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Networks, Trust, and Trade: The Microeconomics of China–North Korea Integration

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Abstract

A central hope of engagement with North Korea is that increased cross-border exchange will encourage the strengthening of institutions, and eventually, a moderation of the country's foreign policy. An unprecedented survey of Chinese enterprises operating in North Korea reveals that trade is largely dominated by state entities on the North Korean side, although we cannot rule out de facto privatization of exchange. Little trust is evident beyond the relationships among Chinese and North Korean state-owned enterprises. Formal networks and dispute settlement mechanisms are weak and do not appear to have consequences for relational contracting. Rather, firms rely on personal ties for identifying counterparties and resolving disputes. The weakness of formal institutions implies that the growth in exchange does not conform with the expectations of the engagement model and may prove self-limiting. The results also cast doubt that integration between China and North Korea, at least as it is currently proceeding, will foster reform and opening.

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Keywords: trust, relational contracting, economic integration, institutions, China, North Korea

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INTRODUCTION

Modern market economies would break down quickly were all transactions consummated at the time of sale. Market transactions thus rest on the expectation that counterparties will fulfill contractual obligations that unfold over time, whether in the context of an investment relationship or with respect to fulfillment of orders and payment for product. Particularly important to the functioning of a market economy in this regard are the extension of credit and the institutions that support it.

The policy environment and formal institutions, including dispute settlement mechanisms, obviously matter to enforcing such contracts. Institutional quality has been found to affect the volume and commodity composition of international trade, including in the particular cases of China and North Korea (Levchenko 2007; Feenstra et al. 2012; Haggard, Lee, and Noland 2012). However, informal institutions can also complement formal institutions or even substitute for them altogether where they are lacking. Networks are key informal institutions that can facilitate trust.

The development of cross-border market exchanges and institutions is of particular interest in economies undergoing reform, and both for economic and political reasons. The external sector can play an important—even leading—role in the reform process, as it did in the export-oriented economies of East Asia. But in closed economies such exchanges may also have important political economy effects. It is possible that the expansion of exchange with closed economies could yield transactions that are not only market-conforming but effectively private in nature. The development of a de facto private cross-border market economy would be accompanied by increasing trust among firms, manifest in longer-term relational contracting, the willingness to extend credit to counterparts, and to invest directly. Cross-border exchanges would ultimately generate economically rooted political interests that would constrain or encourage the North Korean regime to undertake further economic reform and develop supportive market-conforming institutions.[1] However, there is also a counterargument that if one of the trade partners has a strong technological advantage in the institutionally intensive good, as China presumably has vis-à-vis North Korea today, then opening to trade will not strengthen the institutional quality of either partner (Levchenko 2011).

Moreover incumbent governments may have little interest in the development of either informal or formal market-supporting institutions, even though foregoing them carries substantial opportunity costs (Wei 2000, Anderson and Marcoullier 2002, Moenius and Berkowitz 2011). Such developments might threaten the state's capacity to maintain control or to extract rents through corruption. Indeed, authoritarian

1. See Johnson, Ostry, and Subramanian (2007) for an example of the claim of the institution-enhancing impact of international trade in a non-North Korean context. China has made little secret of its hopes in the North Korean case (International Crisis Group 2009, Snyder 2009). Some argue that engagement could even lead North Korea to moderate its foreign policy behavior, including with respect to its military and nuclear ambitions (Moon 2008, Solingen 2007, 2012).

targets are likely to structure economic exchanges precisely so they maximize, control, and limit the risks associated with the emergence of markets, informal and formal institutions, and economic reform.

The dramatic expansion of China-North Korea trade provides a particular opportunity—indeed, a virtual natural experiment—to consider some of the effects of cross-border exchange on the development of relational contracting and informal and formal institutions. Traditionally, trade between the two centrally planned economies was determined politically and was relatively small. The breakup of the Soviet Union, the dissolution of the Eastern Bloc, and the apparent inability of the North Korean leadership to adjust to changing circumstances contributed to an implosion of North Korea's economy and a famine that killed as many as one million people—around 5 percent of the pre-crisis population (Haggard and Noland 2007). The inability of the state to provide food under the existing socialist compact forced small-scale social units—households, work teams, local government and party offices, even military units—to engage in entrepreneurial behavior to secure food.

One aspect of this coping behavior was the development of decentralized cross-border barter trade for food. This barter was eventually monetized and spread to a much broader array of both goods and actors. This "marketization from below" led to a dramatic expansion in bilateral trade that has continued in the face of the second nuclear crisis and two rounds of UN sanctions (figure 1). Ironically, despite the imposition of sanctions this trade has seen particularly robust growth since the onset of the nuclear crisis (Noland 2009a). The North Korean regime has been constrained to allow a certain degree of marketization because of the increasing dependence of households on the market as a source of both income and consumer goods, even staples. However, the government is clearly ambivalent toward this cross-border exchange and the market more generally and has repeatedly sought to limit their scope.

This paper exploits an unprecedented survey of 250 Chinese enterprises doing business in North Korea to analyze the precise nature of emerging Chinese-North Korea inter-firm relations, and the implicit hypotheses associated with deepening cross-border engagement. Particular attention is focused on relational contracting and the determinants of trust. In well-functioning market economies, recourse to the legal system is core to enforcing contracts but is complementary to the development of trust, which facilitates inter-firm interactions of greater complexity and scale. In the absence of such enabling institutions, market participants must rely on informal mechanisms to deal with counterparty risk. This may occur in part through simple repeat play or iterated exchange over time. But a growing body of literature, much of it derived from the experiences of other transitional economies, has looked at alternative means through which exchange might be supported in the absence of institutions. These mechanisms include collective action on the part of merchants themselves or other forms of personal networks rooted in kinship or family (Milgrom, North, and Weingast 1990; Greif 1993; Greif, Milgrom, and Weingast 1994; Clay 1997a, 1997b; Johnson, McMillan, and Woodruff 1999, 2002; McMillan and Woodruff 1999a, 1999b).

The survey permits us, first, to identify the participants in cross-border exchange. Substantial numbers of the Chinese firms in the survey are private and appear to enjoy little support from the government. On the North Korean side, however, state-affiliated entities figure prominently in cross-border exchanges. State-owned North Korean counterparties are more common with respect to Chinese foreign direct investment and importing activities than they are with respect to exporters, where a more diverse set of clients are visible. Moreover, as we argue in more detail below, the designation of firms as state-owned enterprises (SOEs) cannot be taken at face value and it is at least possible that a gradual de facto privatization of trade may be occurring. But at least as measured by ownership, the North Korean regime seems intent on trying to maintain control over foreign-exchange-generating activities.

What about the emergence of trust and informal networks to support exchange? The survey reveals that little trust is evident beyond the relationships among Chinese and North Korean SOEs, although with the caveats just noted with respect to what these entities actually are. However, the rapid growth in trade and investment appears to rest on a distinctly bimodal set of relationships: short-term and smaller-scale exchanges that resemble a spot market and SOE-to-SOE relationships that are embedded in the higher-level political relationship between the two countries.

Finally, the survey provides little evidence that formal institutions, including institutions of dispute settlement, function to support exchange; to the contrary, there is evidence that such institutions remain missing. Chinese firms have extremely negative views of the policy environment in the country, and essentially make money by circumventing it, including through bribery. A substantial share of firms does not believe that they have recourse to any third party to settle disputes. Among those firms that believe that they do have access to dispute settlement institutions—typically on the Chinese rather than North Korean side of the border—this access does not have any discernible consequences on the extent of relational contracting, measured as their willingness to extend credit. Rather firms rely on personal connections in North Korea, both to identify counterparties in the first place and in resolving disputes.

The findings have wider theoretical and methodological implications for the debate about sanctions and inducements. In the absence of formal institutions and policy reforms, cross-border integration may be self-limiting rather than self-reenforcing. The absence of institutions deters integration, deters investment relative to trade, probably limits the extent of purely private exchange, and inhibits the development of informal networks and relational contracting. Institutional improvement would clearly have significant welfare implications, affecting the volume, composition, and financial terms of cross-border exchange. These results should give pause to those who expect that engagement between China and North Korea, at least as it is currently proceeding, will foster the internal changes in North Korea that would lead either to marketization, reform, or a moderation of its external behavior.

WHO ARE THE PARTICIPANTS?

The results reported here are derived from a September 2007 survey of 250 firms engaged in trade or investment with North Korea. (See the appendix for methodological detail.) As there are no public business registries listing firms engaged in business with North Korea, the firms necessarily constitute a sample of convenience, culled from a variety of sources. However, extensive interviews suggest that the sample is broadly representative of the cross-border business. We are also able to draw some conclusions about the nature of the cross-border exchange though comparison with a control group of 53 firms. This control group was drawn randomly from firms operating in the two border provinces of Liaoning and Jilin provinces that were not doing business in North Korea at the time of the survey.

