The Importance of Trust for Investment: Evidence from Venture Capital

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Abstract

We examine the effect of trust on financial investment decisions in a micro-economic environment where trust is exogenous. Using hand-collected data on European venture capital, we show that the Eurobarometer measure of trust among nations significantly affects investment decisions. This holds even after controlling for investor and company fixed effects, geographic distance, information and transaction costs. We then consider the relationship between trust and performance, evaluating two competing hypotheses: one based on the notion that higher trust benefits investment performance, the other based on the notion that lack of trust constitutes a hurdle to investments. We find evidence of a negative relationship between trust and exit performance, especially for IPOs. We further show that more sophisticated investors are more likely to make low trust investments, and that by doing so they achieve superior performance. Based on this and some additional evidence we conclude that lack of trust is a hurdle to making venture capital investments, but that investors who overcome this hurdle tend to do well.

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> *"There are countries in Europe [...] where the most serious impediment to conducting business concerns on a large scale, is the rarity of persons who are supposed fit to be trusted with the receipt and expenditure of large sums of money."* (John Stuart Mill)

Many economists intuitively recognize the importance of trust for economic transactions. Since Arrow's (1973) remark that "virtually every commercial transaction has within itself an element of trust" a small literature has analyzed the role of trust in economic decisions. For example, the work of Knack and Keefer (1997), Temple and Johnson (1998), and Zak and Knack (2001) establishes a positive relationship between trust and economic growth. More recently, Guiso, Sapienza and Zingales (2009) study the importance of trust for bilateral trade in goods, financial assets, and direct foreign investment, and Guiso, Sapienza and Zingales (2008) use Dutch and Italian data to establish an effect of trust on stock market participation.

In this paper we ask whether trust among nations affects the decision to make an investment across different countries, and we ask whether trust is related to investment performance. To answer these questions we use a unique hand-collected dataset of European venture capital investments that allows us to study the effect of trust using a powerful fixed-effect identification strategy. Trust among nations is a robust predictor for venture capital investments. We also find that low trust investments are associated with better investment performance, and that it is more sophisticated investors that are more likely to make such low trust investments.

Following the social capital literature, we define trust as a subjective belief about the likelihood that a potential trading partner will act honestly. It is important to distinguish two different types of trust. Generalized trust pertains to the preconceptions that people of one identifiable group have for people from another identifiable group. Personalized trust, instead, concerns the evolving relationship between two specific agents. In this paper we focus solely on generalized trust, so that we are concerned with what might be considered cursory beliefs, generalizations about others, even stereotypes.

Our first question is whether generalized trust affects the likelihood that a venture capital firm will invest in a start-up company. Prior to investing, there is a search process where entrepreneurs vie for the attention of venture capitalists, which in turn, have to incur time and costs in screening potential deals. We hypothesize that higher trust facilitates this matching process. Moreover, we conjecture that in addition to the country location of the venture capital firm, the nationality of individual venture capital partners also affects the trust relationship with entrepreneurs, and therefore the likelihood of investing.

Our second question concerns the relationship between trust and investment performance. We identify two competing hypotheses, one focusing on the benefits of investing, the other on the costs. The first hypothesis is that higher trust makes it easier for investors and entrepreneurs to interact with each other, and therefore increases the benefits of investing. Under this "Cooperative Trust" hypothesis we would expect a positive relationship between trust and performance. The second hypothesis focuses on the higher costs of making low trust investments, and argues that investors are only willing to do so when expecting higher investment returns. Under this "Trust Hurdle" hypothesis we would expect a negative relationship between trust and performance.

We examine these two questions in the context of venture capital investment decisions.

Venture capital provides a particularly attractive testing ground for the effects of trust. On the one hand, one can reasonably argue that venture capitalists are sophisticated investors who would not act upon poorly-informed priors, and who are well positioned to exploit any arbitrage opportunities. On the other hand, one might counter that the financing of new companies inherently involves limited hard information, high (Knightian) uncertainty, and considerable scope for opportunistic behavior. Investors can therefore be more prone to rely on soft information, including social beliefs such as trust.

We use a hand-collected dataset of European venture capital investments made between 1998 and 2001 that contains investors and companies from 15 European countries, Norway, Switzerland, and the US. The dataset contains detailed information that cannot be obtained from any commercially available database, including the experience and nationality of each venture capital partner and some features of the contracts used for financing. One of the advantages of using microeconomic data is that reverse causality can be safely dismissed: trust among nation can affect venture capital investments, but the venture capital industry is clearly too small to influence the trust among nations.

Given the inherently subjective nature of trust, it is appropriate to measure it by surveying opinions. We adopt the approach of Guiso, Sapienza and Zingales (2009) of using the Eurobarometer survey data of bilateral trust among nations. This measure is based on how much citizens of one country say they trust the citizens of each other country (including their own).

We find a positive effect of trust on investments. The effect is highly significant, both statistically and economically. A one percentage point increase in those who have high trust towards another country implies an almost seven percentage point increase in the probability that an investment is made. Our econometric specification considers all potential financing deals between investors and companies in our sample and asks which deals are actually realized. We account for any country-specific factors, such as regulation, taxes, institutions or country-specific investment opportunities using both investor fixed effects and company country fixed effects (company fixed effects in conditional logit models). The fixed effects also take care of any investor-specific effects, like quality or attitudes towards risk, as well as for systematic differences in company quality across countries. Therefore, the only variables that matter are those that measure *relative* (or *dyadic*) distances between the investor and the company. We distinguish two types of dyadic variables: those that vary at the country-pair level and those that vary at the individual investor-company pair level. The Eurobarometer measure of generalized trust is a country-dyadic variable. To isolate the effect of trust and eliminate alternative explanations we consider additional country-dyadic variables that control for differences in GDP, legal origin, language overlap, common borders, and the amount of information about foreign countries available in the business press. At the individual-dyadic level we control for the actual distance between each individual investor's and each individual company's town. We also control for the investor's propensity to invest in the company's stage and industry. We provide numerous robustness checks, including alternative ways of measuring trust.

Measuring returns in venture capital is fraught with difficulty, so we use the standard approach in the literature of focusing on investment outcomes—see Da Rin, Hellmann and Puri (2011) for a discussion. We consider three measures: (i) IPOs, which are relatively few but clearly associated with high returns; (ii) EXIT, a measure which also includes acquisitions—a more frequent but also a noisier measure of success; and (iii) FAILURE,

which identifies companies that have gone out of business. Our evidence points to a negative relationship between trust and performance. In simple logit models the coefficients for trust are always negative for the IPO and EXIT, and always positive for the FAILURE. They are often, but not always statistically significant. When we include investor fixed effects the coefficients always retain their sign, but lose significance. In other words, investor characteristics largely account for the negative relationship between trust and performance. By contrast, controlling for unobservable selection in a Heckman regression has little effect on the relationship of trust with performance. Overall, these results are consistent with the Trust Hurdle hypothesis, and so with an interpretation that trust affects the costs, rather than the benefits, of investing.

We further explore the Trust Hurdle hypothesis using additional data from our survey. First, we consider the role of investor heterogeneity, exploring the possibility that different investors might be differently able to overcome trust hurdles. Following Kaplan, Martel and Strömberg (2007), we consider US experience as a measure of investor sophistication. We show that venture capital firms whose partners have US experience are more willing to make low trust investments. Moreover, we find that they achieve better investment performance, and that this derives largely from their low trust investments. These results are consistent with the prediction that more sophisticated investors are better positioned to overcome trust hurdles, and that doing so is associated with superior performance.

Second, the Trust hurdle hypothesis predicts that investors will make more low trust investments when they perceive them to be more attractive opportunities. This suggests that there may be heterogeneity across markets, i.e., across groups of deals with different degree of attractiveness to investors. The prediction is that more attractive markets draw more low trust investors. While we cannot measure investors' perceptions of market attractiveness directly, we use the benefit of hindsight to construct a measure of market attractiveness based on the eventual IPO rate of all companies in a particular market, defined by the country, industry and year dimensions. Consistent with our prediction, we find that low trust investments are more likely in more attractive markets. Moreover, we find that the negative relationship between trust and performance becomes stronger in more attractive markets.

The evidence on investment performance does not support the Cooperative Trust hypothesis. To ensure that this is not due merely to the preponderance of a strong trust hurdle effect, we consider two additional pieces of evidence. The Cooperative Trust hypothesis argues that greater generalized trust has the benefit of allowing venture capitalists and entrepreneurs to forge a closer and smoother working relationship. Guided by the prior venture capital literature, we first look at the informal communication and advice that venture capitalists provide to entrepreneurs by interacting with them. Under the Cooperative Trust hypothesis we would expect more interaction between investors and entrepreneurs. From our survey we obtain a measure of the intensity of such interaction. However, our regression estimates show no significant relationship between generalized trust and the level of interaction.

Second, we look at the use of contingent contracts. A prior literature identifies contingent contracts as a sophisticated solution to solving a variety of agency conflicts between entrepreneurs and investors. In practice these sophisticated contracts may be costly to set up, requiring detailed negotiation and considerable lawyer time. Under the Cooperative Trust hypothesis, one would expect that trust is a substitute for these complex legal

contracts, so that they would mainly be used in situations of low trust. We find the opposite: there is a positive relationship between trust and the use of contingent contracts; the effect becomes insignificant with the inclusion of investor fixed effects. Thus none of our additional evidence supports the Cooperative Trust hypothesis.

We believe this paper is the first to examine the effect of generalized trust in a corporate finance setting. This contributes to both our understanding of the role of trust, and of corporate financial transactions. First we are able to identify an effect of trust on investments in a micro-economic environment where alternative explanations can be controlled, most notably with powerful combination of investor and company fixed effects. We are also able to leverage our unique data to obtain some new insights into how the effect of trust varies across different types of investors. Second, our analysis derives some results about the relationship between generalized trust and investment performance, which are new to the corporate finance literature. Our evidence suggests that lack of trust imposes a hurdle for investments. Importantly, it is a hurdle but not a barrier, so that we can derive some key comparative statics on when investors are more or less able to overcome these trust hurdles. Overall this analysis establishes that generalized trust is a force that cannot be ignored in the analysis of venture capital investment. This naturally opens the door for further research on what other corporate financial transactions might be affected by trust.

One of our most interesting results is that sophisticated investors seem better able to overcome trust hurdles, and doing so is associated with better investment performance. Does this results uncover an irrational behavioral investment pattern? One could easily give this result a behavioral interpretation: less sophisticated investors forgo profitable investment opportunities because of an 'irrational' lack of trust that limits their investments. However, what we observe in the data is heterogeneity among investors that is consistent with differential costs of overcoming trust barriers. If these costs are purely imagined, then a behavioral interpretation is warranted. However, these costs might well be real—e.g., the cost of performing due diligence, or the cost of convincing the counterpart that you are trustworthy—in which case there is no irrational bias to speak of. Since we cannot verify the nature of these costs, we caution against too hasty a behavioral interpretation.

The remainder of the paper is structured as follows. Section 1 reviews the relevant literature. Section 2 develops the paper's theoretical motivations. Section 3 explains our data and variables. In Section 4 we examine the effect of trust on investment formation. Section 5 examines the effect of trust on performance. Section 6 delves deeper into the Trust Hurdle hypothesis, testing additional predictions about investor and company heterogeneity. Section 7 finally considers additional evidence concerning the Cooperative Trust hypothesis. It is followed by a brief conclusion.

1 Literature review

Our paper builds on, and contributes to, a number of literatures. Most closely related is the literature on the effects of trust on financial decisions. Guiso, Sapienza and Zingales (2008) document that trust affects the willingness to invest money in shares, and thus contribute to explaining limited participation in the stock market. We examine the decision to invest not by individuals who allocate their savings to liquid markets, but by sophisticated

financial intermediaries that invest in illiquid companies. Moreover, Guiso, Sapienza and Zingales (2009) establish the importance of trust for aggregate trade and foreign direct investment flows. We provide an analysis that is complementary yet distinct. Their analysis remains at the macro level, i.e., at the level of country pairs. We are able to analyze data at the level of individual investor-company pairs. This allows us to address a different set of questions, such as the importance of individual investor characteristics, or the effect of trust on the interaction and contracts between investors and entrepreneurs. We can also address the question of how trust is related to investment performance. Our deal-level data also permits us to control for a comprehensive set of alternative explanatory factors, and thus to better isolate the role of trust. Because we focus on a small segment of the economy, we can also safely eliminate any concerns about reverse causality. We can thus bypass all the difficulties of having to find appropriate instruments for the determinants of trust.

For the venture capital literature our paper makes a novel contribution by addressing deal formation, an issue that has received surprisingly little attention so far. Two recent exceptions are Bengtsson and Hsu (2010) and Hegde and Tumlinson (2011) who use similar empirical approaches to ours and find evidence of assortative matching for investors and entrepreneurs from same ethnic background. Our paper introduces trust as an important factor in the generation and structuring of deals.

Our paper also contributes to research on the 'home bias' investment puzzle (see Bae, Stulz and Tan (2008), Bottazzi, Pesenti, and van Wincoop (1996), French and Poterba (1991), and the survey by Karolyi and Stulz (2003)). Our analysis goes beyond previous work by examining not only whether transactions occur, but also how they perform. We also contribute to the recent literature on cross-border venture capital investments, looking at what factors influence the choice of investing abroad and at syndication and staging in foreign deals—see Balcarcel, Hertzel, and Lindsey (2010), and Chemmanur, Hull, and Krishan (2011). Note also that because of investor country fixed effects our analysis already absorbs all cross-country differences in legal systems, so that the effects of trust we document go beyond differences in legal systems.[1] Also related to our results are those by Ahern, Daminelli, and Fracassi (2012), who find that the amount of trusting within different nations is negatively related to both the volume of mergers and the combined merger announcement returns.

Finally, our study contributes to the broader literature on the economic effects of social capital (see Durlauf and Fafchamps (2006) and Guiso, Sapienza and Zingales (2006) for recent surveys). Ekinci, Kalemli-Ozcan, and Sorensen (2007) investigate the effect of social capital on financial integration among European regions, finding that regions where the level of confidence and trust is high are more financially integrated with each other. Our results suggest that even in developed countries with good legal enforcement investment decisions may be affected by trust.[2]

[1] See also Bottazzi, Da Rin and Hellmann (2009), Cumming, Schmidt and Walz (2010), Kaplan, Martel and Strömberg (2007), and Lerner and Schoar (2005).

[2] Also related to our paper is the work of Bloom, Sadun, and van Reenen (2012), which analyzes managerial practices at multinational companies around the world. They show that firms located in areas with higher trust tend to be in industries that rely on decentralization. Moreover, they find that trust facilitates delegation from the headquarters by improving cooperation.

2 Theoretical motivation

2.1 What is trust?

In this paper we use a commonly accepted definition of trust, as "the subjective probability with which an agent assesses that another agent or group of agents will perform a particular action."[3] Two different types of trust are relevant for our study: personalized trust and generalized trust. Personalized trust is a set of beliefs that one person has about the behavior of another specific person. It is based on a repeated interaction between the two individuals and can thus be thought of as an informed belief. Generalized trust, by contrast, is a set of beliefs about the behavior of a random member of an identifiable group of individuals. Durlauf and Fafchamps (2006) argue that "the main difference between the two is that, for each pair of newly matched agents, the former takes time and effort to establish, while the latter is instantaneous." From an economics perspective, the difference between generalized and personalized trust can be thought of as the difference between poorly-informed prior beliefs versus well-informed posterior beliefs. From an econometric perspective, a key difference is that generalized trust is exogenous to the specific micro-economic transaction, whereas personalized trust is inherently endogenous.

