level of generalized reciprocity between the two parties, in which each party is prepared to accept short term imbalances, given that the relationship is to its long term advantage. Such reciprocity may be maintained between rational actors, "*as long as each party expects that the other party's continued participation is conditional on its own contribution.*" (Miller, 1992, 204, italics in original).[9] However, creating the conditions for such reciprocity also involves a commitment problem on the part of the firm making the order. It has to be able to commit credibly to maintaining a long term relationship, in order to convince the subcontractor to cooperate in the short term where this is necessary.

In short then, firms producing specialized machinery may choose either to produce specialized components internally, or to put them out to subcontractors. If they make the first choice, they avoid the commitment problems involved in subcontracting, but they must also themselves produce components that could be produced more efficiently and cheaply outside the firm. If they make the second choice, they may be able to secure components more cheaply, but they must face the problem of extracting credible commitments from their suppliers, as well as themselves making credible commitments to reward the suppliers for their flexibility. Thus, creating the conditions for generalized reciprocity between subcontractors and final firms involves addressing problems of trust and cooperation. *Ceteris paribus*, it is difficult for both final firms and subcontractors to trust each other enough to cooperate; each may have a short term incentive to take advantage of the other.

One might argue that the problems involved are sufficient to prevent subcontracting from taking place. This would be the likely perspective of Oliver Williamson's transaction cost economics, which predicts that transactions with a high level of asset specificity (i.e.

where the risks of opportunism are high) will take place within the firm rather than between firms (Williamson, 1985). However, as Carlo Trigilia argues,

> in real life situations, ... even transactions with a high level of asset specificity may ... not be internalized [within the firm] if the institutional context limits opportunism and reinforces the bonds of trust (Trigilia, 1998, 392, my translation).

By implication then, institutions are likely to affect both (a) the extent to which firms outsource production to subcontractors rather than producing them internally, and (b) how a final firm cooperates with its subcontractors when it does outsource. Furthermore, they will primarily be important insofar as they affect the possibilities for trust, and consequently, cooperation between firms. In the absence of appropriate institutions that solve the problem of trust and cooperation, businesses will most likely prefer to produce essential components within the firm. Where business actors can trust each other enough to take the risks of cooperating through subcontracting, such cooperation will often be more rewarding than in-house production.

The Cases - Machinery Production in Bologna and Stuttgart

The main body of the article applies the above arguments about trust, cooperation and institutions to two important industrial districts; the packaging machinery district in Bologna, capital city of Emilia-Romagna, and the machine tool district of Baden-Württemberg. These two cases were chosen using the comparable cases strategy to test the existing arguments of

the industrial district literature, and to provide variation on the independent variable. First, Baden-Württemberg and Emilia-Romagna are among the paradigmatic cases of the existing literature, and may reasonably be taken as proxies for a more general phenomenon.[10] Second, they provide a high degree of variation on the independent variable, institutional structure. Finally, they allow some control for extraneous variables.[11] They involve closely related industrial sectors, the packaging machinery industry (Bologna) and machine tools industry (Stuttgart), which have similar needs in the production process. Both produce specialized machinery on order for large customers, and face a similar set of issues with regard to trust and cooperation, at least in one important area of their activity; the vertical organization of production.[12]

The Italian region of Emilia-Romagna has received considerable scholarly attention, both as an apparent example of policy success at the regional level (Putnam, 1993; Nanetti, 1988; Leonardi and Nanetti, 1990) and because of its unusual pattern of industrial production (Putnam, 1993; Bianchi and Gualteri, 1990; Brusco, 1982). The packaging machinery district centred around Bologna and its suburbs is typical in many respects of the "Emilian model" of production. Born in the immediate post-war period, it involves a densely integrated cluster of firms, specialized in the production of particular packaging machines. The Italian packaging machinery industry, which is highly competitive on world markets with some 2.5 billion dollars of sales in 1995, is dominated by Bologna and its hinterlands: some 70% of Italian employment in the sector is located in Emilia-Romagna. ISTAT statistics suggest that some 27,532 individuals were employed in the machinery sector in Bologna in 1996, with 12,340 in the sector of specialized machinery, which is dominated by packaging machine production. The specialized machinery sector had 401 companies, and almost certainly also should include many subcontractors who are incorrectly categorized in official statistics.