The Chinese firms doing business in North Korea are engaged in importing, exporting, investment, and the permutations and combinations of these three activities (figure 2). Pure exporters make up the largest group and are the focus of the subsequent econometric analysis. Most of these exporters are relatively small private enterprises (figure 3). If the processes of marketization implicit in the engagement model are likely to hold, they would be most likely to occur among this group of enterprises. The findings about the relatively small size of the Chinese firms doing business in North Korea were confirmed by comparison with our control group. Simple t-tests show that the firms doing business in North Korea have significantly fewer employees and revenues than their counterparts not doing business in North Korea.[2]

With respect to ownership, 58 percent of the firms doing business in North Korea are private enterprises, and another 14 percent are sole proprietorships; only 3 percent are foreign firms operating in China. There is a distinct minority of a dozen large SOEs, some of which have been doing business with North Korea for more than a quarter century (figure 4). By contrast, the not-doing-business sample includes a different mix of ownership structures, with 38 percent reporting foreign ownership, mostly Japanese or South Korean, and only 28 percent accounted for by private enterprises and sole proprietorships. Interestingly, there were not many pure SOEs in either sample (5 percent in the "doing business" sample, 4 percent in the "not doing business" sample) although joint stock companies—which frequently have government participation—accounted for about 21 percent of the first group and 26 percent of the second group.

The Chinese firms were asked about how they learned about their main business partner ("Before your company established an official business relationship with this client, through which channels did

2. A one-tailed t-test was performed comparing both sales and number of employees between the firms doing business in North Korea and the control group. In both cases, the null hypothesis was rejected at the 99 percent level; firms doing business in China are smaller using both measures.

your company learn about this client?) From table 1, it is evident that the pattern of responses differs across the three modalities of interaction. Most exporters report having had some previous contact with their North Korean customer, with private introductions via friends, family, or other Chinese businesses cited about one-third of the time (respondents were allowed to identify multiple channels of introduction). Chinese official networks and North Korean networks of any sort appear to play little role. Chinese private networks were the most frequently cited channel by Chinese investors in North Korea. But in contrast to exporters, North Korean official channels were cited by more than one-quarter of investors. Investing is subject to expropriation risk and it is not surprising that the North Korean government would play a more prominent role in this process, precisely to allay such concerns.

While our understanding of the Chinese participants is relatively complete, our understanding of their North Korean counterparts is much weaker. Figure 5 reports the Chinese firms' responses to a question about the legal status of their primary North Korean counterparty, broken down by importers, exporters, and investors. In all three types of cross-border exchange, the majority of respondents report that SOEs are their main counterparties. Nonetheless, important distinctions emerge across types of exchange. Importers, and particularly investors, report a much greater dependence on official entities: overwhelmingly SOEs but also government bureaus and the military. It is notable that 11 of the 12 Chinese SOEs in the sample report that a North Korean SOE is their primary counterparty. Pure exporters report a wider array of North Korean counterparties, including Chinese brokers, private firms, and individual entrepreneurs; again, if there is evidence for the engagement model it is more likely to be found among this group. Yet even among this group, official entities—SOEs, urban and rural collective enterprises, government bureaus, and the military—very clearly dominate.

It appears that the North Korean regime exercises relatively tight control over investment and exports, key sources of foreign exchange for the regime, while it has allowed a somewhat wider array of importers to emerge, including small private businesses. This finding would suggest some important limits to the process of marketization and privatization of cross-border exchanges.

However, caution is warranted in drawing this inference because the SOE category encompasses entities and economic behaviors of at least three different types. The first are SOEs engaged in their traditional, legally sanctioned lines of business, presumably subject to extensive direct political control. The second are SOEs whose managers have exploited the company's legal status and resources to initiate non-traditional and in some cases completely unrelated (and even illicit) lines of business. Third, entrepreneurs affiliate with SOEs for political protection (Kim 2007); the SOE may in fact be a shell for an effective joint venture partnership. Similar uncertainty about the true nature of the enterprise exists for other types of counterparties that are reported in the survey such as North Korean government offices. Thus while the majority of counterparties are identified as SOEs, de facto privatization of exchange may be occurring under the mantle of the state, including through corruption. It is thus crucial to move beyond a consideration of the formal characteristics of the North Korean counterparties to a consideration of their behavior.

INFORMAL INSTITUTIONS: NETWORKS, TRUST, AND TRADE

The extension of credit and financial settlement terms more broadly are frequently used as indicators of the existence of trust or its absence of trust in previous research on transitional economies in Europe and Asia (Johnson, McMillan, and Woodruff 1999, 2002; McMillan and Woodruff 1999a, 1999b). Less than 5 percent of all Chinese enterprises doing business in North Korea reported extending loans to their North Korean counterparties. Of these, 60 percent were SOEs—an enormously disproportionate presence relative to their occurrence in the sample (5 percent). For the most part, economic transactions are cash-and-carry except with respect to inter-SOE interactions, itself an indication of the weak institutional environment.

Settlement terms also provide insight into the credibility of the operating environment. None of the traders report doing any business in North Korean won. While this might reflect simple exchange rate risks, a long history of currency confiscations—culminating in the botched November 2009 currency reform—suggests that the risk is also political. Most Chinese exporters to North Korea use Chinese yuan as the settlement currency (55 percent), possibly reflecting the preference of small traders to be paid in local currency, followed by US dollars (34 percent), and barter (8 percent). Imports, by contrast, are settled primarily in US dollars (52 percent), followed by Chinese yuan (29 percent), and barter (15 percent). The more frequent use of US dollars in the import trade may reflect the preferences of sellers who want to get paid in home or conveniently usable currencies; it could also reflect the distinctive preferences of North Korean SOEs (more highly represented among Chinese importers' counterparties) and/or the North Korean government, which may desire to earn convertible currency that does not have to be spent in China.

The survey respondents were asked the share of transactions with their main customer that were settled at the time the order was placed, at the time of delivery, from one to 30 days after delivery, and more than 30 days following delivery. Even using this broader definition of credit, little trust is evident: Only 26 percent of the exporters accept payment after delivery; the others require it at time of order or at delivery. Of these two options, most trade is settled at time of delivery; the next most frequently occurring moment of payment is at time of order placement. Less than 10 percent of import and 5 percent of export transactions with survey firms' main counterparty occur more than 30 days after delivery. Particularly given the dissatisfaction with dispute settlement that we explore in more detail below, it is not difficult to understand why credit is limited. Nonetheless, there is some variation in the propensity to extend credit, particularly among exporters, that we can use to get at the determinants of trust. The exporters are of particular interest in discussing the emergence of trust insofar as they have a more diverse set of customers and appear to conform most closely to our image of market-conforming transactions.

In the subsequent analysis, two proxies for trust are employed: a binary variable on the extension of any credit (i.e., settlement takes place either after the time of delivery), as well as in terms of the ordered categorical data on time of settlement. There are at least four clusters of variables that might be germane to explaining the level of trust. The first two are characteristics of the Chinese firms and their North Korean counterparts. A third possibility is inter-firm relationships or networks—in effect, informal institutions—including the channel through which the parties were introduced, the length of the relationship, and the feasibility of either party defecting from the relationship. Finally, we can test for the effects of access to formal institutions, and particularly dispute settlement mechanisms. We take up the first three of these in this section and discuss the effects of formal institutions in the next two sections.

With regard to firm characteristics, simple analysis of risk would suggest that size, legal status, and access to outside funds would influence the willingness of Chinese enterprises to enter into risky transactions with North Korean counterparties. There is also some evidence that small private Chinese firms may exhibit distinct behavior with respect to North Korea (Haggard, Lee, and Noland 2012). Korean-speaking managers might also be better able to navigate the environment, contributing to a lower subjective assessment of risk. We know little about the North Korean counterparties, but their legal status would presumably affect their perceived riskiness, and by extension, the willingness of Chinese firms to extend credit.

A second cluster of factors that may matter for the emergence of relational contracting is the presence of informal institutions: the networks within which market exchanges may be embedded. Previous research on transitional economies documents that networks can promote relational contracting in weak institutional environments through two distinct channels (Johnson, McMillan, and Woodruff 1999, 2002; McMillan and Woodruff 1999a, 1999b). Networks of similar firms can provide information on customers' reliability but they can also provide a means of sanctioning customers who renege on deals. In principle, if information is the driver, trust should develop through repeated interaction and the network effect should diminish over time. If enforcement is the driver of increased trust, the impact of networks should be more enduring.

However, changes in the number of market participants over time could also affect the efficacy of informal sanctions, though the sign of the effect is ambiguous. One possibility is that as the number of participants increase so does effective anonymity; with more players in the market the monitoring of reputation becomes more difficult. Larger number of firms involved in cross-border trade could erode the effectiveness of reputation-based sanctions; under these circumstances, cross-border exchange in the presence of opportunistic behavior would be self-limiting. A related hypothesis is that defection is connected to the ease in locating alternative suppliers or customers. Trade credit tends to be offered when it is costly to find an alternative counterparty (Johnson, McMillan, and Woodruff 1999; McMillan and Woodruff 1999a). With more parties, firms may face greater risk in extending credit, and hence we would observe a tightening of settlement terms as the number of market participants grows.