This distinction is particularly relevant in the context of venture capital. A venture capitalist and an entrepreneur typically do not know each other before contracting. After investing, they work closely together (Hellmann and Puri (2002)). At the beginning of their relationship, the (generalized) trust between a potential venture capitalist investor and an entrepreneur is exogenous. Once their relationship has developed, trust becomes personalized and endogenous to the numerous decisions and interactions made along the way. In our study we focus solely on generalized trust.[4]

2.2 Why should trust affect venture capital investments?

Our first hypothesis is that higher generalized trust increases the likelihood that a venture capitalist invests in an entrepreneur's company. The underlying logic is that trust helps the search process through which the two parties in the transaction find each other and make the investment decision. For example, a venture capital firm with low (generalized) trust of an entrepreneur may never take much interest in her business plan. Indeed, venture capitalists seriously consider only a small fraction of all business plans proposed to them (Tyebjee and Bruno (1984)). Similarly, an entrepreneur who has low (generalized) trust of a venture capital firm may never bother to initiate contact. Indeed, entrepreneurs typically contact only a subset of all the venture capitalists that are active at any point in time. We therefore submit that higher generalized trust increases the probability that a pair of venture capitalist and entrepreneur generate a match, i.e., that they progress from

[3] A large literature which spans several social sciences examines the concept of trust and its effects on human behavior. Guiso, Sapienza and Zingales (2006), Möllering (2006), and Nooteboom (2002) review this literature from different angles.

[4] Another conceptual distinction is between trusting and trustworthiness (see Glaeser et al. (2000)). Trusting describes a focal person's beliefs about others, whereas trustworthiness describes other's beliefs about the focal person. In our context, the distinction between trusting and trustworthiness corresponds to the distinction between the venture capitalists' trust of entrepreneurs and entrepreneurs' trust of venture capitalists.

the initial state of non-acquainted potential partners all the way to an actual investment.[5]

There are three possible objections to our hypothesis. The first is that there should be no systematic differences in how different people trust a set of individuals. Indeed, if agents have common priors and update them based on all the available information, no systematic differences should persist at the level of generalized trust, which, by construction, excludes private information. A problem with this line of argument is that it doesn't seem to be supported by the data. In Section 3.4 we show that trust differentials are both pervasive and remarkably persistent. Moreover, subjective beliefs can be thought of as non-common priors (Morris (1995)). Their influence can persist when there is limited information exchange and limited updating of beliefs. These conditions are likely to hold in illiquid and opaque markets such as venture capital.[6]

A second possible objection to our hypothesis is that even if trust differences persist, they should not matter, because sophisticated investors can undo them by taking advantage of arbitrage opportunities. This argument seems applicable to liquid and transparent markets, but is less forceful in venture capital, where arbitrage requires a long horizon. Moreover, lack of trust can be self-fulfilling, i.e., it can be explained by the existence of multiple equilibria (Greif (1993)); in the low equilibrium arbitrage is infeasible because the counter-party also has low trust.

A third objection is that the probability that two partners engage in an economic transaction depends on their social networks, an argument often made by sociologists (e.g., Granovetter (1995)). In the context of venture capital, it seems plausible that social networks facilitate the process of search (see Sorenson and Stuart (2001) and Hochberg et al. (2007)). From an economist's perspective, a problem with this objection is that social networks themselves are endogenously formed in a way that reflects the patterns of trust among nations. They can facilitate the matching of entrepreneurs and venture capitalists, but should not be viewed as the ultimate drivers of this process. We therefore view social networks not as an alternative hypothesis, but one of the channels through which trust can affect the formation of venture capital investments.

We also conjecture that the identity of individual decision makers within the investor's organization matters for investments. Venture capital is an appropriate context to put this conjecture to test. This is because the decision to invest is made not by a single individual but by the whole set of partners in the venture capital firm, who have equity in the firm and meet periodically to make investment decisions (Sahlman (1990)). Further, we look at whether individual partners' experience affects investment decisions (see Bottazzi, Da Rin, and Hellmann (2008)). We conjecture that deeper experience may mitigate the effect of trust, since partners with better experience may become more competent in screening business plans and entrepreneurial teams, and might therefore be less influenced by broader societal belief patters such as generalized trust.

[5] Nooteboom (2000) notes that in times of radical innovation the importance of tacit knowledge makes the codification needed for enforceable contracts difficult. In venture capital investments both parties are exposed to outcome uncertainty, and there are numerous possibilities for opportunistic behavior within a venture capital relationship (Sahlman (1990)).

[6] Sociologists frequently argue that in situations where agents have little objective information, social cues (such as generalized trust) become an important basis for decision making (see Podolny (1994)).

2.3 How is trust related to performance?

From a theoretical perspective, one may argue that trust can affect either the benefits or the costs of investing. For the benefits side, a natural hypothesis is that higher generalized trust enables investors and entrepreneurs to interact more easily with each other. This allows them to establish a more effective working relationship which enhances venture performance. We call this the "Cooperative Trust" hypothesis. For the cost side a natural hypothesis is that investors have to incur some private costs of overcoming trust hurdles. These private costs could be purely imagined or they could also be real: for example, an investor may have to spend more time on the due diligence process; he may even have a harder time convincing the entrepreneur of the merits of accepting his money. We call this the "Trust Hurdle" hypothesis.

Both hypotheses predict that higher generalized trust invites more investments. The difference concerns the predictions about performance. Under the "Cooperative Trust" hypothesis we would expect that the benefits of an easier working relationship translate into more successful investment outcomes. This generates a positive relationship between trust and performance. By contrast, under the "Trust Hurdle" hypothesis, investors are only willing to incur the costs of low trust investments if they expect higher venture performance. As a consequence we expect low trust investments only in situations where investors anticipate high investment performance. This hypothesis therefore generates a negative relationship between trust and performance.

We notice that neither a positive nor a negative relationship between trust and performance informs us about the rationality of investors' choices. For example, it might be tempting to argue that a negative relationship between trust and performance proves that investors have an 'irrational' preference for investing in bad companies in countries they trust, over good companies in countries they don't trust. This might be true if generalized trust is merely a stereotype. However, if lack of trust imposes real transactions costs, then even perfectly rational investors would apply a higher investment standard before making an investment in a low trust country. Because it is essentially impossible to observe the detailed costs and constraints that venture capitalists face when making their investment decisions, we refrain from drawing conclusions about trust effects being rational or behavioral.

3 Data and variables

In this section we describe our data sources and motivate our variables, which are defined in Table 1. Table 2 provides descriptive statistics for all dependent and independent variables. Table 3 reports pairwise correlations among variables.

3.1 Data sources

Our data comes from a variety of sources. The main data are gathered through a survey of 685 venture capital firms in 15 European countries: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden, and the UK. Venture firms were included in our sample if they : (i) were full members of the European Venture Capital Association (EVCA) or of a national venture

capital organization in 2001, (ii) were actively engaged in venture capital and (iii) were still in operations in 2002. The survey asked detailed information on all first rounds of venture capital investments made between January 1998 and December 2001, as well as information on the venture firm's partners.[7] We exclude buyout investments.

We received 107 usable responses, which we cross-checked using investor and company websites, commercial databases, and trade publications. Our data represent a comprehensive cross-section which provides a good coverage of all countries, with an overall response rate of nearly 16%, a rate significantly larger than for comparable surveys of industrial firms (see Graham and Harvey (2001)). No single country dominates the sample, and no country is left out. Our data are not dominated by a few respondents: the largest venture capital firm accounts for only 5% of the observations, and the largest five for only 16%. Bottazzi, Da Rin and Hellmann (2008, 2009) provide a more extensive discussion of the data, and report additional tests that confirm the representativeness of the sample.

The main independent variable is the trust from citizens of one country towards citizens of another country. This variable is collected by Eurostat through the yearly Eurobarometer survey of citizens of all European countries. We report in Table 1 the sources for all other independent variables.

3.2 Unit of observation

We adopt two units of observation. In the first part of the analysis, we focus on the decision to invest, i.e., whether to make a deal or not. For this we construct the sample of all potential deals, consisting of every possible pairing between the 107 investors and their 1,170 portfolio companies. Portfolio companies are located in one of the 15 European Union countries venture investors are from; they are also located in Norway, Switzerland, and the US, since Eurostat collects data on trust in citizens of those countries. The unit of observation is the individual investor-company pair (as in Sørensen (2007)). For each company we consider that it could in principle be financed by any of the respondent venture firms. We take into account that some pairs are not feasible because the venture capitalist began operations after the date the company was seeking an investment. Our potential deals dataset includes 101,620 potential deals.

We analyze investment decisions in a discrete choice framework where investors choose among companies as investment alternatives. In addition to a logit model, we use a conditional logit model where, in the terminology of McFadden (1984), we think of investors as cases and companies as the alternatives. This approach takes the investors' perspective which corresponds to our survey design. In this set-up the trust variable measures how people from the investor's country trust people from the company's country. While investors choose companies, those companies also choose to accept the investments. We therefore also estimate our model treating companies as cases and investors as alternatives, in which case the trust variable measures how people from the company's country trust people from the investor's country.

One feature of our analysis is that to be included in our sample, a company must have received funding from at least one investor. We clearly cannot observe all the 'marginal'

[7] We use the term 'firm' for the investor (i.e., the venture capital firm) and the term 'company' for the company that receives the venture capital financing.

companies that never received any funding from any venture capitalist.[8] Our analysis therefore examines whether trust affects investment decisions among all 'infra-marginal' companies, excluding any effect that trust may have on the marginal companies. It is possible that higher levels of trust increase the size of the venture capital market. Indeed, Figure 1 shows a positive correlation of 0.51 (significant at the 6% confidence level) between the size of the venture capital market, measured by aggregate investment (relative to per-capita GDP), and the level of trust received by each country. Therefore it is likely that our analysis understates the total effect of trust.

In the second part of the analysis we focus on the relationship between trust and investment performance. For this part of the analysis we use what we call the realized deals sample, which consists of all the investments that we observe in our data. Our realized deals sample contains a total of 1,228 deals, into 1,170 companies, made by 107 venture capital firms.[9]

3.3 Dependent variables

In the first part of the analysis we ask whether a particular investor finances a particular company. The dependent variable is DEAL, which is a dummy variable that takes the value 1 if the venture capital firm has invested in a particular company and 0 otherwise.

In the second part of the analysis we examine what type of outcomes companies have experienced. We assess outcome performance as of August 2011, almost ten years after the end of our sample frame using commercial databases (Amadeus, ThomsonOne, and Worldscope), press articles (using Lexis-Nexis), and web searches. We classify companies into five distinct exit categories: *(i)* the company had an IPO; *(ii)* the company was acquired; *(iii)* the company went out of business; *(iv)* the company is still in the venture firm's portfolio and operating; and *(v)* the company cannot be traced. We aggregate these categories into three variables that have a clear economic interpretation. IPOs provide the most successful outcome for investors. Therefore, IPO measures whether a company went public or not. The second dependent variable, EXIT, includes both IPOs and acquisitions. EXIT is a broader but likely noisier measure of investment success. The third dependent variable, FAILURE, identifies companies that went out of business or whose situation cannot be traced. These 'untraceable' companies can be reasonably considered a failure because venture firms typically report the exit of portfolio companies to the business press and on their websites.

3.4 Independent variables

Our analysis is based on the Eurobarometer measures of trust, that was previously used (and described in detail) by Guiso, Sapienza and Zingales (2009). Eurobarometer is a large survey about the social and political attitudes of citizens of the European Union that is executed yearly for the European Commission since 1970. Our trust measure is

[8] Note that even if we did, their observations would fall out of the regression by the time we consider the conditional logit model.

[9] There are more deals than companies because 51 companies receive financing from more than one of our venture investors.

derived from the Eurobarometer survey waves from 1990 to 1996.[10]. Specifically, we define trust as the percentage of the citizens in one country that trust a lot people from the other country, as in Bloom, Sadun, and van Reenen (2012).

How reliable is this measure of trust? First, the trust measure reflects patterns one would intuitively expect: people typically have the highest trust for their own country; Scandinavian countries receive high trust, and are also more trusting; the British trust the French less than other nations; and the French are happy to reciprocate. Second, the Eurobarometer trust measure has a strong correlation with the World Values Survey (WVS) measure of trusting, which has been used by several studies (e.g., Knack and Keefer (1997)). The correlation coefficient is 0.72, significant at the 1% level.[11] This strong correlation suggests a reliable measurement of trust that does not depend on the details of how the surveys were implemented. We also notice that trust among nations is remarkably persistent over time: The correlation coefficients across Eurobarometer waves is often over 90% and always above 84%.

The remaining country-dyadic variables are meant to capture other factors that should affect the investment decision, or that constitute potentially alternative explanations. We employ three variables that are standard controls in the literature on geography and trade: (i) whether an investor/company pair is either located in the same country or not, (ii) whether an investor/company pair is in neighboring countries (sharing a common border), and (iii) how economically far away are two countries, using the difference of the logarithm-transformed per-capita GDP. We then consider the role of search costs by looking at the amount of information on each country that is reported in another country's main business newspaper. We also consider two country-dyadic variables that capture transaction costs: the similarity of languages and of legal systems. To account for the intensity of economic relationships between countries we use two standard measures from the trade literature: the share of exports and of foreign direct investments from country i into country j (in billions of dollars), averaged over the period from 1998 to 2001.

Our other independent variables vary at different levels. Three variables are measured at the level of the investor-company pair. First, we compute the log-transformed kilometric distance between the investor's and company's cities using the geodetic formula.[12] Second, we compute two measures to capture an investor's propensity to make a deal in a company's industry and stage of financing: the share of investments of a venture capital firm in the same industry in which the company operates, and the share of investments of a venture capital firm in the same stage at which the company is receiving financing. We consider several company characteristics: its country; its industry; the year in which the company received funding; and whether the company seeks early stage (seed or start-up) or late stage (expansion and bridge) financing. As discuss below, we use a variety of fixed effects,

[10] We do not collect trust data directly from our survey respondents, since such a measure would be endogenous to their investment experience. The Eurobarometer measure, on the contrary, is clearly exogenous to the investments made by venture capitalists.

[11] The WVS survey question is *"Generally speaking, would you say that most people can be trusted, or that you can't be too careful in dealing with people?"* The WVS therefore only measures how trusting citizens of one country are, rather than bilateral country-dyadic trust. Therefore, we compute the correlation coefficient using the Eurobarometer trust measure for citizens of the same country.

[12] Such precision allows us to avoid some of the measurement problems that have plagued the literature on trade and geography, which typically uses a much coarser measure—the distance between capital cities (see Head and Mayer (2010)).

sometimes controlling for investor fixed effects, sometimes controlling for company fixed effects, and sometimes for both. Whenever we don't control for company fixed effects, we use company country fixed effects. And whenever we don't control for investor fixed effects, we control for the following three investor characteristics: (i) the natural logarithm of 1 plus the age of the venture firm; (ii) the natural logarithm of 1 plus the amount under management at the venture firm ; and (iii) whether an investor is an independent or captive venture capital firm, where captive means that the venture firm is owned by a corporation, a financial institution, or a government.

In section 6 we introduce two additional control variables. First we define a dummy variable for whether a venture firms has any partners that have prior work experience in the US. We obtain this data from our survey which asks about prior US work experience for each partner. Second, we define a measure of market attractiveness that we explain in more detail in section 6.2.

4 The role of trust for deal formation

4.1 Methodology

We begin by asking what factors influence a venture capitalist's decision to invest in a company. Our unit of analysis is the sample of potential deals. We estimate the probability that a specific venture capitalist invests in a specific company with the following econometric model:

$$DEAL_p = \alpha + X_n'\beta^n + X_p'\beta^p + X_i'\beta^i + X_c'\beta^c + \varepsilon_p \tag{1}$$

Let i index investors and c index companies, let $p = (i, c)$ index investor-company (potential) pairs, and let n index investor-company country dyads. The dependent variable is DEAL, which is a dummy variable for whether investor i finances company c. The intercept term is denoted by α. The vector X_n' represents variables that vary at the country-dyadic level, namely TRUST, FOREIGN–DEAL, COMMON–BORDER, INFORMATION, GDP–DIFFERENCE, LANGUAGE–OVERLAP, and LEGAL–DIFFERENCE. The vector X_p' represents variables that vary at the investor-company pair level, namely DISTANCE, INDUSTRY–FIT and STAGE–FIT. The vectors X_i' and X_c' represent variables that vary across investors and companies, respectively; we discuss them below.

