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Contract enforcement in transition

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Abstract

The mix of formal and informal mechanisms for contract enforcement is examined using survey data from Poland, Romania, Russia, the Slovak Republic and Ukraine. Using the size of trade credit to quantify the success of contracting, we ask: Do the courts have a perceptible effect on contracting? When can a firm rely on its customer to repay trade credit voluntarily? Which is more effective, the courts or relational contracting? Do trade associations play a role in contract enforcement? Does relational contracting entail inefficiencies? Is the reliance on relation contracting merely a transitory phenomenon, reflecting the inadequacy of these countries' legal systems?

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1. INTRODUCTION

For markets to function there must be some means of assuring promises will be kept. As Arrow (1974, p.357) notes, "Virtually every commercial transaction has within itself an element of trust, certainly any transaction conducted over a period of time. It can plausibly be argued that much of the economic backwardness in the world can be explained by a lack of mutual confidence." Trust rests on a mix of formal and informal institutions. Contracts are maintained both by invoking the law and via people's concern for their reputations (Macaulay, 1963).

An experiment in the interaction between the courts and relational contracting is offered by the transition of the formerly planned economies of eastern Europe and the former Soviet Union. Seeking to avoid the "economic backwardness" noted by Arrow, the governments in these countries have been gradually building market-oriented legal systems to replace the bureaucratic controls of the old planned economy. At the same time, firms have been entering and developing new relationships among themselves, replacing the networks that existed in the planned economy but have broken down during reform (Blanchard and Kremer, 1997).

We surveyed managers of privately owned manufacturing firms in Poland, Romania, Russia, the Slovak Republic and Ukraine in 1997. These five countries give us variation in the data, with Poland having relatively advanced market and regulatory institutions, Russia and Ukraine lagging behind, and the Slovak Republic and Romania in between (EBRD, 1997).

We operationalise the abstract notion of trust in two ways. First, we measure a firm's trust in a customer by asking about trade credit. Financial markets being underdeveloped in these countries, firms depend heavily on trade credit; the firms in our sample receive more of their financing in trade credit than in bank loans.[1] To offer trade credit is to trust it will be repaid. Second, we infer a firm's trust in a supplier by asking whether it would abandon that supplier if offered a 10 per cent lower price by a new, previously unknown firm. A refusal indicates the respondent values the security that comes from the established supplier.

Relational contracting is the basis of most of the transactions in our data. Managers say disputes with trading partners are usually settled without third-party assistance. But the law also matters, despite these countries' incomplete laws and inadequate courts and collection mechanisms (Hay and Shleifer, 1998; Hendley et al., 1997). The courts had been used by 39 per cent of the surveyed firms involved in a recent dispute with a trading partner. To the question of whether the courts could be used to enforce contracts, even if the firm had never had a dispute, more than two-thirds answered that they could.[2]

We find that relational contracting supports trade credit when: (a) the supplier has obtained information about the customer from other firms in the industry or through a social network; (b) the

[1] Trade credit amounts to 54% of external finance for the Polish firms in our sample, 57% for the Slovak firms, and 45% for Ukrainian firms. Only in Russia is trade credit uncommon, representing 2% of external finance. (Our data do not allow us to compute this number for Romania.) In the West, also, a typical small or medium-sized firm has more trade credit than bank loans, though in the West firms have more access to equity finance (Mayer and Alexander, 1990).

[2] The situation could be worse. When Vietnamese private firms were asked the same question in 1995-96, a mere 9% answered in the affirmative (McMillan and Woodruff, 1998b).

two firms have traded over a long enough period that trust has had time to develop; and (c) the customer is locked into the relationship by having high costs of search for an alternative supplier.

The courts, as well, have a perceptible effect. Firms that say the courts can be used to enforce contracts grant their customers significantly more trade credit than firms that say the courts are ineffective. Nevertheless, contracting is based at least as much on relationships as on the courts (at these countries' 1997 level of institutional development). We find that a firm that says the courts are effective gives 6 per cent more trade credit on average. By comparison, dealing with the customer for three years accounts for a 13 per cent increase in trade credit over a new customer; having obtained information about the customer from other manufacturers accounts for a 10 per cent increase; and the customer's being managed by a family member or friend accounts for a 10 per cent increase.

We find some evidence that relational contracting works as a substitute for the courts. Courts appear to be most important at the start of a trading relationship; experience with a trading partner diminishes their effect.

Besides aiding contracting, inter-firm relationships can bring inefficiencies. When our firms were asked whether they would abandon a current supplier to purchase instead from a new, previously unknown supplier offering a 10 per cent lower price, many said they would reject the lower-priced offer. Persisting with a high-priced supplier, because of the trust that has developed, can generate inefficiencies as new entrants have difficulty in competing. The introduction of laws reduces these inefficiencies. Controlling for the complexity of relationships, we find that firms that say they can rely on the courts are more likely to abandon their existing supplier for a new, lower-priced one.

In Section 2 we present our hypotheses on the courts and relational contracting. Section 3 contains regressions estimating the effect of the courts and relational contracting on the amount of trade credit granted. Section 4 contains regressions estimating the effect of the courts and relational contracting on a firm's willingness to change trading partners. Section 5 concludes.

2. CONTRACT-ENFORCEMENT MECHANISMS

We surveyed privately owned manufacturing firms with between seven and 270 workers in Poland (303 firms), the Slovak Republic (308), Romania (321), Russia (269) and Ukraine (270). Most of the surveyed firms are small, with 84 per cent having fewer than 100 employees. Some were spun off from state-owned enterprises, others were started from scratch.[3] We adapted the survey methodology developed for Vietnam by McMillan and Woodruff (1998a, 1998b), though that previous work did not focus on the relative importance of the various contract-enforcement mechanisms. The survey[4] asked about the manufacturer's relationship with its oldest continuous customer and its newest customer, and its oldest continuous and newest supplier. We examine how cooperation in each of the four trading relationships is affected by the availability of the courts and relational contracting.

Underlying the hypotheses we test is the notion that firms' characteristics, and the actions they take, are difficult for other firms to observe (Wilson, 1985). A customer might or might not be dependable in paying its bills. A supplier might or might not be competent to produce goods of an acceptable quality and on time, and even if competent might or might not have incentives to do so. A firm can learn about its potential customers' and suppliers' reliability by making inquiries via a trade association, a social network, or other firms in the same line of business. It also learns about its trading partners through its experience in dealing with them. A firm can give a trading partner an incentive not to renege on a deal either by a legally enforceable contract (provided the legal institutions exist and the actions in question are verifiable) or by the prospect that acceptable performance will be rewarded with profitable future business.

2.1 THE COURTS

All five countries have functioning legal systems. In Russia, for example, contract disputes between "juridical persons" (i.e., firms and organisations) are heard by commercial courts (*arbitrazhnye sudy* in Russian), while "physical persons" use the ordinary courts.[5] Background for our study is provided by some indexes of these countries' legal environments for business. The EBRD's (1997) index of how commercial laws are being enforced and administered, based on a survey of lawyers in

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[3] In our sample for Poland, Romania and the Slovak Republic start-ups far outnumber privatised firms, whereas in Russia and Ukraine privatised firms dominate. For an explanation of why private sector development started earlier in Poland, but is similar in nature to what has occurred elsewhere in eastern Europe and the former Soviet Union, see Johnson and Loveman (1995).

[4] The survey was designed to find similar firms in similar cities in all five countries. The survey questions used in this paper (a subset of the questions asked) are listed and discussed in Annex 1, along with some descriptive data; more are in Johnson, McMillan and Woodruff (1998). We exclude from the data relationships with state-owned enterprises and firms located outside the country, as these relationships involve different contract-enforcement issues from relationships with domestic private firms (state-owned firms are not necessarily profit-maximisers and might have priviliged connections with the bureaucracy; foreign firms might be operating under special legal provisions). We also exclude relationships begun in the pre-reform era, prior to 1989. 29% of the customer relationships and 39% of the supplier relationships in the sample are with state-owned enterprises, and another 7% and 11% are export customers and import suppliers respectively. A much smaller percentage (2%) of the relationships began before 1989. The results are not significantly affected by the exclusion of these results; see footnote 23.

[5] For a description of how the court system functioned in the Soviet Union and how it has changed since then, see Gustafson (1999, Ch.7).

the region, shows differences among the countries: Poland scored 4+, the Slovak Republic, Romania and Russia scored 3, and Ukraine scored 2.[6] The *Wall Street Journal*'s panel of investment professionals rates the countries as of the end of 1997 according to an index of the rule of law. Poland scored 9.0 on a scale of 1 to 10, Romania scored 6.4, the Slovak Republic 6.2, Russia 5.4 and Ukraine 3.9 (*Wall Street Journal*, 1998). The Heritage Foundation's Index of Economic Freedom for 1997, also the result of evaluation by outside experts (Johnson, Holmes and Kirkpatrick, 1998), in terms of property rights put Poland ahead with a score of 2, the Slovak Republic and Russia scored 3, Romania and Ukraine scored 4.[7] The picture from these measures of the legal environment is therefore fairly consistent. Poland is usually the best, followed by the Slovak Republic. Ukraine consistently scores the lowest. Russia and Romania occupy intermediate positions.

In contrast to these aggregative indexes of legal development, our survey gives a firm-level view. Measuring the impact of courts on contracting is difficult. With an efficient court system, we should observe few disputes. For this reason we asked managers not only whether they had actually used the courts to enforce a contract but also whether they could use the courts if a dispute arose, even if their firm had never had a dispute with a trading partner.[8]

Table 1: Reliance on courts

	All firms	Poland	Slovak Republic	Romania	Russia	Ukraine
Courts and other arbitrators:						
% of firms saying courts can enforce contracts	68.4%	72.9%	67.9%	86.9%	55.8%	54.6%
% of firms reporting having had a dispute	57.7%	78.2%	83.4%	78.8%	17.2%	20.2%
% of those w/ dispute who used courts in last dispute	39.2%	46.1%	32.8%	30.4%	54.4%	66.7%
Member of trade association	47.8%	28.9%	31.5%	44.2%	74.4%	67.3%
Member of trade association providing customer/supplier information	39.3%	20.8%	23.4%	34.5%	60.0%	64.1%
Always or almost always resolve disputes w/o third party	61.1%	56.0%	52.7%	74.6%	Na	Na

[6] The EBRD's explanations for these scores are rather long and should be consulted by the reader (EBRD, 1997, p.19). In summary: 4+ denotes clear commercial laws that are supported by an effective court system; 3 indicates that the commercial laws are clear but not fully supported by the court system; and 2 denotes "commercial legal rules are generally unclear and sometimes contradictory."