Alternatively, the increase in cross-border trade may be self-reenforcing. The increased density of participants could promote the formation of voluntary associations, the provision of information on the reputation of counterparties, and a "safety in numbers" effect that could outweigh the anonymity effect (Anderson and Bandera 2006). Which of these two effects dominates is an empirical issue.

The survey yields information on the length of time that the Chinese respondent has interacted with their primary North Korean counterparty. The extent of alternative counterparties can be measured by the number of firms in the survey reporting to be in the same industry. While the survey does not yield true panel data, we proxy for the degree of anonymity by combining the information on the date when the relationship was initiated with the data in figure 4 on the cumulative number of participants in trade, under the admittedly strong assumptions that the current contracting terms reflect conditions that pertained when the relationship started, controlling for the length of the relationship. Yet another measure of anonymity can be constructed by combining the date on which the relationship was initiated with the overall level of bilateral exports or trade at that time.

Specification search proceeded by first calculating simple correlations between the variables discussed above and both the binary and polychotomous categorical measures of trade credit. Several network variables did not prove significant. There was no evidence that Chinese enterprises with Korean-speaking managers or those headquartered in the immediate border region exhibited distinctly higher levels of trust. The number of counterparties in the same industry, as measured by the survey sample, was uncorrelated with settlement terms.

However, there is evidence that firm characteristics and the nature of inter-firm relationships are related to trust.[3] Table 2 reports marginal effects probit estimations on the binary trust variable, and ordered probits on the categorical trust variable. The most highly correlated variable with trade credit in both the simple and ordered probits is the respondent's status as a Chinese SOE. This is a striking result insofar as the primary counterparty of every Chinese SOE in the sample save one is a North Korean SOE. In essence, trust as measured by both extension of credit and by settlement terms is most robust in inter-SOE interactions: Chinese SOEs extend credit to their North Korean counterparts or allow them

3. We tested for whether the availability of outside finance mattered for the extension of credit, on the presumption that it would reduce the risk to the firm itself. It was occasionally, though not robustly, correlated with the willingness to extend credit and we thus omitted it from the regressions reported here.

to run up arrears. This effect is seen most clearly in table 2 specifications 2.7 through 2.9 where trust is positively associated with SOE status on both sides of the transaction. Trust—at least as measured by the extension of credit—is most in evidence in economic relations that are probably embedded in the higher-order political relationship between the two countries.

What about the effect of various forms of networks, measured by how firms were introduced? Direct introduction, defined as respondents having prior contact with their counterparty's management, is consistently correlated with trust. Trust was more likely when firms had direct prior knowledge of each other. There is evidence in specifications 2.1 through 2.6 that introduction via North Korean networks—both public and through private familial and friendship networks—contributes to trust. But these estimated impacts are not reproduced in the categorical data on trade settlement terms. There is no evidence that introduction via Chinese networks matter. In sum, although there is some evidence that networks matter for trust, either their influence is not strong or they are simply unable to overcome the headwinds created by the weak formal institutional environment.

Finally, as one would expect, there is a positive relationship between the length of the relationship between firms and their clients and settlement terms (specifications 2.7 and 2.10). In the context of weak informal and formal institutions, it takes iterated play with a particular firm to build trust. But there is also some evidence that the anonymity effect dominates the "safety in numbers effect," whether measured by the cumulative number of participants in the markets or the volume of total trade (specifications 2.5, 2.9, 2.11, and 2.12). Ideally one would want to control jointly for the length of the relationship and the impact of increasing numbers of market participants, but these variables are highly correlated and (not surprisingly when entered jointly) are statistically insignificant. However this finding appears to call into question the expectation in the engagement model that trade is subject to self-reenforcing externalities. Rather, the increasing number of entrants into the market and increasing trade appears to be negatively correlated with the extent of trust as measured by settlement terms even if repeat play is germane for any given firm.

FORMAL INSTITUTIONS I: PERCEPTIONS OF THE POLICY ENVIRONMENT

Chinese firms have now been operating in North Korea for some time, but as the aggregate trade data in figure 1 suggests the upturn in bilateral relations is recent. Most of the firms in the survey initiated cross-border exchange with North Korea since 2000 (figure 4). How do such firms evaluate the business environment?

Although selection effects are clearly operating, almost 88 percent of all respondents doing business in North Korea report that they are able to make a profit and many report some positive developments in the operating environment. A slight majority believed that it was getting easier to do business in North

Korea at the time of the survey.[4] About 50 percent cite the reduction in trade barriers and the emergence of general markets as positive features in the operating environment. It is important to note, however, that this may have been a function of the timing of the survey, which came during a period of progress on the nuclear issue and the announcement and staging of a second North-South summit just prior to the survey.

For the most part the Chinese firms surveyed have a negative assessment of the business environment in North Korea, including with respect to institutions and policy. Most firms report problems with infrastructure; large majorities identify the ban on cell phones (86 percent) and inadequate infrastructure (79 percent) as constraints (figure 6).[5] However, regulation is also a major hindrance, with 79 percent citing changing regulations, 70 percent citing the nature of regulations, and just over 60 percent reporting expropriation risk as a drag on business.

Previous research indicates that small firms may be more vulnerable to the nature of the North Korean institutional and policy environment (Haggard, Lee, and Noland 2012). Despite the fact that they are more likely to enter, and despite the fact that they engage in activities that reduce risk such as focusing solely on exports and avoiding contact with officials, they are nonetheless more likely to find the regulatory environment a problem. Small private firms appear particularly sensitive when compared to medium-sized firms or SOEs. We also posed a question about whether fears of expropriation make it too risky to invest. Again, small firms and small private firms are more likely to agree suggesting strongly that weak property rights deter firms from expanding their trading operations to include investment.

The survey provides evidence of the business environment in North Korea that goes beyond subjective assessments to include the nature of interactions with officials, including corruption. Most of the Chinese firms report that they are required to get permission or approval from some level of the North Korean government to do business in North Korea, though there are differences across types of firms in the extent to which they actually do so. All of the Chinese SOEs report having obtained permission before starting a business. But 29 percent of the private businesses report that they did not obtain any permission or approval by the North Korean government. The nature of cross-border exchange also affects the propensity to have subsequent contact with officials. Trading activities and particularly importing from China are somewhat less regulated; 47 percent of those who are engaged only in exports to North Korea report that they have no need of government approval to operate. These two findings might be

4. A number of changes have occurred in North Korean economic policy since the survey was conducted, most prominently a disastrous currency reform in November 2009, and it is not known whether the respondents still hold these views.

5. Since the survey was conducted, the ban on cell phones has been lifted with the Egyptian firm Orascom introducing domestic cellular service through most of the country (Noland 2009b). Whether the foreign firms' needs for international connections have been fully addressed is unknown.

interpreted as supporting the engagement expectation that at least some private firms do succeed in forming connections outside the purview of the state.

However, official permission and approval and subsequent regulation by no means exhausts the nature of firms' interactions with the state. A majority of the firms in the survey report a need to bribe to do business (55 percent). Investors are much more likely to report a need to bribe (73 percent) than traders (54 percent) or those engaged in exporting only (44 percent); these differences between investors, traders, and exporters are significant at the 1 percent level and are robust to multivariate analysis (Haggard, Lee, and Noland 2012). Regressions on the propensity to bribe found that firms engaged in trading, which involves the least exposure to North Korea and can even be conducted within China between Chinese firms and North Korean agents, feel less compulsion to bribe. Smaller firms also were less likely to express a felt need to bribe.

But these findings carry a very mixed message with respect to engagement expectations. Firms that limit their activities to trading or that are small evade both contact with North Korean officials and bribery to a greater extent. However, they may stay small and engaged only in trade precisely because of the fear that growth or investment will make them targets of predation. This inference is partly supported by the very distribution of firms engaged in trade with North Korea, which is dominated by smaller entities engaged only in exports. In sum, there is evidence that the operating environment does not permit the spillovers from small, spot-market transactions to relational contracting and the expansion of private exchanges of greater scale and scope.

FORMAL INSTITUTIONS II: DISPUTE SETTLEMENT MECHANISMS

A critical feature of the institutional environment of a market economy is the capacity of investors and traders to resolve disputes. Formal institutions of dispute settlement, typically courts or other means of formal arbitration, are often seen as the very cornerstone of a market-supporting institutional environment even if those formal institutions are supplemented with informal ones. In previous research, courts have been found to improve the functioning of relational contracts and contribute to expanded trade and investment. Indeed, such institutions appear to be most important at the start of a trading relationship (Johnson, McMillan, and Woodruff 1999, 2002). Do firms believe they have access to dispute settlement procedures, and of what sort? Are they effective? Is there any evidence that access to dispute settlement has effect on the nature of those exchanges, including with respect to trust?