To estimate the probability that a deal occurs, we use a logit model (our results do not change when we use a probit). To control for investor characteristics we can afford to use a complete set of investor fixed effects, i.e., 107 dummies. This is clearly the most powerful way of controlling for any investor-specific effects, including the investor's nationality. The investor fixed effects also take care of any systematic differences across investors, including quality and risk aversion. To control for company characteristics, we use INDUSTRY, STAGE and DEAL–DATE. In addition, we use company country fixed effects. This means that we control for the overall level of trustworthiness (e.g., on average the Swedes are trusted more than the Spaniards). As a consequence our trust variables always reflect *relative trust* (e.g., relative to the average level of trust, the Spaniards are more trusted by the French than by the British). Moreover, the company country fixed effects control for any country-specific effects, such as investment opportunities, the legal

and institutional environment, and investor friendliness. The coefficient of trust therefore captures how deviations from the average level of trust towards the company's country affect the likelihood that an investor will make a deal with a company located in that country. [13]With over one thousand companies in our sample we cannot add one fixed effect for every company. However, to control even more finely for company characteristics, we also consider a conditional logit model. This semi-parametric specification effectively includes both investor and company fixed effects, thus providing the richest possible set of controls. In all logit regressions we cluster the standard errors at the level of the country dyad, reflecting that our key independent variable TRUST varies at that level. However, such clustering violates the independence of individual errors across groups in the conditional logit, so that we use robust standard errors for those regressions.

We want to distinguish trust from home bias. There are many reasons why investors may prefer to invest in a domestic company (Karolyi and Stulz (2003)). While trust may be one of those reasons—indeed people tend to express the highest trust for their own countrymen—we not do want to rely a preference for domestic deals to identify the effect of trust. We therefore separately control for whether a company is located in the same or different country than the investor, as captured by the FOREIGN–DEAL dummy. Thus our estimate of the trust effect is conservative, as we eliminate one important channel through which trust may affect investments.

4.2 Main results

The estimates from the simple and conditional logit models are reported in Table 4. In column *(i)* we report the results of the logit estimation without any country-dyadic controls (except those related to geography, namely foreign deal and common border); in column *(ii)* we include all the country-dyadic controls. In columns *(iii)* and *(iv)* we report the results from the conditional logit model, first without and then with country-dyadic controls.

We find that the coefficient on TRUST is positive and significant at the 1% level across all specifications. This clearly supports the hypothesis that trust affects the likelihood of making an investment. In addition to being statistically significant, the estimated coefficient measures an economically important effect. We focus on column *(ii)* in Table 4, which is our main specification; results for the other specifications are very similar. The logit regression estimates the odds ratio, defined as the ratio of the probability of success to the probability of failure of the event (in our case of a deal being made). Consider a one point increase in the percentage of people that express high trust. An example (drawn near the median of the trust distribution) is that 15.3% of Spaniards have high trust for Germans, and 16.3% of Dutch have high trust for Germans. Such a one percentage point increase, averaged across the values of the covariates, generates a 5.7% increase in the probability of reaching a deal. Alternatively, consider moving from the 25th to the 75th percentile of the trust distribution. For example, 10.5% of British people highly trust Germans, which is at the 25th percentile, while 24.8% of Norwegians highly trust Germans, which is at the 75th percentile. Moving from the 25th to the 75th percentile of the trust distribution corresponds to a 119% increase in probability of reaching a deal—in

[13]See Footnote (18)

other words, it more than doubles it. This magnitude is consistent with the results for portfolio investments of Guiso, Sapienza, and Zingales (2009).

Table 4 contains several other results. Geographic distance is very important. The coefficient for DISTANCE has a negative sign and is statistically highly significant in all specifications. This confirms the notion that venture capital is a highly localized activity. The coefficient for FOREIGN–DEAL is negative and statistically significant in all four specifications. The coefficient for COMMON–BORDER is insignificant. The coefficient of INFORMATION is positive and statistically highly significant. This result suggests that search costs, broadly defined, matter. The result is even more surprising given the fact that our measure is only a rough proxy for differences in the amount of information available to investors. GDP–DIFFERENCE is negative and statistically significant, LANGUAGE–OVERLAP is positive, and LEGAL–DIFFERENCE is negative but never significant. Throughout all regressions we find that INDUSTRY–FIT and STAGE–FIT have a highly significant effect, with an (expected) positive sign. This shows that specialization is an important aspect of the venture capital market: companies need to fit into investors' strategic preferences in order to attract investments.

The results in Table 4, beyond using investor and company country fixed effects, already controls for many alternative explanations other than trust. We can go even further and ask to what extent the relationship between trust and venture investments differs from the relationship between trust and trade, identified by Guiso, Sapienza and Zingales (2009). To examine this we include measures of trade or foreign direct investments (FDI) as additional controls. One reason for doing this is that existing patterns of trade may facilitate venture investments. Another reason is to test whether trust matters *more* for venture investment than for general trade flows. However, there is also one reason not to include trade. Guiso, Sapienza and Zingales (2009) establish a positive relationship between trust and aggregate trade flows. Including trade in our equation therefore introduces multicollinearity, i.e., the model may be over-specified. Table 5 reports the results of adding EXPORTS or FDI to our logit and conditional logit specifications with dyadic variables. As expected, we find that both variables are positive and statistically significant. However, their inclusion does not affect the significance and magnitude of the trust variable. This suggests that, even after possibly over-specifying the model, we continue to find that trust matters. In fact, the evidence suggests that trust matters more for venture capital investment than for aggregate trade and FDI flows.

4.3 Further discussion

In this subsection we discuss a variety of extensions and robustness checks for our results about trust and investment decisions. For brevity's sake the results are not reported here, but are available upon request.

4.3.1 Alternative measures of trust

Since our trust variable measures the trust of an average citizen, a potential concern is that it doesn't reflect the beliefs of venture capitalists. That is, the average citizen's trust

may not apply to the socio-economic group venture capitalists belong to.[14] We therefore recalculate our measure of trust for a subset of the population that is likely to correspond to the average venture capitalist. Since the Eurobarometer includes some information on respondents' characteristics, we restrict our attention to those whose profile broadly corresponds to that of professionals. More precisely, we consider respondents who are in the upper half of the income distribution, were at least 20 years old when finishing their last studies (implying they have at least a bachelor degree), and are between 34 and 50 years old—an interval that covers one standard deviation around the mean age of the venture partners in our sample. This additional measure of trust has a very high correlation coefficient with the main measure of trust (0.99), suggesting that socio-economic differences have little effect on trust. When we use this alternative measure, all the results of Table 4 remain unaffected.

Our analysis so far focuses on the trust of the investor's country in the company's country. This reflects the notion that investors are those who decide whether to make a deal or not. However, entrepreneurs have to accept their investors, too. We then consider trust also from the company's perspective. These two measures contain strong elements of reciprocity and are therefore highly correlated, so that we cannot include both measures in the same regression. Instead, we re-estimate our regressions substituting 'investor' trust with 'company' trust. The information variable is our only other asymmetric variable, so we also rebuild it from the company's perspective. All of our results remain qualitatively intact when we adopt the company's perspective.

We measure trust using the investor's headquarter location. Since venture capital firms are small partnerships where the decision-making process is confined within the partners, we ask whether the presence of partners of different nationality affects deal formation.

Our data contains information on the nationality of each venture capital partner, which allows to examine two possible effects. First, we consider whether any of the partners of the venture capital firm have the same nationality as the company, since a partner from the company's country may increase the likelihood of investing. For example, since the British have low trust in the French, we ask whether a British firm with a French partner is more likely to invest in a French company than a British firm without French partners. The PARTNER–MATCH variable captures this effect. Second, we build a measure of 'average partners' trust' of the venture partnership in a company's country. For this, we average the trust scores of all of the venture firm's partners, based on their country of birth, and subtract TRUST from this average. PARTNER–TRUST measures the *differential* trust of individual venture capitalists within the firm. Suppose that the British venture capital firm had an Italian partner. Italians have higher trust for the French than the British. PARTNER–TRUST measures this increase in trust.[15]

The results show that the composition of partners inside the venture capital firm indeed matters for investment decisions. Both PARTNER–MATCH and PARTNER–TRUST are positive and statistically highly significant, without much affecting the size

[14] For example, while it may be true that the French hardly enjoy a high level of trust in the pubs of East London, what we care about is what trust they enjoy in the wine bars of the City of London.

[15] While generalized trust is clearly exogenous to the venture firm's investment decisions, the choice of partners might be endogenous. A venture capital firm that plans to make investments in a certain country might hire a partner from that country. Therefore, when we use these variables we only aim to establish correlation, not causation.

of the TRUST variable, which remains highly significant. These results indicate that the national composition of partners affects the likelihood of a deal.

We also estimate the effect of trust using the 'average trust' variable computed by Guiso, Sapienza, and Zingales (2009). This measure is based on a cardinal interpretation of the survey responses, which are coded in a range of 1 to 4. The trust measure is calculated by taking the average response over individuals and over time to the trust question, after partialling out time effects. Our results are unchanged.

4.3.2 Alternative sample definitions

The Eurobarometer data contains a bilateral measure of trust not only for the foreign countries but also for the domestic country. Unlike Guiso, Sapienza and Zingales (2009) who focus on exports and FDI, we can make use of the domestic trust data. Our regressions already include a control dummy for whether the investor and company are from the same country or not. To make our results more comparable to the prior literature, we performed some additional analyses on foreign subsamples. We focus on two definitions that we call the broad and the narrow foreign subsample. The 'broad' foreign subsample excludes investors that only invest domestically. It consists of 48 investors and 1,170 companies. This gives us a subsample where each company is fundable by all its domestic venture capital firms and by those foreign venture firms that invest abroad; it therefore contains some (potential and realized) domestic deals—those by venture firms that invest beyond their home country.[16] The 'narrow' foreign subsample excludes all domestic deals, potential or realized. It only includes venture firms that invest abroad, and those companies that have at least one foreign investor. It consists of 48 investors and 217 companies. The narrow sample is closest to one used in the prior literature, but has several disadvantages. It throws away much relevant information, thus reducing our statistical power. Even more importantly, it alters the economic interpretation of the logit model which now estimates choices from an artificially constrained choice set. When using these subsamples we find that the coefficients of trust retain their size and significance as in Table 4.

In defining the sample of potential deals, we deliberately refrain from imposing restrictions on the set of admissible potential deals, other than requiring that the venture capital firm was in existence at the time that the company was seeking funding. This means that we let the econometric model determine what matches are more or less likely. An alternative approach is to impose additional restrictions on the set of admissible potential deals, making assumptions about which pairs have a zero probability of resulting in a deal. While we prefer not to make such assumptions in the main model, we consider this a useful robustness check. First, we observe that some venture capital firms in our sample never invest in certain sectors, or in companies at certain stages of development. We therefore exclude the potential deals where the investor never invests in a company's sector or stage. Second, we combine these two restrictions with excluding potential deals where the investor never invests abroad. In both cases we find that our results are not affected.

Our unit of analysis is the potential deal, but our key dependent variable, TRUST, varies at a higher level of aggregation, namely the country-dyad. Our base specification

[16] None of our results change if we also drop from the set of the potential matches the 516 companies that are financed by venture firms that invest only domestically.

thus clusters by country-dyads. As an additional robustness check we aggregate the data to the level of the country-dyads. This involves a considerable loss of information, since we have to discard most of the micro-level information. Still, we consider a Poisson model where the dependent variable is the number of deals in each country dyad, and the independent variables are just the country-dyad controls. We find that the coefficient on trust continues to be statistically significant at the 1% level; using a negative binomial model yields similar results.

4.3.3 Alternative specifications

The prior social capital literature argues that trust among nations is related to the history of wars, to religious similarities, and even to genetic similarities (Guiso, Sapienza and Zingales (2009)). These variables have no obvious connection to venture capital investments, and their inclusion comes at the risk of over-specifying the model because they have been shown to be correlated with trust. Still, we confirm that the main effect of trust continues to hold even after controlling for these additional factors.

There is a long tradition in economics of distinguishing beliefs from preferences, dating back at least to the seminal work of Becker (1957) and Arrow (1973). In our context, a concern is to distinguish how much investors 'trust' other countries, based on beliefs, and how much investors 'like' other countries, based on taste. To measure liking—a subjective concept that is difficult to measure—, we use the Eurovision Song Contest, a popular European event, to construct a measure of taste-based preferences that varies within country pairs. Eurovision is an annual televised music contest among European countries, where each country is allowed to send one candidate. Viewers from around Europe rank the contestants from other countries on a scale from 0 to 12. We use these scores to build a normalized measure of the votes from citizens of country i to the song of country j in the Eurovision Song Contest, averaged over the period from 1993 to 2001. While the absolute ranking presumably depends on contestants' quality, prior research has argued that the relative vote ranking reflect patterns of how much people from one European country like others (Clerides and Stengos (2006), Fenn et al. (2006)). As in Felbermayr and Toubal (2007), we control for song quality through a comprehensive set of song-specific fixed effects. We find that the effect of trust is not affected by the inclusion of the Eurovision variable, that is itself statistically not significant.

The venture capital industry is highly cyclical. Our data covers the period 1998-2001, so that the early sample comes from an upward cycle and the latter part from a down cycle. One may ask whether the effect of trust is stronger in boom or bust periods. To address this, we interact the trust variable with two dummies, one for the boom period (1998-1999) and one for the bust period (2000-2001). We find that both coefficients continue to be positive and statistically significant. They are very close and their difference is far from being statistically significant.

In Table 4 we cluster the standard errors at the country-dyad level for all logit regressions. We consider this a natural choice for clustering, since the main dependent variable, TRUST, varies at that level. However, there may also be other reasonable approaches to clustering the standard errors. For instance, because each country appears multiple times across country-dyads we also implement two-dimensional clustering (Petersen (2009)) where we cluster both at the company-country and the investor-country

level. We find that this does not change the sign or statistical significance of any coefficient. Note that we can only do this clustering in the logit model, because such clustering would violate the assumption of independence of individual errors across groups of the conditional logit model.[17]

To account for the fact that we have a small number of realized deals, we rerun our regressions using the rare events logit package (`relogit`) developed by Tomz et al. (2003). Our results are unaffected.

Some venture capital firms have multiple offices (Chen et el. (2010)). This may affect our measure of effective distance between investors and companies. We therefore compute the minimal distance between each company and all (potential and actual) investors. We find that none of our results are affected.

Finally, in case one still worries that there remain any unobserved peculiarities in our data that drive the results, we construct a falsification exercise. Instead of giving each investor and company its true country identity, we randomly assign a 'false' country identity. Based on these false identities, we also recalculate all the country-dyadic variables. The coefficient of TRUST in our main regressions becomes utterly insignificant, providing further reassurance that our main result is not an artifact of the sample, but reflects a real and robust economic phenomenon.

5 The relationship between trust and investment performance

5.1 Methodology

We now turn to the relationship between trust and investment performance, focusing on the investment outcome experienced by venture capital backed companies. In Section 2.3 we discussed two hypotheses about the relationship between trust and performance, one predicting a positive relationship based on the ease of working together ("Cooperative Trust" hypothesis), and one predicting a negative relationship based on the cost of overcoming low trust barriers ("Trust Hurdle" hypothesis). We now turn to the empirical testing of these competing hypotheses.

5.1.1 Estimation strategy

Our unit of analysis is the sample of realized deals. The dependent variables are the three measures of investment outcome that we discussed in section 3.3: (i) IPO, as the main measure of successful investment, (ii) EXIT, which also includes acquisitions, a more frequent but often less profitable exit route, and (iii) FAILURE, which measures the frequent occurrence of unsuccessful venture investments.