[7] This index measures the protection of private property by the government and judicial system. A 2 denotes "very high" protection, a 3 denotes "high" protection, a 4 denotes low protection, and a 5 denotes very low protection (Johnson, Holmes and Kirkpatrick, 1998, pp.47).

[8] The propensity to use the courts to settle disputes varies across countries even when legal systems are well developed. Macaulay (1963) gives examples of US firms being reluctant to go to court in a dispute. Japanese firms are still more reluctant than US firms; Haley (1978) argues that the costs of using the Japanese courts are so high that suing usually does not pay. Arrighetti, Bachman and Deakin (1997, p.188) asked some European firms about the likelihood of legal action against a customer or supplier committing a breach of contract: of about 20 firms in each country, 40% of British firms, 79% of Italian firms, and 95% of German firms said it was unlikely or very unlikely.

Table 1 summarises our indicators of the effectiveness of courts. To the question of whether the courts could hypothetically be used to enforce contracts with customers and suppliers, more than two-thirds of managers across the five countries say they can be. The percentage is highest in Romania (87 per cent) and Poland (73 per cent) and lowest in Ukraine (55 per cent).[9] Most firms, in fact, have been involved in a contractual dispute (58 per cent). We asked these managers whether they used the court in their most recent dispute with a customer or supplier. Among those firms reporting at least one dispute, more than half in Russia and Ukraine and almost half in Poland said they used the courts. Courts were used in less than a third of disputes in the Slovak Republic and Romania.[10] Romanian firms are most likely to say they can use the courts but least likely to have used them. Polish firms, on the other hand, are less likely to say courts can be used but more likely to have used them.

Workable courts offer some assurance that debts will be paid. Our first hypothesis, therefore, is that firms that express faith in the courts will offer more trade credit. In the regressions to follow we test this, taking as our main measure of courts' effectiveness the answer to the question "could you use the courts if you had a dispute?" Despite the hypothetical nature of this question, it appears to be a better measure than experience with courts, because courts might be used less frequently the more effective they are. We will, however, use the question about actual court use as a check on the regression results.

Why would firms within a given country vary in their assessments of the courts' effectiveness? They operate, after all, under the same laws. Within-country differences could arise in three ways. (a) The accessibility of the courts could be objectively different for different firms or for different managers. For example, there could be fixed costs either of using the courts or of investigating whether they are usable; larger firms would then be more likely to say the courts are usable. Or managers who are better educated or younger might adapt more quickly to the rapidly changing institutions in transition economies.[11] (b) The perceived ability to use courts may be associated with unmeasured characteristics of the managers interviewed. Managers with "a trusting nature" may be more likely to say courts can be used. (c) Managers could differ in random ways in their perceptions of the courts'

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[9] Pop-Eleches (1998) finds that 67% of small retailers in Romania say they can use the courts for disputes with business partners, while Frye and Shleifer (1997) report that only 45% of a sample of retailers in Poland responded similarly. These levels are consistent with our findings, given the larger size of the manufacturing firms in our survey. But we find less optimism among Russian managers than Frye and Shleifer, who report that 65% of their sample of Russian retailers say they can use courts for disputes with business partners.

[10] Although Russian and Ukrainian firms are most likely to use courts given a dispute, they are least likely to report having had a dispute, so the percentage of firms having experience with courts is actually lowest in those countries. The percentage of firms reporting disputes is only 16% in Russia and 20% in Ukraine, compared with more than 75% of firms in each of the other three countries. While this may reflect a difference in the interpretation of the question across countries, it may also reflect more personal-based relationships with customers and suppliers given the much smaller number of customers of Russian and Ukrainian firms.

[11] In Poland, for example, confidence in courts is higher among firms whose managers are younger than 40 years of age (82% versus 69%, t=2.17) and have 16 or more years of schooling (76% versus 67%, t=1.68). Firms with more than 50 employees are only marginally more likely to say they could use courts (75% versus 72%, t=0.61). The effect of size is more significant in the Slovak Republic, where 73% of large firms and 64% of small firms say courts can be used (t=1.69).

effectiveness; given the speed of change of these countries' institutions, some errors of perception are to be expected. Differences in responses arising from (a) and (c) imply real or perceived differences in the ability to use courts. To the extent that the within-country differences are explained by (a) and (c), our regression coefficients will not be misestimated, provided the managers act on their reported beliefs in their credit-granting decisions. A positive association between the stated ability to use the courts and higher levels of credit granted to customers can then be interpreted as an effect of the institutions on trust. Differences in responses arising from (b), on the other hand, are more problematic, for a response that courts can be used may indicate an attitude of the manager (gullibility?) that is also correlated with giving credit. We control for these factors to the extent we can by including variables measuring firm and manager characteristics. Nevertheless, we are unable to control for unmeasured characteristics such as a manager's trusting nature.

2.2 RELATIONAL CONTRACTING

As Macaulay's classic 1963 study showed, courts are seldom used to resolve disputes between trading partners even in the United States, and using them generally signals the termination of the trading relationship.[12] Firms generally rely on relational contracting. The theory of repeated games provides predictions of when relational contracting works. Cooperation rests on the ability of the firm to punish its trading partner if it does not cooperate. We test four sets of predictions about when contracting can be supported by informal punishments.[13]

First, the most straightforward punishment, refusing to deal with the trading partner in the future, is effective if the future profits from forgone trade are large enough to outweigh the current gains from not cooperating; this depends on the size of the discount rate or the frequency of the interaction. A hypothesis to be tested in the regressions to follow is that more trade credit is granted to customers that buy more frequently.[14]

Second, the threat of severing a relationship gains force if it is costly to find alternative trading partners (Kranton, 1996; Ramey and Watson, 1996). Firms work to sustain relationships to avoid searching for new trading partners. The second hypothesis to be tested, therefore, is that customers with higher search costs receive more trade credit. We proxy the customer's cost of finding a new supplier, alternative to the interviewed firm, by the number of manufacturers of products similar to the interviewed firm located near it (within 1 km). We expect to find that a larger number of similar firms located nearby is associated with firms providing less credit to their customers.

Third, information is important in assessing credit risk. The business ability and competitive position of the customer, its reliability, and the level of its investments affect the likelihood of repayment. Managers were asked how they first made contact with their oldest and newest customers. We identify relationships as arising from two different types of information networks, which we refer to as social networks and business networks. Either of these networks may provide information about trading partners; either may also provide the ability to sanction trading partners by sullying their

[12] In our data, too, we find that the use of courts generally signals the severing of a relationship with a trading partner. In Poland, for example, the relationship was severed in 98% of the cases where courts were used to resolve a dispute, compared with 78% of the cases where they were not used in a dispute.

[13] Similar questions about informal contracting in Vietnam are studied in McMillan and Woodruff (1998a).

[14] This hypothesis must be treated with care, however, for the timing of purchases might not be exogenous but rather determined at the same time as the extent of trade credit.

reputation within the network. If a firm initially learns about its customer from other firms in the industry or through family connections, it might be more willing to offer trade credit. The networks differ, however, in their ability to expand. Social connections are built slowly over time, and hence social networks are relatively closed. Business networks are more open in the sense that they can incorporate new members more rapidly. The regressions will test the hypothesis that more trade credit is offered when, before the relationship began, the firm received information about the customer from other firms or through social networks. But we will also look for differences in the effects of the different kinds of network.

Fourth, the history of the trading relationship might affect the level of trust. Cooperation might build up gradually, as the supplier learns through trading about the customer's reliability. By gradually increasing the amount of trade credit it offers, the firm might be able to sort fly-by-night firms from those with longer time horizons (Ghosh and Ray, 1996; Watson, 1995). The regressions will test the hypothesis that more trade credit is offered when the relationship is of longer duration.[15]

Information learned from experience trading with a specific customer may substitute for information gained from business or social networks at the start of the relationship. The ability to use courts may also be more important at the start of a relationship, when the customer is less well known. We will test for time-dependent effects of networks and courts by interacting the measures of relationship duration with other informal and formal enforcement variables.

For the network variables, these interaction terms will also allow us to distinguish between two roles of networks discussed in the literature: providing information about customers' reliability and providing an ability to sanction customers that renege. The threat of severing a relationship if debts are not paid gains extra force if it comes not just from the firm owed the money but also from other firms in the same line of business. Gossip among the firms permits sharing information on customers' behavior in order to implement such community sanctions (Kandori 1992; Greif 1993). Since manufacturers also learn about the reliability of customers through dealing with them, the initial informational advantage of networks should dissipate over time. If community sanctions are important in eliciting cooperation, on the other hand, the effect of networks will be enduring.

2.3 LOYALTY

To the question, "If another firm you have never purchased from offered to supply this input for a price 10 per cent less than this supplier, would you purchase from the new firm instead of this supplier?", firms gave one of three answers: they would refuse this offer, accept the offer and abandon the existing supplier, or buy from the new supplier while continuing to purchase from the old supplier. Their answers, summarised in Table 2, suggest there is significant friction in these markets. Just over half said they would pass up the apparently better deal, in whole or in part, to maintain the relationship with the existing supplier (for brevity we will call this "loyalty"). Romanian firms were most likely to say they would drop their existing supplier in favour of the cheaper supplier, giving this response in almost two-thirds of the cases. Less fragile relationships are indicated in Poland and the Slovak Republic, where half or fewer of the firms would abandon

[15] Banerjee and Duflo (1998) find that a firm's reputation determines the nature of its contracting with its trading partners, but in their analysis the reputation adheres to the firm in general (it is proxied by the age of the firm) whereas in our analysis reputation is developed within a specific relationship.

existing suppliers. In Russia and Ukraine, almost all firms say they would buy from the new supplier without breaking the relationship with the existing supplier.[16]

Table 2: Indicators of trading relationships

	All firms	Poland	Slovak Republic	Romania	Russia	Ukraine
Loyalty to existing suppliers						
Refuse offer of new supplier	16.9%	19.5%	24.0%	8.4%	16.3%	16.7%
Buy from both	45.1%	38.0%	27.6%	29.1%	82.3%	75.4%
Buy from new supplier	37.9%	42.5%	48.4%	62.5%	1.4%	7.9%
Produce goods only for this customer	20.9%	21.9%	33.1%	26.9%	4.4%	10.1%
Supplier produces only for man	10.5%	8.7%	15.9%	5.3%	11.5%	12.4%
"Would be impossible":						
To find alternative buyer	14.8%	20.0%	25.7%	10.1%	4.5%	9.4%
For supplier to find alternative buyer	4.8%	7.5%	7.2%	1.7%	2.2%	4.3%
Average number of customers	69	100	86	107	10	12
% taking less than one week to:						
Find alternative buyer for goods	35.5%	39.4%	33.6%	50.0%	31.1%	16.2%
Find alternative supplies	52.0%	60.7%	59.6%	76.7%	24.0%	14.0%

A firm might refuse to drop its current supplier for two reasons. First, there are risks in dealing with an unknown supplier, compared with the relative security of the customary supplier. The risk of shifting is that the new supplier might be unreliable, supplying low-quality goods, perhaps, or not having the goods available for delivery as needed. Second, asset specificities might dictate staying with the current supplier. In these transition economies, however, the majority of the trading relationships involve the exchange of general rather than relationship-specific goods. Only 21 per cent of the goods produced for customers identified in the survey are produced uniquely for those customers; only 11 per cent of suppliers produce a good sold only to the interviewed manufacturer. And these percentages probably overstate the level of buyer-specific production, since they may merely reflect the thinness of the markets. In the regressions to follow we control for asset specificity by including the variable representing the supplier's producing uniquely for the respondent firm. The residual propensity to stick to the current supplier in the face a 10 per cent price cut presumably reflects the perceived risks of dealing with the unknown supplier.