The survey permitted respondents engaged in multiple types of business to characterize each of their principal business relationships separately, for example, allowing a single firm to report on relations with its main import, export, and investment partner. It is first worth establishing that trade and investment is certainly not frictionless, and anecdotes of opportunism on the part of North Korean firms abound. Disputes appear to be fairly common. Twenty-one percent of these business relationships had generated disputes, and note that these are principal business partners only. The pattern of disputes was fairly uniform across types of business relationships: 19 percent of those engaged in exporting reported having disputes, as well as 24 percent of firms importing and 23 percent of investors. But if we compare investors with those who export only—what we call "pure exporters"—we see clear evidence of the hold-up problem. Fully 41 percent of investors report disputes, while only 4 percent of pure exporters do. This result comports with the findings in the previous section on size and corruption. As with the policy environment and corruption, weak dispute settlement also appears to push firms back to less risky, "cash-and-carry" transactions.

When asked how they would resolve a dispute, the pattern of responses across exporters, importers, and investors differed in predictable but interesting ways; we focus here on the differences between exporters and investors (table 3). More than one-quarter of exporters indicated that there were no third parties from which they could seek help.[6] To the extent that they did believe there was recourse, it was largely on the Chinese side of the border: twenty percent indicated that they would seek help from Chinese government officials, 19 percent would look to other Chinese companies or business associations, and 17 percent would use the Chinese court system. Although the number of disputes reported on the part of pure exporters was small (only 5 of 113 pure exporters), their pessimism was warranted; none of the five reported they were satisfied with the process of dispute resolution.

For the investors, nearly one-quarter (24 percent) would try to settle matters privately, 21 percent would appeal to North Korean local officials, and 16 percent to Chinese officials, presumably reflecting the far greater importance of North Korean officials in settling investment disputes that involve the foreign investor's physical presence in North Korea. It is also notable that the share reporting that they would appeal to local officials (21 percent) exceeded that of provincial officials (11 percent) and central government officials (9 percent). This pattern is consistent with a reduction in de facto central control that was a byproduct of "marketization from below," but it may also reflect the fact that investors see local officials as more forthcoming.[7] This finding could have substantial long-run significance for the North

6. Multiple responses for dispute resolution modalities were permitted. If the modality figures are calculated as a share of total responses (not number of enterprises), the exports results are Chinese government officials (13 percent), other Chinese firms or business association (12 percent), and Chinese courts (11 percent). For imports the results are private negotiation (23 percent), North Korean local officials (12 percent), and Chinese officials (9 percent). For investors the results were private negotiation (21 percent), local North Korean officials (18 percent), and Chinese officials (13 percent). In no case did the North Korean court system's share of responses reach 10 percent.

7. In the past year the North Korean government has tried to reverse this trend, specifically centralizing the foreign investment approval process.

Korean political economy, suggesting that just as marketization occurred "from below," so local officials may play a more central role in de facto policy reform than the central government.

Whatever the investors thought ex ante, their disaffection after the fact is high. Ninety-four percent of the investors who experienced disputes report that they were not satisfied with the way their dispute was settled.

In short, the number of disputes is high. Many firms report that they do not have access to dispute settlement mechanisms at all or that they must rely on Chinese mechanisms, presumably because of the weakness of North Korean ones. Dissatisfaction with the outcome of disputes is nearly ubiquitous.

But it may nonetheless be the case that those firms which believe they have access to formal dispute settlement would be more trusting; this would indicate at least some expectation that formal institutions matter. Conversely, it may be that firms are more likely to extend credit only in the presence of recourse to informal networks of various sorts, including private third parties or friends and relatives. In the interests of tractability, we have grouped the responses listed in table 3 into five blocks for the purpose of the multivariate statistical analysis appearing in table 2. This permits us to test for the effects of perceived access to a wide array of different dispute settlement processes: North Korean official (government officials and courts), Chinese official, Chinese companies and private trade associations, and personal networks (relatives and friends). The final category consists of those who do not believe that they have access to either formal or informal dispute settlement mechanisms: They believe that they must resolve their problems through direct private negotiation or state that they have no third party recourse.

There is no evidence that belief in access to any sort of Chinese dispute settlement, public or private, has an effect on trust as measured by settlement terms. Evidence on the impact of belief in access to North Korean public sector settlement is ambiguous. At the most basic level, in specifications 2.1 through 2.6, recourse to North Korean officials or courts is consistently associated with greater trust. However this relationship is not entirely robust when applied to the finer categorical disaggregation of financing terms reported in specifications 2.7 through 2.12. Moreover, in regressions not reported in the interest of brevity, when the variable "North Korean public sector" is disaggregated into its state official and courts components, access to North Korean courts is never statistically significantly correlated with trade settlement term; in short, it is not formal dispute settlement mechanisms that matter but political connections.

The most consistent finding is that belief in recourse to friends and family to resolve disputes is associated with greater trust. Again, we find evidence that points to the self-limiting nature of cross-border exchange. Trust is possible in the context of personal networks but these networks are limited by their very nature. Impersonal exchanges are bounded by the absence of more formalized institutions supporting property rights and contracting.

CONCLUSION

This paper has used a unique survey of Chinese businesses operating in North Korea to explore some key arguments regarding the extent to which engagement generates privatization and marketization of exchange, the development of trust and relational contracting. We also consider whether there is evidence of the spillover of these activities onto an improved formal institutional and policy environment, including with respect to dispute settlement.

The findings with respect to privatization and marketization are ambiguous, but not strongly supportive of the engagement model. Chinese firms engaging in cross-border trade are largely private and do not appear to have substantial support from the Chinese government, if any; these firms are therefore more likely to operate on commercial terms and exit if unprofitable (as some in the survey control group in fact did). On the export side of the ledger, Chinese traders do interact with a wider array of North Korean counterparties, including private firms.

But most transactions that generate foreign exchange for the regime—namely, North Korean exporters and joint ventures with Chinese firms—are dominated by state entities. It is possible that these firms are engaging in market-like behavior beyond the purview of the state, including through rent-seeking activities. But at least as measured by the ownership of North Korean counterparts, the cross-border trade remains largely in state hands. The political economy arguments regarding the transformative effects of engagement frequently overlook the fact that the regimes that are likely to be the target of such strategies are also likely to have statist political economies that are capable of exercising relatively tight control over cross-border exchanges, including through the instrumentality of the state-owned enterprise.

There is little evidence of trust in relational contracting beyond the relationships among Chinese and North Korean SOEs. We also found that as cross-border integration has proceeded, the propensity to engage in relational contracting has not increased correspondingly. We hypothesized that this may be the result of increasing anonymity and the absence of private associations which could sustain reputation-based sanctions. This raises the possibility that the growth of cross-border exchange could be self-limiting, as the risk premium on doing business in North Korea rises in the absence of concomitant strengthening of formal or informal institutions. In short, some of the positive externalities from trade to the development of relational contracting that permits greater scale and scope of private activities does not appear to be taking place.

What about the policy and institutional environment? The Chinese enterprises generally have negative appraisals of the North Korean business environment, with large majorities invoking not only the inadequacy of the physical infrastructure but the problematic nature of the regulatory environment. In response these firms have adopted various strategies to reduce risk, including limiting their activity to trading and to exporting in particular; these transactions involve less exposure to North Korea and can even be undertaken in China. Such strategies are particularly prevalent among small and small private enterprises and firms that do not believe that they can call upon political connections in North Korea. Transactions are undertaken in ways that suggest limited trust, including not only settlement in hard currencies but very stringent payment terms and limited credit, in effect "cash-and-carry."

However, it is impossible to fully avoid the reach of the state, and bribery and corruption are pervasive. There is some evidence that the likelihood of predation is correlated with size, But we also found that small firms—even though they pay fewer bribes—nonetheless express particularly adverse views of the policy environment and about risks of expropriation and predation in particular. These findings strongly suggest that size may be endogenous to the weak policy environment, which adds a self-limiting aspect to the expansion of cross-border integration. Firms may limit the scale of involvement in order to fly beneath the radar of a predatory state.

The survey indicates that Chinese firms receive little support from the government, and have a limited belief in the ability of North Korean, Chinese, or private business networks to protect them in the face of disputes. In the absence of formal institutions, they are reliant on political connections and private networks of family and friends in the North to resolve disputes, a dependence that pushes the firms either toward politicized trade or toward self-limiting personal networks. Equally interesting is our finding that even among firms that believed that they had access to formal dispute settlement mechanisms on either side of the border, this belief did not change their behavior with respect to relational contract and trust, at least as measured by settlement terms. Not surprisingly, in a weak institutional environment even belief in access to institutions of dispute settlement does not necessarily have effect; again, private networks had the most robust effect of any network variables on the extent of trust.

We have focused largely on the microeconomics of engagement, leaving aside the broader question of whether engagement will ultimately contribute to a moderation of provocative behavior by altering the state's assessment of its own interests or by contributing to a growth of pluralism that will constrain provocative behavior. Although it goes beyond the scope of this paper, developments since the onset of the nuclear crisis raise serious doubts about whether engagement between North Korea and its largest trade partner will generate such effects. Rather than contributing to the development of genuine market-conforming exchange among decentralized participants, North Korean authorities have responded to the market by actively quashing decentralized cross-border trade, centralizing the investment approval process, and channeling economic integration with China through entities under more direct central political control. As with the microeconomic processes described here, the engagement model must take into account the core point raised by Solingen (1998, 2012), that statist political coalitions are perfectly aware of the potentially corrosive effects of market-oriented engagement and, for that reason precisely, seek to control it.