Our econometric model is given by:

[17] The conditional logit is a fixed effect model that exploits repeated observations of deals for each investor (i.e., investors are the 'groups'). It tests how the characteristics of the investor-company pair affect the likelihood of the deal, controlling for all the unobserved investor characteristics—which are removed from the model. Double clustering implies that we cluster for both company and investor nationality. Since venture capital firms invest in companies located in different countries, some of the deals within a group are domestic and others are foreign. The violation of the independence of individual errors across different groups occurs whenever we cluster the standard errors by company nationality.

$$OUTCOME_r = \alpha + X_n'\beta^n + X_r'\beta^r + X_i'\beta^i + X_c'\beta^c + \varepsilon_p \quad (2)$$

where $r = (i, c)$ indexes the *realized* investor-company pairs. The X vectors represent the same variables as in equation (1), except for the fixed effects. In the realized deals sample the number of observations prevents us from controlling for company fixed effects. We therefore show the results of two models, one with and one without investor fixed effects (FE henceforth). In the model without investor FE we control for other investor characteristics that have shown to be of importance in prior research (Bottazzi, Da Rin and Hellmann (2008, 2009)): INDEPENDENT–VC, VC–AGE, and VC–SIZE. We also include investor-country fixed effects. We use a logit model when we do not include investor FE (using a probit model yields the same results), and we use a conditional logit model when we include investor FE.

There are good econometric reasons for choosing either model. When using the model without investor FE we may under-control for investor characteristics, potentially overstating variation in the data. At the opposite, the model with investor FE may over-control for investor characteristics, and therefore understate relevant variation in the data. The latter concern is particularly relevant for smaller sample sizes, such as with our hand-collected data. There are also differences in the economic interpretation of the two specifications. The model with investor FE takes a narrow perspective by considering only variation in trust within a given investor's portfolio, whereas the model without investor FE takes a broader perspective that also includes variation in trust across investors.

Consider, for instance, the Trust Hurdle hypothesis (a similar logic applies to the Cooperative Trust hypothesis). A possible case is that all investors face the same costs of overcoming trust hurdles and all perceive the same benefits of doing so. In this case we would expect substantial variation within investor portfolios and no variation across venture capital firm. A very different case occurs when investors face different costs of overcoming trust hurdles. In this case we would expect variation both within portfolios and across venture firms. In the first case we would expect that the inclusion of investor FE does not materially affect the results, whereas in the second case, we would expect investor FE to explain a substantial part of the variation. We therefore believe that both models are informative, as they provide complementary information about the relationship between trust and performance.

5.1.2 Unobservable selection

An additional issue is whether our estimates could be driven by selection on unobservable deal characteristics. For example, it could be that in low trust situations the only investments that are made are less risky deals. Since we cannot observe the business nature of a deal, we could incorrectly attribute to trust what is in effect due to an unobservable selection effect. To address this concern we estimate a Heckman selection model. The selection equation is given by equation (1) and the outcome equation by equation (2). We face the usual identification challenge of augmenting the selection equation with variables that affect the selection equation, but that can reasonably be excluded from the outcome equation. Obviously one can always argue that any variable that affects deal formation also affects contracting. Our plausibility argument is that these variables, while demonstrably important for deal formation, are unlikely to matter for the on-going relationship

of the entrepreneur and venture capitalist.

We submit that the EXPORTS and FDI variables are plausible candidates for the exclusion restriction; we employ EXPORTS in the main analysis, and we obtain the same results when using FDI instead. A high level of exports and FDI means that two countries are likely to have well-established networks for facilitating cross-country commercial transactions. Rauch (2001) suggests that trade flows are related to interpersonal networks. We therefore allow for the possibility that the presence of these cross-country institutional links facilitate the search process between entrepreneurs and investors. After the match is made, however, it is reasonable to assume that these trade-related institutional links no longer have a direct impact on investment performance. We believe this is a reasonable assumption, given that there is no natural economic argument why aggregate trade flows should affect performance of individual venture capital investments. This strikes us as plausible, given that our regressions already contain many controls, most notably fixed effects for both investor and company country.

Naturally the exclusion restriction is inherently theoretical and cannot be empirically tested with data, or made more plausible by anecdotal examples. We therefore make a cautious interpretation of our findings, i.e., we consider our Heckman specification reasonable but not definitive. Another cautionary note is that, because of the large number of observations (over 100,000 in the selection equation) and control variables, we can only achieve convergence in STATA when we use the linear probability version (heckman instead of heckprob), and invoke the two-step estimation procedure (which still achieves consistent estimates).

5.2 Main results

We focus our discussion on the relationship between trust and investment performance. We note from Panel B of Table 3 that the correlation coefficient of trust with IPO is –0.105, with EXIT is –0.101 and with FAILURE is 0.141 (all significant at the 1% level). This suggests a negative relationship between trust and performance. To control for observables and unobservables we move to a multivariate analysis. Table 6 reports the results of the logit (Panel A) and Heckman (Panel B) regressions without investor FE. Table 7 reports the results with investor FE.

Panel A of Table 6 shows that trust has a negative effect on the IPO rate, with a coefficient significant at the 10% level. The coefficient for EXIT is also negative, but insignificant. The coefficient of trust on FAILURE is positive and significant at 10%. The logit specification may be affected by unobserved heterogeneity. Panel B therefore examines our Heckman specification. The results are very similar to those of Panel A: the coefficient of trust is negative and significant for IPO, negative and insignificant for EXIT, and positive and significant for FAILURE. Table 7 considers the two specifications of Table 6, but now with investor FE. Panel A therefore reports results from a conditional logit model, and Panel B from a Heckman regression. The trust coefficients retain the same sign as before, but it never reaches the 10% statistical significance level.[18]

[18] The careful reader may notice that the number of observations varies across specifications. Table 2 shows that our sample includes 1,228 deals in 1,170 companies. In Tables 6 and 7 the number of deals is less for several reasons. For 93 deals we are unable to measure the exit event because the company name was kept anonymous. This leaves us with 1135 deals, as in Table 7B. We do not have information

In the selection equation of the Heckman model, EXPORTS is highly significant with the expected sign. The Mills ratio is statistically significant only in the IPO regression of Panel B of Table 6. Among the control variables, FOREIGN–DEAL is significant without investor FE, with a negative effect on investment performance, but loses its significance (except for FAILURE) with investor FE. No other control variables seem to have strong predictive power in the outcome regressions.

Because the logit and conditional logit are nonlinear models, the estimated coefficients do not directly reveal economic magnitudes. We therefore compare marginal effects computed at the means across different models.[19] Consider the IPO variable. For the logit model of Table 6, we calculate an average marginal effect of trust equal to –1.062. For the Heckman model of Table 6, we obtain –0.946. The difference is only 11%, suggesting that unobservable selection has only a modest effect in explaining the magnitude of the trust effect. We then compare the marginal effect of the logit model of Table 6 to those we obtain from Table 7, that includes investor FE. For the conditional logit model the marginal effect is –0.697, which is 34% lower. For the Heckman model the marginal effect is –0.589, which is 45% lower. The main insight from these comparisons is therefore that investor FE substantially reduce the estimates of the marginal effect of trust on performance, while the effect of the Heckman correction is modest.

The same pattern holds for the trust coefficients in the EXIT and FAILURE regression. Specifically, in the logit model of Table 6 the average marginal effect of trust is –0.746 for EXIT and 1.078 for FAILURE. The coefficients of the Heckman model of Table 6 are very similar. The marginal effects of trust in the conditional logit model of Table 7 are –0.436 for EXIT and 1.070 for FAILURE; they become –0.198 for EXIT and 0.887 for FAILURE in the Heckman model. Again we find that investor FE substantially reduce the marginal effect of trust on performance.

These results have several implications. First, none of the findings support the Cooperative Trust hypothesis, which posits a positive relation between trust and investment performance. All regressions suggest instead a negative relationship between trust and performance, consistent with the Trust Hurdle hypothesis. Second, the evidence for the Trust Hurdle hypothesis is consistent across specification, but not conclusive. This is mainly because several of the trust coefficients have p-values in a narrow range of 9-12%. The trust effect is stronger for the IPO and FAILURE variables than for the EXIT variable, possibly because the latter is a noisier measure of successful performance. Third, there is little evidence of selection on unobservables: the Mills ratios are mostly insignificant, and the coefficients are fairly similar with or without the Heckman correction. Fourth, the inclusion of investor FE does account for much of the negative correlation between trust and performance, especially for the IPO variable. This suggests that heterogeneity across venture capital firms plays a central role in the relationship between trust and performance. This provides the impetus for the further analysis of investor heterogeneity

on the size of 2 VC firms, so we lose their 6 deals, leading to the 1129 deals in Table 6B. In Table 6A the EXIT and FAILURE regressions have 1,125 observations, because all 4 Greek companies in our sample are failures, so the logit model drops them. The number of deals in the IPO regression is still lower because four countries have no IPOs. Finally, Table 7A has still fewer deals, due to the fact that a number of VC firms do not experience certain types of exit, especially IPOs.

[19] Specifically, we use the delta method for the logit model of Table 6. The Heckman models are linear, so the marginal effect can be read off the coefficient estimate directly. For the conditional logit in Table 7, we use the coefficient of the equivalent linear probability model.

that we discuss in section 6.1.

5.3 Further discussion

We now discuss several extensions and robustness checks for our results about the effect of trust on outcome performance. For brevity's sake the results are not reported here, but are available upon request.

As we did for section 4, we employ alternative measures of trust: the socio-economic measure of trust, and the measure of trust from the company perspective. In both cases our results are confirmed, with very similar patterns in terms of coefficients and statistical significance. For the cardinal 'average trust' measure, however, we find that the trust coefficient is always statistically insignificant. We also add the PARTNERS–TRUST and PARTNERS–MATCH variables in order to explore the role of partner nationality in investment outcomes. These variables are never significant, and they do not change the results for the coefficient of trust (which only becomes marginally insignificant in the IPO regression of Panel A of Table 6). While partners' nationality has an effect on investment decisions, through the composition of the venture partnership, this effects vanishes once we examine the relationship between trust and investment outcomes.

We then consider alternative model specifications. First, we consider that the cyclicality of the venture industry might affect our results. We thus interact the trust variable with two dummies, one for the boom period (1998-1999) and one for the bust period (2000-2001). In most regressions we do not find any significant differences for the two periods, except in Panel A of Table 7 where the IPO coefficient is significant for the boom years but not the bust years. This foreshadows the analysis of section 6.2 where we will use a more fine-grained measure of market attractiveness. Second, we use the minimal distance between company and investors with multiple offices and find that this does to affect any results. Third, we repeat the falsification exercise where we randomly assign 'false' national identities to companies and investors. Again we find that all trust effects vanish, as expected.

We also include some robustness checks specific to the investment outcome regressions. First, for the few companies with multiple deals we keep the earliest and delete all others. This does not affect any results. Second, we consider the possibility that some acquisitions may be disguised failures. Acquisition values of private companies are rarely reported. Still, we reclassify as failure those companies who report acquisition value below their reported investment amounts, and find that none of our results are affected. Third, we reestimate the Heckman models of Tables 6 and 7 first replacing EXPORTS with FDI, and then using both of them. In both instances we find that FDI is positive and significant in the selection equation, and that the effect of trust remains very similar both in the selection and outcome equations.

6 Further evidence on the Trust Hurdle hypothesis

The evidence from section 5 is more consistent with the Trust Hurdle hypothesis than the Cooperative Trust hypothesis. In this section we take a deeper look at several additional predictions of the Trust Hurdle hypothesis. In section 7 we will then take a separate look

at the Cooperative Trust hypothesis. In section 6.1. we focus on heterogeneity among investors, whereas in section 6.2 we focus on heterogeneity among companies.

6.1 The role of partner experience

The Trust Hurdle hypothesis is based on the notion that investors face some costs of overcoming trust hurdles. There may well be heterogeneity among investors, so that these costs may differ across different investors. A natural conjecture is that the cost of overcoming hurdles should be lower for more sophisticated investors. This could be because they are less influenced by stereotypes that create artificial investment hurdles. Or is could be that they have a comparative advantage in a low trust environment at performing due diligence and convincing hesitant entrepreneurs. Sophisticated investors should therefore be more likely to invest in low trust deals. They might also be better at perceiving superior investment opportunities in these low trust environments. And as a consequence, they should also have a relatively better performance with their low trust investments.

To empirically test these additional predictions of the Trust Hurdle hypothesis, we leverage our hand-collected survey data which contains information on individual partners within venture firms. To measure investor sophistication we build on the prior work of Kaplan, Martell and Strömberg (2007), who suggests that having work experience in the US exposes European venture partners to best management practice and to a culture of entrepreneurship that could facilitate the evaluation of business projects. Specifically we construct a simple dummy variable for whether or not a particular venture firm has a partner with US experience or not.

Econometrically, we want to look at the differential role of trust for more versus less sophisticated investors. This means that we need to look at the interaction effects of trust and investor experience. We start by considering some univariate tests that relate investors' US experience with trust and investments performance. Panel A.1 of Table 8 shows that investors with US experience make investments with lower average trust scores (0.485 versus 0.396). They also achieve a higher IPO rate (10.8% versus 4.8%), a higher rate of exits (42.5% versus 30.5%), and a lower failure rate (48.3% versus 63.7%). For all these, the t-statistic for the difference of means is significant at the 1% level.

These results raise the question whether the higher success rate of these more sophisticated investors actually derives from their low trust investments. Panel A.2 reports additional univariate statistics that distinguish between high trust and low trust investments. For this, we divide the realized deals sample at the median value of trust, and call the subsample above (below) the median the high (low) trust subsample. Panel A.2 shows that better investment performance is invariably associated with low trust investments of investors with US experience. In fact, the difference between low and high trust investments is always larger for investors with US experience. Consistent with this, the last column of Panel A.2 show the statistical significance of the t-test for the difference of means. For investors with US experience this difference is always significant at the 1% level. For investors without US experience the difference is significant (at the 10% level) only for IPOs. Moreover, the performance difference between investors with and without US experience is always larger for low than for high trust deals, as reported in the last row of Panel A.2. The difference in investment performance between investors with and

without US experience is statistically significant at least at the 5% level for low trust deals, but never significant for high trust deals.

While these univariate results are striking, they do not control for company and investor characteristics. In Panel B of Table 8 we return to the model of Table 4 and examine whether US experience affects the relationship between trust and deal formation. We find that the main effect of trust remains strongly positive (significant at 1%), and that the interaction effect is negative and significant at 1%. This suggest that trust is relatively less important for investors with US experience.

Panel C and D look at investment outcomes. Panel C estimates the logit model equivalent to Panel A of Table 6; Panel D estimates the conditional logit equivalent to Panel A of Table 7. The two panels yield similar results. There remains a negative relationship between trust and performance, and this effect is stronger for investors with US experience. The interaction effect is statistically significant for the IPO and EXIT variables, but insignificant for FAILURE. In terms of magnitude, the average marginal effect of trust for IPO in Panel C increases from -0.649 when US experience is zero to -1.180 when US experience is one—a change of over 80%. Note that the main trust effect is weaker in these regressions, turning mostly insignificant. This suggests that the negative relationship between trust and performance is largely driven the more sophisticated investors with US experience. Note also in Panel C the coefficient for US experience is positive and significant, confirming that investors with US experience perform better.

Overall we conclude that investor sophistication is important for the effect of trust on investment outcomes. More sophisticated investors are more willing to overcome trust hurdles in their investment choices. Moreover, their low trust investments are associated with the best investment performance. This evidence confirms the additional predictions of the Trust Hurdle that are based on investor heterogeneity. These findings are also inconsistent with the Cooperative Trust hypothesis: one would expect more sophisticated investors to take greater advantage of the easy interactions with the entrepreneurs, therefore expecting a positive interaction term between trust and investor sophistication.

6.2 The role of market attractiveness

The previous section looked at the predictions of the Trust Hurdle hypothesis that concern investor heterogeneity in the costs of overcoming trust hurdles. We now turn to predictions that concern company heterogeneity in the benefits of overcoming trust hurdles. Specifically, we look at differences in the attractiveness of the investment opportunities.