Stuttgart is the capital city of the German *Land* (state) of Baden-Württemberg, which has traditionally played an important role in the German machinery industry. While German data protection law makes it difficult to gather detailed statistics on the machine tool sector, the region of Stuttgart had some 439 companies engaged in machine manufacture in 1996, with 78,792 workers. This figure includes a considerable variety of manufacturers, by no means all of which are machine tool producers; however, previous research (Porter, 1990) has established the existence of a machine tool cluster in the Stuttgart area. Like Italian firms, many German firms are world leaders in their market niches, although they have experienced increasing competition from Japanese and US producers in recent years (Herrigel, 1995). Machine production in Baden-Württemberg has been identified as an industrial district, most prominently in the work of Gary Herrigel (1996), although there is some considerable controversy over whether it exhibits the same patterns of cooperation as its Italian equivalents (Cooke and Morgan, 1994; Staber, 1996, Grotz and Braun, 1997).

The two machinery districts are embedded in highly different institutional systems. Much recent work in political economy highlights the importance of institutions capable of underpinning impersonal transactions as a component of economic success (North, 1990; Greif, 1994). The Italian state has had only modest success in creating and implementing such institutions. As described by Marino Regini;

> even when public policies apparently assign a leading role to state regulation, ... mechanisms for circumventing them are often set in motion; or else the state rules are only weakly and inefficiently implemented, with the consequence that even the opposite result may be achieved (Regini, 1997, 106).

Not only is the state incapable of properly enforcing institutional rules, but the court system too is cumbersome, inefficient, and perceived as being partial and politicized (Volcansek,

1990). This has had important consequences for the political economy of Italy, leading to a high level of insecurity in the business environment (Trigilia, 1996).

However, the relative weakness of formal institutions at the national level goes together with the continued existence of vigorous informal institutions in many localities. As Regini notes, this apparently chaotic system can enable as well as constrain; the ineffectiveness of formal mechanisms provides room for a voluntaristic and ad-hoc system of informal regulation which is frequently strongest at the local level. One may go further; as Richard Locke describes it, Italy is less a single coherent economy than a congeries of micro-economies at the local level, each with its own logic of relations (Locke, 1995; Bagnasco and Trigilia, 1993). The weakness of formal institutions creates opportunities for actors at the local level, which in some cases at least has allowed for the creation and persistence of local, informal rules, governing economic exchange. The existing literature suggests that industrial districts typically involve just such rules (Trigilia 1989, Bellandi 1996, Bianchi 1993, Brusco 1990). As described by Sebastiano Brusco, in industrial districts,

> ... alongside state regulations, there is a second set of rules that derives from the community to which all the companies belong. This set of rules, shared by everyone and to which everyone has to adapt, originates in civil society, and also carries a series of sanctions: whoever breaks the rules of the game is excluded from the community and can no longer work with it (Brusco, 1990, 182).

The prevailing literature suggests that Germany presents no such complicated mixture of weak formal institutions and strong local informal institutions. While local identity is still politically important in some contexts, the existing literature suggests that formal institutions are credible and effective; as Wolfgang Streeck puts it, "the institutions which embed [Germany's] economy and shape its performance are politically negotiated and typically legally constitutionalized, rather than commanding compliance as a matter of informal

obligation" (Streeck, 1997, 37). Formal enforcement is credible; while firms only infrequently take each other to court, this is because the high degree of juridification provides some certainty as to the likely outcomes of legal action (Arrighetti, Bachmann and Deakin, 1997). Furthermore, the political system has a homogenizing effect; while Germany is a federal state, its system of "cooperative federalism" is at least as much aimed at creating similarities across regional contexts as at providing a flexible response to differences in regional circumstances. The result is a system in which there is little evidence of the kinds of local "community" rules that play such an important role in Italy (Voelzkow, 1999; Glassmann and Voelzkow, 2001).