APPENDIX

A pilot survey was conducted in September 2007 using a survey instrument designed by the authors with the actual interviews conducted by the Horizon Research Consultancy Group. Horizon was responsible for securing any local permits and ensuring that the survey was conducted according to the European Society for Opinion and Market Research (ESOMAR) rules (http://actrav.itcilo.org/actrav-english/telearn/global/ilo/guide/iccmar.htm). The final survey was conducted during October and November 2007. The predominant means of conducting the survey was through face-to-face interviews, though some interviews were conducted by telephone. The success rate in conducting the interviews was around 7 percent. Among the reasons that interviews could not be conducted were refusal by the enterprise to participate prior to or during the interview, inability to establish contact with the enterprise, and the unavailability of the person within the enterprise eligible to respond according to the survey instrument (chairman, manager, etc.). The data—and particularly firm addresses—were subject to post-survey verification by random spot-checking.

Given that there are no known or available registries of all Chinese firms doing business with North Korea, the sample of firms doing business with North Korea was of necessity a sample of convenience. The sample was developed using North Korean, Chinese, and Western press accounts, authors' interviews in Northeast China in the summer of 2007, as well as information gathered by the Horizon Group in the process of the pilot and interviews with other firms. The sample was drawn from enterprises operating in two border provinces—Jilin and Liaoning—due to the practical impossibility of implementing the survey on a nationwide basis, particularly with respect to the control group of firms not doing business in North Korea.

The design involved a survey of 300 firms, with 250 doing business in North Korea and 50 not doing business in North Korea; in the end, we had 53 responses from firms not doing business in North Korea. We defined firms doing business with North Korea to include those that were involved in trading (import, export, or both), investment, or that maintained representative offices in North Korea. Those not doing business included 10 firms that had done business and had quit ("the quitters") and 43 that had never done business with North Korea ("the never-weres").

The survey began with a pilot of 30 firms from Jilin and Liaoning provinces (20 firms doing business in North Korea and 10 firms not doing business in North Korea). Although it was understood this was a sample of convenience, enterprises reflecting a broad distribution of size, sector, and provincial location were targeted. Following the successful completion of the pilot—which did not require fundamental modification of the survey—we were able to transit directly to the full survey and all of the pilot firms were included in the final 300 firms. Once the sample of 250 enterprises operating in North Korea was completed, the control group was selected by randomly sampling business registries for Jilin and Liaoning provinces.

REFERENCES

Anderson, James E., and Oriana Bandera. 2006. Traders, cops, and robbers. *Journal of International Economics* 70: 197–215.

Anderson, James E., and Douglas Marcouiller. 2002. Insecurity and the Pattern of Trade: An Empirical Investigation. *The Review of Economics and Statistics* 84, no. 2 (May): 342–52.

Clay, Karen. 1997a. Trade, Institutions and Credit. *Explorations in Economic History* 34: 495–521.

Clay, Karen. 1997b. Trade Without Law: Private-Order Institutions in Mexican California. *Journal of Law, Economics and Organization* 13, no. 1 (April): 202–231.

Feenstra, Robert C., Chang Hong, Hong Ma, and Barbara J. Spencer. 2012. *Contractual Versus Non-Contractual Trade: The Role of Institutions in China.* NBER Working Paper 17728. Cambridge, MA: National Bureau of Economic Research.

Greif, Avner. 1993. Contract Enforceability and Economic Institutions in Early Trade: The Maghribi Traders' Coalition. *American Economic Review* 83, no. 3 (June): 525–48.

Greif, Avner, Paul Milgrom, Barry R. Weingast. 1994. Coordination, Commitment, and Enforcement: The Case of the Merchant Guild. *The Journal of Political Economy* 102, no. 4 (August): 745–76.

Haggard, Stephan, and Marcus Noland. 2007. *Famine in North Korea: Markets, Aid, and Reform*. New York: Columbia University Press.

Haggard, Stephan, Jennifer Lee, and Marcus Noland. 2012. Integration in the Absence of Institutions: China-North Korea Cross-Border Exchange. *Journal of Asian Economics* 23, no. 2:130–45.

International Crisis Group. 2009. Shades of Red: China's Debate over North Korea, Asia Report No. 79. Brussels. Available at http://www.crisisgroup.org/en/regions/asia/north-east-asia/north-korea/179-shades-of-red-chinas-debate-over-north-korea.aspx.

Johnson, Simon, John McMillan, and Christopher Woodruff. 1999. Contract Enforcement in Transition. EBRD Working Paper 45. London: European Bank for Reconstruction and Development.

Johnson, Simon, John McMillan, and Christopher Woodruff. 2002. Courts and relational contracts. *Journal of Law, Economics, and Organization* 18, no.1: 221–77.

Johnson, Simon, Jonathan Ostry, and Arvind Subramanian. 2007. *The Prospects for Sustained Growth in Africa*. IMF Working Paper 07/52. Washington.

Kim, Sung Chull. 2007. *North Korea Under Kim Jong Il: From Consolidation to Systemic Dissonance*. Albany: State University of New York Press.

Levchenko, Andrei A. 2007. Institutional Quality and International Trade. *Review of Economic Studies* 74, no. 3: 791–819.

Levchenko, Andrei A. 2011. *International Trade and Institutional Change*. NBER Working Paper 17675. Cambridge, MA: National Bureau of Economic Research.

McMillan, John, and Christopher Woodruff. 1999a. Interfirm Relationships and Informal Credit in Vietnam. *The Quarterly Journal of Economics* 114, no. 4: 1285–1320.

McMillan, John, and Christopher Woodruff. 1999b. Dispute Prevention without Courts in Vietnam. *Journal of Law, Economics and Organization* 15, no. 3: 637–58.

Milgrom, Paul R., Douglas C. North, and Barry R. Weingast. 1990. The Role of Institutions in the Revival of Trade: the Law Merchant, Private Judges, and the Champagne Fairs. *Economics and Politics* 2, no. 1 (March): 1–23.

Moenius, Johannes, and Daniel Berkowitz. 2011. Law, trade, and development. *Journal of Development Economics* 96: 451–60.

Moon, Chung-in. 2008. Managing the North Korean Nuclear Quagmire: Capability, Impact, Prospects. In *The United States and Northeast Asia: Debates, Issues, and New Order*, eds. G. John Ikenberry and Chung-in Moon. New York: Rowman and Littlefield.

Noland, Marcus. 2009a. The (Non) Impact of UN Sanctions on North Korea. *Asia Policy* 7: 61–88.

Noland, Marcus. 2009b. Telecoms in North Korea: Has Orascom Made the Connection? *North Korea Review* (Spring).

Snyder, Scott. 2009. *China's Rise and the Two Koreas: Politics, Economics, Security*. Boulder: Lynne Rienner Publishers.

Solingen, Etel. 1998. *Regional Orders at Century's Dawn: Global and Domestic Influences on Grand Strategy*. Princeton: Princeton University Press.

Solingen, Etel. 2007. *Nuclear Logics: Contrasting Paths in East Asia and the Middle East*. Princeton, N.J.: Princeton University Press.

Solingen, Etel., ed. 2012. *Dissuading Proliferators: Do Positive and Negative Inducements Work?* New York: Cambridge University Press.

Wei, Shang-Jin. 2000. How Taxing is Corruption on International Investors?, *The Review of Economics and Statistics* 82, no. 1:1–11.

Table 1 Respondent introduction networks

	Exporters		Importers		Investors	
Introduction network	**Percent share of firms**	**Percent share of responses**	**Percent share of firms**	**Percent share of responses**	**Percent share of firms**	**Percent share of responses**
Direct contact	50	41	27	21	20	16
Knew management	6	5	11	9	14	12
DPRK family and friends	11	9	14	11	11	9
DPRK government	11	9	19	16	27	22
Chinese government	7	6	10	8	7	6
Chinese businesses in DPRK	31	26	40	33	37	30
Chinese family and friends	2	2	0	0	0	0
Others	3	2	3	2	6	5

DPRK = Democratic People's Republic of Korea

Note: Respondents were allowed to give multiple responses. Share of firm percentages do not add up to 100. Share of responses percentages reflect total responses given. For firms, n = 210, 109, and 70 respectively. For responses, n = 251, 135, and 86.

Source: Authors' calculations.