The Trust Hurdle hypothesis says that the more attractive an investment opportunity, the more it is worthwhile to overcome trust hurdles. We define market attractiveness as the potential of a set of companies to achieve good exit performance. We generate two hypotheses about heterogeneity across such groups of companies. First, we should see more low trust investments in markets that with more attractive investment opportunities. Second, we would expect that the benefit of making a low trust investments is bigger in more attractive markets.

Empirically it is difficult to measure the attractiveness of investment markets. Venture capitalists themselves rely on private information and subtle signals. To overcome this measurement problem we use the benefit of hindsight to create a measure of the attractiveness of investment opportunities. Our measure does not look at the ex-post suc-

cess of the company itself, but instead looks at what we call the company's "market." We define a market as a unique combination of country, industry and year—e.g., biotech in France in 1999. A market is the set of companies that received their first round of venture investment in the same country, same industry and same year. For each market we ask what fraction of companies experienced an IPO by August 2011.

To estimate such market IPO rates we do not rely on our sample companies, but instead make use of all the companies found in the ThomsonOne (formerly VentureXpert) database. This guarantees a much broader coverage, and avoids self-referential measurement. We match the ThomsonOne data to our market definition and calculate market IPO rates for each market. For each company, we define MARKET-ATTRACTIVENESS as the respective market IPO rate. At the time of making a deal, investors clearly do not know this ex-post measure of success. However, as long as their assessment of opportunity is correlated with our measure of ex-post market success, we can use this measure as a (noisy) proxy for the investor's ex-ante beliefs about each company's market attractiveness.

We examine the effects of market attractiveness as we did for US experience. Results are reported in Table 9. We divide the realized deals sample into two subsamples, where deals with above (below) median market attractiveness are labeled as attractive (unattractive) markets. Panel A.1 shows that the average trust level is lower in hot markets. It also shows that the IPO and exit rates are higher in attractive markets and the failure rate lower. All these differences are statistically significant at the 1% level. This just confirms that our measure of market attractiveness, based on ThomsonOne data, correlates with the data of the companies in our survey.

Panel A.2 of Table 9 further shows that low trust investments in attractive markets have a higher IPO rate, higher exit rate and lower failure rate than low trust investments in unattractive markets. Moreover, the difference in the IPO rate between low and high trust investments is larger and statistically more significant in attractive than in unattractive markets. Similarly, the difference in the IPO rate between attractive and unattractive markets is larger and statistically more significant for low trust investments. The same observation is true for the exit rate. For the failure rate, instead, we find that these differences are very similar.

Panel B of Table 9 shows the results for the deal regressions, where we now interact trust with market attractiveness. The trust coefficient remains strongly positive and significant. The interaction of trust with market attractiveness is negative. In the logit model it is statistically significant with a p-value of 2%, in the conditional logit model the p-value falls to 12%. Overall, this evidence is consistent with the notion that trust becomes less important in more attractive markets.

Panel C and D report the results for the exit regression. As expected, the coefficients of trust and of its interaction with market attractiveness are negative for the IPO and EXIT regressions, and positive for the FAILURE regressions. In terms of statistical significance, the results are mixed. The p-value for the coefficient on the interaction term is often marginally above the 10% conventional level, ranging between 7% and 17%. Similarly, the coefficients for TRUST are never significant, but often narrowly missing the 10% mark. We interpret this evidence as suggestive although not conclusive for the hypothesis that the relationship between trust and investment outcomes becomes more negative in more attractiveness markets.

Overall, the results on market attractiveness reveal a pattern that is consistent (albeit

not always statistically significant) with the Trust Hurdle hypothesis. Trust matters less for investments in more attractive markets. Moreover, the superior performance of low trust deals stems mainly from those more attractive markets. Note also that, once again, the evidence does not appear to be consistent with the Cooperative Trust hypothesis, where we might expect that the benefits of an easier relationship between investors and entrepreneurs should be worth more in more attractive markets, suggesting a positive interaction effect between trust and market attractiveness.

7 Further evidence on the Cooperative Trust hypothesis

The evidence so far does not support the Cooperative Trust hypothesis. In section 5 we noted that trust is negatively related to performance and in section 6 we noted that interacting our trust measure with measures of both investor sophistication and market attractiveness yields the opposite signs than expected under the Cooperative trust hypothesis. This suggests that the dominant effect in the data is the Trust Hurdle effect. The question remains of whether there are *any* effects supportive of the Cooperative Trust hypothesis. For this, we now examine some additional evidence.

We go beyond the analysis of investment performance, and ask whether trust affects other aspects of the investment relationship. Building on the prior venture capital literature, we focus on two aspects of the relationship between investors and entrepreneurs—see Da Rin, Hellmann and Puri (2011) for a comprehensive overview. First, venture capital investors are typically active value-adding investors (Hellmann and Puri (2002)), but there is considerable heterogeneity in the interactions between investors and entrepreneurs (Bottazzi, Da Rin and Hellmann (2008)). Second, venture capitalists make use of sophisticated contracts that impact the relationship between investors and entrepreneurs. In particular, empirical work of Kaplan and Strömberg (2003, 2004) documents the pervasive use of contingent control rights in US venture capital contracts.[20]

The Cooperative Trust hypothesis revolves around the benefits of higher trust. The hypothesis is that higher generalized trust facilitates cooperation by allowing venture capitalists and entrepreneurs to forge a closer and smoother working relationship. We would therefore expect that higher generalized trust leads to a closer relationship and more frequent interactions between the venture capitalist and the entrepreneur. Moreover, we would also expect less reliance on formal contractual arrangements, as there is less of a need to design complicated contingent contracts.

To evaluate these additional predictions of the Cooperative Trust hypothesis, we leverage some of our unique hand-collected data. Our survey contains information on the frequency of interaction between investors and entrepreneurs. It also contains information about the use of contingent contracting clauses. Based on this we construct two additional outcome measures. The first, INTERACTION, measures the frequency of interactions between the investors and each portfolio the company. The second variable, CONTINGENT CONTRACTS, measures the use of contingent contracts in each deal.

Our main interest is to examine the Cooperative Trust hypothesis. For this we esti-

[20] The theoretical work of Dessein (2005) and Hellmann (2006) also explains how simple control structures can give too much power either to the investor or the entrepreneur, and how control structures which are contingent on firm performance can achieve more efficient outcomes.

mate regressions similar to those reported in Panel A of Tables 6 and 7. Panel A of Table 10 reports the results without investor FE. Because of the ordinal nature of the dependent variables, we use ordered logit regressions. For robustness we also estimate linear and Poisson regressions and found very similar results. Panel B of Table 10 adds investor FE. Because of the large number of fixed effects, we can only estimate linear regressions. We find that the coefficient of trust on INTERACTION is positive but highly insignificant across all specifications. For the CONTINGENT CONTRACTS regression without investor FE, we find that the trust coefficient is positive and significant. With investor FE the coefficient becomes highly insignificant.

The results of Table 10 again do not support the Cooperative Trust hypothesis. There is no evidence of any significant effect of trust on the frequency of interactions between the investors and entrepreneurs. Even worse, contrary to the prediction of the hypothesis, we find some evidence for a *positive* relationship between trust and the use of contingent contracts.

The fact that we find positive (and sometimes significant) trust coefficients in the contingent contracts models is also worth commenting on.[21] If generalized trust is not about trusting the individual person, then we should not think of contingent contracts as solving problems of insufficient trust between the investor and the entrepreneur. Instead we might think of contingent contracts as being affected by how much the investor trusts institutions in the entrepreneur's country. Indeed, if the investor does not trust the institutions (e.g., legal enforcement) of the country where the company is located, there is not much point in writing a sophisticated contract.[22] This line of reasoning naturally generates a positive relationship between generalized trust and the use of contingent contracts.

We also consider a battery of robustness checks along the lines of those for the deal and exit regressions, which are available upon request We find that none of them affects our results: we use the socio-economic measure of trust and the company perspective trust, we restrict the regressions to the foreign subsamples discussed in section 4.3.2, we employ the minimal company-investor distance, we verify that the effect of trust does not vary significantly across boom and bust years,[23] and we keep the earliest and delete all others for the few companies with multiple deals. Our results are also robust to the falsification exercise described in section 4.3.3.

As a robustness check we also look at the four individual types of contingent control rights. In unreported logit regressions we consistently find that the coefficients of trust are positive. In a pattern consistent with Table 10, all but one one coefficient are statistically significant in the regressions without investor FE, while only one remains significant when we include these FE. Furthermore, in unreported regressions we also examine Heckman models, along the lines of Table 6B and 7B. We find that the results are very similar: the

[21] As noted above, this results holds in the specification without investor FE, but vanished with investor FE. This suggests that contracting terms may be largely determined by the overall practices of the venture capital firm, rather than on a deal by deal basis. This is consistent with recent findings by Bengtsson and Ravid (2011) that venture capital firms tend to use similar contracts across portfolio companies.

[22] As suggested by Woolthuis, Hillebrand, and Nooteboom (2002), 'trust may be needed prior to setting up a contract to ensure that the time and effort invested in the contract, which can be seen as a relation-specific investment, is not likely to be wasted.' Poppo and Zenger (2002) also provide some empirical evidence that trust and contracts can be complements.

[23] In one of the four equations for this check we find that the effect of trust is stronger in bust years for the use of contingent contracts.

trust coefficient is insignificant in both INTERACTION models, it is positive and significant for CONTINGENT CONTRACTS model without investor FE, but again becomes insignificant with investor FE.

8 Conclusion

Economists often distrust explanations that rely on subjective beliefs. Trust is a subjective belief, but so is economists' distrust of trust-based explanations. Hence the importance of empirically establishing the effect of trust.

No single paper can definitively decree the full economic importance of trust. The approach we take in this paper is to examine the effect of trust in a tightly defined environment, venture capital, where we can obtain micro level data. This has the advantage that we can safely dismiss concerns about reverse causality, and that we can control for a large number of alternative explanations. For instance, we find that the effect of trust on investment remains strongly positive even after we control for both investor and company fixed effects, as well as a large number of additional controls.

We extend the research question to consider the relationship between generalized trust and investment performance. We formulate two alternative hypotheses, that focus on trust affecting the benefits and costs of investments, respectively. We find that trust does not operates on the benefits side, in term of higher trust generating superior exit performance, as suggested by the "Cooperative Trust" hypothesis. Rather, we find that trust operates on the private costs side, in terms of lower trust generating hurdles for making investments, as suggested by the "Trust Hurdle" hypothesis. Our analysis also generates some novel comparative statics: for example, we find that more sophisticated investors are more likely to make low trust investments, and they achieve better investment performance from those investments.

While previous work has shown the effect of generalized trust in a variety of economic situations, we believe that we are the first to look at trust in a corporate finance context. Our results suggest that generalized trust may matter for investment choices, investment outcomes and even financial contracts. Most interesting, we find that trust effects differ across different types of investors. We hope that this opens us a new line of research in financial economics, to look at whether and when lack of generalized trust impacts corporate financial transactions.

Our analysis also has some implications for policy. Governments across the globe are seeking to attract venture capitalists to invest in their countries.[24] Our results suggest that investments will be more forthcoming from countries where there is higher generalized trust. This provides some guidance as to what countries might be the most promising targets for government that want to attract foreign venture capital investments.

[24] See Bottazzi and Da Rin (2002), Da Rin, Nicodano, and Sembenelli (2006) and Lerner (2008).

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Table 1: Variable definitions
Table 1(a): Dependent variables

Deal is measured at the potential deal level. All other dependent variables are measured at the (realized) deal level.

Variable	Description
DEAL	dummy variable that takes the value 1 if the venture capital firm has invested in a particular company; 0 otherwise. We obtain the data from our survey instrument, which asked venture firms to list all their portfolio companies.
IPO	dummy variable that takes the value 1 if the company has been exited by October 2011 via an Initial Public Offering ; 0 otherwise. The data is obtained from the Amadeus, Zephyr, and SDC Platinum databases, and from web searches.
EXIT	dummy variable that takes the value 1 if the company has been exited by October 2011 via an IPO or acquisition; 0 otherwise. The data is obtained from the Amadeus, Zephyr, and SDC Platinum databases, and from web searches.
FAILURE	dummy variable that takes the value 1 if by October 2011 the company had gone out of business or could not be traced; 0 otherwise. The data is obtained from the Amadeus, Zephyr, and SDC Platinum databases, and from web searches.
INTERACTION	ordered categorical variable that takes values 1 to 4 depending on whether the venture capital firm is reported to interact with the company on a weekly, monthly, quarterly, or annual basis. We obtain the data from our survey instrument, which asked: *How many times per year does (did) the responsible partner(s)/manager(s) personally interact with this company? (check one).* Possible answers were: *annually; quarterly; monthly; weekly.*
CONTINGENT CONTRACTS	index measure of contingent control rights obtained from counting the presence of the following four contingent control rights: control over the board of directors, voting rights, company liquidation, and termination of the founder's employment contract. This variable takes a value between 0 and 4. We obtain the data from our survey instrument, which asked the following questions: *Does your firm has a right to obtain control of the board of directors contingent on the realization of certain events? Does your firm has a right to obtain voting rights contingent on the realization of certain events? Does your firm has a right to liquidate the company contingent on the realization of certain events? Does your firm has a right to fire the founder/CEO contingent on the realization of certain events?* For all questions, the possible answers were: *Yes, No.*

Table 1(b): Independent variables: Country-dyadic level

Country-dyadic variables are measured at the level of the investor country and company country pair.

Variable	Description
TRUST	percentage of the citizens in one contry that trust a lot people from the other country. It is obtained from the Eurostat's Eurobarometer question: *"I would like to ask you a question about how much trust you have in people from various countries. For each, please tell me whether you have a lot of trust, some trust, not very much trust or no trust at all."* The answers range from 1 (no trust at all) to 4 (a lot of trust). Our measure is the percentage of individuals who respond 4.
INFORMATION	percentage of times a country is mentioned in the other country's main business newspaper over the 1998-2001 period, obtained from the Factiva database. For each country dyad, we record the number of articles in the main business newspaper of country i that mention in the headlines country j, or citizens of country j. We divide this number by the total number of articles in the newspaper that are related to all the countries in our sample. We set INFORMATION equal to zero for domestic deals (i=j).
GDP DIFFERENCE	difference (for each country pair) of the log-transformed per capita GDP, expressed in euros and averaged over the 1998–2001 period. This variable is obtained from Datastream.
LANGUAGE OVERLAP	percentage of people who speak the same language in each country dyad. This variable is set to 1 for domestic deals. The data is obtained from www.ethnologue.com.
LEGAL DIFFERENCE	dummy variable that takes value 1 if investor and company are located in countries with different legal origins; 0 otherwise. We distinguish between Common law, French-origin civil law, German-origin civil law, and Scandinavian-origin civil law. The data is obtained from La Porta et al. (1998).
FOREIGN DEAL	dummy variable that takes value 1 if the investor and company are from different countries; 0 otherwise.
COMMON BORDER	dummy variable that takes value 1 if the investor's and company's countries share a land border; 0 otherwise (including domestic deals).
EUROVISION	Normalized score of the votes from citizens of country i to the song of country j in the Eurovision Song Contest, computed as in Felbermayr and Toubal (2007), averaged over the period from 1993 to 2001. The variable is set to 0 for domestic deals. The data is obtained from the www.eurovision.tv website.
EXPORTS	percentage of the exports from country i to country j, out of the total export towards the sample countries, averaged over the period from 1998 to 2001. This variable is set to 0 for domestic deals. The data is obtained from the UN World Trade database.
FDI	percentage of the foreign direct investments from country i to country j out of the total FDI towards the sample countries, averaged over the period from 1998 to 2001. This variable is set to 0 for domestic deals. The data is obtained form OECD's Main Economic Indicators database.

Table 1(c): Other independent variables

Distance, Industry Fit, and Stage Fit are measured at the investor-company pair level; Independent VC, VC Size, VC Age, and US Experience at the investor level; all other variables at the company level.