Thus, the existing literature suggests that Italy and Germany provide a substantial degree of variation on the independent variable, institutional form. In Italy, the relative weakness of formal institutions at the national level is associated with a highly variegated economy, in which localized systems of informal rules play an important part, especially in industrial districts. In Germany in contrast, strong formal institutions are associated with a relatively uniform political economy, in which there is little evidence of the sorts of strong, localized informal institutions that structure economic relationships in Italy.

Trust and Cooperation between Firms in Industrial Districts

There is clear evidence of differences in subcontracting patterns in the two case studies, which are furthermore linked to the differences in institutional settings that I have already referred to. Italian interviewees made it clear that the judicial system was ineffective in providing enforcement; firms were reluctant to go to court even when they clearly had a good case.

> [legal action] is a waste of money *{spendere soldi per niente}*. Because in a legal action, one spends money on the lawyers, then it goes on, in practice, for two years, three years, four years, five years, ten years, then it never finishes.[13]

However, the packaging machinery district of Bologna, like other such districts, had a set of local rules - community institutions - which governed the behavior of both final firms and subcontractors. As one Italian interviewee put it, a firm which does not cooperate

> comes to be excluded from the system. Slowly, one does not have credibility any more, which allows one to remain in the system. The world of packaging is very small - even if it is big it is very small. It is thus that it is, there are many personal relations that serve also sometimes to avoid situations which ... do not have to be solved through legal means. He who doesn't keep to this rule - these aren't written rules - well there you are! *{beh!}*[14]

These rules turned for the most part on probity in personal relations between actors. As described by one interviewee,

> there is a saying in these parts that a handshake is worth more than a piece of paper with writing on it ... this is an approach which is particularly characteristic of someone from Emilia-Romagna. If someone steps out of line once, tries to be clever in some way ... there is a characteristic tendency which is particular to this area ... to cancel [the deal].[15]

Not only would opportunism lead to a cancellation of the immediate deal, but there was likely to be a "freezing off"of relations extending into the future.[16]

These informal rules involved more than the simple punishment of opportunists by those whom they had cheated. Reputational mechanisms played an important part in the packaging district, so that those who had cheated would not only be punished by the injured party, but also find it far more difficult to find future trading partners.

> This is a very small world. Reputation spreads in three days ... in three hours, not days. This is a small world, everybody knows everybody, and this is good in one sense, because if you have a good reputation, ... you can capitalise on it, because you

> are known and this is bad, because if you have a bad reputation and have done something wrong, everybody knows it, and they try to avoid you.[17]

This provided firms with a clear incentive to behave in a trustworthy fashion.

> from the point of view of the subcontractors a mistaken behavior, [with] a rather small yield, will become known very quickly in the productive system to the other customers, and thus it is easy to exclude this firm from the relations of production. In this case we have a transparency of the market which makes it much more difficult to maintain incorrect behavior.[18]

There is an unmistakable resemblance between the social "equilibrium" which these informal rules led to, and the forms of non-state enforcement modelled by game theorists such as Avner Greif (1994), Paul Milgrom, Douglass North and Barry Weingast (1990), and Randall Calvert (1995b). In these models too, communication between actors may allow honest behaviour in bilateral relationships, even if the number of actors is quite large. For example, Greif, in his work on trading relationships in late mediaeval society contrasts two different "cultures," Genoa, where a high reliance was placed on formal contracts between traders and their agents, and Maghribi traders in the Islamic world, who relied instead on community enforcement. The One-Sided Prisoner's Dilemma (OSPD) which faced traders who had to rely on agents to conduct their business in distant ports may also be used to describe the dilemmas of final firms who wish to delegate part of the production process to subcontractors. Like Greif's Maghribi traders, Bolognese packaging machine manufacturers invest in gossip with each other, conveying information about their relationships with subcontractors. And like Greif's agents, subcontractors who are known to have cheated find it difficult to form new relationships with firms in the community, and soon find themselves excluded from new business opportunities.[19]

The existence of these informal institutions, which mandated personal honesty in business relations, allowed producer firms to put work out to subcontractors. Furthermore, the final firms could commit to their subcontractors, and vice versa, without resort to formal contracts. Formally binding contracts were rare in the district; only a few of the very largest firms seem to have used them. As a rule, informal relationships between business actors were sufficient. In the words of the firms themselves;