A firm refuses the offered lower price, presumably, after doing a cost-benefit calculation. A firm would willingly pay a premium to its current supplier for either or both of two reasons. First, it

[16] The responses to this hypothetical question are consistent with the data on the duration of actual customer and supplier relationships identified in the survey. When the sample is limited to firms begun in 1987 or later (more than 90% of the firms in every country except Poland), the average duration of relationships as a ratio of the age of the firm is lowest in Romania, highest in Russia and Ukraine, and between the two in Poland and the Slovak Republic.

knows more about the current supplier's competence than about the potential new supplier's, and its risk aversion dictates paying a premium for the lower uncertainty. Second (as in the model of Klein and Leffler, 1981) it pays a premium to get an assurance that the supplier will not cheat it, and the supplier refrains from cheating it in order to continue earning the premium. The question of whether a firm would abandon its established supplier for a 10 per cent lower price gives us a lower bound on the sum of the risk premium and the Klein-Leffler premium.

By increasing the scope of contracts, functioning courts reduce the risk of working with unknown suppliers and so increase the willingness to switch. We hypothesise that firms that can rely on courts are more willing to buy from suppliers previously unknown to them; courts should reduce loyalty. This willingness to change suppliers, in turn, means that more productive firms are able to gain market share more quickly, which could have profound effects on the incentives of supplier firms to increase their productivity.

We shall run regressions with loyalty – the propensity to stick with the existing supplier – as the dependent variable, and the same set of institutional and relationship variables as used in the trade-credit regressions as the independent variables. Whether or not the firm switches depends both on how much it stands to lose by abandoning the current supplier and on the risks of dealing with the new supplier. What is lost by abandoning the current supplier depends on how well the repeated game with the current supplier is working. If the firm does not trust the current supplier, it has no reason to refuse the new offer. The variables we identified above with respect to trade credit as facilitating relational contracting (other's search cost, frequency of interaction, business and social networks, duration) are therefore also predicted to affect loyalty. For example, if delivery is infrequent, the firm probably does not have a cooperative relationship with its current supplier, so is more willing to switch than if the frequency is high. We further hypothesise that a firm will be more committed to an existing relationship when its own cost of searching for alternative sources of inputs is higher. Suppliers who are the sole source of a given input and those providing goods sold only to the interviewed firm are harder to replace, and we expect them to be abandoned less frequently.

Relational contracting, then, has ambiguous effects. Ongoing relationships can improve efficiency by supporting deals that the legal system is unable to enforce. But exclusion is the corollary of ongoing relationships. Continuing to deal with a particular supplier means being reluctant to deal with new suppliers. If firms routinely reject lower-priced deals, low-cost producers will find it difficult to get new customers and high-cost producers will not be driven out. In a primitive economy, customers are stuck with their suppliers because of quality uncertainty; in a sophisticated economy, trading partners might be locked in by specific assets. By controlling for factors related to the specificity and success of the relationship with the existing supplier, we are able to say something about how functioning courts affect the efficiency of the market.

2.4 OTHER CONTRACT-ENFORCEMENT MECHANISMS

Trade associations in the West sometimes provide arbitration services for disputes involving their members (Bernstein, 1996; Woodruff, 1998). Almost half of the firms we surveyed are members of a trade association. Membership is highest in Russia and Ukraine, and lowest in Poland (see Table 1). Two-thirds of these firms (39 per cent of all firms) say their association offers assistance in locating new trading partners and information on the reliability of existing or potential trading partners (thus helping relationships to develop), and/or arbitration of disputes with trading partners (thus

substituting for the courts).[17] We hypothesise that, because trade associations provide information about potential trading partners' reliability and help arbitrate disputes, membership in a trade association (a) increases the amount of trade credit a firm offers and (b) makes a firm more ready to switch to a new supplier.

Private protection rackets are famously rife in Russia and Ukraine, though they are less active in the other post-communist countries. In a survey of Russian shopkeepers by Zhuravskaya and Frye (1998), 33 per cent reported that one of the roles of private protection organisations was to enforce agreements (though far more reported their role was to "protect" the shopkeepers from other criminals). According to anecdotes, though, the mafia play a larger role with shops than with manufacturing firms of the sort we surveyed. We did not focus on the mafia in our survey (for fear that asking such a sensitive question would make managers reluctant to answer our other questions). We do have some suggestive information. First, to the question about third parties able to enforce contracts with trading partners, some firms (12 per cent over the whole sample, but 17 per cent in Russia and 18 per cent in Ukraine) said that "other organisations" – i.e., other than the courts, local or national government agencies, or non-governmental agencies such as trade associations – could enforce contracts. Since they were not asked to specify the organisation, we do not know what organisations they are referring to, but presumably private protection organisations, if present, are included. Second, firms reporting disputes with trading partners were asked whether "an informal private agency specialising in such cases" aided in the resolution of the dispute. Only 5 per cent of firms gave this response, though 48 per cent of Russian firms and 26 per cent of Ukrainian firms reporting disputes said they used such an agency.[18] We will insert the "other organisations" and "informal private agency" variables in our regressions to check that they do not change the estimated effects of the court and relationship variables that are the focus of this paper.

2.5 THE EFFECTIVENESS OF THE ENFORCEMENT MECHANISMS

The hypotheses to be tested are summarised on Table 3. The first set of regressions, in Section 3, examine how the courts and relational contracting affect the level of cooperation between trading partners, as measured by trade credit. The second set, in Section 4, examine how they affect the market friction of firms' reluctance to buy from new suppliers.

[17] The Russian Chamber of Commerce, according to Greif and Kandel (1995), provides its members with information on companies that have been alleged to have violated contracts. Some of the trade associations may have evolved from institutions of the old planned economy. But start-up firms are as likely as privatised firms to be members of trade associations everywhere except in the Slovak Republic, which suggests the services the associations offer are valuable.

[18] Hendley et al. (1997) suggest that private enforcement and court enforcement may complement each other: "Private enforcers often review relevant legal documentation before acting." The model of Baker, Gibbons and Murphy (1994) gives another rationale for the courts and relational contracts to be complementary: it is possible for imperfect formal contracting to crowd out relational contracting and cause a welfare loss.

Table 3: Summary of hypotheses to be tested

	Trade credit offered	Loyalty to suppliers
Search costs	+	+
Information:		
Duration of relationship	+	+
Business networks	+	+
Social networks	+	+
Frequency of delivery	+	+
Institutions:		
Courts	+	-
Trade associations	+	-

3. DETERMINANTS OF TRADE CREDIT

In this section we report on regressions with the percentage of the bill paid after delivery as the dependent variable and contract-enforcement-mechanism proxies as the independent variables. The survey was administered to 1,471 firms, yielding 2,942 potential manufacturer-customer relationships. After excluding state-owned customers, foreign customers, and those relationships begun before 1989, the potential sample is 1,733. Of these, complete data are available for the basic set of variables for 1,449 observations.[19] In all the regressions we include dummy variables to control for sector and country. Further controls are discussed below.

The variables are summarised on Table 4. On average, more than half of the bill is paid after delivery. Delayed payment is most common in Poland, where an average of 84 per cent of the purchase price is paid after delivery and 71 per cent is paid more than a week after delivery, and least common in Russia, where only 12 per cent of the purchase price is paid after delivery and 4 per cent more than a week later (Table 4). Over the sample, 29 per cent pay everything on or before delivery and 49 per cent pay everything within a week after delivery. We use both the percentage of bills paid after delivery and the percentage paid more than a week after delivery as indications of cooperation among trading partners. A longer delay in payment presumably indicates a greater level of trust. However, we expect to find little difference between the two measures of credit. Where legal enforcement of debts is questionable, the major difference is not between varying terms of credit but between giving credit and not giving it; whenever payment is delayed trust is needed.

Table 4: Dependent variables

	All firms	Poland	Slovak Republic	Romania	Russia	Ukraine
Number of observations	1449	345	418	455	108	123
When bill is paid						
% after delivery	59.2%	83.5%	69.7%	48.1%	11.8%	37.5%
% > 7 days after delivery	43.7%	71.0%	56.1%	28.1%	4.3%	17.0%
Number of firms within 1km	0.59	0.69	0.84	0.57	0.07	0.02
(standard deviation)	(1.83)	(1.99)	(2.15)	(1.78)	(0.38)	(0.13)
% w/ no similar firms w/in 1km	0.79	0.77	0.74	0.76	0.96	0.98
Length of relation w/ customer (years)	2.49	2.34	2.13	1.89	4.43	4.63
(standard deviation)	(2.34)	(2.43)	(2.12)	(1.98)	(2.17)	(2.14)
1st info from business association	44.7%	44.1%	48.3%	36.0%	41.2%	69.1%
Customer managed by family/friend	18.2%	6.4%	13.4%	30.5%	22.2%	18.7%
% of firms saying courts can enforce contracts	72.7%	73.0%	64.6%	89.0%	53.7%	56.1%
% of those w/ dispute who used courts in last dispute	27.5%	41.1%	28.7%	24.0%	9.3%	17.1%
Member of trade association providing customer/ supplier information	30.0%	17.7%	22.5%	35.4%	46.2%	56.1%

[19] A firm may have two customer relationships in the data, but a single manufacturer-customer relationship appears only once. We treat the observations as independent. Annex 2 reproduces the regressions in Column 1 of Table 5 (Table 7) splitting the sample into oldest and newest customers (suppliers). The results are consistent with those reported in the main body of the paper.