Variable	Description
DISTANCE	natural logarithm of one plus the kilometric distance between the venture capital investor and the company. The distance is computed by applying the geodetic formula to the longitudinal and latitudinal coordinates of each investor and company pair. This data is obtained from www.multimap.com.
INDUSTRY FIT	percentage of the deals made by the venture capital investor in the same industry of the company.
STAGE FIT	percentage of the deals made by the venture capital investor in the same stage at which the company gets financed.
INDEPENDENT VC	dummy variable that takes the value 1 if the venture capitalist defines itself as an independent venture firm; 0 otherwise
VC SIZE	natural logarithm of one plus the amount under management of the venture capital firm at the end of the sample period, in millions of current euros.
VC AGE.	natural logarithm of one plus the age of the venture capital firm, measured in months at the end of the sample period.
US EXPERIENCE	dummy variables that takes value 1 if a venture capital investor has partners with US work experience; 0 otherwise. We obtain the data from our survey instrument, which asked, for each partner: *Has this partner work experience in the US?* Possible answers were: *Yes; No.*
INDUSTRY	set of dummy variables for each company's industry. We obtain the data from our survey instrument, which gave the following choices: Biotech and pharmaceuticals; Medical products; Software and internet; Financial services; Industrial services; Electronics; Consumer services; Telecommunications; Food and consumer goods; Industrial products (including energy); Media & Entertainment; Other.
EARLY STAGE	dummy variable that takes value 1 if the company raised seed or start-up finance; 0 otherwise. We obtain the data from our survey instrument, which asked: *Indicate the type of your first round of financing to this company.* Possible answers were: *Seed; Start-up; Expansion; Bridge.*
DEAL DATE	set of dummies for the year of the deal.
MARKET ATTRACTIV.	average IPO rate in a company's market. We define a market by the country, sector, and year of the deal. For each market we compute the average IPO rate of companies that received their first investment in that country, industry, and year. We obtain the IPO rate data for each market from ThomsonOne.
INVESTOR F.E.	set of 107 dummy variables, one for each investor.
COMPANY F.E.	set of 1,170 dummy variables, one for each company.
INVESTOR–COUNTRY F.E.	set of investor country dummy variables.
COMPANY–COUNTRY F.E.	set of company country dummy variables.

Table 2
Descriptive statistics

This Table provides descriptive statistics for the potential deals sample (Panel A) and for the realized deals sample (Panel B). We report the mean, minimum and maximum values of the dependent and independent variables (except for industry dummies). For dummy variables we report the frequency of observations. Variables are defined in Table 1.

	POTENTIAL DEALS SAMPLE			REALIZED DEALS SAMPLE		
VARIABLE	Mean	Minimum	Maximum	Mean	Minimum	Maximum
Deal	0.012	0	1	–	–	–
IPO	–	–	–	0.085	0	1
Exit	–	–	–	0.378	0	1
Failure	–	–	–	0.542	0	1
Interaction	–	–	–	2.931	0	1
Contingent Contracts	–	–	–	1.331	0	4
Trust	0.203	0.037	0.716	0.434	0.071	0.716
Information	0.085	0	0.664	0.029	0	0.664
GDP Difference	0.106	0	0.618	0.056	0	0.284
Language Overlap	0.153	0	1	0.834	0	1
Legal Difference	0.179	0	1	0.051	0	1
Distance	6.720	0	9.323	3.843	0	9.176
Foreign Deal	0.893	0	1	0.182	0	1
Common Border	0.211	0	1	0.046	0	1
Industry Fit	0.146	0	1	0.368	0.018	1
Stage Fit	0.508	0	1	0.705	0.049	1
Independent-VC	0.679	0	1	0.599	0	1
VC-Size	170.505	1.300	4,100.000	223.405	1.300	4,100.000
VC-Age	78.433	12	390	97.568	12	390
US-Experience	0.544	0	1	0.581	0	1
Early Stage	0.586	0	1	0.586	0	1
Deal-1998	0.073	0	1	0.126	0	1
Deal-1999	0.170	0	1	0.213	0	1
Deal-2000	0.394	0	1	0.365	0	1
Deal-2001	0.363	0	1	0.296	0	1
Eurovision	0.334	–1.216	2.895	–	–	–
FDI	0.083	0	0.693	–	–	–
Exports	0.093	0	0.469	–	–	–
Market Attractiveness	0.080	0	1	0.089	0	1
Industry-Biotech and pharma	0.131	0	1	0.145	0	1
Industry-Medical products	0.070	0	1	0.070	0	1
Industry-Software and Internet	0.312	0	1	0.307	0	1
Industry-Financial services	0.037	0	1	0.037	0	1
Industry-Industrial services	0.035	0	1	0.036	0	1
Industry-Electronics	0.064	0	1	0.059	0	1
Industry-Telecom	0.079	0	1	0.079	0	1
Industry-Consumer services	0.121	0	1	0.121	0	1
Industry-Food and consumer goods	0.022	0	1	0.021	0	1
Industry-Industrial products	0.012	0	1	0.011	0	1
Industry-Media & entertainment	0.064	0	1	0.060	0	1
Industry-Other industries	0.053	0	1	0.032	0	1
Number of observations	*101,620*			*1,228*		
Number of companies	*1,170*			*1,170*		
Number of deals	*1,228*			*1,228*		
Number of venture firms	*107*			*107*		

Table 3: Correlations

This Table reports pairwise correlations (significance levels in brackets). Panel A reports correlations among variables in the potential deals sample. Panel B reports correlations among variables in the realized deals sample. Variables are defined in Table 1.

Panel A: Potential deals sample

	Dealt	Trust	Inform.	GDP Differ.	Lang. Overlap	Legal Differ.	Dist.	Foreign. Deal	Common Border	Exports	FDI	Mark. Attract.	US Exp.
Deal	1.000												
Trust	0.202 (0.00)	1.000											
Information	–0.066 (0.00)	–0.219 (0.00)	1.000										
GDP Diff.	–0.053 (0.00)	–0.384 (0.00)	0.011 (0.03)	1.000									
Lang. Overlap	–0.217 (0.00)	0.673 (0.00)	–0.200 (0.00)	–0.238 (0.00)	1.000								
Legal Differ.	–0.037 (0.00)	–0.064 (0.00)	0.210 (0.00)	0.127 (0.00)	0.128 (0.00)	1.000							
Distance	–0.231 (0.00)	–0.464 (0.00)	0.219 (0.00)	0.298 (0.00)	–0.525 (0.00)	0.019 (0.00)	1.000						
Foreign Deal	–0.255 (0.00)	–0.723 (0.00)	0.314 (0.00)	0.211 (0.00)	–0.842 (0.00)	0.161 (0.00)	0.616 (0.00)	1.000					
Comm. Border	–0.055 (0.00)	0.031 (0.00)	0.310 (0.00)	–0.099 (0.00)	–0.017 (0.00)	0.379 (0.00)	–0.127 (0.00)	0.178 (0.00)	1.000				
Exports	–0.047 (0.00)	–0.193 (0.00)	0.663 (0.00)	–0.036 (0.00)	–0.150 (0.00)	0.328 (0.00)	0.115 (0.00)	0.391 (0.00)	0.534 (0.00)	1.000			
FDI	–0.050 (0.00)	–0.144 (0.00)	0.429 (0.00)	–0.028 (0.00)	–0.016 (0.00)	0.210 (0.00)	0.245 (0.00)	0.259 (0.00)	0.008 (0.00)	0.524 (0.00)	1.000		
Mark. Attract.	0.009 (0.80)	0.014 (0.80)	0.101 (0.80)	–0.054 (0.00)	0.020 (0.00)	0.006 (0.07)	–0.052 (0.00)	–0.022 (0.00)	0.060 (0.00)	0.088 (0.00)	–0.007 (0.00)	1.000	
US Experience	0.008 (0.01)	–0.014 (0.00)	–0.027 (0.00)	0.015 (0.00)	–0.058 (0.00)	–0.037 (0.00)	–0.075 (0.00)	–0.048 (0.00)	0.032 (0.00)	–0.036 (0.00)	0.021 (0.00)	–0.012 (0.00)	1.000

Panel B: Realized deals sample

	IPO	Exit	Failure	Interac.	Cont. Contr.	Trust	Inform.	GDP Differ.	Lang. Overlap	Legal Differ.	Dist.	Foreign Deal	Comm. Border	Mark. Attr.	US Exp.
IPO	1.000														
Exit	0.391 (0.00)	1.000													
Failure	–0.332 (0.00)	–0.849 (0.00)	1.000												
Interaction	–0.054 (0.08)	–0.032 (0.31)	0.023 (0.47)	1.000											
Cont. Contracts	–0.077 (0.02)	–0.019 (0.54)	0.011 (0.72)	0.285 (0.00)	1.000										
Trust	–0.105 (0.00)	–0.101 (0.00)	0.141 (0.00)	0.211 (0.00)	0.262 (0.00)	1.000									
Information	0.039 (0.20)	0.094 (0.00)	–0.160 (0.00)	–0.024 (0.00)	–0.149 (0.11)	–0.505 (0.00)	1.000								
GDP Diff.	0.110 (0.00)	0.155 (0.00)	-0.191 (0.00)	–0.318 (0.00)	–0.294 (0.11)	–0.587 (0.00)	0.276 (0.00)	1.000							
Lang. Overlap	–0.072 (0.01)	–0.078 (0.00)	0.119 (0.00)	0.114 (0.00)	0.069 (0.02)	0.664 (0.00)	–0.726 (0.00)	–0.313 (0.00)	1.000						
Legal Differ.	0.010 (0.74)	0.060 (0.04)	–0.051 (0.00)	0.049 (0.11)	–0.042 (0.16)	–0.246 (0.00)	0.238 (0.00)	0.189 (0.00)	–0.346 (0.00)	1.000					
Distance	–0.001 (0.98)	0.510 (0.09)	–0.105 (0.00)	–0.129 (0.00)	–0.077 (0.02)	–0.389 (0.00)	0.501 (0.00)	0.184 (0.00)	–0.548 (0.00)	0.209 (0.00)	1.000				
Foreign Deal	0.065 (0.03)	0.079 (0.01)	–0.120 (0.00)	–0.100 (0.00)	–0.062 (0.02)	–0.684 (0.00)	0.740 (0.00)	0.313 (0.00)	–0.963 (0.00)	0.492 (0.00)	0.563 (0.00)	1.000			
Comm. Border	0.107 (0.00)	0.095 (0.00)	–0.073 (0.01)	–0.104 (0.00)	–0.140 (0.00)	0.083 (0.00)	0.252 (0.00)	0.156 (0.00)	–0.366 (0.00)	0.586 (0.00)	0.176 (0.00)	0.463 (0.00)	1.000		
Mark. Attract.	0.207 (0.00)	0.087 (0.00)	–0.076 (0.01)	–0.048 (0.13)	–0.090 (0.00)	–0.127 (0.00)	0.008 (0.79)	0.217 (0.00)	–0.037 (0.21)	0.007 (0.81)	–0.036 (0.22)	0.030 (0.31)	0.030 (0.31)	1.000	
US Experience	0.104 (0.00)	0.120 (0.00)	–0.151 (0.00)	–0.146 (0.00)	–0.097 (0.00)	–0.287 (0.00)	0.201 (0.00)	0.297 (0.00)	–0.203 (0.00)	0.010 (0.72)	0.029 (0.31)	0.204 (0.00)	0.084 (0.00)	0.123 (0.00)	1.000

Table 4
Deal regressions: main model

This Table reports results of logit and conditional logit regressions for the potential deals sample. The dependent variable is DEAL. Variables are defined in Table 1. All regressions include investor fixed effects. Company controls are a set of dummies for each company's country, industry and stage, and for the year the deal was completed. Columns (i) and (ii) report results of logit regressions. Columns (iii) and (iv) report results of conditional logit regressions. These models are discussed in Section 4.1. For each independent variable, we report the estimated coefficient and the z-score (in parenthesis) computed using (Huber-White) heteroskedasticity-robust standard errors. In the logit regressions, standard errors are clustered by country-dyad. Values significant at the 1%, 5% and 10% level are identified by ***, **, *.

	DEAL	DEAL	DEAL	DEAL
	(i)	*(ii)*	*(iii)*	*(iv)*
	Logit	Logit	Cond. Logit	Cond. Logit
Trust	6.836***	6.498***	6.809***	6.484***
	(4.361)	*(3.490)*	*(4.935)*	*(3.917)*
Information		4.122***		4.087***
		(3.245)		*(3.120)*
GDP Difference		–4.594**		–4.431***
		(–2.495)		*(–2.597)*
Language Overlap		0.680		0.666
		(1.491)		*(1.160)*
Legal Difference		–0.174		–0.159
		(–0.579)		*(–0.507)*
Distance	–0.226***	–0.223**	–0.222***	–0.219***
	(–2.623)	*(–2.574)*	*(–5.634)*	*(–5.529)*
Foreign Deal	–2.237***	–1.699**	–2.202***	–1.685**
	(–4.021)	*(–2.072)*	*(–4.682)*	*(–2.093)*
Common Border	0.156	–0.249	0.147	–0.254
	(0.535)	*(–0.893)*	*(0.491)*	*(–0.838)*
Industry Fit	6.896***	6.930***	6.809***	6.838***
	(27.568)	*(27.717)*	*(24.520)*	*(25.123)*
Stage Fit	2.947***	2.976***	2.915***	2.941***
	(13.601)	*(13.906)*	*(17.355)*	*(17.532)*
Investor Fixed Effects	Included	Included	Included	Included
Company Controls	Included	Included	Included	Included
Observations	*101,620*	*101,620*	*101,620*	*101,620*
Pseudo R^2	*0.503*	*0.507*	–	–
Number of investors	*107*	*107*	*107*	*107*
Number of companies	*1,170*	*1,170*	*1,170*	*1,170*

Table 5
Deal regressions: models with exports and Foreign Direct Investments

This Table reports results of logit and conditional logit regressions for the potential deals sample. The dependent variable is DEAL. Variables are defined in Table 1. All regressions include investor fixed effects. Company controls are a set of dummies for each company's country, industry and stage, and for the year the deal was completed. Columns (i) and (ii) report results of logit regressions. Columns (iii) and (iv) report results of conditional logit regressions. These models are discussed in Section 4.2. For each independent variable, we report the estimated coefficient and the z-score (in parenthesis) computed using (Huber-White) heteroskedasticity-robust standard errors. In the logit regressions, standard errors are clustered by country-dyad. Values significant at the 1%, 5% and 10% level are identified by ***, **, *.

	DEAL	DEAL	DEAL	DEAL
	(i)	*(ii)*	*(iii)*	*(iv)*
	Logit	Cond. Logit	Logit	Cond. Logit
Trust	5.080***	5.102***	6.539***	6.526***
	(2.800)	*(2.918)*	*(3.728)*	*(3.670)*
Exports	11.494***	11.254***	—	—
	(3.587)	*(3.363)*		
FDI	—	—	5.777***	5.705***
			(6.965)	*(4.687)*
Information	2.376**	2.376*	5.295***	5.248***
	(2.008)	*(1.873)*	*(5.794)*	*(4.165)*
GDP Difference	–5.570***	–5.393***	–6.906***	–6.715***
	(–3.206)	*(-3.244)*	*(–3.478)*	*(–3.612)*
Language Overlap	–0.767	–0.753	–0.045	–0.049
	(–1.145)	*(–0.948)*	*(–0.095)*	*(–0.076)*
Legal Difference	–0.055	–0.043	–0.368	–0.351
	(–0.192)	*(–0.139)*	*(–1.059)*	*(–1.006)*
Distance	–0.219**	–0.215***	–0.218**	–0.214***
	(–2.516)	*(–5.387)*	*(–2.501)*	*(–5.270)*
Foreign Deal	–4.489***	–4.415***	–3.100***	–3.067***
	(–3.690)	*(–3.464)*	*(–3.416)*	*(–3.120)*
Common Border	–0.802**	–0.796**	–0.334	–0.333
	(-2.276)	*(–2.190)*	*(–1.130)*	*(–1.093)*
Industry Fit	6.978***	6.883***	7.053***	6.954***
	(27.607)	*(24.781)*	*(26.978)*	*(24.609)*
Stage Fit	2.977***	2.941***	2.961***	2.923***
	(13.870)	*(17.399)*	*(13.358)*	*(17.452)*
Investor Fixed Effects	Included	Included	Included	Included
Company Controls	Included	Included	Included	Included
Observations	*101,620*	*101,620*	*101,620*	*101,620*
Pseudo R^2	*0.510*	–	*0.514*	–
Number of investors	*107*	*107*	*107*	*107*
Number of companies	*1,170*	*1,170*	*1,170*	*1,170*

Table 6
Outcome regressions without investor fixed effects

This Table reports results of regressions for the realized deals sample. The dependent variables are IPO, EXIT, and FAILURE. Variables are defined in Table 1. Panel A reports results of logit regressions. Panel B reports results of a Heckman selection model, where the outcome equation is a logit regression with the same specification as in Table 4, and the excluded variable is Exports. Investor controls are a set of dummies for each investor's country, size, age, and type (independent vs. captive). Company controls are a set of dummies for each company's country, industry and stage, and for the year the deal was completed. These models are discussed in Section 5.1. For each independent variable, we report the estimated coefficient and the z-score (in parenthesis) computed using (Huber-White) heteroskedasticity-robust standard errors, clustered by country-dyad. Values significant at the 1%, 5% and 10% level are identified by ***, **, *.