> The long term things, I would say that there is nothing written. In practice, there is nothing like a contract. There is a tacit consensus, whereby we have work and make orders from these subcontractors.[20]

and

> with Italian subcontractors, or in the neighborhood, one has to work *{giocare}* on the personal and emotional plane. It is verbal, not all written down.[21]

and

> To have then the work of the artisan at the beginning of the year, one makes an accord. We ask for the best work. With the duty of doing the best work for us. ... most times it is a verbal agreement.[22]

and

> There is no formalised contract, one works a lot on reciprocal knowledge, on reciprocal trust.[23]

and

> What is applied is not a specific contract, it is a personal relationship between an office which puts out work and a small artisanal organisation which produces it.[24]

Because of the reputational penalties which final firms would suffer if they reneged on their personal commitments, subcontractors could trust them enough to reciprocate in turn, refraining from behaving in an opportunistic fashion, and providing flexibility in the short term in the knowledge that their commitment would be rewarded over the long run. The conditions for a quite generalized form of gift exchange, with extensive cooperation, were met, because informal institutions allowed actors to commit credibly to each other, and thus to trust in each others' credible commitments.

> In practice, it might be as if they were ours, to have relationships thus, consolidated over the long term, without disagreements, always with respect for these relationships which we had before. Always working in good harmony, with the consequence of good results. This is fundamental. Precisely because it is a decisive part of the machine.[25]

and more generally,

> I would say that the characteristic of this sector is this; an extreme interchange and collaboration between ... suppliers, and firms who produce the goods.[26]

These relationships of collaboration and exchange involved a very high degree of flexibility on the part of subcontractor firms. Several firms spoke of the willingness of subcontractors to work long hours for them at short notice.

> From this collaboration comes the availability on their part to work also 12 hours a day for a week, in order to finish a machine.[27]

and

> if we have a date thirty days away, or at the end of the month, I will telephone them and say " Look, the piece has to come fifteen days early, because something unexpected has turned up, and can you do it soon."[28]

and

> One also has to have the possibility of working Saturday and Sunday if it is necessary. And we have obtained this on occasion, precisely thanks to these relations which we have with our suppliers in this network, which participate in our results.[29]

Furthermore, problems of "hold-up" appeared exceedingly rare. Indeed, at least in some cases, final firms were prepared to order specialized parts from subcontractors with whom they had a relationship, without bargaining over price until after the piece had been produced. While this may sometimes have led to difficulties for final firms, these difficulties did not involve subcontractors opportunistically jacking up prices after the fact, but the uncertainties of trying to fix a final price with the customer for a particular machine without knowing the costs of all the inputs.

The relations of generalized reciprocity that were supported by these informal institutions furthermore allowed a radical disintegration of the production process in the Bologna packaging machine industry. As described by a local economic research organization,

> the production cycle in the mechanical sector is broken up into various phases of work, which leads to a high reliance on the flexible specialisation model. Because of this, we have systems in which the firms at the center are specialised in certain phases of production, solely assembly and planning, and all the phases of the production process are delegated to other firms, which are specialised.[30]

The production of specific components was usually carried out by a multitude of artisanal firms, each specialising in a particular phase of the production process, working on behalf of larger firms which sold the final product.

> little artisanal outfits that ... provide particular mechanisms [are] a Bolognese tradition. Firms do not produce one part of the goods that they may come to sell; they are made by subcontractors.[31]

The usual arrangement was thus one in which final producers designed the machines, sent the specifications for particular parts and mechanisms to smaller producers, and then assembled, sold and maintained the final product. The process of assembly [*montaggio*] was more important than it sounded; indeed it was perhaps the most strategic part of the manufacturing cycle. Italian manufacturing firms usually did wish to retain some control over the process of ensuring that components manufactured by different firms worked well together. But firms sometimes put even this vital part of the manufacturing process out to others.

> The situation is that we don't produce anything inside. We make everything outside - that is typical. We only do the planning and the assembly. And the testing. Then, not only [the above], we sometimes subcontract out the assembly, when we have a lot of requests. Thus, one also sometimes subcontracts out planning. Technical studies. Thus, the only thing that we don't want to subcontract is the sales.[32]

This disintegration of the production system captured certain economies that were not available in more conventional production relations.