Table 2 Trust: provision of credit to export clients

	Binary					
	1=yes; 0=no					
	(2.1)	**(2.2)**	**(2.3)**	**(2.4)**	**(2.5)**	**(2.6)**
Intro network: DPRK public sector	0.372**	0.297*	0.374**	0.325**	0.250	0.327**
	(0.170)	(0.164)	(0.170)	(0.160)	(0.155)	(0.159)
Intro network: DPRK private sector	0.359**	0.341**	0.358**	0.317**	0.299*	0.310*
	(0.154)	(0.151)	(0.155)	(0.160)	(0.158)	(0.160)
Intro network: Chinese public sector	0.244	0.202	0.231	0.297*	0.252	0.280
	(0.177)	(0.169)	(0.175)	(0.172)	(0.167)	(0.171)
Intro network: Chinese private sector	0.086	0.056	0.083	0.098	0.067	0.092
	(0.088)	(0.083)	(0.087)	(0.093)	(0.089)	(0.092)
Intro network: direct introduction	0.190**	0.154**	0.186**	0.211**	0.168**	0.205**
	(0.082)	(0.077)	(0.081)	(0.086)	(0.084)	(0.086)
Dispute help: DPRK public help, government and court	0.216**	0.217**	0.220**	0.207**	0.206**	0.213**
	(0.099)	(0.099)	(0.099)	(0.101)	(0.101)	(0.101)
Dispute help: Chinese settlement sources, government and court	0.009	0.004	0.010	0.026	0.021	0.028
	(0.075)	(0.075)	(0.075)	(0.084)	(0.084)	(0.084)
Dispute help: Chinese companies	0.016	0.028	0.024	0.052	0.070	0.066
	(0.090)	(0.091)	(0.091)	(0.102)	(0.103)	(0.103)
Dispute help: private DPRK help	0.137*	0.140**	0.143**	0.169**	0.177**	0.177**
	(0.070)	(0.070)	(0.070)	(0.077)	(0.076)	(0.076)
DPRK ownership: private	–0.110	–0.159*	–0.114	–0.197**	–0.230***	–0.206**
	(0.111)	(0.086)	(0.109)	(0.099)	(0.080)	(0.096)
DPRK ownership: foreign	–0.022	–0.084	–0.022	–0.062	–0.106	–0.066
	(0.135)	(0.107)	(0.136)	(0.140)	(0.117)	(0.139)
DPRK ownership: state affiliated	0.034	–0.032	0.035	0.001	–0.047	0.001
	(0.130)	(0.121)	(0.131)	(0.145)	(0.135)	(0.147)
China ownership: private	0.733***	0.734***	0.737***			
	(0.067)	(0.051)	(0.070)			
China ownership: joint stock cooperative	0.975***	0.975***	0.976***			
	(0.009)	(0.009)	(0.010)			
China ownership: SOE or state affiliated	0.903***	0.899***	0.903***			
	(0.020)	(0.020)	(0.021)			
Small and private firm				–0.095	–0.067	–0.088
				(0.090)	(0.088)	(0.089)
Length of relationship	0.008			0.013		
	(0.008)			(0.008)		
Number of market participants at time of entry		–0.001			–0.001**	
		(0.000)			(0.000)	
China–DPRK trade volume at time of relationship starting with largest client			–0.000			–0.001
			(0.001)			(0.001)
Observations	192	193	192	184	185	184
ll	–85.59	–87.49	–85.88	–85.19	–86.22	–85.90
chi2	46.93	45.84	46.34	38.74	39.39	37.32
r2_p	0.215	0.208	0.212	0.185	0.186	0.178

(table continues on next page)

Table 2 Trust: provision of credit to export clients *(continued)*

	Categorical					
	1=payment upon order; 2=payment upon delivery; 3= payment within 30 days of delivery; 4=payment more than 30 days after delivery					
	(2.7)	(2.8)	(2.9)	(2.10)	(2.11)	(2.12)
Intro network: DPRK public sector	0.293	0.290	0.288	0.120	0.096	0.122
	(0.307)	(0.312)	(0.308)	(0.305)	(0.309)	(0.305)
Intro network: DPRK private sector	0.386	0.380	0.395	0.441	0.425	0.441
	(0.299)	(0.299)	(0.301)	(0.312)	(0.311)	(0.312)
Intro network: Chinese public sector	0.664*	0.605*	0.606*	0.564	0.503	0.512
	(0.361)	(0.358)	(0.358)	(0.352)	(0.349)	(0.350)
Intro network: Chinese private sector	0.141	0.150	0.128	0.187	0.195	0.170
	(0.216)	(0.214)	(0.215)	(0.217)	(0.215)	(0.217)
Intro network: direct introduction	0.390*	0.378*	0.372*	0.481**	0.453**	0.456**
	(0.226)	(0.222)	(0.225)	(0.230)	(0.226)	(0.229)
Dispute help: DPRK public help, government and court	0.273	0.290	0.283	0.230	0.253	0.241
	(0.225)	(0.225)	(0.225)	(0.231)	(0.230)	(0.230)
Dispute help: Chinese settlement sources, government and court	0.056	0.057	0.070	0.008	0.009	0.029
	(0.213)	(0.212)	(0.212)	(0.215)	(0.214)	(0.214)
Dispute help: Chinese companies	0.045	0.074	0.078	0.021	0.063	0.070
	(0.239)	(0.237)	(0.238)	(0.240)	(0.238)	(0.239)
Dispute help: private DPRK help	0.549**	0.565**	0.578***	0.564**	0.584***	0.603***
	(0.223)	(0.222)	(0.223)	(0.227)	(0.226)	(0.226)
DPRK ownership: private	0.931**	1.030**	0.884**	0.701	0.854*	0.616
	(0.438)	(0.427)	(0.437)	(0.453)	(0.439)	(0.452)
DPRK ownership: foreign	0.189	0.330	0.181	0.026	0.221	–0.008
	(0.433)	(0.420)	(0.432)	(0.451)	(0.436)	(0.451)
DPRK ownership: state affiliated	0.727*	0.887**	0.710*	0.489	0.730*	0.454
	(0.410)	(0.396)	(0.410)	(0.423)	(0.406)	(0.424)
China ownership: private	0.451	0.423	0.518			
	(0.551)	(0.549)	(0.551)			
China ownership: joint stock cooperative	0.277	0.283	0.372			
	(0.577)	(0.575)	(0.578)			
China ownership: SOE or state affiliated	1.428**	1.375**	1.477**			
	(0.636)	(0.642)	(0.635)			
Small and private firm				–0.554**	–0.501**	–0.502**
				(0.229)	(0.229)	(0.229)
Length of relationship	0.050**			0.069***		
	(0.023)			(0.024)		
Number of market participants at time of entry		–0.001			–0.003**	
		(0.001)			(0.001)	
China–DPRK trade volume at time of relationship starting with largest client			–0.003*			–0.004**
			(0.002)			(0.002)
Observations	192	193	192	184	185	184
ll	–174.6	–176.8	–175.3	–168.3	–170.9	–169.4
chi2	40.63	39.25	39.16	35.83	33.70	33.59
r2_p	0.104	0.0999	0.100	0.0962	0.0897	0.0902

SOE = State-owned enterprise; DPRK = Democratic People's Republic of Korea

Note: Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Source: Authors' calculations.

Table 3 Respondent dispute resolution channels

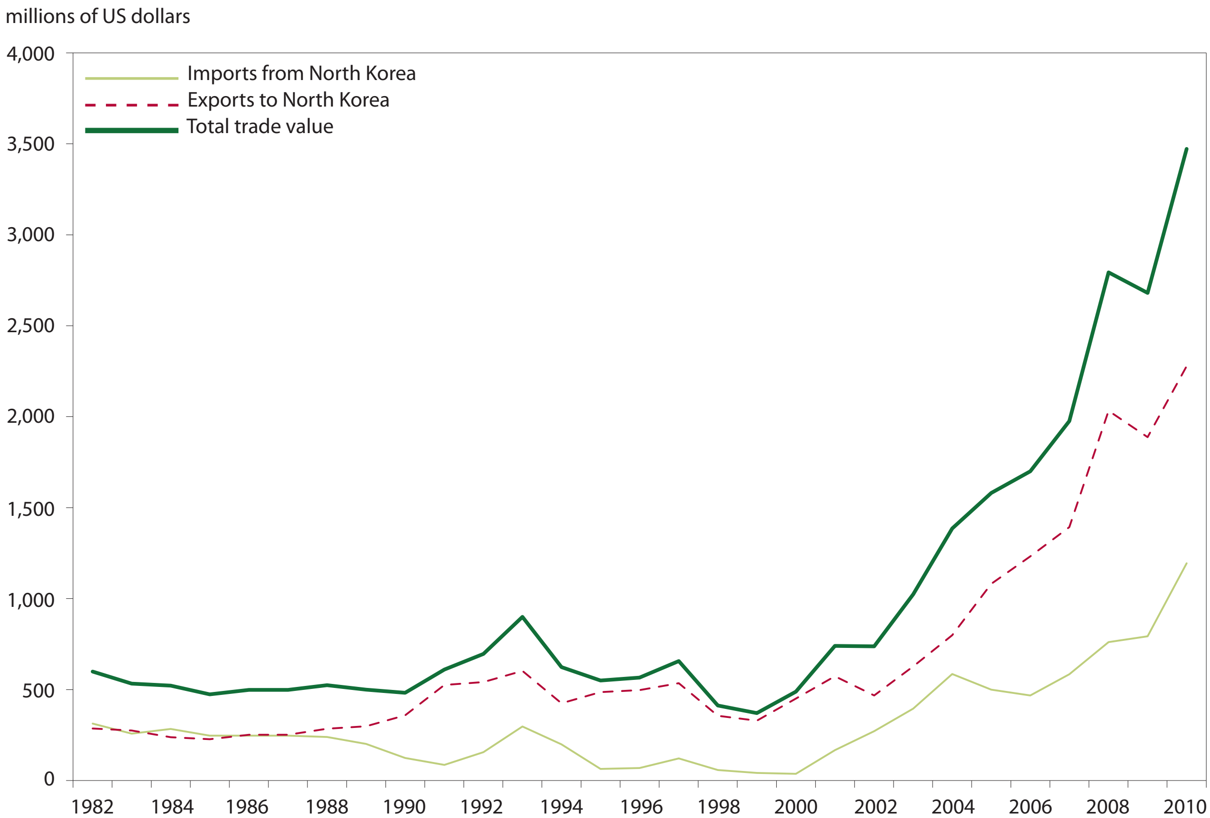
	Exporter		Importer		Investor	
Dispute resolution channel	**Percent share of firms**	**Percent share of responses**	**Percent share of firms**	**Percent share of responses**	**Percent share of firms**	**Percent share of responses**
DPRK central government	11	7	8	6	9	7
DPRK provincial government	9	6	9	7	11	10
DPRK local government	12	8	17	12	21	18
Chinese government officials	20	13	12	9	16	13
Chinese court	17	11	6	5	3	2
DPRK courts	7	5	9	7	9	7
Other Chinese companies	19	12	6	4	3	2
DPRK relatives and friends	11	7	17	13	16	13
Other informal organizations	4	3	2	1	0	0
No third party	26	17	15	11	1	1
Private negotiation	17	11	31	23	24	21
Other (third country or diplomatic channels)	1	1	2	1	3	2