Panel A: Logit model with investor controls

	IPO	EXIT	FAILURE
	(i)	*(ii)*	*(iii)*
	Logit	Logit	Logit
Trust	–15.772*	–3.709	5.280*
	(–1.667)	*(–1.439)*	*(1.912)*
Information	–4.245	1.632	–4.220***
	(–0.851)	*(0.916)*	*(–2.818)*
GDP Difference	–3.032	–2.443	4.403
	(–0.378)	*(–0.898)*	*(1.337)*
Language Overlap	–4.263**	-1.144	0.576
	(–2.098)	*(–1.507)*	*(0.722)*
Legal Difference	0.251	1.019**	–1.174**
	(0.276)	*(2.137)*	*(–2.156)*
Distance	–0.106***	0.018	–0.033
	(–2.602)	*(0.477)*	*(–0.756)*
Foreign Deal	–8.455***	–2.793**	3.002**
	(–2.670)	*(–2.513)*	*(2.489)*
Common Border	1.346	0.629	–0.301
	(1.092)	*(1.473)*	*(–0.758)*
Industry Fit	0.061	0.061	0.028
	(0.122)	*(0.124)*	*(0.059)*
Stage Fit	0.568	-0.100	-0.146
	(1.046)	*(-0.528)*	*(-0.815)*
Investor controls	Included	Included	Included
Company controls	Included	Included	Included
Observations	*1,054*	*1,125*	*1,125*
Pseudo R^2	*0.235*	*0.119*	*0.140*

Panel B: Heckman selection model

	IPO	EXIT	FAILURE
	(i)	*(ii)*	*(iii)*
	Heckman	Heckman	Heckman
Trust	–0.946**	–0.855	1.136*
	(–2.445)	*(–1.266)*	*(1.672)*
Information	–0.334	0.197	–0.673*
	(–1.499)	*(0.507)*	*(–1.720)*
GDP Difference	–0.599	–0.368	0.733
	(–1.301)	*(–0.458)*	*(0.906)*
Language Overlap	–0.116	–0.239	0.150
	(–0.909)	*(–1.074)*	*(0.670)*
Legal Difference	0.063	0.193	–0.235*
	(0.817)	*(1.441)*	*(–1.738)*
Distance	–0.003	0.007	–0.010
	(–0.632)	*(1.010)*	*(–1.317)*
Foreign Deal	–0.217	–0.510	0.595*
	(–1.195)	*(–1.612)*	*(1.869)*
Common Border	0.079	0.148	–0.077
	(1.316)	*(1.405)*	*(–0.725)*
Industry Fit	–0.086	–0.061	0.066
	(–1.561)	*(–0.640)*	*(0.682)*
Stage Fit	–0.028	–0.054	–0.012
	(–0.687)	*(–0.753)*	*(–0.169)*
Investor Controls	Included	Included	Included
Company Controls	Included	Included	Included
	SELECTION EQUATION		
Trust	1.856***	1.856***	1.856***
	(3.615)	*(3.615)*	*(3.615)*
Exports	5.411***	5.411***	5.411***
	(6.823)	*(6.823)*	*(6.823)*
Information	0.826**	0.826**	0.826**
	(2.333)	*(2.333)*	*(2.333)*
GDP Difference	–2.269***	–2.269***	–2.269***
	(–3.904)	*(–3.904)*	*(–3.904)*
Language Overlap	–0.410**	–0.410**	–0.410**
	(–2.018)	*(–2.018)*	*(–2.018)*
Legal Difference	–0.054	–0.054	–0.054
	(–0.540)	*(–0.540)*	*(–0.540)*
Distance	–0.110***	–0.110***	–0.110***
	(–11.699)	*(–11.699)*	*(–11.699)*
Foreign Deal	–2.128***	–2.128***	–2.128***
	(–6.751)	*(–6.751)*	*(–6.751)*
Common Border	–0.338***	–0.338***	–0.338***
	(–3.570)	*(–3.570)*	*(–3.570)*
Industry Fit	3.212***	3.212***	3.212***
	(27.932)	*(27.932)*	*(27.932)*
Stage Fit	1.359***	1.359***	1.359***
	(15.818)	*(15.818)*	*(15.818)*
Investor Fixed Effects	Included	Included	Included
Company Controls	Included	Included	Included
Mills λ	–0.063***	–0.053	0.037
	(–2.43)	(–1.22)	(0.81)
Observations	*101,614*	*101,614*	*101,614*
Realized deals	*1,129*	*1,129*	*1,129*
Wald χ2(58)	*210.66*	*195.32*	*245.12*

Table 7
Outcome regressions with investor fixed effects

This Table reports results of regressions for the realized deals sample with investor fixed effects. The dependent variables are IPO, EXIT, and FAILURE. Panel A reports results of logit regressions. Panel B reports results of a Heckman selection model, where the outcome equation is a logit regression with the same specification as in Table 4, and the excluded variable is Exports. Investor controls are a set of dummies for each investor's country, size, age, and type (independent vs. captive). Company controls are a set of dummies for each company's country, industry and stage, and for the year the deal was completed. These models are discussed in Section 5.1. For each independent variable, we report the estimated coefficient and the z-score (in parenthesis) computed using (Huber-White) heteroskedasticity-robust standard errors. In the logit models standard errors are clustered by country-dyad. Values significant at the 1%, 5% and 10% level are identified by ***, **, *.

Panel A: Conditional Logit

	IPO	EXIT	FAILURE
	(i)	*(ii)*	*(iii)*
	Cond. Logit	Cond. Logit	Cond. Logit
Trust	–14.917	–2.489	5.977
	(–1.550)	*(–0.781)*	*(1.606)*
Information	–4.584	1.339	–5.264**
	(–0.913)	*(0.512)*	*(–2.094)*
GDP Difference	–5.377	–0.289	2.575
	(–0.743)	*(–0.080)*	*(0.704)*
Language Overlap	–6.164	–0.813	0.272
	(–1.331)	*(–0.891)*	*(0.320)*
Legal Difference	0.306	0.611	–1.121**
	(0.269)	*(0.981)*	*(–2.049)*
Distance	–0.132***	0.036	–0.057
	(–2.613)	*(1.024)*	*(–1.541)*
Foreign Deal	–10.282**	–2.059	3.133**
	(–2.022)	*(–1.396)*	*(2.205)*
Common Border	1.660	0.695*	–0.492
	(1.482)	*(1.867)*	*(–1.019)*
Industry Fit	1.579	0.654	–0.445
	(1.599)	*(1.205)*	*(–1.059)*
Stage Fit	2.568***	0.209	–0.573
	(3.156)	*(0.561)*	*(–1.384)*
Investor Fixed Effects	Included	Included	Included
Company Controls	Included	Included	Included
Observations	*621*	*1,037*	*1,045*
Pseudo R^2	*0.185*	*0.052*	*0.051*

Panel B: Heckman Selection Model

	IPO	EXIT	FAILURE
	(i)	*(ii)*	*(iii)*
	Heckman	Heckman	Heckman
Trust	–0.597	–0.206	0.896
	(–1.279)	*(–0.257)*	*(1.126)*
Information	–0.196	0.472	–0.971**
	(–0.687)	*(0.961)*	*(–1.996)*
GDP Difference	–0.695	–0.143	0.534
	(–1.463)	*(–0.175)*	*(0.659)*
Language Overlap	–0.112	–0.139	0.130
	(–0.809)	*(–0.581)*	*(0.548)*
Legal Difference	0.076	0.087	–0.192
	(0.941)	*(0.625)*	*(–1.390)*
Distance	–0.012	-0.001	–0.005
	(–1.454)	*(–0.082)*	*(–0.342)*
Foreign Deal	–0.282	–0.439	0.680**
	(–1.321)	*(–1.195)*	*(1.870)*
Common Border	0.072	0.139	–0.109
	(1.150)	*(1.292)*	*(–1.018)*
Industry Fit	0.191	0.367	–0.264
	(0.829)	*(0.925)*	*(–0.672)*
Stage Fit	0.159	0.154	–0.205
	(1.453)	*(0.816)*	*(–1.096)*
Investor Fixed Effects	Included	Included	Included
Company controls	Included	Included	Included
	SELECTION EQUATION		
Trust	1.836***	1.836***	1.836***
	(3.580)	*(3.580)*	*(3.580)*
Exports	5.426***	5.426***	5.426***
	(6.846)	*(6.846)*	*(6.846)*
Information	0.826**	0.826**	0.826**
	(2.332)	*(2.332)*	*(2.332)*
GDP Difference	–2.287***	–2.287***	–2.287***
	(–3.937)	*(–3.937)*	*(–3.937)*
Language Overlap	–0.407**	–0.407**	–0.407**
	(–2.008)	*(–2.008)*	*(–2.008)*
Legal Difference	–0.055	–0.055	–0.055
	(–0.554)	*(–0.554)*	*(–0.554)*
Distance	–0.110***	–0.110***	–0.110***
	(–11.758)	*(–11.758)*	*(–11.758)*
Foreign Deal	–2.134***	–2.134***	–2.134***
	(–6.770)	*(–6.770)*	*(–6.770)*
Common Border	–0.339***	–0.339***	–0.339***
	(–3.585)	*(–3.585)*	*(–3.585)*
Industry Fit	3.224***	3.224***	3.224***
	(28.022)	*(28.022)*	*(28.022)*
Stage Fit	1.364***	1.364***	1.364***
	(15.905)	*(15.905)*	*(15.905)*
Investor Fixed Effects	Included	Included	Included
Company controls	Included	Included	Included
Mills λ	0.043	0.097	–0.076
	(0.46)	(0.61)	(–0.48)
Observations	*101,620*	*101,620*	*101,620*
Realized deals	*1,135*	*1,135*	*1,135*
Wald $\chi^2(141)$	*298.05*	*319.785*	*426.84*

Table 8
The role of US experience

This Table reports results of univariate tests and of regressions for both the potential and the realized deals samples.Panel A reports univariate results. Panel B reports results of logit and conditional logit regressions in the potential deals sample with the same specifications of columns (ii) and (iv) of Table 4. The dependent variable is Deal. Panels C and D report results of regressions in the realized deals sample. Dependents variables are IPO, EXIT, and FAILURE. Panel C reports results of logit regressions without investor fixed effects, and Panel D reports results of conditional logit regressions. Variables are defined in Table 1. Investor controls are a set of dummies for each investor's country, size, age, and type (independent vs. captive). Company controls are a set of dummies for each company's country, industry and stage, and for the year the deal was completed. These models are discussed in Section 6.1. For each independent variable, we report the estimated coefficient and the z-score (in parenthesis) computed using (Huber-White) heteroskedasticity-robust standard errors. In logit models standard errors are clustered by country-dyad. Values significant at the 1%, 5% and 10% level are identified by ***, **, *.

Panel A: Univariate tests

Panel A.1: Univariate tests, full sample

	Trust	IPO	Exit	Failure
US Experience	0.396	0.108	0.425	0.483
No US Experience	0.485	0.048	0.305	0.637
t-test	*10.47****	*–3.51****	*–4.06****	*5.13****
(p-value)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*

Panel A.2: Univariate tests, Trust High and Trust Low subsamples

	Trust High	Trust Low	*t-test (p-value)*
IPO			
US Experience	0.063	0.134	*2.94*** (0.00)*
No US Experience	0.035	0.074	*1.78** (0.08)*
t-test (p-value)	*–1.49 (0.14)*	*–1.97** (0.05)*	
Exit			
US Experience	0.290	0.501	*5.55*** (0.00)*
No US Experience	0.299	0.315	*0.35 (0.73)*
t-test (p-value)	*0.23 (0.82)*	*–3.99*** (0.00)*	
Failure			
US Experience	0.631	0.398	*–6.09*** (0.00)*
No US Experience	0.658	0.597	*–1.26 (0.21)*
t-test (p-value)	*0.65 (0.51)*	*4.29*** (0.00)*	

Panel B: Deal regressions

	DEAL *(i)* Logit	DEAL *(ii)* Cond. logit
Trust	9.228***	9.208***
	(4.537)	*(4.666)*
Trust-US-Experience	–4.440***	–4.421***
	(–3.850)	*(–3.332)*
US Experience	–0.041	—
	(–0.036)	—
Information	4.056***	4.021***
	(3.187)	*(2.987)*
GDP Difference	–4.433**	–4.254**
	(–2.418)	*(–2.384)*
Language Overlap	0.534	0.515
	(1.121)	*(0.817)*
Legal Difference	-0.083	-0.065
	(-0.261)	*(-0.181)*
Distance	-0.227***	-0.223***
	(-2.577)	*(-5.561)*
Foreign Deal	–1.838**	–1.827**
	(–2.162)	*(–1.974)*
Common Border	–0.328	–0.335
	(–1.164)	*(–1.100)*
Industry Fit	6.876***	6.783***
	(26.603)	*(23.788)*
Stage Fit	2.955***	2.919***
	(13.487)	*(17.333)*
Investor Fixed Effects	Included	Included
Company Controls	Included	Included
Observations	*101,620*	*101,620*
Pseudo R^2	*0.510*	–
Number of investors	*107*	*107*
Number of companies	*1,170*	*1,170*

Panel C: Outcome regressions without investor fixed effects

	IPO	EXIT	FAILURE
	(i)	*(ii)*	*(iii)*
	Logit	Logit	Logit
Trust	–14.998	–3.137	5.323*
	(–1.375)	*(–1.096)*	*(1.691)*
Trust-US-Experience	–2.929*	–2.393*	1.763
	(–1.792)	*(–1.904)*	*(1.440)*
US Experience	1.722*	1.749***	–1.526***
	(1.787)	*(2.840)*	*(–2.744)*
Information	–4.163	1.071	-3.784**
	(–0.872)	*(0.647)*	*(-2.509)*
GDP Difference	–2.943	–1.959	4.257
	(–0.382)	*(–0.738)*	*(1.338)*
Language Overlap	–4.027*	–1.371*	0.741
	(–1.958)	*(–1.877)*	*(0.951)*
Legal Difference	0.393	1.267**	-1.448**
	(0.438)	*(2.518)*	*(-2.477)*
Distance	–0.103**	0.026	-0.044
	(–2.397)	*(0.680)*	*(-0.982)*
Foreign Deal	–8.832**	–3.410***	3.665***
	(–2.556)	*(–2.999)*	*(2.729)*
Common Border	1.391	0.625	-0.304
	(1.107)	*(1.436)*	*(-0.742)*
Industry Fit	0.013	-0.097	0.250
	(0.026)	*(-0.207)*	*(0.581)*
Stage Fit	0.673	0.017	-0.291
	(1.327)	*(0.092)*	*(-1.441)*
Investor Controls	Included	Included	Included
Company Controls	Included	Included	Included
Observations	*1,054*	*1,125*	*1,125*
Pseudo R^2	*0.237*	*0.126*	*0.148*