The percentage of the bill paid after delivery is the outcome of both the supply of credit and the demand. The reduced-form equation is:

$$TC_i = \alpha + \beta R_i + \gamma S_i + \delta B_i + \phi D_i + \mu_i ,$$

where TC is the observed trade credit, R_i is a vector of variables characterising the relationship, S_i is a vector of seller characteristics, B_i is a vector of buyer characteristics, D_i is a vector of industry and country dummies, and μ_i is random noise. The subscripts i represent the (i=1…n) buyer-seller pairs in the sample. Our focus is the willingness of sellers to grant credit, given repayment uncertainties represented by the vector of relationship and seller characteristics. Since our survey does not contain information on the vector of buyer characteristics, these variables will be missing from our regressions and we will estimate:

$$TC_i = \alpha + \beta R_i + \gamma S_i + \phi D_i + \mu_i.$$

The estimated coefficients of the relationship and seller characteristics would be affected by the missing variables if the buyer characteristics are correlated with these measured characteristics. We see no reason to expect that this is the case. The buyer's demand for credit does not depend on information the seller has about the buyer from social or family networks, or the seller's attitude toward courts, or the seller's membership in trade associations, and so on. Given this, we expect that the missing variables add noise that is uncorrelated with the variables of interest. Thus we shall interpret the regression coefficients as representing the willingness of sellers to grant credit. Furthermore, it appears that, unlike in the United States, trade credit is offered at relatively low interest rates, which presumably means that buyers will accept any trade credit offered, so the amount of measured trade credit tends to reflect supply rather than demand. According to our respondents, in Poland there is sometimes a negotiable discount for cash. For delayed payments, interest is typically charged at 0.09 per cent per day, which is not much higher than the interest rate on bank loans, around 25 per cent per year in the autumn of 1997. Romania has a regulation that trade credit is interest-free up to ten days and thereafter incurs interest at 0.15 per cent per day, which is comparable to the commercial banks' average nominal lending rate of 55 per cent per year.[20] Among 20 interviewees sampled in Romania, one-fourth said they receive discounts for cash payments, while three-fourths said there is no discount for cash.

3.1 THE BASIC CONTRACT-ENFORCEMENT REGRESSIONS

We begin by examining the decision to allow customers to pay part of the bill after delivery. The regression reported in Column 1 of Table 5 is a probit, with the dependent variable equal to 1 if any portion of the bill is paid after delivery and 0 otherwise. Just over two-thirds (69 per cent) of the relationships with customers involve some delayed payment. The variables are shown in three groups: those measuring customer search costs; those measuring manufacturer information and communication; and those measuring access to courts and trade associations. All of the independent variables have the expected sign and are significant at the .05 level or higher.

[20] The Polish interest rates are reported at http://www.meximedia.com/ECO/22pol.html and at http://www.oecd.org/publications/observer/213/indicato-eng.htm. The Romanian regulation and prevailing interest rate come from http://www.businesseurope.com/romania/markrom.htm. Perhaps the high US interest rates reflect adverse selection: firms that a good credit risk take out bank loans instead of long-term trade credit. In the transition countries, bank loans are harder to get so it is not just the higher-risk firms that receive trade credit.

Table 5: Trade credit regression results

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Probit for credit/no credit	% paid after delivery	% > 1 week after delivery	% after delivery * % of sales	% paid after delivery	% paid after delivery	% paid after delivery
Customer search:							
Number of other firms w/in 1 km	-0.02 (2.77)	-1.70 (3.07)	-1.30 (2.23)	-0.29 (1.59)	-2.09 (3.42)	-1.34 (2.31)	-1.39 (2.39)
Manufacturer Information:							
Duration of relation (years)	0.11 (6.09)	6.38 (4.63)	6.61 (4.51)	4.05 (9.28)	7.17 (4.45)	6.26 (3.99)	5.72 (3.64)
Duration squared	-0.013 (4.89)	-0.73 (3.77)	-0.81 (3.86)	-0.45 (7.25)	-0.86 (3.62)	-0.69 (2.95)	-0.64 (2.70)
First information from business network	0.12 (4.23)	9.89 (4.37)	8.07 (3.46)	3.61 (5.12)	11.72 (4.54)	10.21 (4.05)	9.24 (3.64)
First information from social network	0.14 (4.07)	9.42 (3.33)	9.95 (3.31)	3.53 (3.81)	10.85 (3.40)	10.77 (3.49)	8.86 (2.83)
Frequency of delivery (0-5)							1.30 (1.49)
Talk to other suppliers of this customer (0-4)							-2.17 (1.58)
Visits to or from customer Before first sale (0-14)							0.72 (2.33)
Courts:							
Courts can enforce contracts (0-1)	0.08 (2.74)	5.86 (2.53)	7.82 (3.20)	2.41 (3.24)	5.37 (1.95)	4.10 (1.53)	
Used court in most recent dispute (0-1)							3.10 (1.26)
Member of trade association w/ cust, supplier services	0.06 (2.18)	3.66 (1.67)	1.73 (0.75)	0.84 (1.18)	2.71 (1.07)	3.11 (1.25)	3.32 (1.33)
Other variables:							
Average % of bill paid to suppliers after delivery						0.22 (6.37)	0.21 (6.30)
Industry/country controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Other control variables	No	No	No	No	No	Yes	Yes
Manager control variables	No	No	No	No	No	Yes	Yes
Number of observations	1,449	1,449	1,449	1,449	1,148	1,148	1,148
% obs not censored		21.95%	16.22%	68.60%	19.16%	19.16%	19.16%
Chi-Square	244.23	475.39	480.4	297.5	319	403.2	412.3
p-value	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

Notes: t-statistics in parentheses. Column 1 is a probit; columns 2-3 and 5-7 are two-tailed tobits; column 4 is a one-tailed tobit. The first column reports the change in the probability of giving credit; Columns 2-7 report the marginal effects in the uncensored range. All regressions include 9 industry and 4 country controls. The other control variables included in Columns 6 and 7 are measures of the age of the firm and its square, the number of employees and its square, and variables indicating firm received a bank loan in 1996, the customer is a retailer/wholesaler, the firm set prices by bargaining w/ customers, the customer is foreign-owned and the customer is local. Manager controls are age, years of schooling, was manager in a state-owned enterprise, other family members own businesses, and family owned business before 1950.

Customer search costs are proxied for by the number of competitors located near (within 1 km) the interviewed manufacturer. Most manufacturers (79 per cent) report no manufacturers of similar products located nearby and, on average, there is less than one firm located within 1 km of manufacturers (Table 4). Each additional competitor located nearby reduces the probability that credit is offered by 2 per cent.

The longer a manufacturer has dealt with a given customer, the better able it is to evaluate the credit risk. Case studies accompanying a similar survey in Vietnam suggested that learning through trading is important (see McMillan and Woodruff, 1998b). Here, we find the likelihood of giving credit increases (at a decreasing rate) with the duration of the relationship. During the first 3 years of a relationship (slightly more than the sample mean duration of 2.5 years), the probability of giving credit increases by 21 per cent. We should be careful in attributing the duration effect solely to learning about the trading partner. Duration may also reflect selection. Suppose trust is instant in some relationships, and credit is offered immediately. If those relationships have a greater probability of surviving, then our duration estimates will reflect the fact that relationships of longer duration involve trading partners that are inherently more trusted, and the duration estimates will be biased upward. Other than controlling for the level of initial trust as best we can, through the measures of initial information, there is little we can do with our data to separate learning from selection effects. But this potential bias should be kept in mind when interpreting the results.[21]

Manufacturers may also learn about the trustworthiness of trading partners by talking to others. We identify relationships as arising from two different types of information networks, which we refer to as business networks and social networks. Managers were asked how they first made contact with their oldest and newest customers. Firms came into contact with about 45 per cent of their private sector customers through information from other manufacturers. More than three-fourths of these were identified as other customers of the manufacturer, with the remainder being suppliers, competitors or other firms. About 18 per cent of the customers in the sample are managed by a family member or friend of the interviewed manager.[22] This percentage is highest in Romania, where previous social connections characterise 30 per cent of customer relationships, and lowest in Poland where only 6 per cent of customers are managed by a family member or friend. Firms identified through business networks are 12 per cent more likely to receive credit and those identified through social networks 14 per cent more likely to receive credit, compared with customers identified without the help of these networks.

Belief in courts and membership in trade associations are also positively associated with credit. Firms saying that courts can be used to enforce contracts are 8 per cent more likely to grant credit; members of trade associations providing customer or supplier services (information about the

[21] The problem parallels the tenure debate in the wage determination literature. OLS estimates of tenure effects may be biased because of job matching or cohort effects. See Altonji and Williams (1997) for a discussion.

[22] Firms were allowed to indicate more than one source of initial information, though few did so. In only nine relationships did managers indicate that both business and social networks were used in locating a customer. The most frequent responses of the remaining firms were "he contacted us" (almost half the remaining responses), and "through an advertisement" and "met at a market fair," each about 10% of the remaining responses.

identity and location of new customers; information about the trustworthiness of customers/suppliers; and/or dispute arbitration) are 6 per cent more likely to grant credit.[23]

These results indicate that institutions – courts and trade associations – matter. But their measured effects are smaller than the measured effects of relational contracting. The coefficient on courts is smaller than that on the variables proxying business or social networks. Also, the estimated probability of granting credit increases by more over the course of the first year of a relationship than it increases if the courts become available. There are, however, several reasons to view these comparisons with caution. First, we might expect there to be more measurement error in the court variable than in the other variables, because of the hypothetical nature of the question used to create it. As discussed above, the measured duration effect may also be biased upward. Second, since the effectiveness of courts varies across countries, some of the effect of courts may be captured by the country dummy variables. Excluding the country dummies does increase the size of the effect of courts, but only from 8 per cent to 9 per cent. Finally, courts and trade associations may substitute for one another. A term interacting the two is negative when included in the regression (β=-0.16, t=2.30). Its inclusion increases the effect of courts for firms which are not members of trade associations (β=0.12, t=3.52) and the effect of trade association membership for firms which do not have confidence in courts (β=0.17, t=3.05). Thus, it appears that networks, relationships and institutions – courts and trade associations – all have similar effects on the trade credit decision.[24]

The next three columns present regressions using alternative definitions of the dependent variable. In Column 2, the dependent variable is the proportion of the bill paid after delivery. Since about a third of the sample (32 per cent) pays nothing after delivery and almost half (47 per cent) pays the entire bill after delivery, the regression is estimated as a two-tailed tobit. The coefficients shown on Table 5 are the marginal effect in the non-censored range of the sample. Thus, conditional on receiving some credit, a customer located through a business or social network pays about 10 percentage points more of its bill after delivery. In Column 3, credit is defined as the proportion of the bill paid 8 days or more after delivery. In Column 4, we multiply the percentage of the bill paid after delivery by the percentage of the manufacturer's sales that go to the specified customer. This gives a measure of the dollar amount of the credit, relative to the manufacturer's sales, and provides an alternative measure of the risk faced by the manufacturer. By the measure used in Column 4, a customer buying 1 per cent of the manufacturer's production and paying 75 per cent of its bill after delivery represents less credit risk than a customer buying 10 per cent of production and paying 50 per cent of its bill after delivery.