DPRK = Democratic People's Republic of Korea

Note: Respondents were allowed to give multiple responses. Share of firm percentages do not add up to 100. Share of responses percentages reflect total responses given. For firms, n = 210, 109, and 70 respectively. For responses, n = 322, 146, and 82.

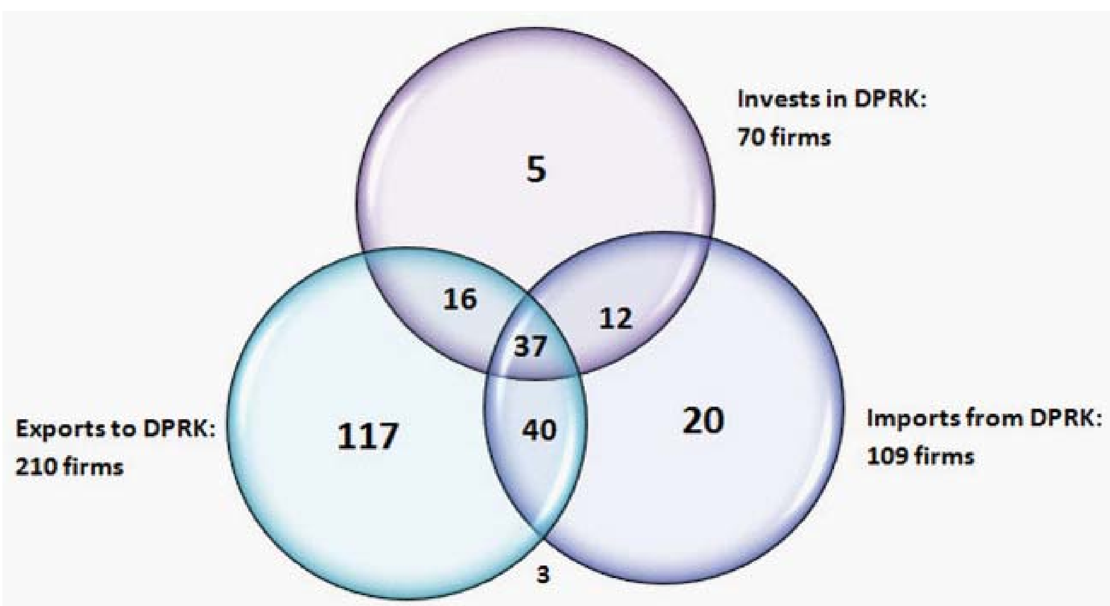
Source: Authors' calculations.

Figure 1 China–North Korea Trade, 1982–2010



Source: UN Comtrade, Ministry of Commerce of the People's Republic of China.

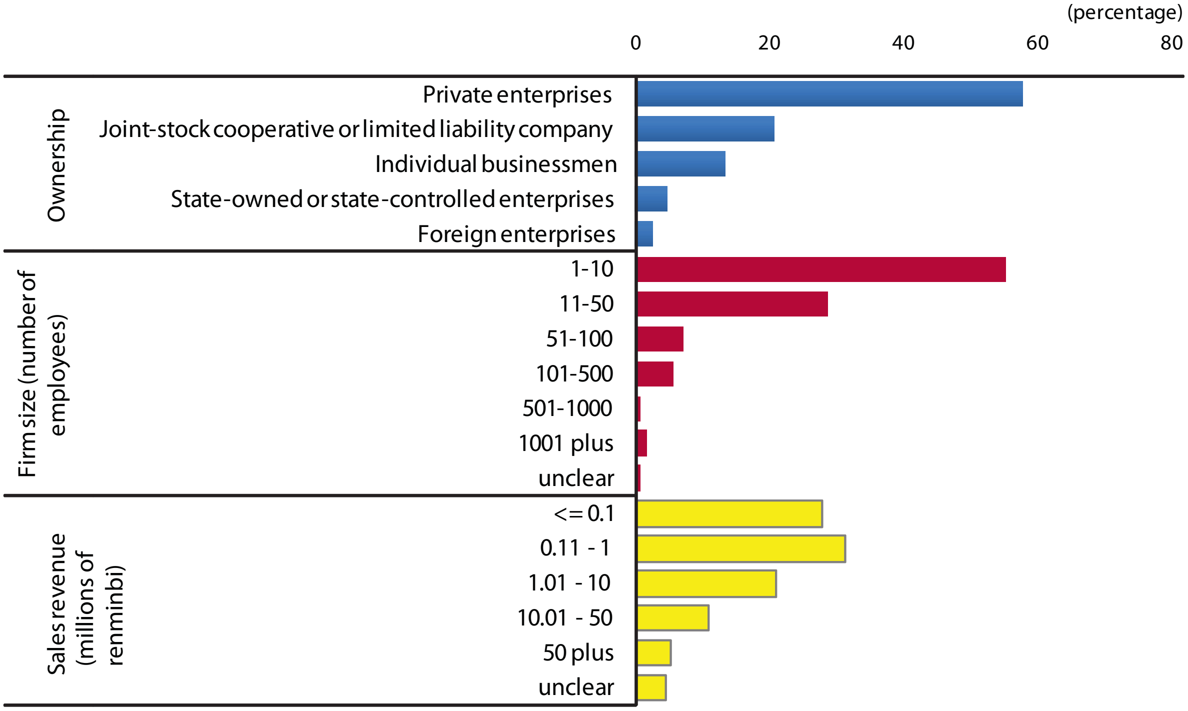
Figure 2 Composition of 250 enterprises doing business with North Korea



DPRK = Democratic People's Republic of Korea

Sources: The China–North Korea business survey, authors' calculations.