> [The system of production in Emilia-Romagna] has allowed one to have wide specialisation with modest investments. Why? Because the artisan, who has acquired this machine for doing this stage of work, [does] eight hours, twelve hours, fifteen hours, twenty hours. One specialises in this sector, and amortises the cost of the machine much more quickly ... In the German "system," between inverted commas, a big firm buys machines, and works to do this stage of work only for those pieces which it needs for its own production. Probably, this machine remains unused most of the time. Then, the amortisation of costs is slower.[33]

Thus, in summary, informal institutions in the Bologna packaging machinery district allowed actors credibly to commit to each other, and thus to trust each other enough to maintain relationships which involved a high level of reciprocity and gift exchange. This in turn provided the necessary flexibility to allow firms to subcontract out highly sensitive and important parts of the production process, that would normally have been carried out within

the internal hierarchy of the firm. The production process was thus disintegrated to an extraordinary extent; extraordinary at least in the eyes of conventional Williamsonian transaction cost economics.[34] However, a more sophisticated institutionalist approach, that examines both institutions (North, 1990; Knight, 1992) and the equilibrium outcomes that they may lead to, may explain forms of trust and cooperation that seem at first sight to defy explanation in terms of the rational actor model.

The machine tool industry of Stuttgart, involved a rather different vertical organization of production, as might have been expected given the differences in its institutional context. While formal institutions, in contrast to Italy, were effective and credible, there was no evidence of the kinds of extensive informal community institutions that characterized the Bologna machinery industry. Thus, extensive subcontracting of the sort typical in Bologna, was quite rare. As one Italian interviewee, in an unprompted description, depicted the difference;

> The German system sees the firm, which is to say the unit of production, as an almost complete system, where one carries out all of the activities which form the product. In Italy, social organisation is different, historically. ... An industrial firm in Bologna - however, it is more or less like this in the rest of Italy too - plans this part for itself, which makes up part of a complete machine. It does the design, and then there is an entire series of external workers, to which it sends the design for getting the primary material. And then, it passes this on to another who does the first stage of work, and then onto another who does another stage of work; this is the procedure for returning a finished part, or perhaps [it is] already assembled into a small group which is mounted onto the principal machine.[35]

This dichotomy was rather over-stated, but did capture genuine differences between the two systems. While the decision of whether to subcontract or not did not only depend on whether or not subcontractors could be trusted to provide the necessary flexibility and quality and not to behave opportunistically, it was clear that it was substantially more difficult in Stuttgart than in Bologna to achieve the necessary kinds of generalized reciprocity. Of the relevant

interviewees in Bologna, only three very large firms did not rely on extensive subcontracting, and two of those three still subcontracted out up to 70% of components. In Baden-Württemberg, just the opposite was true; only a very small proportion of firms engaged in extensive subcontracting (see below).[36] A large proportion of the firms interviewed in Baden-Württemberg preferred not to rely on outside subcontractors except for standardised inputs, because of the time wasted in bargaining, or because firms could not be relied on to deliver parts on time or to provide the necessary quality. As one firm responded, when asked whether it outsourced work,

> No, we have an in-house production of over 90%. This is clearly related to the fact that we face ever shorter times for our products, and therefore can't spend a lot of time negotiating over supplies - "Can you make me this, and what does it cost," and so on. That doesn't work.[37]

Another firm found that it could be "simply more flexible" if it relied on internal production rather than outside firms. It had found that it could not rely on subcontractors to deliver in a timely fashion; "it has sometimes happened that a supplier says 'I cannot supply this part this week any more.' And I need it urgently."[38] A third firm reported similar difficulties in getting subcontractors to deliver on time; it had also sometimes received parts which were unusable, or which required extensive re-machining.[39] A fourth firm spoke of the problem of information transfer; it couldn't be sure that firms at a geographical remove would consistently implement technical changes to improve the product.[40] A fifth firm had previously had outsourced work to a foreign firm, but had ceased because of quality concerns with the components that were being supplied. Now it produced all of its work in-house.[41]

Another group of firms went somewhat farther; they did outsource components, but only where such components were not critical to the firm's specialist strengths. One firm had recently begun a strategy of putting out as much work as it could, but only