All of the core variables are robust to any of these definitions of credit, with two exceptions. Trade association membership loses its significance when credit is measured by payments made 8 days or more after delivery (Column 3) and both trade association membership and our measure of customer search costs drop below the .10 level of significance when the sales-weighted credit measure is used (Column 4).

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[23] These results are little changed when customers which are state-owned firms or are located in another country are included in the sample. Trade associations have slightly more impact on credit and courts slightly less impact. The duration effect is smaller when pre-reform relationships are included.

[24] Significant country-level effects remain after the effects of the independent variables have been accounted for. Taking Poland as the base country, the probability that credit is granted is lower for reasons unexplained by the regressions in the Slovak Republic (β=-.17, t=4.31), Romania (β=-.36, t=8.67), Russia (β=-.72, t=12.89) and Ukraine (β=-.46, t=7.18).

We next test the robustness of the results by adding a series of controls for firm, customer and manager characteristics. There are missing responses for each of the additional control variables; when all of them are included, the sample size is reduced to 1,148. The remaining regressions are run using this sample, and using the proportion of the bill paid after delivery as the dependent variable. The regression reported in Column 2 is repeated in Column 5 with the smaller sample for comparison purposes. The smaller sample has a modest effect on the results (see Column 5). Membership in a trade association is no longer significant; the significance level of the ability to use courts falls as well, though it remains above the .10 level.

The additional controls in Columns 6 and 7 include variables suggested by the trade credit literature – measures of the age and size of the firm, access to outside credit (measured by receiving a bank loan in 1996), a measure of the ability to price discriminate (whether prices are set through bargaining with customers), whether the customer is a retailer or wholesaler, whether the customer is foreign-owned, and whether the customer is located in the same city as the manufacturer (see Petersen and Rajan, 1997; McMillan and Woodruff, 1998a). The regression also includes an indication of the amount of credit the manufacturer receives from the two suppliers identified in the survey. This variable is calculated as the average of the percentage of the bill paid after delivery to the oldest and most recent supplier. Receiving credit from suppliers may allow a firm to grant credit to customers by relaxing its capital constraint. The regression indicates that customers pay an additional 1 per cent of their bill after delivery for each 5 per cent of the bill paid by manufacturers to their suppliers after delivery (β=0.22, t=6.37). The size and significance of the coefficient suggest the variable is measuring something more than a relaxation of the capital constraint. The level of credit received from suppliers may also be an indication of the norms in the manufacturer's industry. This provides control for sample heterogeneity in addition to the industry and country dummies.

Lastly, the regression reported in Column 7 replaces belief in the courts with experience with the courts. From the perspective of theory, the ability to use courts is the relevant variable. If both trading partners believe that courts are effective, the threat to use them will be sufficient to prevent either side from reneging on agreements. But most firms in the survey report that they have had at least one dispute with a trading partner, and about 40 per cent of those firms say the courts played some role in resolving the dispute (Table 1). Experience with the courts may be taken as a stronger indication of their effectiveness.[25] Court experience has an insignificant effect on the level of credit granted.

The last regression also adds three factors which may affect the ability to sustain cooperation with a customer but which may be endogenous – the frequency with which goods are delivered, talking with other suppliers of the customer, and visiting the customer before the first sale. The construction of the variables is described in Annex 1. Because of the potential endogeneity, the coefficients on these variables should be interpreted with some caution. Of the variables added in column 7, only

[25] There are two concerns with this interpretation. First, we do not know what role the courts played in the resolution of the dispute. In Mexico, for example, manufacturers said they often used courts to certify losses for tax purposes, after giving up any hope of recovering the loss (Woodruff, 1998). Second, more than 40% of the firms said they have never had a dispute. These firms are coded the same as firms who have had disputes but not used the courts. Coding firms who said they had never had a dispute as not having used the court may increase the noise in our measure. But excluding these firms from the sample makes little difference. The effect of experience with courts on credit remains insignificant (β=2.66, t=1.01).

visiting prior to the sale is significantly associated with granting credit (β=0.72, t=2.33).[26] Visiting with the customer before the first sale is a potentially important means of gathering information about the customer. Prior visits may also indicate a previous social connection (and indeed, visits are positively correlated with information from social networks). Neither the frequency of delivery nor talking with other suppliers is significant at the .10 level, and the latter variable does not have the expected sign.

The additional controls have little impact on the variables of interest. Belief in the courts is the only variable whose significance changes, with the variable dropping below the .10 level of significance when the additional variables are added and the sample size is reduced.[27]

The availability of "extra-legal" or private enforcement organisations (such as the mafia) may also affect a firm's willingness to grant credit to its customers. Because our survey contains limited information on various private enforcement options, we have not included measures of private enforcement in the basic set of variables. We used the questions described in Section 2.4 above to create two variables that provide some control for the availability of private enforcement. When added to the basic regression reported in Column 2, "other third party enforcement" is insignificant (β=0.79, t=0.23). Using "an informal private agency specialising in such cases" also has an insignificant effect on credit (β=-6.11, t=0.88). More important for our main hypotheses, the inclusion of these two variables has no effect on the sign or significance of the other contract-enforcement variables.

3.2 INTERACTION EFFECTS

The regressions on Table 5 consider the effect of each contract enforcement mechanism independently. But it is reasonable to expect that the various means of enforcing contracts interact with one another. For example, information learned about the customer in the course of a trading relationship may substitute for initial information from social or business networks. If so, then the effect of information should diminish over time. On the other hand, if a network provides the ability to sanction a trading partner by damaging her reputation, then the networks will have enduring effects on the level of trust. We use a series of interaction terms to study the interdependence of the various ways of enforcing contracts.

We consider first how the duration of the trading relationship affects the information, search cost, and institutional variables. We do this by interacting duration and its square with each of the two information variables (family networks and social networks), with the customer search cost variable (number of competitors nearby) and with the two main institutional variables (courts and trade associations). The interaction terms are added to the regression in Column 1 of Table 5. We use the coefficients to create Chart 1a, which shows how the effect of access to institutions changes as the trading relationship matures, and Chart 1b, which shows the time-variant nature of information variables.[28]

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[26] When visits by the manufacturer to the customer and visits by the customer to the manufacturer are separated, only the former is significantly associated with the level of credit. This suggests that the variable is picking up information gathering rather than just previous social contacts.

[27] This is apparently at least in part because of the interaction between courts and trade associations. When the courts-trade association interaction term is included, courts is significant at the .10 level (β=5.56, t=1.85). Trade associations remain insignificant (β=8.76, t=1.49), as does the interaction term (β=-6.79, t=1.07).

[28] The regression results on which Charts 1a and 1b are based are available from the authors.

Both of the courts variables and both of the networks variables have much greater effects at the beginning of a trading relationship. The relationship itself appears to be a substitute for the assurance gained from either institutions or initial information. For example, firms expressing confidence in the courts allow their customers to pay almost 7 percentage points more of their bills after delivery at the start of a relationship, but only 3 percentage points more after 6 years of dealing with them.[29] We calculated chi-square tests for the joint significance of each pair of time-dependent variables. Only for business networks (χ^2=7.40, ρ=0.02) does the chi-square test reject the hypothesis of time-independent effects. For social networks (χ^2=4.26, ρ=0.12), search costs (χ^2=0.34, ρ=0.84), courts (χ^2=0.87, ρ=0.65) and trade associations (χ^2=0.44, ρ=0.80), the time trend is not significant.[30]

3.3 SUMMARY OF TRADE-CREDIT REGRESSIONS

Trust between trading partners is supported by both institutions and relational contracting. Manufacturers who express confidence in courts allow their customers to pay about 6 percentage points more of their bill after delivery. Trade associations have a smaller positive effect (about 4 percentage points) and their effect is less robust. Courts and trade associations appear to substitute for one another.

While institutions matter, relationships and information are at least equally important. During the first three years of a trading relationship, the level of credit increases by about 13 percentage points. Where the manager had a previous social relationship with the customer, or where connections are made through business networks, the level of credit is also about 10 percentage points higher.

These findings are robust to alternative definitions of the dependent variable, and to changes in specification. Annex 2 reports the results of regressions run at the individual country level. Most of the findings hold in each of the countries, though with smaller samples the significance levels are generally lower. Finally, the estimated effects of relationships are largely consistent with the results for Vietnam reported in McMillan and Woodruff (1998a). In Vietnam, the proportion of the bill paid after delivery increased by an estimated 17 percentage points during the first three years of the relationship, compared to 13 percentage points in eastern Europe. Each additional competitor located nearby decreased the level of delayed payment by about 1 per cent in the Vietnam survey, compared to 1-2 per cent here.[31] And contacts made through business networks resulted in 11-17 percentage points more credit in Vietnam, somewhat larger than the 10 percentage point impact estimated for the five east European countries.

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[29] We also tested for interactions between court enforcement and the search cost and information variables. We found no significant interactions.

[30] A similar exercise indicates that the effect of visits before the first sale is also short-lived. At the start of a relationship, each prior visit increases credit by 2 percentage points. The effect of visits goes to zero over the first five years of the relationship. The time trend is significant (χ^2=7.92, ρ=0.02). This last result is consistent with the finding, reported in footnote 26, that visits from the customer to the manufacturer have no effect on credit.

[31] McMillan and Woodruff (1998a) also measure customer search cost with a variable indicating that the manufacturers "most important competitor" is located nearby. That question was not included in the east European survey.