Panel D: Outcome regressions with investor fixed effects

	IPO	EXIT	FAILURE
	(i)	*(ii)*	*(iii)*
	Cond. Logit	Cond. Logit	Cond. Logit
Trust	–13.920	–0.856	5.113
	(–1.251)	*(-0.251)*	*(1.324)*
Trust-US-Experience	–5.508*	–4.755**	2.432
	(–1.701)	*(–1.965)*	*(0.919)*
US Experience	—	—	—
Information	–4.493	1.312	-4-.978**
	(–0.854)	*(0.542)*	*(–2.048)*
GDP Difference	–5.127	-0.508	2.809
	(–0.695)	*(-0.138)*	*(0.756)*
Language Overlap	–5.131	–1.063	0.390
	(–1.055)	*(–1.177)*	*(0.444)*
Legal Difference	0.754	1.016	–1.323**
	(0.603)	*(1.389)*	*(–2.081)*
Distance	–0.136***	0.034	–0.057
	(–2.767)	*(0.976)*	*(–1.508)*
Foreign Deal	–10.547*	–2.964*	3.535**
	(–1.808)	*(–1.807)*	*(2.405)*
Common Border	1.813	0.698*	–0.490
	(1.613)	*(1.884)*	*(–1.019)*
Industry Fit	1.643	0.660	–0.446
	(1.624)	*(1.206)*	*(–1.057)*
Stage Fit	2.437***	0.159	–0.556
	(3.139)	*(0.422)*	*(–1.334)*
Investor Fixed Effects	Included	Included	Included
Company Controls	Included	Included	Included
Observations	*621*	*1,037*	*1,045*
Pseudo R^2	*0.188*	*0.054*	*0.052*

Table 9
Market attractiveness

ThisTable reports results of univariate tests and of regressions for both the potential and the realized deals samples.Panel A reports univariate results. Panel B reports results of logit and conditional logit regressions in the potential deals sample with the same specifications of columns (ii) and (iv) of Table 4. The dependent variable is Deal. Panels C and D report results of regressions in the realized deals sample. Dependents variables are IPO, EXIT, and FAILURE. Panel C reports results of logit regressions without investor fixed effects, and Panel D reports results of conditional logit regressions. Variables are defined in Table 1. Investor controls are a set of dummies for each investor's country, size, age, and type (independent vs. captive). Company controls are a set of dummies for each company's country, industry and stage, and for the year the deal was completed. These models are discussed in Section 6.2. For each independent variable, we report the estimated coefficient and the z-score (in parenthesis) computed using (Huber-White) heteroskedasticity-robust standard errors. In logit models standard errors are clustered by country-dyad. Values significant at the 1%, 5% and 10% level are identified by ***, **, *.

Panel A: Univariate tests

Panel A.1: Univariate tests, full sample

	Trust	IPO	Exit	Failure
Attractive Markets	0.416	0.137	0.431	0.494
Unattractive Markets	0.452	0.034	0.326	0.590
t-test (p-value)	*4.23*** (0.00)*	*–6.30*** (0.00)*	*–3.65*** (0.00)*	*3.28*** (0.00)*

Panel A.2: Univariate tests, Trust High and Trust Low subsamples

	Trust High	Trust Low	*t-test (p-value)*
IPO			
Attractive Markets	0.079	0.168	*2.97*** (0.00)*
Unattractive Markets	0.030	0.040	*0.64 (0.52)*
t-test (p-value)	*–2.61*** (0.00)*	*–4.78*** (0.00)*	
Exit			
Attractive Markets	0.317	0.493	*4.12*** (0.00)*
Unattractive Markets	0.282	0.393	*2.75*** (0.00)*
t-test (p-value)	*–0.85 (0.39)*	*–2.42** (0.02)*	
Failure			
Attractive Markets	0.609	0.431	*–4.12*** (0.00)*
Unattractive Markets	0.668	0.476	*–4.62*** (0.00)*
t-test (p-value)	*1.38 (0.17)*	*1.07 (0.29)*	

Panel B: Deal regressions

	DEAL *(i)* Logit	DEAL *(ii)* Cond. Logit
Trust	6.873***	6.849***
	(3.458)	*(3.884)*
Trust-Attractive-Market	-2.634**	-2.601
	(-2.533)	*(-1.553)*
Attractive Market	1.418**	1.401**
	(2.346)	*(1.975)*
Information	4.331***	4.291***
	(3.387)	*(3.174)*
GDP Difference	–4.308**	–4.097**
	(–2.319)	*(–2.232)*
Language Overlap	0.860*	0.838
	(1.688)	*(1.384)*
Legal Difference	–0.368	–0.348
	(–1.086)	*(–0.946)*
Distance	–0.224**	–0.220***
	(–2.524)	*(–5.435)*
Foreign Deal	–1.460*	–1.455*
	(–1.702)	*(–1.744)*
Common Border	–0.266	–0.270
	(–0.908)	*(–0.809)*
Industry Fit	6.908***	6.814***
	(26.796)	*(24.793)*
Stage Fit	2.993***	2.957***
	(13.638)	*(17.373)*
Investor Fixed Effects	Included	Included
Company Controls	Included	Included
Observations	*96,831*	*96,831*
Pseudo R^2	*0.504*	–
Number of investors	*106*	*106*
Number of companies	*1,115*	*1,115*

Panel C: Outcome Regressions without investor fixed effects

	IPO	EXIT	FAILURE
	(i)	*(ii)*	*(iii)*
	Logit	Logit	Logit
Trust	–10.896	–3.296	2.831
	(–0.705)	*(–1.285)*	*(1.042)*
Trust-Attractive-Market	–6.952	–7.346*	5.701
	(–1.516)	*(–1.758)*	*(1.384)*
Attractive Market	4.287*	2.148	–1.247
	(1.817)	*(1.556)*	*(–0.777)*
Information	–7.248	2.131	–4.840***
	(–1.003)	*(1.192)*	*(–3.002)*
GDP Difference	5.542	–0.496	2.494
	(0.446)	*(–0.182)*	*(0.766)*
Language Overlap	–9.416	–0.797	0.065
	(–1.202)	*(–1.202)*	*(0.087)*
Legal Difference	–3.089	0.846*	–0.905
	(–1.242)	*(1.693)*	*(–1.605)*
Distance	–0.091*	0.022	–0.036
	(–1.947)	*(0.559)*	*(–0.802)*
Foreign Deal	–12.189	–2.087**	2.072*
	(–1.102)	*(–2.121)*	*(1.841)*
Common Border	1.478	0.873**	–0.507
	(0.792)	*(2.113)*	*(–1.229)*
Industry Fit	–0.309	–0.119	0.172
	(–0.712)	*(–0.249)*	*(0.372)*
Stage Fit	0.477	–0.125	–0.126
	(0.857)	*(–0.687)*	*(–0.700)*
Investor Controls	Included	Included	Included
Company Controls	Included	Included	Included
Observations	*992*	*1,081*	*1,081*
Pseudo R^2	*0.249*	*0.132*	*0.151*

Panel D: Outcome regressions with investor fixed effects

	IPO	EXIT	FAILURE
	(i)	*(ii)*	*(iii)*
	Cond. Logit	Cond. Logit	Cond. Logit
Trust	–14.008	–0.150	3.699
	(–0.928)	*(–0.043)*	*(1.067)*
Trust-Attractive-Market	–11.033*	–8.989	7.990
	(–1.783)	*(–1.622)*	*(1.420)*
Attractive Market	8.524***	3.315	–2.912
	(3.107)	*(1.635)*	*(–1.233)*
Information	–8.886	1.625	–5.550**
	(–1.235)	*(0.650)*	*(–2.175)*
GDP Difference	5.970	1.926	0.010
	(0.485)	*(0.476)*	*(0.003)*
Language Overlap	–25.102	–0.285	–0.289
	(–1.373)	*(–0.290)*	*(–0.337)*
Legal Difference	–6.978	0.314	–0.801
	(–1.509)	*(0.361)*	*(–1.176)*
Distance	–0.125**	0.038	–0.062*
	(–2.379)	*(1.136)*	*(–1.650)*
Foreign Deal	–29.185	–1.218	2.313*
	(–1.430)	*(–0.705)*	*(1.716)*
Common Border	2.214	1.060***	–0.861*
	(1.623)	*(2.823)*	*(–1.701)*
Industry Fit	0.945	0.315	–0.133
	(1.019)	*(0.629)*	*(–0.320)*
Stage Fit	2.653***	0.239	–0.604
	(3.465)	*(0.658)*	*(–1.428)*
Investor Fixed Effect	Included	Included	Included
Company Controls	Included	Included	Included
Observations	*582*	*994*	*1,002*
Pseudo R^2	*0.213*	*0.065*	*0.061*

Table 10
Cooperation between investors and companies

This Table reports results of ordered logit and linear regressions for the realized deals sample. The dependent variables are Contingent Contracts and Interaction. Variables are defined in Table 1. Panel A reports results of ordered logit regressions; Panel B reports results of a linear probability model with investor fixed effects. These models are discussed in Section 7. Investor controls are a set of dummies for each investor's country, size, age, and type (independent vs. captive). Company controls are a set of dummies for each company's country, industry and stage, and for the year the deal was completed. For each independent variable, we report the estimated coefficient and the z-score (in parenthesis) computed using (Huber-White) heteroskedasticity-robust standard errors. In the ordered logit logit models standard errors are clustered by country-dyad. Values significant at the 1%, 5% and 10% level are identified by ***, **, *.

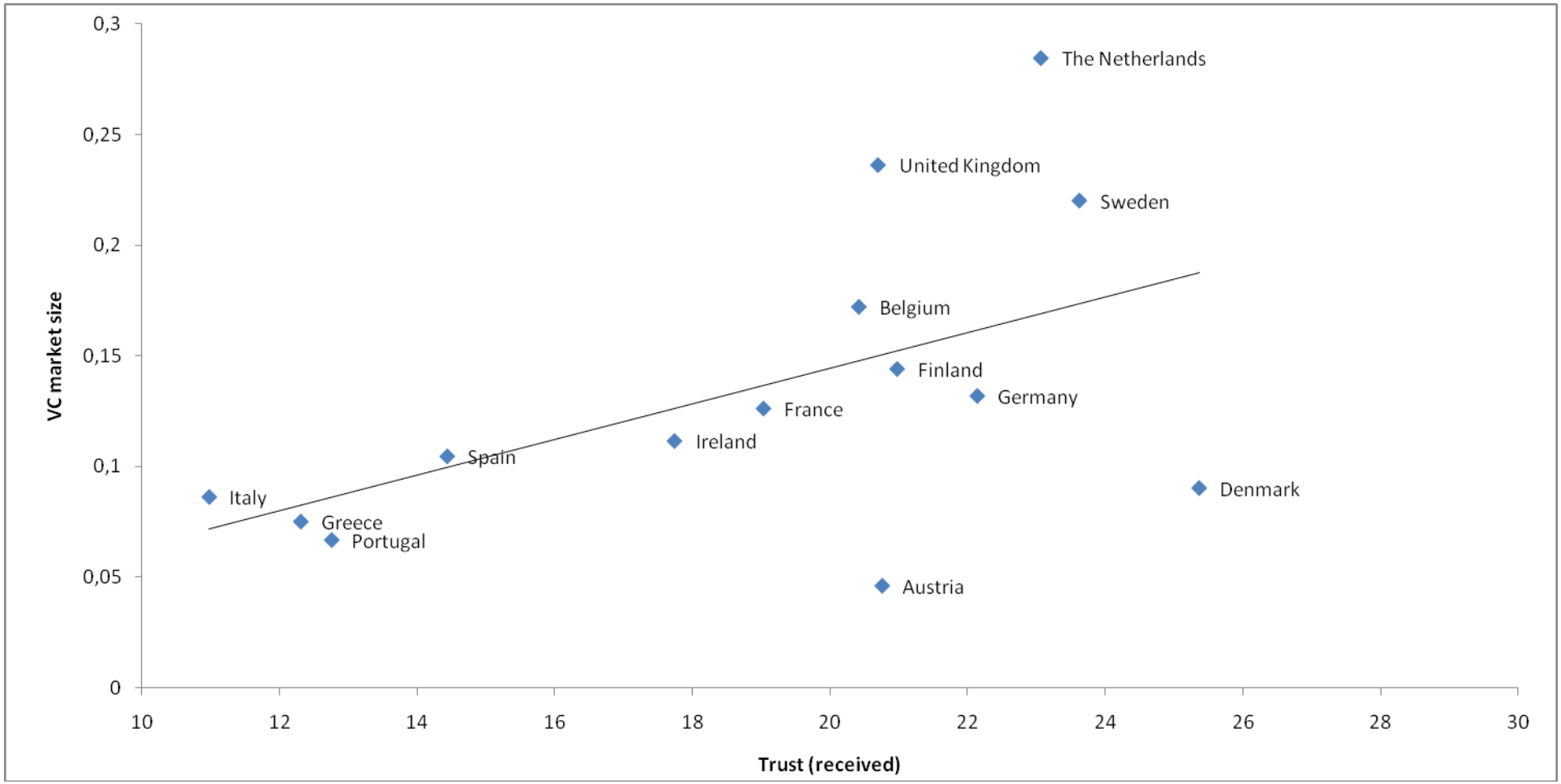
Panel A: Ordered logit regressions

	INTERACTION *(i)* Ordered Logit	CONTINGENT CONTRACTS *(ii)* Ordered Logit
Trust	–6.414	10.859***
	(–1.231)	*(3.025)*
Information	4.133	2.095
	(1.536)	*(1.366)*
GDP Difference	2.297	–0.673
	(0.333)	*(–0.238)*
Language Overlap	7.383*	0.044
	(1.946)	*(0.047)*
Legal Difference	3.277**	–0.386
	(2.407)	*(–0.562)*
Distance	–0.038	–0.024
	(–0.928)	*(–0.870)*
Foreign Deal	3.995	3.235**
	(1.057)	*(2.039)*
Common Border	–2.555***	–1.577***
	(–2.706)	*(–3.044)*
Industry Fit	0.061	–0.509
	(0.115)	*(–0.681)*
Stage Fit	0.521	0.019
	(0.722)	*(0.031)*
Investor controls	Included	Included
Company controls	Included	Included
Observations	*1,068*	*1,087*
Pseudo R^2	*0.438*	*0.170*

Panel B: Linear regressions with investor fixed effects

	INTERACTION *(i)* Linear probability	CONTINGENT CONTRACTS *(ii)* Linear probability
Trust	0.391	0.527
	(1.338)	*(0.548)*
Information	0.277	0.684
	(1.115)	*(0.918)*
GDP Difference	–0.175	–2.384**
	(–0.438)	*(–2.000)*
Language Overlap	0.242**	–0.318
	(2.354)	*(–0.992)*
Legal Difference	–0.021	0.417**
	(–0.317)	*(2.306)*
Distance	0.003	–0.008
	(0.583)	*(-0.871)*
Foreign Deal	0.253*	–0.248
	(1.693)	*(-0.522)*
Common Border	–0.086*	–0.113
	(–1.725)	*(–0.645)*
Industry Fit	-0.038	0.196*
	(-0.635)	*(1.678)*
Stage Fit	0.002	–0.058
	(0.033)	*(–0.523)*
Investor controls	Included	Included
Company controls	Included	Included
Observations	*1,068*	*1,087*
R^2	*0.721*	*0.863*

Figure 1: Trust and VC market size



This figure shows the relationship between countries' trust and the size of their venture capital market. Each observation represents a country in our dataset. Trust (received) is the average percentage of people who expressed high trust in the Eurobarometer data. A value of 20 means that on average 20% of people expressed high trust. VC market size is measured as the total venture capital investments divided by the country's per-capita GDP, for the period 1998-2001.