> that part that is neither time-critical nor quality-critical, and that has no significant value-added for us. In this way, we want to concentrate on our core competences, and reduce our in-house production *{Fertigungstief}*.[42]

Other firms had resorted to outsourcing during a period of crisis in the German machine industry between 1991 and 1993. This was sometimes simply a temporary response to short term market difficulties;

> The trend previously was to work more with subcontractors. That was also naturally affected by the recession, in that one sought to keep as little in-house as possible, so as to reduce costs. I am rather positive to the opposite strategy, namely making a lot in-house. In other words, now that we are over the worst years I would rather take a risk and add an employee.[43]

However, in other cases the crisis had led to longer-term organizational changes; a small number of firms had moved to a much more extensive dependence on subcontracting.[44] Clearly, this group of firms had managed, to some considerable extent, to create the conditions for generalized reciprocity. As in Italy, this involved the creation of long term relationships with suppliers who provided critical components.

> For things of central importance, we have long term relationships. When someone uses production parts that are of elementary significance for the machine, than one can't go on the principle of "Here today, gone tomorrow." It doesn't work. One then needs long term relationships.[45]

and

> We need those strong connections because we need to be as flexible as we are. We cannot work with subcontractors who are not willing to change designs shortly before delivery, whatever that means in detail. We cannot place an order four months before the delivery and not be able to change anything in-between.[46]

Given the very small number which engaged in extensive subcontracting, it is difficult to make definitive assertions; however the evidence suggests that there was a key difference between the kinds of long term relationships found in Bologna and Stuttgart. The latter did not involve diffuse informal commitments, but were instead based on formal contracts.[47]

> That is why our subcontractors usually know the amount of work that they will have for us. We do not order individual components from them. We contract the amount of business for the next year or for the next two years or for the next three years, so they have already contracted all the work they will have for us for the next three years. The only thing which is not fixed is the date of the delivery for the individual components. So we have very long term contracts with companies, and that is why they are easily willing to help us when we need changes.[48]

These contracts did not spell out in detail the obligations of the two parties, but instead provided a technology of commitment. The final firm could commit to a long term relationship with the subcontractor, but the subcontractor had an incentive to provide flexibility insofar as the contract would, at some stage in the future be opened up for renegotiation. Formal contracts thus served as a partial substitute for the informal relations of obligation characteristic of subcontracting relations in Bologna. However, they carried a cost. Unlike informal obligations, they limited the final firm's ability to flexibly respond to changing market circumstances: it had formally agreed to take a number of components over a certain period. In Bologna, in contrast, final firms could deal more flexibly with changes in demand. As one Italian interviewee put it

> There is always a turnover of work ... one never does contracts of one year, two years. *... Not ever with the difficulties* [*that there would be*] *for a firm of our size in making long term contracts with external suppliers.*[49]

This allowed an "extreme flexibility [in the relationship], especially where the quantity of work is extremely reduced."[50] Thus, formal institutions, even when they provided the basis for reciprocal relations between final firms and subcontractors carried a cost; they tied the final firm to specific and formal obligations that carried into the future.

In summary then, the absence of the kinds of extensive informal institutions found in Bologna meant that business actors in Stuttgart could not trust in each others' personal commitments as a means to secure reciprocity. This had two effects. First, an extensive reliance on subcontracting was relatively rare in Stuttgart, in contrast to Bologna, where it was the norm. Second, where such subcontracting did take place, it seemed to rest on formal rather than informal institutions, with important consequences for the forms of cooperation observed.

Conclusions

The analysis of trust and cooperation in the two case studies supports the basic contentions of the simple model of institutions and trust that I have outlined. First, even if Williamsonian transaction cost economics fails to explain observed outcomes, important forms of trust and cooperation found in industrial districts can be explained even if actors are selfishly rational.[51] In the "strong" Italian case, a radical disintegration of the production process, which seems on the face of it to involve non-rational trust between actors, could in fact be explained by the presence of informal institutions. These informal institutional rules made it rational to behave in a trustworthy fashion in personalized relations between business actors. Those who did not found themselves excluded from future opportunities to do business, not only with the party they had cheated, but with other business actors in the

community, who communicated among each other about their experiences in subcontracting relationships. The set of relations supported by these institutions strongly resembled those equilibria involving cooperation in non-state settings which have been modeled by game theorists. Thus, institutions both gave actors incentives to behave in a trustworthy manner, and led to the dissemination of information which allowed actors to trust each other with regard to a specific - and highly important - set of issues.