The importance of both institutions and networks is greatest at the start of a relationship, and declines as the relationship matures.[32] This raises the question of whether an inability to rely on institutions may prevent relationships from starting. We examine this question in the next section by asking: When will a manufacturer sustain a relationship with an existing supplier in the face of a lower price offered by a previously unknown supplier?

[32] This statement depends on a time series implication drawn from cross sectional data, and should be appropriately discounted.

4. DETERMINANTS OF SUPPLIER LOYALTY

The cost of gaining cooperation by means of relationships is that, in order to maintain existing relationships, firms may pass up deals offered to them by new trading partners. As discussed above, firms were asked how they would respond if an unknown supplier offered them the same input as an existing supplier at a 10 per cent lower price. Many said they would decline this offer. In this section we examine the determinants of a firm's loyalty to its current supplier. The theory we use to organise the data is similar to that underlying the trade credit regressions. In both cases, trust is an important part of what we are measuring. But the trust in an existing supplier, or lack of trust in a new supplier, is of a different nature than the trust in a customer. If a customer is granted credit, the payment can be made only by that customer. So the trust in a credit relationship is trust in that specific customer. If bridges are burned with an existing supplier and the new supplier subsequently fails to deliver an input, then the relevant question is, How easily can third supplier be found? The trust in a supply relationship has to be measured relative the market.

Table 6: Supplier loyalty independent variables

	All firms	Poland	Slovak Republic	Romania	Russia	Ukraine
Number of observations	1,051	311	379	315	30	16
Supplier produces this good only for your firm	11.3%	9.3%	17.2%	6.0%	16.7%	6.3%
Firm has no alternative supplier for this input	31.9%	26.4%	31.4%	37.8%	30.0%	37.5%
Length of time to replace supplier (1-5)	2.24 (.93)	2.15 (.98)	2.30 (1.00)	2.13 (.78)	2.97 (.49)	3.13 (.50)
Information:						
Duration of relationship (years)	2.21 (2.10)	2.44 (2.25)	2.24 (1.99)	1.59 (1.63)	4.49 (2.48)	4.89 (2.86)
Frequency of delivery (0-5)	2.83 (1.24)	2.80 (1.29)	2.84 (1.27)	2.93 (1.17)	2.27 (.87)	2.31 (1.20)
Supplier is managed by family/friend	9.0%	3.2%	9.0%	14.3%	20.0%	0.0%
First information from other manufacturers	50.2%	50.8%	55.9%	41.0%	60.0%	68.8%
% of firms saying courts can enforce contracts	76.9%	77.8%	70.2%	88.3%	40.0%	62.5%
% of those w/ dispute who used courts in last dispute	27.9%	35.4%	27.4%	23.8%	6.7%	37.5%
Member of trade association providing customer/supplier information	25.8%	19.0%	22.2%	34.9%	37.9%	33.3%

Note: Standard errors in parentheses.

Accepting the lower-priced offer from an unknown supplier involves risk. If the new relationship fails, production may be hampered and reputation with customers compromised. We consider the same three sets of variables affecting the cost firms are willing to pay to maintain existing relationships (see Table 3). First, if the cost of searching for an alternative (third) supplier is high, then firms will work to maintain existing relationships. We found this to be the case in relationships with customers, and we expect it to hold for relationships with suppliers as well. Second, the level of information about and confidence in the existing supplier will also affect the manufacturer's efforts to maintain existing relationships. We expect to find firms investing more heavily to maintain relationships with more trusted suppliers. Lastly, where institutions like courts and trade associations function, confidence in new suppliers can be gained more quickly and new cooperative relationships formed more easily. These institutions should therefore reduce the loyalty to existing suppliers. The sample means of all of the independent variables are shown on Table 6.

Table 7 presents results from probits using three different dependent variables. Columns 1-4 are ordered probits with acceptance of the offer from the new supplier coded 1, rejection of the offer coded 3 and the "buy from both" response coded as 2. The first regression uses a limited set and the second an extended set of independent variables. The third adds a set of controls for manager characteristics; the fourth replaces confidence in courts with experience using courts. Lastly, Column 5 compares rejection of the offer (strict loyalty) to the other two responses, while Column 6 compares partial or full rejection with outright acceptance (lower loyalty). The coefficients reported in Columns 5 and 6 are the changes in the probability of the dependent variable being one given a change in the independent variable. As with customer credit, we limit the sample to relationships with domestic, privately owned suppliers begun before 1989. We add controls for industry, country and firm characteristics to all of the regressions, as described in the note on Table 7.[33]

The regressions include three variables to control for the complexity of relationships with suppliers.[34] The most direct measure of search cost we have comes from a question asked to manufacturers: "If this supplier failed to delivery goods as promised, how long would it take you to find an alternative source of inputs?" Second, a minority (11 per cent) of the suppliers produce a good sold only to the interviewed manufacturer, suggesting a higher level of relationship-specific investment, and suppliers who are more difficult to replace. Lastly, in 32 per cent of the cases, the manufacturer has no alternative suppliers for the input. In these cases, the risk of accepting the deal outright is increased.[35] In each of the six regressions, the search variables all have the expected positive signs. In all but one case (Column 6), these variables are significant at the .05 level or above. Moreover, these variables have a large impact on loyalty. For example, where the supplier produces a good sold only to the interviewed manufacturer, rejection of the new offer is 17 per cent more likely and outright acceptance of the offer is 17 per cent less likely (Columns 5 and 6).

[33] Country-level regressions are reported in Annex 2.

[34] Since the suppliers themselves were not interviewed, we do not know how many similar firms are located near the supplier. Thus we are forced to use other proxies for search costs.

[35] As would be expected, there is a positive correlation between the direct search measure and the other measures, with having no alternative supplier (.36) and the supplier producing a good sold only to the manufacturer (.20) having the highest correlation.

Table 7: Loyalty to suppliers

	(1)	(2)	(3)	(4)	(5)	(6)
					Reject deal	Don't accept deal
Search:						
Length of time to replace supplier (1-5)	0.18 (4.09)	0.12 (2.58)	0.11 (2.34)	0.09 (1.95)	0.04 (3.19)	0.07 (3.48)
Supplier produces good unique to your firm	0.53 (4.46)	0.48 (3.98)	0.48 (3.94)	0.48 (3.97)	0.17 (4.54)	0.17 (3.17)
Firm has no alternative supplier for this input	0.19 (2.21)	0.21 (2.34)	0.25 (2.82)	0.26 (2.95)	0.09 (3.45)	0.04 (0.91)
Information:						
Duration of relationship (years)	0.04 (2.02)	0.03 (1.33)	0.03 (1.36)	0.02 (1.29)	0.01 (2.03)	0.01 (1.69)
First information from business network	-0.01 (0.08)	-0.05 (0.56)	-0.03 (0.37)	-0.03 (0.40)	-0.02 (0.86)	0.01 (0.30)
First information from social network	0.25 (1.85)	0.23 (1.61)	0.26 (1.79)	0.23 (1.62)	0.08 (1.86)	0.09 (1.57)
Frequency of delivery (0-6)	0.09 (2.91)	0.11 (3.30)	0.12 (3.56)	0.12 (3.54)	0.02 (2.39)	0.03 (2.38)
Visits to or from supplier before 1st transaction (0-14)		0.03 (2.50)	0.03 (2.40)	0.03 (2.58)		
Other suppliers would learn of dispute w/ this supplier		0.15 (1.66)	0.16 (1.69)	0.15 (1.64)		
Courts:						
Courts can enforce contracts	-0.13 (1.51)	-0.17 (1.82)	-0.17 (1.82)		-0.06 (2.22)	-0.02 (0.60)
Used court in most recent dispute				-0.38 (4.20)		
Trade associations provide customer/supplier services	-0.27 (3.17)	-0.28 (3.12)	-0.31 (3.38)	-0.30 (3.31)	-0.09 (3.88)	-0.09 (2.29)
Loan in 1996		0.16 (1.90)	0.15 (1.81)	0.18 (2.16)		
Industry/country controls	Yes	Yes	Yes	Yes	Yes	Yes
Other control variables	No	Yes	Yes	Yes	No	No
Manager control variables	No	No	Yes	Yes	No	No
Number of observations	1,051	1,051	1,051	1,051	1,051	1,051
Chi-Square	145.6	215.4	231.5	246.1	131.5	144.9
p-value	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

Notes: t-values in parentheses. The coefficients in Columns 5 and 6 are dp/dx slope coefficients. All regressions also include 4 country and 9 industry indicators. The regressions in Columns 2-4 include the age of the firm and its square, the number of employees and its square, and a variable indicating that the firm sets prices through bargaining with customers, a variable indicating that the supplier is a wholesaler or retailer, and indicators of foreign ownership and location in a different city. Manager controls are age, years of schooling, was manager in an SOE, other family members own businesses, and family owned business before 1950.

Cooperation with an existing supplier may be sustained through bilateral sanctions. More frequent interactions with suppliers (represented by the frequency of delivery) make cooperation easier to sustain. Manufacturers should be less likely to abandon these relationships, and we find that they are. A supplier from whom goods are purchased weekly instead of biweekly is 2 per cent less likely to be abandoned. When firms have particularly good information about and a high level of trust in an existing supplier, we expect them to be less willing to abandon the relationship. We find that relationships of longer duration are less likely to be abandoned, though the effect is not large and not always significant. The probability of rejecting the lower-priced offer increases by 1 per cent for each year of experience trading with the existing supplier.

The use of networks and third-party information sharing also increases loyalty. Loyalty is greater when the supplier is managed by a family member or friend, with manufacturers about 8 per cent less likely to switch from such suppliers. This effect is significant at the .10 level in three of the regressions, and nearly so in the other three. Previous social connections may also be signalled by pre-relationship visits. These visits are also associated with higher levels of loyalty. Ongoing communication among suppliers, represented by the manufacturer's indication that his other suppliers would hear about any dispute he had with this supplier, also results in higher levels of loyalty. The effect of gossip is only marginally significant. Moreover, we find no effect on loyalty when the initial information about a supplier comes from a business network. These findings suggest that informal enforcement comes at a price; it increases the likelihood that a lower-priced supplier will find a reduced market for his goods.

We are most interested in what effect courts and trade associations have on the willingness to buy from unknown suppliers. In this regard, the data are clear. Expressing confidence in the ability to rely on the courts and having used the court in resolving the last dispute with a trading partner are both associated with less loyalty to existing suppliers. Confidence in the courts reduces the probability of rejecting the deal by 6 per cent. In the ordered probit, experience with the courts has a larger and more significant effect than confidence in courts.[36] Membership in a trade association has a somewhat larger effect, increasing the likelihood of accepting the new offer in part or in whole by 9 per cent. The data show that these institutions have statistically and economically significant effects on the level of market friction.