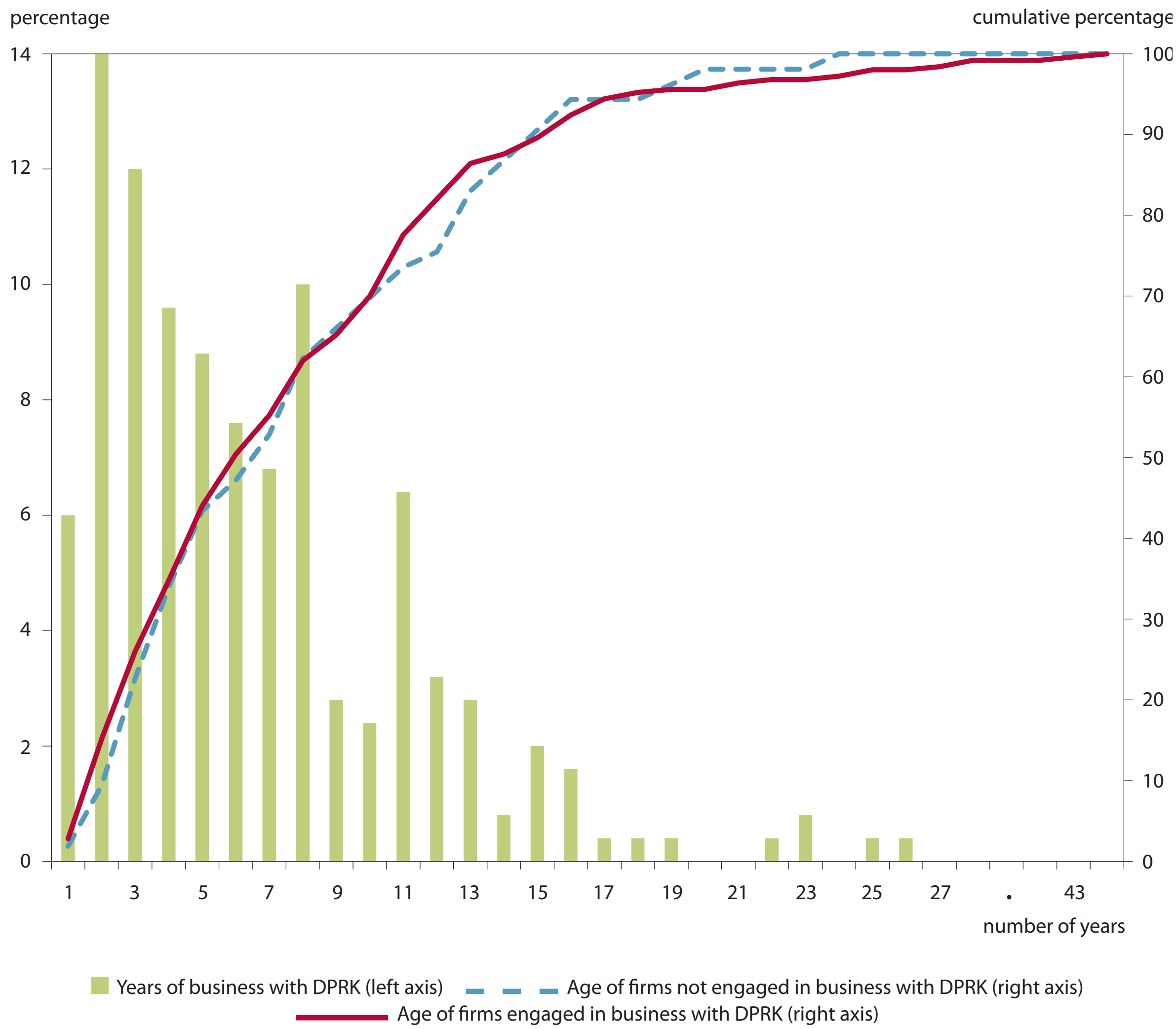
Figure 3 Firm characteristics of those engaged in business with DPRK



DPRK = Democratic People's Republic of Korea

Sources: The China–North Korea business survey, authors' calculations.

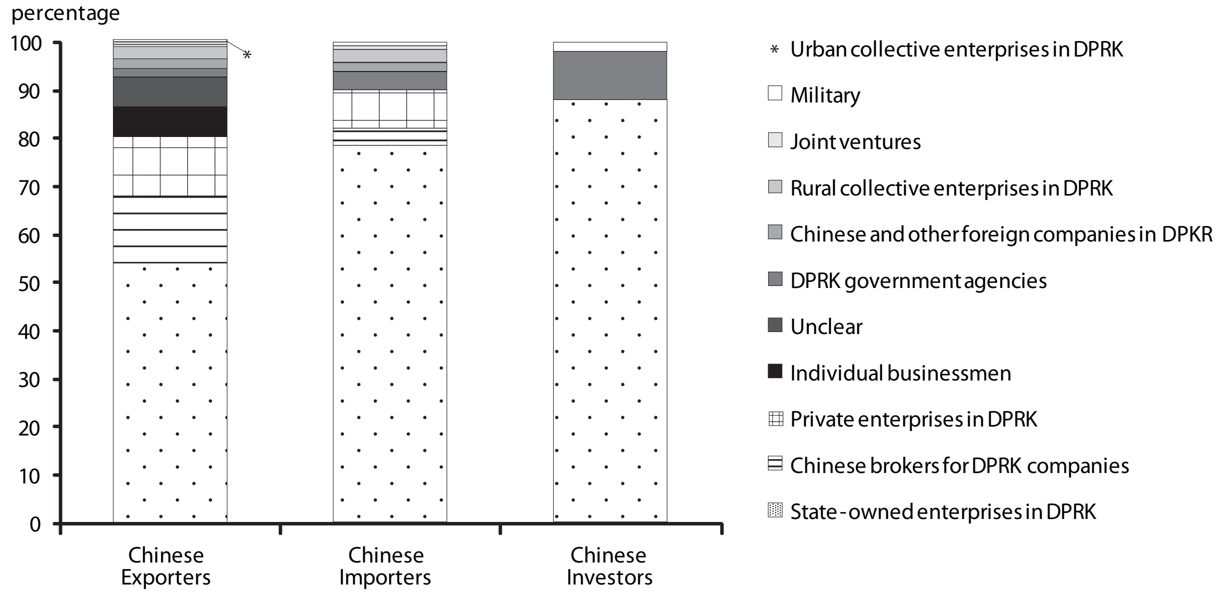
Figure 4 Age of firms and length of business conducted with DPRK



DPRK = Democratic People's Republic of Korea

Sources: The China–North Korea business survey, authors' calculations.

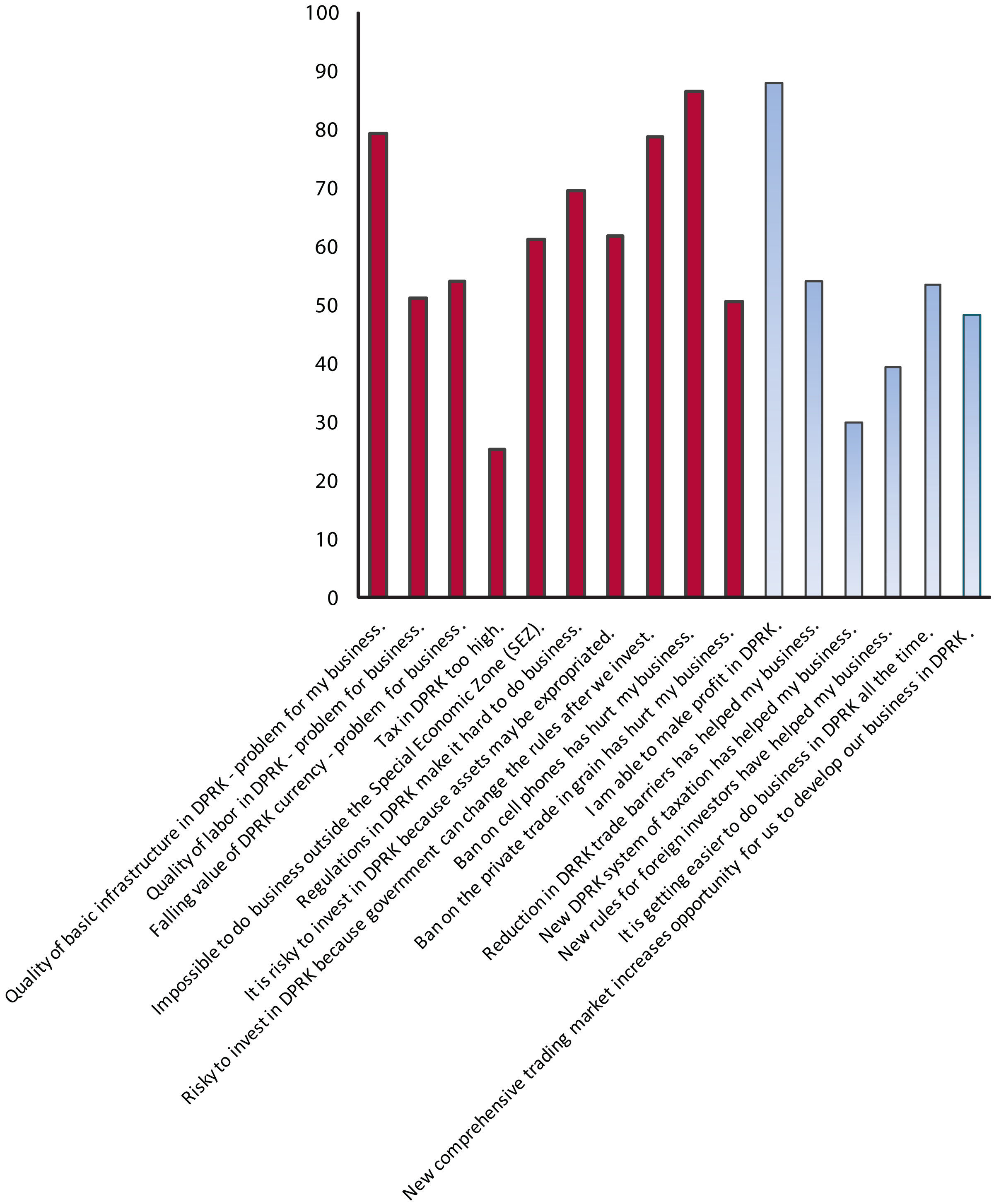
Figure 5 Ownership of North Korean counterparties



DPRK = Democratic People's Republic of Korea

Sources: The China–North Korea business survey, authors' calculations.

Figure 6 Perception of DPRK business environment: those doing business with DPRK (share of those who agree with statement)



DPRK = Democratic People's Republic of Korea

Sources: The China–North Korea business survey, authors' calculations.