Second, institutional variation led, as predicted, to variation in patterns of trust and cooperation.[52] In the German case study, where there were no extensive informal institutions of the sort found in Italy, firms typically were not able to trust each other enough to cooperate through the kinds of extensive subcontracting found in Italy. In the few cases where they did rely substantially on subcontracting, it appeared to involve formal institutions, which had important implications for the kind of cooperative relationship that could be sustained. In contrast to Italy, where informal institutions supported a highly flexible form of reciprocal gift exchange, which could shift according to changes in demand, German final firms, if they wished to make credible commitments to their subcontractors, had to do so through relatively inflexible contractual forms.

This explains how variation in patterns of trust and cooperation, with regard to specific issues, may occur against the direction predicted by those scholars who see diffuse interpersonal trust as an important explanatory variable. Diffuse interpersonal trust, far from being a cultural orientation, may be viewed as the contingent result of particular institutional arrangements; in particular, effective formal institutions (Levi, 1996, 1998). In contexts where the state is weak, one possible outcome (among many) is the creation of informal institutions which permit trust and cooperation among actors in a particular community with regard to particular sets of issues. The kinds of trust and cooperation that are possible under

these circumstances are furthermore likely to be affected by their specific institutional setting in various ways. As I have suggested in this paper, one possible outcome may be that actors may trust each other enough to sustain forms of cooperation that are extraordinarily difficult to achieve in more formalized settings where exchange is impersonal.

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[2] See Inglehart (1990). Inglehart (1997) more recently suggests that diffuse interpersonal trust in Italy has slowly increased. Even if this is so, it doesn't explain why industrial districts flourished most in a period (the 1980's) when survey data suggested that diffuse interpersonal trust among Italians was extraordinarily low.

[3] I note that I only discuss trust and cooperation in industrial districts insofar as they are found in vertical supply relations. Sociologists are almost certainly correct in arguing that many other forms of cooperative activity in industrial districts, such as technological innovation, are much less amenable to study through the rational actor model, insofar as interests are likely to be fluid. I am grateful to Gary Herrigel and Jonathan Zeitlin for this point.

[4] This paper should not be taken as an attack on the study of political culture *tout court*. I share with students of political culture the conviction that "cultural" variables play an important role in the explanation of political behavior. See further Farrell (2003), Farrell and Knight (forthcoming). Although the "oversocialized" account of human action proposed by

some political culture theorists (e.g. Eckstein, 1988), and embraced in Inglehart (1990) is highly problematic, other conceptions of political culture (e.g Elkins and Simeon, 1979; Barnes, 1988) view it in a much less totalizing way.

[5] For example, Miller (1992); Greif (1994); North (1990); Milgrom, North and Weingast (1990); Greif, Milgrom and Weingast (1990), Calvert (1995a, 1995b).

[6] See Hardin (2002).

[7] The relationship between institutional evolution and trust is explored at greater length in Farrell and Knight (2003).

[8] On this question, see further, Greif 1994. I discuss this issue at greater length in forthcoming work.

[9] Gift exchange and reciprocity have typically been treated as non-rational; see Sahlins (1972, 1976); Polanyi (1992); Trigilia (1998), but quite generalized forms of reciprocity can be maintained by rational actors; see the exemplary study of trust and reciprocity between Orma cattle-herders and their agents in Ensminger (2000).

[10] On packaging machinery production in Bologna, see Capecchi (1997); Curti and Grandi eds. (1997); Bianchi and Gualteri (1990); Brusco et al. (1996). On machine tool production in Stuttgart, see Herrigel (1996a); Staber (1996); Braczyk et al. (1996).

[11] There are differences between the cases under examination. For example, the final customers for machine tools in Baden-Württemberg are often large local firms, whereas Italian packaging machinery producers are more internationally oriented. Furthermore, horizontal forms of association differ between the two industries. However, neither of these differences seem likely to impact on the vertical relations between machine makers and their subcontractors being considered in this article.