Controlling for the complexity of the relationship and the level of information about the existing supplier, firms that can rely on institutions are substantially more likely to abandon existing suppliers for a better deal. The fact that firms that cannot rely on the courts or trade associations to enforce contracts are likely to pay a cost to maintain relationships with known suppliers implies that inefficiencies result from the absence of these institutions.[37]

[36] When experience with the courts replaces confidence in courts, the effect is also larger in column 5 (β=-.06, t=2.58) and column 6 (β=-.10, t=2.72).

[37] Firms receiving bank loans are more loyal than those without loans, which seems a perverse result. This may reflect an effect modeled by den Haan, Ramey and Watson (1998). In this model, firms that are credit-constrained may be forced to abandon relationships when they would otherwise prefer not to do so.

5. CONCLUSION

Our data show that repeated bilateral trade, market friction, networks, courts and trade associations are all contributing significantly to contract enforcement in Poland, Romania, Russia, the Slovak Republic and Ukraine. But the costs of these differ. Courts and trade associations increase cooperation and also increase the willingness to take a chance with an unknown supplier. Where courts function well, suppliers who are able to improve their efficiency and lower their prices will be rewarded for doing so. Networks increase cooperation but reduce the willingness to buy from previously unknown suppliers. Where networks govern inter-firm relationships, the rewards to – and incentives for – low-cost suppliers will be smaller.

Our results suggest that relational contracting and the courts are substitutes. Two pieces of evidence support this. First, the courts have a smaller effect on trade credit in longstanding relationships than in new relationships. Second, firms that say the courts are effective are less loyal to their existing suppliers, presumably because the assurance the courts give them substitutes for the assurance they are getting from the ongoing relationship with the current supplier.

How will the relative role of the courts and relational contracting change as these legal systems develop? The following are logical implications of our empirical findings:

- Since the courts and relationships are substitutes, the role of the courts relative to relational contracting can be expected to increase over time, both as these countries develop more workable legal systems and as falling search costs weaken the inter-firm ties.
- This larger role of the courts should result in increased efficiency, both because some transactions (those involving large, infrequent orders) cannot be sustained by repeated-game incentives, and because relationships entail inefficiencies through sometimes excluding low-cost new entrants.

It does not follow, however, that relational contracting will become less common as the economy develops and the legal system becomes more effective. More advanced technology tends to mean greater specificity of investment, and therefore more locked-in supplier-customer relationships. For some goods, the courts cannot be resorted to because, with high-technology products or with goods that have subtle quality characteristics, it is often difficult or impossible for a third party to verify that the contract has been breached. Our data show such an effect across the five countries. The managers were asked, if they refused to accept delivery of goods from a particular supplier, how long it would take that supplier to find another customer. One of the options given for answers was that "it would be impossible." If we take this as meaning the product is specific to the customer, the incidence of specificity is higher in the Slovak Republic and Poland and lower in the other three countries (see Table 2). They were also asked how long it would take them to find alternative supplies in the event that a specific supplier failed to deliver goods. If we take the answers " a day or less" and "less than a week" as a measure of low search costs, then search costs are higher in Ukraine and Russia than in the other three countries (Table 2). Combined, these measures suggest that Poland and the Slovak Republic, the most advanced of the five economies, have relatively high specificity and low search costs; Russia and Ukraine, the least advanced, have high search costs and low specificity; and Romania is in between, with low search costs but low specificity.

The incidence of relationship-based contracting, therefore, might rise or fall as the economy develops. It depends whether the increasing specificity of investment outweighs the lowering of search costs and the increasing dependability of the legal system.

ANNEX 1: THE SAMPLE AND THE SURVEY

The data reported here are from surveys undertaken in Russia and Ukraine in May and June 1997, and in Poland, Romania and the Slovak Republic in September-December 1997. Pilot surveys were undertaken in Russia and Ukraine in January-February 1997, in Poland and the Slovak Republic in March 1997, and in Romania in August 1997. The sample of about 300 firms in each country was drawn from a list provided by the country's Statistical Institute. In order to increase the cross-country comparability of the sample, the initial selection was limited to one medium-sized city in each country: Katowice (Poland), Brasov (Romania), Bratislava (the Slovak Republic), Volgograd (Russia) and Dnepopetrovsk (Ukraine). Only in the Slovak Republic did we have trouble identifying a large enough sample of firms meeting the established size criteria that were willing to participate. In the final sample, about one-quarter of the Slovak firms are located in Bratislava, one-quarter in Kosice, and the remaining half are spread across seven other cities. Participation rates were high among the firms contacted – in excess of 70 per cent in Poland and Romania, and 68 per cent in the Slovak Republic. We believe the resulting sample is reasonably representative of small and medium-sized manufacturing firms in each country, though it is not a census.

Table A1 provides a summary of the characteristics of firms in the sample. Most were started in 1990 or after; many within 3 years of the survey. Only in Poland was a significant share of the firms started before 1988. The majority of firms in Russia and Ukraine were privatised, or spun off from state-owned enterprises; the majority in the other three countries started from scratch, with none of their equipment coming from state-owned enterprises.

At least 85 per cent of the managers in each of the countries report that they have previous experience working in an SOE. Previous work experience in the private sector is much more common for start-up firms than spin-offs. At least 29 per cent of start-up managers have prior private sector experience in every country except Romania. In all five countries the educational background of managers is similar; the average amount of schooling is 15-16 years everywhere.

Measured by employment, in all five countries privatised firms were much larger in their first year of operation than the start-ups. The start-ups were smallest at birth in the Slovak Republic and largest in Poland, though there is not a large difference among the countries in the average size of start-ups in their first year.

In Poland, Romania and the Slovak Republic, the sample was drawn so that one-quarter of the firms were from the same industry, metal parts and products. Nearly a fifth of the Ukrainian firms and one-eighth of the Russian firms are also produce metal products. The remaining firms are spread across manufacturing sectors, as shown in Annex 1 Table 1.

The survey was administered face-to-face by interviewers contracted in each country, with responses provided by the general manager or deputy general manager of each firm. The largest part of the survey is a series of questions related to the longest-running and newest customer and supplier relationships. There are also sections on the resolution of contract disputes with customers and suppliers, access to formal bank finance, hidden and unofficial payments, and a set of general questions regarding the size and profitability of the firms.

Annex 1: Table 1: Sample comparisons

	Poland	Slovak Republic	Romania	Russia	Ukraine
Number of firms surveyed:	303	321	308	269	270
Year founded:					
before 1988	68	13	0	4	17
1988-89	38	7	3	13	21
1990-93	138	199	204	182	152
1994-97	59	89	114	64	74
Percent privatised	21.8%	22.7%	12.5%	51.8%	69.1%
Manager worked previously:					
Private sector	35.2%	28.3%	8.4%	20.5%	11.9%
Public Sector	93.7%	87.3%	88.5%	98.8%	95.6%
Public – manager	35.1%	25.8%	29.6%	57.8%	62.2%
Public – engineer	34.0%	38.9%	51.7%	38.2%	35.6%
Public – ord. worker	37.6%	34.5%	17.7%	5.1%	2.2%
Years schooling of manager	15.7	16.2	16.1	15.3	15.2
# employees in 1st year	44	42	54	34	60
# employees end of 1996	63	57	57	35	60
Employ 1st year--privatised	83	119	257	47	73
Employ 1st year--start-up	33	19	25	22	32
Percent of firms in sector:					
Metal parts and products	27.7%	26.0%	27.7%	12.7%	18.6%
Wood products/furniture	5.9%	9.4%	11.5%	2.6%	5.2%
Food products	11.9%	10.7%	19.6%	10.1%	6.3%
Footwear/clothing	16.5%	12.7%	14.6%	14.9%	4.5%
Construction materials	9.2%	10.4%	11.5%	14.9%	15.6%
Chemical products	9.9%	8.1%	7.8%	6.3%	9.7%
Paper and packaging	1.6%	4.2%	2.5%	7.1%	1.9%
Handicrafts and art	1.3%	0.7%	1.6%	1.1%	1.9%
Electrical machinery	8.3%	8.4%	0.6%	12.3%	11.1%
Miscellaneous	7.6%	9.4%	2.5%	17.9%	25.3%

THE SURVEY

The most relevant survey questions are listed below. In many cases, we also note how the question was used to create the dependent or independent variables (in italics).

Questions asked about oldest and newest customer:

(55) How often do you deliver goods to this customer?

1	Daily	{310}
2	Weekly	
3	Every 2 weeks	
4	Monthly	
5	Every 1-3 months	
6	Less often	

Frequency of delivery is 5 for daily, 4 for weekly, and so on.

(61) Before you began working with this customer, what was your primary source of information about this firm/person?

	Yes	No		
1 It is managed or owned by my family	1	2	**Q 63**	{316}
2 It is managed or owned by a friend	1	2	**Q 63**	{317}
3 I used to work for this firm	1	2	**Q 63**	{318}
4 From a previous business acquaintance	1	2	**Yes Q 62, No Q 63**	{319}
5 Through a government agency	1	2	**Q 63**	{320}
6 Through a bank	1	2	**Q 63**	{321}
7 Through a credit rating agency	1	2	**Q 63**	{322}
8 Through a business association	1	2	**Q 63**	{323}
9 Other: (specify) ……..	1	2	**Q 63**	{324}

{.....325}

The most common "other" responses were "he contacted us" (44%), "advertisement" (12%), "met at a market fair" (9%) and "we found the company ourselves" (8%). Social networks are indicated by yes responses to either of the first 2 questions; business networks by yes responses to 3, 4 or 8.

(63) How many times did your company's representatives visit this customer's factory or store before you sold to him?

1	Never	{327}
2	1-3 times	
3	4-6 times	
4	More than 6 times	

(64) How many times did this customer's representatives visit your factory before you sold to him?

1	Never	{328}
2	1-3 times	
3	4-6 times	
4	More than 6 times	

Questions 63 and 64 were combined for the "visits with customer" variable. "Never" was given a value of 0; "1-3 times" a value of 2; "4-6 times" a value of 5; and "More than 6 times" a value of 7. Thus, the visits variable takes on values from 0 to 14.