[12] Much of the literature on Italy examines horizontal cooperation between firms in the production of collective goods. However, it is difficult to examine this comparatively; some goods which are provided through collective cooperation in Italy, are provided through the state in Germany, with no need for cooperation among firms. In the vertical organization of production, in contrast, there is no scope for the state to provide a functional equivalent for trust and cooperation of this sort.

[13] Firm Interview 17.

[14] Firm Interview 8. I have translated the almost untranslatable Italian expletive *beh!*, as "well, there you are," its most neutral and general interpretation. Equally valid translations might be "So much for that" or "So much for him."

[15] Firm Interview 16.

[16] Ibid.

[17] Firm Interview 2. On the importance of reputation, and the close-knit nature of the packaging industry, see also Firm Interviews 1, 5, 7, 8, 13, 17.

[18] Interview with researcher at Nomisma (local economic research organization).

[19] I here want to note one problem in applying such models to cooperation: in real life, retaliation for opportunism is not only driven by rationalistic calculus. Some "types" may punish even when this is costly and there was evidence to suggest that retaliation for opportunism in Bologna was sometimes non-rational in this sense. See Ostrom (2000).

[20] Firm Interview 4.

[21] Firm Interview 16.

[22] Firm Interview 13.

[23] Firm Interview 10.

[24] Firm Interview 9. See also Firm Interview 14, Firm Interview 17 for further evidence on the lack of resort to formal contracts in subcontracting relations in the area. There is one interviewee who suggests that formal contracts are becoming more important than hitherto - see Firm Interview 8.

[25] Firm Interview 5.

[26] Firm Interview 9.

[27] Firm Interview 3.

[28] Firm Interview 1.

[29] Firm Interview 16. See also Firm Interview 15, Firm Interview 17.

[30] Interview with Nomisma researcher.

[31] Firm Interview 9.

[32] Firm Interview 7.

[33] Firm Interview 8. For a more general overview of this question, see Miller (1992).

[34] While it is not impossible for a transaction-cost approach to explain these divergences, Williamson's version of transaction cost economics pays no sustained attention to the impact of external institutions, focusing instead on the specific nature of the transaction itself.

[35] Firm Interview 8. The interviewee had been asked a general question about differences between the Italian and German vocational training systems.

[36] One might reasonably object that this disparity may result from the sample size, which may lead to distorted or inaccurate findings. My reply would be that other, larger N statistical surveys support the broad picture of subcontracting practice suggested by my research results, even while they do not, by their nature, address the finer-grained questions of trust and cooperation discussed in this article.

[37] Firm Interview 33.

[38] Firm Interview 25.

[39] Firm Interview 32.

[40] Firm Interview 35.

[41] Firm Interview 20.

[42] Firm Interview 21.

[43] Firm Interview 35.

[44] Firm Interview 18, Firm Interview 36.

[45] Firm Interview 36.

[46] Firm Interview 18.

[47] Here, my findings are supported by the more general literature on inter-firm cooperation in Germany; see Streeck (1992); Arrighetti et al. (1997).

[48] Firm Interview 18.

[49] Firm Interview 9, my italics.

[50] Ibid.

[51] Note the limits of my claim here. I am not seeking to assert that actors *are* always rational in industrial districts; rather I wish to argue (a) that the kinds of diffuse trust and cooperation observed can in principle be explained with reference to external constraints, without any resort to internalized norms as a force motivating behavior (Calvert 1995c), and (b) that the strong resemblance between the kinds of cooperation observed, and the predictions of game theory, suggest that the latter provides useful tools for modelling the former. While models of sub-game perfect equilibrium usually emphasize the costliness of punishment, social order under such assumptions can be maintained if "shunning" not only affects defectors, but those

who refuse to punish defectors. See Calvert (2000). I am grateful to Randy Calvert and Gary Miller for a highly useful conversation on this topic.

[52] The argument that inefficient legal orders are likely to be associated with a stronger role for informal mechanisms finds support in other contexts. For statistical evidence, see McMillan and Woodruff (2000).