(67) What proportion of the customer's payment is made at the following times:

1	___ % When the order is placed	{334-35}
2	___ % On delivery	{336-37}
3	___ % 1-7 days after delivery	{338-39}
4	___ % 8-30 days after delivery	{340-41}
5	____ % More than 30 days after delivery	{342-43}
6	____ % Other Schedule (Specify)	

Firms specifying some amount for "other schedule" were dropped from the sample (42 cases or 1.5% of the sample). Payment after delivery is the sum of 3, 4 and 5; payment eight days or more after delivery is the sum of 4 and 5.

(76) Currently, does your company talk with other suppliers of this customer?

1	No	{354}
2	Yes, daily	
3	Yes, weekly	
4	Yes, monthly	
5	Yes, but infrequently	

Response 1 was given a value of 0, response 5 a value of 1, 4 a value of 2, 3 a value of 4 and 2 a value of 5.

Questions asked about oldest and newest supplier:

(121) Does this supplier make

1	The exact same product for other firms,	{514}
2	Is the input specific to your firm?	

(130) Before you began working with him, what were your sources of information about this supplier?

	Yes	No		
1 It is managed or owned by my family	1	2	**Q 132**	{523}
2 It is managed or owned by a friend	1	2	**Q 132**	{524}

3 I used to work for this firm	1	2	**Q 132**	{525}
4 From a previous business acquaintance	1	2	**Yes Q 131, No Q132**	{526}
5 Through a government agency	1	2	**Q 132**	{527}
6 Through a bank	1	2	**Q 132**	{528}
7 Through a credit rating agency	1	2	**Q 132**	{529}
8 Through a business association	1	2	**Q 132**	{530}
9 Other: (specify) ……..	1	2	**Q 132**	{531}

Same as question 61 above. The most common "other" responses were "advertisement" (30%), "He contacted us" (19%), "met at a fair" (11%), and "found company ourselves (7%).

(137) Do you have other suppliers of this input? Yes 1
No 2

(138) If this supplier failed to deliver, how long would it take you to find replacement supplies?

1 A day or less
2 More than a day, less than a week
3 More than a week, less than a month
4 More than a month
5 Would be impossible

Response 1 was coded as 1, response 2 as 2, and so on.

(146) If another firm you have never purchased from offered to supply this input for a price 10% less than this supplier, would you purchase from the new firm instead of this supplier?

Yes 1
No 2
Buy from both 3

(147) If your company had a dispute with this supplier, would your other suppliers find out about it?

Yes 1 {563}
No 2

This question was used for the variable "other suppliers would know about dispute."

Contract Disputes:

(183) Even if you never had a contract dispute could you please tell me which of the following third parties can enforce an agreement with a customer or supplier?

	Yes	No	
1 Court	1	2	{707}
2 The national government	1	2	{708}
3 The local government	1	2	{709}
4 A non-governmental organisation (such as a trade association	1	2	{710}
5 Other	1	2	{711}
6 There is no one	1	2	{712}

Confidence in courts is indicated by a yes response to question 183_1.

(186) Has a customer ever failed to pay for a product after you have delivered it?

Yes	1	{720}
No	2	

(187) Has a supplier ever refused to accept the return of defective merchandise or to refund money for merchandise returned because of low quality?

Yes	1	{721}
No	2	

(189) What organisations assisted in the case of your most recent payment dispute?

	Yes	No	
1 Courts	1	2	{725}
2 Local government authorities	1	2	{726}
3 A formal private agency specialising in such cases	1	2	{727}
4 An informal private agency specialising is such cases	1	2	{728}
5 No one	1	2	{729}

A yes response to question 189_1 indicates the courts were used in the most recent dispute with a trading partner. For a no response to 189_1, or where the firm reports that it has not had a dispute with a trading partner, use of courts takes a value of 0.

General:

(11) Number of full time employees at the end of first half of 1997.....{109-111}

(12) What is your main business activity?

01	Metal parts and products	06	Chemical products	**For official use only**	{112-113}
02	Wood products and furniture	07	Paper and packaging		
03	Food products and beverages	08	Handicrafts and art		
04	Clothes, footwear, and leather goods	09	Electrical machinery		
05	Construction materials	10	Miscellaneous		

Used to create 10 industry dummies.

(201) How many other producers of goods similar to yours are located

Within 1 km of your factory {758-59}

Within same city {760-61}

(206) Is your company a member of any type of business or trade association?

Yes 1 {768}

No 2

(207) What benefits do companies get from business or trade associations?

	Yes	No	
Information about technology	1	2	{769}
Information about the identity and location of new customers/suppliers	1	2	{770}
Information about the trustworthiness of customers/suppliers	1	2	{771}
Contract and/or dispute arbitration	1	2	{772}
Other (specify)	1	2	{773}

{.....774}

The trade association variable is one if the response to question 206 is yes and there is at least one yes response to the second, third, or fourth part of question 207.

(242) If it were possible for you to decrease the price of your main product by 10% (without your competitors changing their prices), how much do you think your sales would increase as a percentage of your current sales?

.....% {907-8}

ANNEX 2: REGRESSION RESULTS BY COUNTRY

Courts and trade associations may be more effective in some countries than in others; social networks may become less important as market institutions develop. Our last set of regressions repeat the basic trade credit and loyalty regressions using the sub-sample from each country. The results are shown on Annex 2 Table 1 (trade credit) and Annex 2 Table 2 (supplier loyalty). Because of the limited number of complete observations in Russia and Ukraine, these countries are combined for the trade credit regressions. Even combined, there are not enough observations to run loyalty regressions for Russia and Ukraine.

Not surprisingly, the smaller sample sizes yield fewer statistically significant results. With a few exceptions, discussed below, all of the trade credit variables (Annex 2 Table 1) retain the expected sign in each of the countries. The effects of business networks are notably consistent across these countries, and always significant at the .10 level. Relationship duration is significant in the three east European countries, but not in Russia and Ukraine. Social networks have the biggest impact in Romania and in Russia and Ukraine, where they are most commonly used (see Table 4), and no impact in Poland, where their use is infrequent. Customer search costs have a significant effect only in the Slovak Republic, though in Poland the measured effect is nearly the same magnitude as the overall sample.

The results for institutions are more mixed. Neither institutional variable is significant in Poland, and trade association membership has the wrong sign.[38] In the Slovak Republic, courts have a large, significant effect (β=11.09, t=2.64), while trade associations have a smaller, insignificant effect (β=4.06, t=0.81). The situation is reversed in Romania, where trade associations have a positive effect (β=6.80, t=1.68) and courts have a positive but insignificant effect (β=5.72, t=0.92), and in Russia and Ukraine, where again trade associations have a significant impact (β=10.99, t=2.57) and courts do not (β=4.21, t=0.99).

In the loyalty regressions, the search cost variables retain the expected sign with one exception (Romania and the length of time to replace the supplier), and generally retain their significance. Social networks increase loyalty only in the Slovak Republic (β=.19, t=2.20), which is also the only country where confidence in courts has a significant impact on loyalty.[39] Trade associations have a more consistent effect on loyalty, though in the Slovak Republic the effect is not significant.

[38] Experience using courts is a stronger indicator of credit in Poland, though this variable does not reach significance (β=5.40, t=1.39).

[39] As with trade credit, experience using courts has a larger effect in Poland (β=-0.07, t=1.57) and also in Romania (β=-0.02, t=1.08).

Annex 2 Table 1: Trade credit regression results by country

	(1)	(2)	(3)	(3)
	Poland	**Slovak Republic**	**Romania**	**Russia / Ukraine**
Customer search:				
Number other firms w/in 1 km	-1.08	-2.59	-0.06	
	(1.28)	(2.63)	(0.05)	
Manufacturer information:				
Duration of relationship (years)	5.74	4.77	9.70	-0.57
	(2.82)	(1.47)	(3.10)	(0.16)
Duration squared	-0.72	-0.51	-1.15	-0.01
	(2.17)	(1.00)	(2.18)	(0.01)
First information from business network	12.36	9.54	11.59	11.38
	(2.85)	(2.17)	(2.49)	(2.15)
First information from social network	-2.29	7.60	14.44	13.04
	(0.34)	(1.23)	(2.96)	(1.98)
Courts:				
Courts can enforce contracts (0-1)	-0.44	10.27	5.62	4.21
	(0.11)	(2.42)	(0.90)	(0.99)
Member of trade association w/ cust, supplier services	-2.51	3.92	6.88	10.99
	(0.57)	(0.77)	(1.70)	(2.57)
Country/industry dummies	Yes	Yes	Yes	Yes
Other control variables	No	No	No	No
Manager control variables	No	No	No	No
Number of observations	345	418	455	231
% obs not censored	7.54%	13.64%	29.45%	43.72%
Chi-Square	35.9	48	51.5	21.07
p-value	<0.001	<0.001	<0.001	<0.001

Notes: t-values in parentheses. All regressions include 9 industry and 4 country controls. In Russia and Ukraine, the number respondents reporting other similar manufacturers located within 1 km is not sufficient to include this variable.

Annex 2 Table 2: Loyalty to suppliers – Probability of rejecting offer

	(1)	(2)	(3)
	Poland	**Slovak Republic**	**Romania**
Search:			
Length of time to replace supplier (1-5)	0.07 (2.93)	0.04 (1.56)	-0.1*E-5 (0.00)
Supplier produces good unique to your firm	0.17 (2.01)	0.21 (3.40)	0.15 (2.60)
Firm has no alternative supplier for this input	0.14 (2.68)	0.05 (1.04)	0.05 (2.26)
Information:			
Duration of relationship (years)	0.01 (1.08)	0.02 (1.73)	0.0003 (0.06)
First information from business network	0.004 (0.10)	-0.02 (0.51)	-0.02 (1.21)
First information from social network	-0.02 (0.17)	0.19 (2.20)	-0.004 (0.19)
Frequency of delivery (0-6)	0.03 (1.86)	0.04 (2.19)	-0.002 (0.29)
Courts:			
Courts can enforce contracts	0.01 (0.10)	-0.13 (2.68)	-0.01 (0.41)
Trade associations provide customer/supplier services	-0.15 (2.84)	-0.07 (1.35)	-0.05 (2.89)
Industry/country controls	Yes	Yes	Yes
Other control variables	No	No	No
Manager control variables	No	No	No
Number of observations	311	379	315
Chi-Square	49.22	57.1	31.1
p-value	<0.001	<0.001	0.0132

Notes: t-values in parentheses. The coefficients are dp/dx slope coefficeints. All regressions include 9 industry and 4 country controls. In Russia and Ukraine, there is not enough variance in the dependent variable to give meaningful results. All but five firms with private suppliers say they would buy from both the old and new supplier.

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